

PRODUCT CATALOGUE

2013

NIVELCO

3 YEARS WARRANTY @ NIVELCO – WHERE ELSE?

NIVELCO

an instrumentation expert

PiloTREK W-100

Level transmitter family – The new flagship from NIVELCO

Thanks to our esteemed partners the first 100 units of the new generation PiloTREK W-100 level transmitters have been commissioned since November 2012. We are proud that on the first challenge, our PiloTREK non-contact microwave level transmitter won the Product Award of the MagyarRegula 2012 exhibition, as an innovative Hungarian development.

The 25 GHz (K-band) PiloTREK Pulse Radars are regarded the most progressive non-contact level transmitters of the industrial process automation field. Their accuracies are excellent and their short and narrow antennas make their installation simple and low cost. NIVELCO's new K-band radar featuring ± 3 mm accuracy and short dead band excels with its versatile housing concept lining up plastic and aluminium versions. Its antenna range incorporates stainless steel horn and enclosed plastic tube varieties. The enclosed antenna versions can be replaced without removing the antenna enclosure from the process. Local programming of the PiloTREK is aided by a plug-in display module. If on-site reading is not desired this module may not be required thus reducing cost of ownership.

The signal processing algorithm of the new PiloTREK is based on NIVELCO's 30 years of experience with non-contact level measurement making it an excellent choice for applications simple and challenging alike.



MAIN FEATURES

- 2-wire K-band Pulse Burst Radar
- 25 GHz frequency
- 23 metre measuring range for liquids and slurries
- ± 3 mm accuracy
- Easy installation due to small antennas
- Horn and enclosed antenna types
- Sanitary types for meeting
- High hygienic requirements
- High temperature version
- Plug-in graphical display module
- Ex version

INDUSTRY SEGMENTS

- Water, wastewater
- Power generation
- Food and beverage
- Pharmaceutical
- Chemical

APPLICATIONS

- Liquids and slurries in general

ESTEEMED PARTNER!

NIVELCO Process Control Co. celebrated its 30th anniversary in 2012. Founded in 1982 to concentrate on the manufacture of industrial level measurement and control products, **NIVELCO** is now a world-class level specialist, based in Hungary. The **NIVELCO** strength originates from the solid base created by a family business, guided over 75 turbulent years by four basic principles:

- Respect for the Knowledge and Experience of the Founders
- Professional Pride in our Products
- Responsibility for our Colleagues and Customers
- Ensuring our Products and Services provide Value

The **NIVELCO Group** successfully maintained its leading position alongside other major instrument manufacturers throughout the economic crises of recent years. Indeed **NIVELCO** further increased the number of export markets served. Thanks to this healthy position, a four-year support contract was signed recently with the Hungarian Paralympic Association, helping to support a successful Olympic participation in the XXII Winter Olympic Games in 2014.

The whole **NIVELCO Company** looks forward to applying these basic principles, and our existing and ever-developing skills, to the future requirements of our industrial control customers, in increasingly more demanding world markets.



Szóllós
Tamás Szöllős

THE STORY OF A FAMILY VENTURE

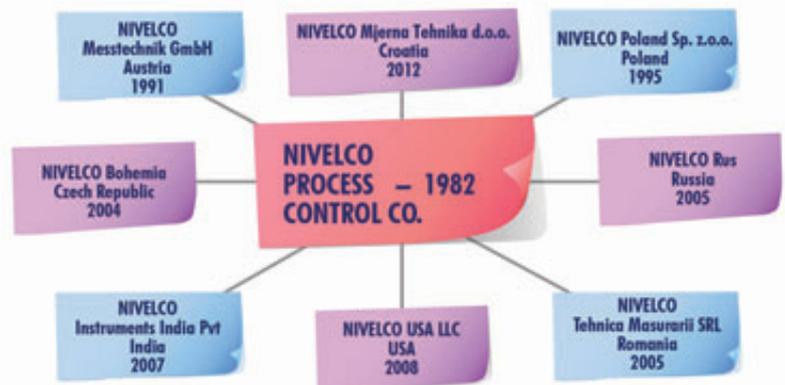


After training as an engineer in the "ITT Standard" telephone company, in 1939 Endre Szöllős started his own business designing and producing telephone systems for business and industry. While the World War II did not provide an easy period for Endre and his colleagues, the business grew and provided good training for his sons. Following their University courses in electrical engineering and economics respectively, Tamás and András Szöllős were able to lead the company forward, after the early death of Endre in 1969. By 1982, the production of a series of industrial controllers had led to a developing specialisation in level measurement and control: and **NIVELCO** was founded. In 1989, when International trade from Hungary became straightforward, **NIVELCO** had a full, proven level control product range and capability, backed by well established in-house manufacturing and engineering facilities. In 1989 the **NIVELCO** launch of the World's first "Compact" ultrasonic level transmitter had a major impact, offering a combined sensor/transmitter in one unit, leading the world market.



NIVELCO took the opportunity offered by these newly available export markets, and opened trading relationships with various identified distributors and sales agents. Building on existing sales links into neighbouring countries, **NIVELCO** also invested in their own sales organisations and offices in Austria and Poland, and then later in the Czech Republic, Romania and Russia. Our success in these ventures demonstrates that by maintaining our business principles, expertise and specialist skills, **NIVELCO** can compete successfully with the best suppliers to the industry, by providing:

- Wide range of products to suit all applications
- Investment in advanced technology expertise and high quality product development
- High specification quality management and control systems
- Worldwide marketing, sales and service support
- Fast, flexible in-house production and customer order logistics
- Company-wide IT System to provide full product design and production data
- Fair, modest pricing, ensuring the capital for future customer support and development
- Continuing investment in our people and their working relationships



Despite that in today's globalised world, the multinational giants - set up for mass production - can rule the market, there are many medium-size companies who specialise in satisfying customer needs, and manufacture products with high intellectual added value. The achievements of **NIVELCO** demonstrate that flexible, customer-led medium-size companies can find their place in the market and maintain their independence.

NIVELCO'S TIMELINE

- 1982 NIVELCO formed
- 1982 NIVOSONAR,
the first Ultrasonic level transmitter
- 1984 NIVOCONT Vibrating rod level switch
- 1986 NIVOCAP Capacitance level transmitter
- 1989 NIVOSONAR Compact
Ultrasonic level transmitter: A WORLD FIRST!
- 1991 NIVELCO Messtechnik (Austria)
- 1992 New factory opened in Budapest
- 1994 NIVOPOINT Float level switch
- 1994 NIVOMAG Magnetic coupling level switch
- 1995 Accreditation to ISO 9001
NIVELCO Company in Poland
- 1996 NIVELCO Trade Center
NIVOSWITCH Vibrating fork level switch
- 1999 NIVOPRESS Hydrostatic level transmitter
- 2000 Budapest Factory expansion
- 2001 NIVOTRACK Magnetostrictive level transmitter
- 2002 Standardized mechanical and electronic construction
HART Digital Communication in the transmitters
- 2003 ATEX Hazardous Area Approvals
- 2004 MultiCONT the new system concept
NIVELCO Bohemia (Czech Republic)
- 2005 MICROTREK Radar-based level transmitter
NIVELCO T.M. Company in Romania
- 2007 NIVELCO Instruments (India)
- 2007 NIVELCO Company in Russia
- 2008 NIVELCO Company in USA
- 2009 AnaCONT
pH, ORP and conductivity transmitter
The first SIL product certification
- 2010 AnaCONT Dissolved oxygen transmitter
- 2012 PiloTREK Non-contact radar level transmitter



Efficient industrial production relies on the information provided by modern high technology sensors and instrumentation. In the 1980's the whole sensor manufacturing industry was radically changed by developments in microprocessors and electronics. NIVELCO achieved the significant market position it holds today by recognising these developments.

Recognising the growth in the market demand, NIVELCO earned recognition primarily with its level transmitter, and gained a substantial global market share, based on its purposeful business policies and constant investment in technology.

In 2013 NIVELCO produced every 20th ultrasonic transmitter sold in the world, every 50th vibration level switch, and every 100th radar level transmitter.

In this way NIVELCO has established and maintained a leading and respected world market position, and in the past 30 years has sold more than 700,000 units of level instrumentation: NIVELCO is now the 4th largest ultrasonic level transmitter producer in the world.



THE HEADQUARTERS

From cramped beginnings in 1982, with 15 employees occupying 150 m² in Budapest, NIVELCO has invested in extensive facilities capable of total control of the production requirement. In the year 2000, a further expansion to the new factory created a capacity of 10,000 m², giving significant space for future development: this is currently allocated to the NIVELCO Trade Center, and some associated activities. In the currently unused factory areas, the NIVELCO Trade Center provides leased space to host headquarters for other companies. NIVELCO engineering, manufacture and production is exclusively in Hungary: the other subsidiaries deal only with sales and marketing activities, plus consulting, installation and service. The modern air-conditioned factory and excellent working conditions ensure a neat and tidy environment, and create the right conditions for producing good quality work.



PRODUCTION

NIVELCO has invested heavily in the best production machinery available, with all aspects of the required production being undertaken in the factory. Here, computer-controlled CNC machining centres, as well as surface mount electronics production facilities and fume extraction, make a clean and efficient unit. The investment is driven using a global IT system for production control and logistics. In this way NIVELCO maintains total control over the build, and has achieved quality management system approval to ISO9001. All production output is tested using automatic systems, heat-soaked and cycled where needed in special test chambers.



SALES AND SUPPORT

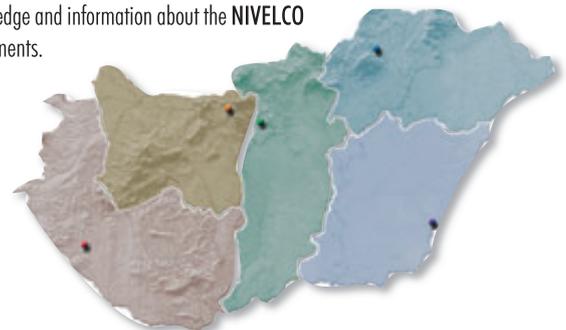


Efficient technical sales support to customers, contractors and distributors has always formed an essential part of the NIVELCO business approach, and the application knowledge and experience developed in the sales team is a major business strength. Input from the NIVELCO sales team covering the five regions in Hungary, and the NIVELCO sales companies in Poland, the Czech Republic, Romania, India and Russia, as well as that from export distributors and sales agents, is treated as a valuable resource to be shared, and to guide product planning and development. To provide and present this experience to new sales personnel, and distributors, NIVELCO produce articles for publication, plus application notes and reference site information for presentation on the website. Hands-on demonstrations are encouraged, notably using a NIVELCO Exhibition bus that brings products and practical presentations to customers across Europe: frequent training courses in the Budapest training centre provide customers, installers and staff from sales distributors with hands-on experience. The NIVELCO showroom provides a permanent resource where equipment can be demonstrated in action.

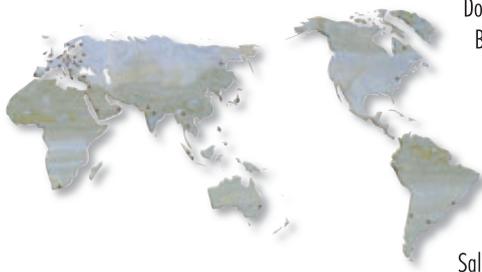


MARKETING

The marketing department at the Hungarian headquarters supplies all marketing materials such as brochures, advertisements and presentations, for the subsidiary companies to show the unified NIVELCO corporate image. The marketing team coordinates the constant updating of all information on the multilingual NIVELCO website and is also responsible for keeping up-to-date downloadable colour brochures, technical documentation, etc. The NIVELCO movie (presented on the website) was shot by our own NIVELCO crew to present the manufacturing capability and the wide application possibilities of NIVELCO instruments. Other priority tasks for the marketing department involve participation in exhibitions and organisation of regular professional training courses for our sales partners and customers, presenting detailed knowledge and information about the NIVELCO instruments.



EXPORT MARKETING



Doing some business with East Bloc countries was what we had as export in the 80's, when NIVELCO was formed: the East Bloc was still its old self and markets were closed. Nevertheless NIVELCO was an export driven company, and almost a decade later, in 1990, we were able to show our muscles to the world for the first time. This was the beginning of NIVELCO's export success. Twenty years later, exporting more than 80% of its production, NIVELCO has now proved itself to be an export oriented company. Covering over 65 countries through our own subsidiary companies and through distributors, our products reach almost all world markets. To aid distributors and our own subsidiaries, regular training programmes are organised in order for their staff to keep up with technology driving NIVELCO's high tech instruments.

Sales meetings held annually provide a vehicle for information transfer and for an exchange of ideas between people from all over the world. When our dealers participate in international exhibitions, they are supported with operational models, exhibition accessories and experts. With the success seen with the NIVELCO non-European subsidiaries (like USA, Russia and India), there is the strong intention to open further similar subsidiaries in the near future.



REFERENCES, STATISTICS



Palm oil (Malaysia)

IN ALL INDUSTRIES AND ALMOST EVERYWHERE IN THE WORLD! This phrase best describes the wide application possibilities of NIVELCO instruments. Many references to NIVELCO installations and applications are quoted on the website - tank contents measurement in food, pharmaceuticals and chemicals; environment protection applications; sump control in wastewater systems, and flow monitoring in effluent channels are just some of those illustrated. **ALMOST NO MATTER WHAT IS TO BE MEASURED!**

No matter what level you need to measure - whether it is sewage in the USA, animal feed pellets in Hungary, palm oil in Malaysia, cement, sand and building materials in Austria — trust NIVELCO instruments to do the job.



Construction materials (Austria)



Wastewater treatment (Poland)



Animal food (Hungary)



Sewage pump station (USA)

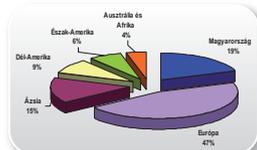


Land reclamation (South Korea)

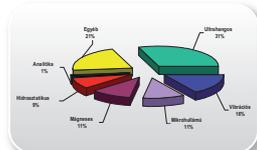
STATISTICS

The NIVELCO story over the last 30 years has been one of consistent growth — growth in factory production output and sales value, growth in employees and in our business resources. Achieving a 7-fold sales growth from an employee base growing 3-fold, productivity has also more than doubled over the period, assisted by some EU subsidies for IT and technological development.

As a consequence of effective and purposeful management, the capital employed within the NIVELCO Group has gradually grown, and reached 12 million Euros in 2012. Europe, including Hungary, presents the major established market, with 65 % of sales.

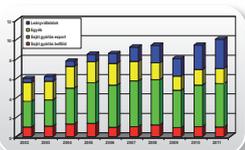


Geographics split of sales in 2011

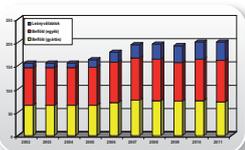


Product split of sales in 2011

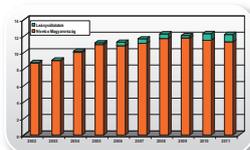
In terms of the product ranges, the sales split for 2011 shows that while ultrasonics still maintain a 30 % share of the total business, further new products have established a solid market presence, and already radar systems have achieved significant sales.



Sales (million EUR)



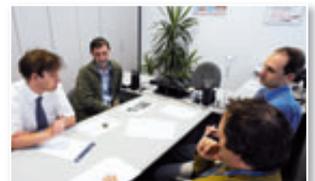
Employees (person)



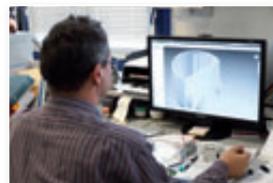
Employed capital (million EUR)

RESEARCH AND DEVELOPMENT

The main profile of the Research and Development Department is the development of all manufactured products and technologies including mechanics, hardware and software. More importantly, the Development Team is responsible for designing new products in accordance with customer needs, and driving these into production.



Besides the new developments there is also continuous modernisation and revamping of the existing well-known products as well as supporting and optimising the product line to achieve better and better product quality. Creating a wide product portfolio - wider than the competitors - to be able to provide suitable solutions to special market needs, it is necessary to undergo many official design approval procedures, such as are needed with ATEX, PED, or shipping approvals, or with measurement accuracy and performance certifications like OIML, GOST, or SIL. In the course of these procedures, close co-operation has been established between NIVELCO and the international classification institutions (BKI, TÜV, GL, DNV, BV, OMH, etc). Our policy and our essential goal is to design and launch high technology, carefully tested products into the market, products which can be easily manufactured, that can have a fast delivery time, operate according to the customers needs, and can be sold at a competitive price. Having extensive practical experience and professional knowledge, the engineering team at NIVELCO has established the knowledge, structure and procedures to achieve this goal. NIVELCO maintains close links with academia



and suppliers to utilise the most advanced developments available. Strong working links have been established with the Technical University and with the College of Technology in Budapest, and with other academic institutions, which has led to the recruitment of many well trained engineers.

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SUBSIDIARY AND DISTRIBUTION NETWORK

To find a local NIVELCO representation, please check [distribution](#) page on NIVELCO [website!](#)

SUBSIDIARY AND DISTRIBUTION NETWORK

To contact NIVELCO, please use [contact page](#) on NIVELCO website!

SALES AND APPLICATION SUPPORT

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sales@nivelco.com <http://www.nivelco.com>

GENERAL DESCRIPTION

Since its foundation NIVELCO has been concentrated to manufacture industrial level measurement products. Our main profile has not changed, this is proven by our wide level transmitter portfolio applying many different types of level metering principles. Our ultrasonic level transmitter selection is definitely the widest on the market offering integrated, compact, 2- or 4-wire transmitters for liquids or solids with remarkable number of selectable variations.

- The new K-band PiloTREK non-contact level transmitters are regarded the most progressive non-contact level transmitters of the industrial process automation field.
- The high-precision NIVOTRACK magnetostrictive level transmitters with 0.1 mm resolution are applicable for custody transfer liquid level measurements.
- The NIVOFLIP bypass liquid level indicators are suitable for high temperature applications and high pressure processes.
- The NIVOCAP capacitance level transmitters provides highly reliable measurement thanks to the well-know and accepted capacitive principle. Most of our transmitters are available in PFA coated version for aggressive mediums, and all transmitter families have explosion-proof models applicable in hazardous environments.

NON-CONTACT MICROWAVE

PiloTREK



- 25 GHz (K-band) measuring signal
- 2-wire compact transmitter
- Accuracy up to ± 3 mm
- Measuring range up to 23 m
- Max. 25 bar and 180°C
- 4-20 mA, HART communication
- $\epsilon_r > 1.9$
- IP67 protection
- Explosion-proof models

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GUIDED MICROWAVE

MicroTREK



- 2-wire compact transmitter
- TDR principle
- ± 5 mm or ± 20 mm accuracy
- $\epsilon_r > 1.4$
- Measuring range up to 24 m
- 4-20 mA, HART communication
- Max. 40 bar and +200°C
- Rod or cable probes
- Plug-in graphic display module
- Explosion-proof models

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CAPACITANCE LEVEL TRANSMITTERS

NIVOCAP



- 2-wire compact transmitter
- Rod or cable probes up to 20 m
- $\epsilon_r > 1.9$
- Fully or partly insulated probes
- 32-point linearization
- High sensitivity
- 4-20 mA, HART communication
- Explosion-proof models

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HYDROSTATIC LEVEL TRANSMITTERS

NIVOPRESS D



- 2-wire compact level and pressure transmitter
- 0.1 bar - 400 bar
- High overload capability
- Accuracy: 0.25%
- Stainless steel diaphragm
- Plug-in display module
- 4-20 mA, HART communication
- Explosion-proof models

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HYDROSTATIC LEVEL TRANSMITTERS

NIVOPRESS N



- 2 or 3-wire submersible transmitter
- Stainless steel body
- Up to 200 m range
- 4-20 mA, HART communication
- Accuracy: 0.25 %
- Incorporated Pt100 temperature sensor
- Venting tube in cable
- IP68 protection
- Explosion-proof models

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BYPASS LEVEL INDICATORS

NIVOFLIP



- Operation without power supply
- 500–5500 mm measuring range
- ± 10 mm accuracy
- Stainless steel or titan float
- Optional strap-on level switches
- Max. 100 bar process pressure
- DIN and ANSI flanges
- High temperature version up to +250°C
- PED approval

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MAGNETOSTRICTIVE TRANSMITTERS

NIVOTRACK



- 2-wire compact and mini compact transmitter
- 0.1 mm or 1 mm resolution
- Max. 15 m measurement range
- For liquids with min. 0.5 kg/dm³ density
- Distance, level and volume measurement
- Rigid or flexible probes
- OIML R-85 international certification
- Explosion-proof models

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ULTRASONIC INTEGRATED

EasyTREK FOR LIQUIDS



- For liquid level measurement
- 2-wire integrated transmitter
- Narrow 5° beam angle
- Max. 25 m measurement range
- PP, PVDF, PTFE transducers
- 32-point linearization
- 4-20 mA, HART communication
- Open channel flow metering
- Explosion-proof models, IP68

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ULTRASONIC INTEGRATED

EasyTREK FOR SOLIDS



- For free flowing solid measurement
- 4-wire integrated transmitter
- Narrow 5° beam angle
- Max. 60 m measurement range
- PP and aluminium sensors
- Joystick aiming device
- 4-20 mA, HART communication
- Explosion-proof models, IP68

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ULTRASONIC COMPACT

EchoTREK FOR LIQUIDS



- For liquid level measurement
- 2- and 4-wire compact transmitter
- Narrow 5° beam angle
- Max. 25 m measurement range
- PP, PVDF, PTFE and st. st. transducers
- 32-point linearization
- Plug-in display module
- 4-20 mA, HART communication
- Explosion-proof models, IP68

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ULTRASONIC COMPACT

EchoTREK FOR SOLIDS



- For free flowing solid measurement
- 4-wire compact transmitter
- Narrow 5° beam angle
- Max. 60 m measurement range
- PP and aluminium sensors
- Joystick aiming device
- Plug-in display module
- 4-20 mA, HART communication
- Explosion-proof models, IP68

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GENERAL DESCRIPTION

The 25 GHz (K-band) **PiLoTREK** Pulse Radars are regarded the most progressive non-contact level transmitters of the industrial process automation field. Their accuracies are excellent and their short and narrow antennas make their installation simple and low cost. **NIVELCO**'s new K-band radar featuring ± 3 mm accuracy and short dead band excels with its versatile housing concept lining up plastic, aluminium and stainless steel versions. Its antenna range incorporates stainless steel horn and enclosed plastic tube varieties. The enclosed antenna versions can be replaced without removing the antenna enclosure from the process. Local programming of the **PiLoTREK** is aided by a plug-in display module. If on-site reading is not desired this module may not be required thus reducing cost of ownership. The signal processing algorithm of the new **PiLoTREK** is based on **NIVELCO**'s 30 years of experience with non-contact level measurement making it an excellent choice for applications simple and challenging alike.

MAIN FEATURES

- 2-wire K-band Pulse Burst Radar
- 25 GHz frequency
- 23 metre measuring range for liquids and slurries
- ± 3 mm accuracy
- Easy installation due to small antennas
- Horn and enclosed antenna types
- Sanitary types for meeting high hygienic requirements
- High temperature version
- Plug-in graphical display module
- Ex version



INDUSTRY SEGMENTS

- Water, wastewater
- Power generation
- Food and beverage
- Pharmaceutical
- Chemical

APPLICATION

- Liquids and slurries in general

OPERATION

The operation of the non-contact microwave level transmitters is based on the measurement of the time of flight of the microwave burst. The propagation speed of microwave impulses is practically the same in air, gases and in vacuum, independently from the process temperature and pressure, so the measured distance is not affected by the physical parameters of medium to be measured. The level transmitter induces microwave impulses a few nanoseconds long in the antenna and a part of the energy of the emitted signals is bounced (reflected) back from the measurement surface depending on the measured media. The time of flight of the reflected signal is measured and processed by the electronics, and then this is converted to distance, level or volume proportional data. The measurability of the level of a specific medium is depending on the signal strength of the reflected microwave impulses. The signal strength of the reflected impulses is considerably depending on the distance to be measured, the relative dielectric constant of the measured medium and the turbulence of the surface. The relative dielectric constant (ϵ_r) of the medium should be more than 1.9.

ANTENNA TYPES

Antenna type	Antenna diameter				
	DN40 mm		DN50 mm	DN80 mm	
	Process connection				
	1 1/2" BSP / NPT	2" TRICLAMP	DN50 pipe coupling	2" BSP / NPT	DN80 – DN150 flanges
Stainless steel (1.4751 / 316 Ti) horn	■	–	–	■	■
Plastic (PP) enclosure	■	–	–	■	–
Plastic (PTFE) enclosure	–	■	■	–	–

TECHNICAL DATA

Version	Plastic housing	Aluminium housing	High temperature version
Measured values	Level, Distance; Calculated values: Volume, Mass		
Frequency of the measuring signal	~25 GHz (K-band)		
Measuring range	0.2 m – 23 m - (see: special data of the antenna variations)		
Linearity error (as per EN 61298-2)	< 0.6 m: ±15 mm; 0.6 - 1 m: ±8 mm; 1 - 10 m: ±3 mm; > 10 m: ±0.04% of the measured distance		
Minimal beam angle	11° (see: special data of the antenna variations)		
Minimal ϵ_r of the medium	1.9 (depending on the measurement range; see: special data of the antenna variations)		
Resolution	1 mm		
Temperature error (as per EN 61298-3)	0.05% FSK / 10 °C (-20 °C ... +60 °C)		
Power supply voltage	20 V ... 36 V DC		
Output	Digital communication	4-20 mA + HART	
	Display	SAP-300 graphical display unit	
Measuring frequency	10...60 sec as per the application settings		
Antenna diameter	38 mm (1 1/2"), 48 mm (2"), 75 mm (3")		
Antenna material	Horn: Stainless Steel; enclosure: PP, PTFE		Horn: Stainless Steel; enclosure: PTFE
Medium temperature	-30 °C ... + 100 °C, (up to 120 °C for max. 2 min); with PP antenna enclosure: max.: 80 °C		-30 °C ... + 180 °C
Maximal medium pressure	25 bar at 120 °C; with plastic antenna enclosure: 3 bar at 25 °C		
Ambient temperature	-20 °C ... +60 °C		
Process connection	Threaded, Flanged or Sanitary connections (as per order codes)		
Ingress protection	IP 67		
Electrical connection	2x M 20 x1.5 cable glands + internal thread for 2x 1/2" NPT cable protective pipe, cable outer diameter: Ø 7 ... Ø 13 mm, wire cross section: max.1.5 mm²		
Electrical protection	Class III.		
Housing material	Plastic (PBT)	Paint coated aluminium	
Sealing	Viton, EPDM		
Approvals	ATEX, IEC Ex, FM (approval is pending)		
Communication certifications	R&TTE, FCC		
Mass	1 – 1.6 kg	2 – 2.6 kg	3 – 3.6 kg

SPECIAL DATA OF THE ANTENNA VARIATIONS

Type	WES/WGS-140/14N	WEM/WGM-140/14N	WES/WGS-150/15N	WEM/WGM-150/15N	WEP/WGP-140/14N
Name	DN40 (1 1/2") stainless steel horn antenna		DN50 (2") stainless steel horn antenna		DN40 (1 1/2") PP encapsulated antenna
Housing material	Paint coated aluminium	Plastic (PBT)	Paint coated aluminium	Plastic (PBT)	
Process connection	1 1/2" BSP, 1 1/2" NPT		2" BSP, 2" NPT		1 1/2" BSP, 1 1/2" NPT
Beam angle	19°		16°		–
Measurement range					
$\epsilon_r = 1.9 ... 4$	0.2 m ... 4.5 m		0.2 m ... 7 m		–
$\epsilon_r = 4 ... 10$	0.2 m ... 12 m		0.2 m ... 18 m		0.2 m ... 10 m
$\epsilon_r > 10$	0.2 m ... 18 m		0.2 m ... 23 m		0.2 m ... 16 m

Type	WHS/WJS-140/14N	WHS/WJS-150/15N	WHS/WJS-18□	WES/WGS-18□
Name	High temperature type DN40 (1 1/2") stainless steel horn antenna	High temperature type DN50 (2") stainless steel horn antenna	High temperature type DN80 (3") stainless steel horn antenna with flange	DN80 (3") stainless steel horn antenna with flange
Housing material	Paint coated aluminium			
Process connection	1 1/2" BSP, 1 1/2" NPT	2" BSP, 2" NPT	DN80 – DN150 flanges	
Beam angle	19°	16°	11°	
Measurement range				
$\epsilon_r = 1.9 ... 4$	0.2 ... 4.5 m	0.2 ... 7 m	0.2 ... 15 m	
$\epsilon_r = 4 ... 10$	0.2 ... 12 m	0.2 ... 18 m	0.2 ... 23 m	
$\epsilon_r > 10$	0.2 ... 18 m	0.2 ... 23 m	0.2 ... 23 m	

SPECIAL DATA OF THE ANTENNA VARIATIONS

Type	WES/WGS-140/14N			WEM/WGM-140/14N	
Antenna enclosure	WAP-140-0 / WAP-14N-0	WAT-14T-0	WAT-14R-0	WAT-14T-0	WAT-14R-0
Name	DN40 (1 1/2") antenna with PP antenna enclosure	Sanitary type DN40 (1 1/2") antenna with PTFE antenna enclosure			
Housing material	Paint coated aluminium			Plastic (PBT)	
Process connection	1 1/2" BSP, 1 1/2"NPT	2" TRICLAMP	DN50 pipe coupling	2" TRICLAMP	DN50 pipe coupling
Measurement range					
$\epsilon_r = 4 \dots 10$	0.2 m ... 10 m				
$\epsilon_r > 10$	0.2 m ... 16 m				

Type	WEP-150/15N	WES/WGS-150/15N	WHS/WJS-140/14N
Antenna enclosure		WAP-150-0 / WAP-15N-0	WAT-14R-0
Name	DN50 (2") antenna with PP antenna enclosure		High temperature, sanitary type DN40 (1 1/2") antenna with PTFE antenna enclosure
Housing material	Plastic (PBT)		Paint coated aluminium
Process connection	2" BSP, 2" NPT		2" TRICLAMP
Measurement range			
$\epsilon_r = 4 \dots 10$	0.2 m ... 16 m		0.2 m ... 10 m
$\epsilon_r > 10$	0.2 m ... 20 m		0.2 m ... 16 m

POLARIZATION

The PiLoTREK non-contact level transmitters emit linearly polarized microwave impulses. The polarization plane of the emitted impulses can be rotated by 360° in case of W□S and W□M types. The rotation of the polarization plane can minimize unwanted false reflections from disturbing objects or from the tank wall. The orientation of the polarization plane coincides with the line drawn between the cable glands.

PROGRAMMING, ECHO MAP

With the help of the SAP-300 plug-in display a simplified full-parameter programming can be accomplished, the parameters of measurement and output can be set using the text-based menu system.

The large LCD dot-matrix display displays the measured values in numerical and bar graph form.

The Echo Map feature helps to detect false reflections and aids the optimization of the measurement configuration.



BACKGROUND MAPPING

The background mapping feature provides excellent solution to ignore unwanted false reflections coming from (not-moving) disturbing objects. For this purpose the instrument needs to map the totally empty tank to create a "background image". Then the measurement evaluation software of PiLoTREK will automatically recognise and ignore the false reflections coming from the disturbing objects inside the tank.



MOUNTING

To avoid unwanted multiple reflections the instrument should not be mounted in the middle of the tank or in the vicinity of the filling place or the outlet of the tank. The ideal position for the PiLoTREK is on the $r = (0.3 \dots 0.5) R$ in case of cylindrical tank. The distance between the sensor and the tank wall should be at least 200 mm.

The mounting placement should be as far as possible from the disturbing objects inside the tank and from the sources of disturbing effects such as waving, vortex or strong vibrations. The antenna face should be parallel to the medium surface within $\pm 2-3^\circ$. To avoid overheating the instrument should be protected against direct sunshine.

PiLoTREK W, with horn antenna

2-wire compact radar level transmitter
 Housing: aluminium or plastic
 Output: 4-20 mA + HART
 Power supply: 24 V DC
 Antenna sealing: FPM
 Ingress protection: IP67
 Ex marking: ATEX II Ex ia II C

Type

W - 1 -

Version

W - 1 -
 E Transmitter
 G Transmitter with LCD display
 H * High temperature transmitter (max. 180°C)
 J * High temperature transmitter with LCD display (max. 180°C)

Antenna / Housing material

W - 1 -
 P ** PP / Plastic housing (PBT glass fibre reinforced)
 M 1.4571 / Plastic housing (PBT glass fibre reinforced)
 S 1.4571 / Aluminium housing (paint coated)

Antenna / Connection size

W - 1 -
 4 Horn DN40 / 1 1/2", only with threaded connection
 5 Horn DN50 / 2", only with threaded connection
 8 Horn DN80 / only with flange

Process connection

W - 1 -
 0 BSP
 N NPT
 2 DN80 PN25 1.4571 flange
 3 DN100 PN25 1.4571 flange
 6 DN80 PN25 PP flange
 7 DN100 PN25 PP flange
 A 3" RF 150 psi 1.4571 flange
 B 4" RF 150 psi 1.4571 flange
 E 3" RF 150 psi PP flange
 F 4" RF 150 psi PP flange

Output / Ex

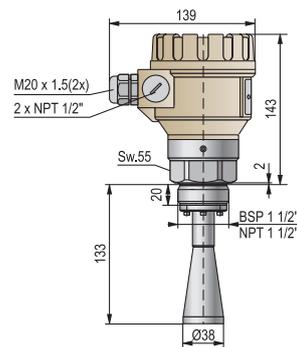
W - 1 -
 4 4-20 mA + HART
 8 4-20 mA + HART / Ex ia ***

W - 1 -

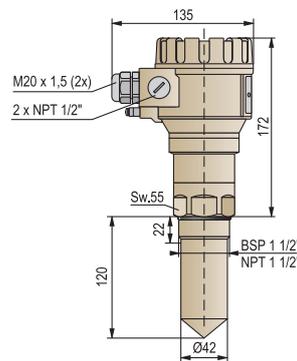
* High temperature version can be ordered only with aluminium housing
 ** The P versions are available only with threaded process connection and DN40, DN50 antenna diameter
 *** Approval is pending

Accessories to order

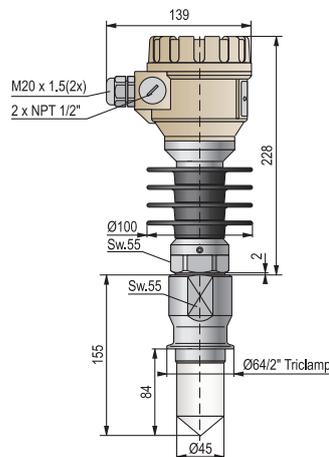
Type
 W A P - 1 4 0 - 0 PP antenna enclosure with 1 1/2" BSP process connection for DN40 antenna
 W A P - 1 4 N - 0 PP antenna enclosure with 1 1/2" NPT process connection for DN40 antenna
 W A P - 1 5 0 - 0 PP antenna enclosure with 2" BSP process connection for DN50 antenna
 W A P - 1 5 N - 0 PP antenna enclosure with 2" NPT process connection for DN50 antenna
 W A T - 1 4 T - 0 PTFE antenna enclosure with 2" TriClamp process connection for DN40 antenna
 W A T - 1 4 R - 0 PTFE antenna enclosure with DN50 Pipe coupling process connection for DN50 antenna
 S A P - 3 0 0 Display unit (see "Transmitter accessories")
 S A T - 3 0 4 HART-USB modem (see "UNICOMM modules")
 S A K - 3 0 5 - 2 HART-USB/RS485 modem
 S A K - 3 0 5 - 6 HART-USB/RS485 modem / Ex ia
 S A S - 3 0 3 EView 2 software package for max. 15 transmitters (see "Transmitter accessories")



PiLoTREK WES-140



PiLoTREK WEP-140



PiLoTREK WHS-140 + WAT-14T

NIV24
 WES-140-4

GENERAL DESCRIPTION

The **MicroTREK** guided microwave level transmitter is designed for continuous level measuring of conductive or non conductive liquids, pulps and solids. **MicroTREK** level gauge operates based on the well known TDR (Time Domain Reflectometry) principle. Micropulses are sent along a probe guide at the speed of light. As soon as the pulse reaches the surface of the medium, it is reflected back to the electronic module. Level distance is directly proportional to the flight time of the pulse. The reflected signal is dependent on the dielectric constant of the material, the feasibility of the measurement is $\epsilon_r > 1,4$. The TDR technology is unaffected by the properties of the medium as well as that of the space above it. Measurement is also unaffected by the change in the physical properties of the materials such as temperature, pressure, dielectric constant.

MAIN FEATURES

- Measuring range up to 24 m
- Accuracy: ± 5 mm
- Measurement is independent of dielectric constant, temperature, pressure and density variations
- Rod, cable and coaxial probes
- Minimum $1,4 \geq \epsilon_r$
- 2-wire version
- Graphic display
- 4-20 mA + HART output
- Medium temperature range: $-30^\circ\text{C} \dots +200^\circ\text{C}$
- Maximum process pressure: 40 bar
- IP 65 protection

CERTIFICATIONS

- ATEX  II 1G Ex ia IIC T6...T3
- ATEX  II 1G Ex ia IIB T6...T3
- ATEX  II 1D iaD A20/A21 IP65 T100°C
- IEC Ex ia IIC T6...T3 Ga
- IEC Ex ia IIB T6...T3 Ga
- IEC Ex ia IIC T100°C Da



HHA-400

HTK-400



SAP-300 graphic display

APPLICATIONS

Mono Cable / Mono Rod	Twin cable	Twin rod	Coaxial pipe
<ul style="list-style-type: none"> ■ Cement, limestone, fly ash, alumina, carbon black ■ All high-viscosity liquids ■ Mineral powders, free flowing solids ■ Clean and contaminated liquids ■ For stilling wells (calibration required) ■ Aggressive mediums with coated probes ■ Slightly conductive foams ■ High temperature applications ■ Bypass applications 	<ul style="list-style-type: none"> ■ Tank parks with solvents, oil or fuels ■ Water storage tanks ■ Plastic granules ■ For liquids with low dielectric constant ($\epsilon_r > 1.8$) ■ Light granules ■ Where minimum dead-zone is needed ■ For narrow tanks ■ For solids with low dielectric constant ($\epsilon_r > 1.8$) ■ Mounting close to tank wall is possible 	<ul style="list-style-type: none"> ■ Plastic granule vessels ■ Coated tanks ■ Clean and contaminated liquids ■ Fine powders ■ Where minimum dead-zone is needed ■ For narrow tanks ■ For mediums with low dielectric constant, and slightly flowing products 	<ul style="list-style-type: none"> ■ Small vessels or tanks ■ Solvents, liquefied gases ■ LPG, LNG ■ For clean liquids with low dielectric constant ■ Agitated or flowing liquids - the probe acts as a stilling well ■ Liquid or vapour spray near the probe ■ High temperature applications - probe can be heated ■ Contact possible with metallic object or tank wall without measurement uncertainty. ■ Where no dead zone allowed

TECHNICAL DATA

General data		
Input data	Measured values	Distance, level, volume
	Measuring range	Depends on the probe type and dielectric constant of the measured medium
Probe types	Coaxial, twin cable, mono cable, twin rod and mono rod	
Housing	Paint coated aluminium or plastic PBT	
Medium temperature	-30 °C ... +200 °C, (Ex), other temperature ranges for non-Ex versions on request Flange temperature: -30 °C ... +90 °C, for high temperature versions +200 °C	
Medium pressure	- 0.1 ... 1.6 MPa (- 1...1.6 bar); maximum allowed pressure on 20°C with 1.4571 (stainless steel) flange 4 MPa (40 bar)	
Ambient temperature	-30 °C ... +60 °C, with display: -20 °C ... +60 °C	
Sealing	FPM (Viton®), for high temp versions optional Perfluoroelastomer (Kalrez®), EPDM	
Ingress protection	IP 65	
Power supply	18 – 35 V DC, protected against surge transients	
Output data	Output signals	Analogue: 4 – 20 mA, (3.9 – 20.5 mA) passive output, error indication 22 mA
		Digital: HART® interface, terminal resistor maximum 250 Ohm
		Display: SAP-300 LCD dot-matrix
	Accuracy*	For liquids: ± 5 mm, if probe length L ≥ 10 m, 0.05 % of the probe length For solids: ± 20 mm, if probe length L ≥ 10 m, 0.2 % of the probe length
Resolution	± 3 µA	
Electrical connection	2 x M20x1.5 metal cable gland (Ex version), cable diameter: Ø 7...13 mm, or M20x1.5 plastic cable gland, cable diameter: Ø 6...12 mm wire cross section: 0.5 ... 1.5 mm² (shielded cable suggested), 2 x NPT 1/2"	
Electrical protection	Class III.	
Mass (housing)	1.5 kg	

* Under ideal reflecting surface and constant temperature conditions.

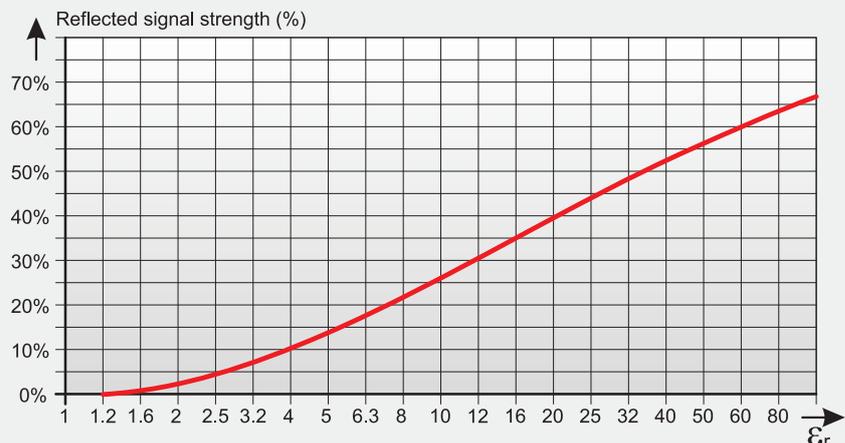
Additional data for the Ex approved models

Ex marking	ATEX	⊕ II 1G Ex ia IIC T6 ... T3 ; coated probe versions: ⊕ II 1G Ex ia IIB T6 ... T3 ; ⊕ II 1D iaD A20/21 IP 65 T100°C
	IEC Ex	Ex ia IIC T6...T3 Ga, Ex ia IIB T6...T3 Ga, Ex ia IIIC T100°C Da (-30°C ≤ Tamb ≤ +60°C)
Intrinsically safe data	Ci ≤ 10 nF, Li ≤ 10 µH, Ui ≤ 30 V, li ≤ 150 mA, Pi ≤ 1 W Ex transmitters should be powered with Ex ia power supply	
Ex power supply, load	Uo < 30 V, Io < 150 mA, Po < 1 W, Supply range 18 V ... 20 V, Rt max = (Ut - 12 V) / 0.02 A	
Medium temperature	-30 °C ... +200 °C	
Ambient temperature	-30 °C ... +60 °C, with display: -20 °C ... +60 °C	

MEASURABILITY OF THE MEDIUM

The measurability of the medium and the reflected signal strength depends on the relative dielectric constant of the medium

Informative ε _r values			
Butane	1.4	Diesel oil	2.1-4
Cement	1.5-10	Grain	3-5
PB	1.6-1.9	Limestone	6.1-9.1
Kerosene	2.1	Sulphuric acid	20
Crude oil	2.1	Acetone	21
Whiting powder	2.2-2.5	Ethanol	24
Benzene	2.3	Methanol	33.1
Asphalt	2.6	Glycol	37
Clinker	2.7	Nitrobenzene	40
Resin	3.6	Water	80



PROBE SELECTION

Reliable microwave measurement depends on the correct selection of probes taking into consideration the properties of the medium and other technologic conditions.

Probe type	Max. measuring range (m)	Dead zone*		Process connection	min. ϵ_r
		Upper (t) / lower (b) (mm) $\epsilon_r = 80$	Upper (t) / lower (b) (mm) $\epsilon_r = 2,4$		
Mono cable \varnothing 4 mm	24	300/20	400/100	1"; 1 1/2"	2,1
Mono cable \varnothing 8 mm				1 1/2"	
Mono rod \varnothing 8 mm				1"	
Mono rod \varnothing 14 mm				6	
Twin cable \varnothing 4 mm	24	150/20	300/100	1 1/2"	1,8
Twin rod \varnothing 8 mm	3				
Coaxial pipe \varnothing 28 mm	6	0/10	0/100	1"; 1 1/2"	1,4
Coated cable \varnothing 6 mm	24	300/20	400/100	1"; DN40 Triclamp; DN40 Milch, DN50	2,4
Coated rod \varnothing 12 / 16 mm				3	

* the unmeasurable upper and lower part of the tank, the lower dead zone is extended with the length of the counterweight (cable versions only)

TECHNICAL DATA OF THE PROBES

Type	HOK, HOK HOV, HOW	HOR, HOP	HOS, HOZ	HON, HOJ	HOT, HOU	HOD, HOE	HOA, HOB HOC, HOH
Denomin.	Cable	Rod	Rod	Cable	Twin cable	Twin rod	Coaxial
Max. meas. dist.	24 m	3 m	6 m	24 m		3 m	6 m
Min. meas. dist. $\epsilon_r=80 / \epsilon_r= 2,4$	0.3 m / 0.4 m			0.15 m / 0.3 m		0 m	
Minimal medium ϵ_r	2.1			1.8		1.4	
Min. dist. to objects	\varnothing 600 mm			\varnothing 200 mm		\varnothing 0 mm	
Process connection	1" BSP; 1"NPT	1" BSP	1 1/2" BSP		1" BSP; 1"NPT		
	1 1/2" BSP; 1 1/2" NPT	1"NPT	1 1/2" NPT		1 1/2" BSP; 1 1/2" NPT		
Probe material	1.4401	1.4571		1.4401		1.4571	
Probe nominal \varnothing	4 mm	8 mm	14 mm	8 mm	4 mm	8 mm	28 mm
Mass	0.12 kg/m	0.4 kg/m	1.2 kg/m	0.4 kg/m	0.24 kg/m	0.8 kg/m	1.3 kg/m
Separator material*	-			PFA, welded on the cable	PTFE-GF25	PTFE	
Weight dimensions	\varnothing 25x100 mm	-		\varnothing 40x260 mm	\varnothing 40x80 mm	-	
Weight material	1.4571	-		1.4571		-	

* there is no separator below 1.5 m length

TECHNICAL DATA OF THE COATED PROBES

Type	HOF, HOG	HOX	HOY	HOM	HQQ	HQI
Denomination	FEP coated cable			PFA coated rod	PP coated rod	
Max. meas. distance	24 m			3 m		
Min. meas. distance $\epsilon_r=80 / \epsilon_r= 2,4$	0.3 m / 0.4 m			2.4		
Minimum medium ϵ_r	2.4			\varnothing 600 mm		
Min. dist. to objects	\varnothing 600 mm			DN 50 PN40		
Process connection	1" BSP; 1"NPT	DN 40 Triclamp	DN 40 Milch	DN 50 PN40		
Max medium temperature	+150 °C			+60 °C		
Probe material	1.4401			1.4571		
Probe coating material	FEP			PFA	PP	
Probe nominal \varnothing	6 mm			12 mm	16 mm	
Fillet and weight coating material	-			PFA	PFA	PP
Weight material	1.4571			-		
Mass	0.16 kg/m			0.5 kg/m	0.6 kg/m	

MicroTREK H-400/H-500

2-wire TDR level transmitter for liquids and free-flowing solids with stainless steel probe with or without plastic coating; Measuring range up to 24 m
 Output: 4-20 mA with HART (HART configuration software is provided free of charge)
 Accuracy for liquids: ± 5 mm for L < 15 m (± 5 mm ± 0,05% for L ≥ 15 m)
 Accuracy for powder and bulk solids: ± 20 mm for L < 15 m (± 20 mm ± 0,05% for L ≥ 15 m)
 Power supply: 18-35 V DC

Pressure rating: 40 bar (may be restricted by the pressure rating of the used flange)
 Enclosure of electronics: IP65 / NEMA 4
 Sealing: FPM as standard (EPDM or FFKM available on request)
 Ex marking: ATEX II 1G Ex ia II C T6...T3 or Ex ia II B T6...T3 (for plastic coated version)
 ATEX 1D iaD A20/A21 IP 65 T100°C

Type

H - -

Version / Temperature

H - -

- T Transmitter / Flange temperature max. 90°C
- H Transmitter / Flange temp. max. 200°C (with St. St. probe only)
- B Transmitter with local LCD indicator / Flange temperature max. 90°C
- P Transmitter with local LCD indicator / Flange temp. max. 200°C (with St. St. probe only)

Probe / Process connection

H - -

- R Mono rod, 1.4571 / 1" BSP / max. 3 m
- S Mono rod, 1.4571 / 1 1/2" BSP / max. 6 m
- P Mono rod, 1.4571 / 1" NPT / max. 3 m
- Z Mono rod, 1.4571 / 1 1/2" NPT / max. 6 m
- K Mono cable, Ø 4 mm, 1.4401 / 1" BSP / max. 24 m
- L Mono cable, Ø 4 mm, 1.4401 / 1" NPT / max. 24 m
- N Mono cable, Ø 8 mm, 1.4401 / 1 1/2" BSP / max. 24 m
- J Mono cable, Ø 8 mm, 1.4401 / 1 1/2" NPT / max. 24 m
- T Twin cable, 2x Ø 4 mm, 1.4401 / 1 1/2" BSP / max. 24 m
- U Twin cable, 2x Ø 4 mm, 1.4401 / 1 1/2" NPT / max. 24 m
- A Coaxial, 1.4571 / 1" BSP / max. 6 m
- B Coaxial, 1.4571 / 1" NPT / max. 6 m
- D Twin rod, 1.4571 / 1 1/2" BSP / max. 3 m
- E Twin rod, 1.4571 / 1 1/2" NPT / max. 3 m
- F ← Mono cable, Ø 4 mm, + FEP coated / 1" BSP / max. 24 m
- G ← Mono cable, Ø 4 mm, + FEP coated / 1" NPT / max. 24 m
- X ← Mono cable, Ø 4 mm, + FEP coated / Triclamp 1 1/2" / max. 24 m
- Y ← Mono cable, Ø 4 mm, + FEP coated / Sanitary DN40 / max. 24 m
- Q ← Mono rod + PFA coated / DN50, PN25, 1.4571+PFA lining
- I ← Mono rod + PP coated / DN50, PN25, 1.4571+PP lining
- M ← Mono cable, Ø 4 mm, + PFA/FEP coated / DN50, PN25, 1.4571+PFA/FEP lining

Housing

H - -

- 4 Aluminium (paint coated)
- 5 Plastic PBT, glass fibre reinforced (Ex version not available; HT, HB only)

Probe length

H - -

- 1 0 - 3 0 1.0-3.0 m (each 0.1 m) For mono rod, 1.4571
- 1 0 - 3 0 1.0-3.0 m (each 0.1 m) For mono rod, PP coated
- 1 0 - 3 0 1.0-3.0 m (each 0.1 m) For mono rod, PFA coated
- 0 1 - 2 4 1.0-24.0 m (each 1 m) For mono cable, Ø 4 mm, 1.4401
- 0 1 - 2 4 1.0-24.0 m (each 1 m) For mono cable, Ø 8 mm, 1.4401
- 0 1 - 2 4 1.0-24.0 m (each 1 m) For twin cable, 1.4401
- 1 0 - 6 0 1.0-6.0 m (each 0.1 m) For coaxial, 1.4571
- 1 0 - 3 0 1.0-3.0 m (each 0.1 m) For twin rod, 1.4571
- 0 1 - 2 4 1.0-24.0 m (each 1 m) For mono cable, Ø 4 mm, 1.4401 + FEP

Output / Approval

H - -

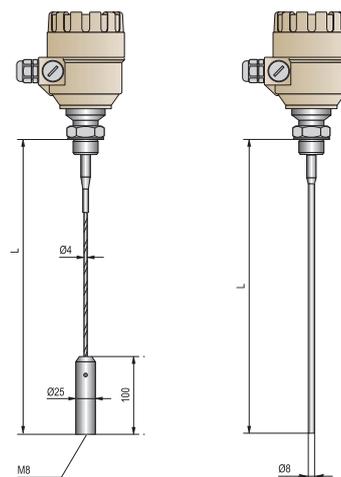
- 4 4-20 mA + HART / none
- 6 4-20 mA + HART / ATEX 1/2 D
- 8 4-20 mA + HART / ATEX II 1G Exia

H - -

Available on request:

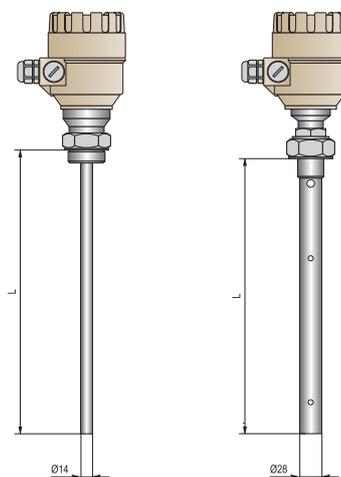
- S A P - 3 0 0 Display
- various process connections (price information on request)
- DIN and ANSI flanges
- special sealings
- EPDM
- FFKM ←

The above process connections and special sealings should be ordered separately and should be specified in the text part of the order.
 Non-standard, customized 4-20 mA output calibration



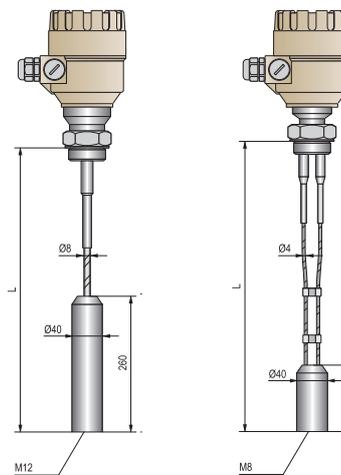
HTK, HTL, HTV, HTW

HTR, HTP



HTS, HTZ

HTA, HTB



HTN, HTJ

HTT, HTU

Price on request for H_V, H-W, H_C, H_H
 Need of IEC is to be specified with order

GENERAL DESCRIPTION

NIVOCAP 2-wire capacitive level transmitters provide an ideal solution for level measurement of conductive or non-conductive liquids. The probe of the instrument and the reference probe (which can be either the metal wall of the tank or installed separately) operate as opposing plates of a capacitor. Between the plates of this capacitor the air is replaced by a medium with greater dielectric constant than the air during filling the tank, therefore the capacitance is changing directly proportional to the level. The incorporated electronic circuitry measures the capacitance difference and converts it to an output signal proportional to level.

MAIN FEATURES

- Maximum 20 m measurement range
- Vertical mounting
- Rod or cable probe versions
- -30... +200°C medium temperature
- Max. 40 bar medium pressure
- 32 point linearization table
- Indirect assignment of 0% and 100%
- 4-20 mA + HART output
- Ex version
- IP 67 protection

APPLICATIONS

- Level and volume measurement
- Level measurement of conductive and non-conductive materials
- Level measurement of liquids
- For high pressure and high temperature mediums

CERTIFICATIONS

- ATEX II 1G EEx ia IIB T6



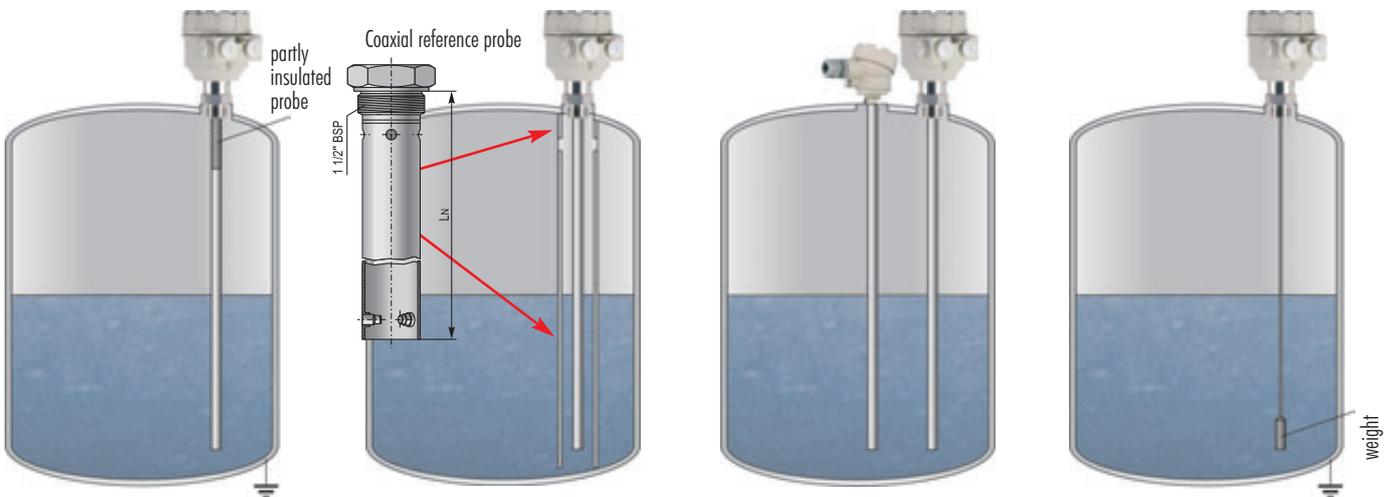
CHR-200

CFR-100

CTR-300

CTK-200

MEASUREMENT ARRANGEMENTS



Rod probe

Metal tank and non-conductive medium. The rod probe is insulated partly at the process connection.

Rod probe

With coaxial tube reference probe

Rod probe

With reference rod probe

Cable probe with weight

Metal tank

weight

TECHNICAL DATA

Version		Rod probe	High temp. rod probe	Cable probe
Measurement range (L _N)		0.2 – 3 m		1 – 20 m
Capacitance range		0 pF...5 nF		
Min. capacitance change		Max. (I _{OUT}) SPAN: 10 pF or 10% FS then greater		
Saturation capacitance of the insulated probe		~600 pF/m		~200 pF/m
Relative dielectric constant		ε _r min. 1.5		
Process connection		As per order codes		
Material of wetted parts	Threaded part	stainless steel DIN 1.4571		
	Probe	Fully or partially PFA coated stainless steel (DIN 1.4301)		Fully FEP coated steel cable
Housing material		Paint coated aluminium or plastic (PBT)		
Medium temperature		-30°C ... +130 °C	-30°C ... +200 °C	-30°C ... +130 °C
Ambient temperature		-25°C ... +70 °C		
Medium pressure		max. 4 MPa (40 bar)		max. 1.6 MPa (16 bar)
Power supply / consumption		12 – 36 V DC / max. 800 mW, overvoltage protection against transients		
Output data	Output signals	Analogue: 4...20 mA (3.9...20.5 mA) R _{max} = U _T -11.4 V/0.02A Error indication: 3.8 mA or 22 mA		
		Digital: HART		
		Display module: SAP-202, 6 digit LCD, dimensions, bargraph		
	Damping time	Current loop test: 10 mV / 1 mA via resistor in series		
	Linearity error	0, 3, 6 ... 300 sec selectable		
	Temperature error	±0.3% FS ±0.02% /°C FS		
Electrical connection		2 x M20x1.5 plastic cable glands, for cable: Ø6-12 mm, Ex version: 2 x M20x1.5 metal cable glands cable: Ø7-13 mm, wire cross section: 0.5...1.5 mm ² (shielded cable is recommended) 2 x NPT 1/2" internal thread for protective pipe		
Electrical protection		Class III.		
Ingress protection		IP67		
Mass		≈ 2.5 kg 0.5 m probe	≈ 3 kg 0.5 m probe	≈ 2 kg 3 m probe

SPECIAL DATA FOR Ex CERTIFIED MODELS

Protection type	ia
Ex marking	ATEX II 1G EEx ia II B T6
Intrinsically safe data	C _i ≤ 15 nF; L _i ≤ 200 μH; U _i ≤ 30 V; I _i ≤ 140 mA; P _i ≤ 1 W
Applicable Ex power supply	U ₀ < 30 V; I ₀ < 140 mA; P ₀ < 1 W
Temperature classification	Temperature class: T6; T ambient: 70 °C; T medium: 80 °C

PROBE SELECTION

Consequences of the capacitive operation principle: Relative dielectric constant of the medium should be taken into consideration. Measurement will be accurate only in case of suitable probe and reference probe selection.

	Medium		Reference probe		
	Conductive	Non-conductive	Rod	Tube	Tank
Insulated probe, reference probe	■	■	■	■	■
Partly insulated probe, reference probe		■	■	■	
Relative dielectric constant (ε _r)		min. 1.5			

NIVOCAP C, rod probe

2-wire rod probe capacitance level transmitter for conductive and non-conductive liquids

Stainless steel process connection

Power supply: 12-36 V DC

Probe lengths: 0.2-3.0 m

Ex marking: ATEX  II 1 G EEx ia IIB T6

Programming

With 4 buttons: 4/20 mA (with real level), error indication and damping time

With SAP-202 programmer: complete programming, 32-point linearisation

Remote programming: for HART capable units with HART modem and the EView software or with the MultiCONT controller. The EView light software (on DVD) is provided free of charge.

Type

C - -

Version / Max. temperature

C - -

- T Transmitter / 130°C
- B Transmitter with local LCD indicator / 130°C
- H Transmitter / 200°C
- P Transmitter with local LCD indicator / 200°C

Process connection size / Insulation

C - -

- R 1" BSP / Fully PFA insulated stainless steel
- P 1" BSP / Partially PFA insulated stainless steel
- A 1" NPT / Fully PFA insulated stainless steel
- C 1" NPT / Partially PFA insulated stainless steel

Housing

C - -

- 2 Aluminium (paint coated)
- 3 Plastic, PBT, glass fibre reinforced

Probe length

C - -

Fully PFA insulated

- 0 2 0.2 m
- 0 3 - 3 0 0.3-3 m; each started 100 mm

Partially PFA insulated

- 0 2 0.2 m
- 0 3 - 3 0 0.3-3 m; each started 100 mm

Output / Approval

C - -

- 2 4-20 mA / none
- 4 4-20 mA + HART / none
- 6 4-20 mA / Ex (only 130°C rated version)
- 8 4-20 mA+ HART / Ex (only 130°C rated version)

C - -

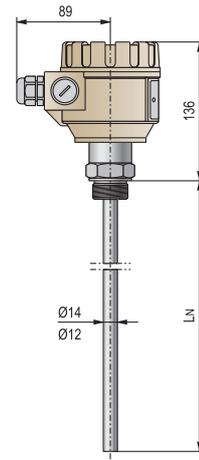
Available on request: special process connections

- 1 1/2" Triclamp (ISO 2852)
- 2" Triclamp (ISO 2852) - X07
- DN 40 Pipe coupling (DIN 11851)
- DN 50 Pipe coupling (DIN 11851) - X12

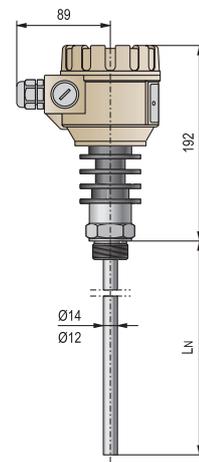
Accessories to order

Type

- S A P - 2 0 2 Plug-in display module (See "Electronic accessories")
- S A S - 3 0 3 EView 2 software package (See "Electronic accessories")
- S A T - 3 0 4 HART-USB modem (See "Electronic accessories")
- S A K - 3 0 5 - 2 HART-USB/RS485 modem
- S A K - 3 0 5 - 6 HART-USB/RS485 modem / Exia



NIVOCAP CTR-2



NIVOCAP CHR-2

NIVOCAP C, coaxial reference probe

For use with NIVOCAP rod probe type transmitters

Process connection: 1 1/2"

Internal process connection for NIVOCAP: 1" BSP

Material: stainless steel

Probe length: 0.2-3 m

Type

C F - 1

Connection type

C F - 1

A BSP
D NPT

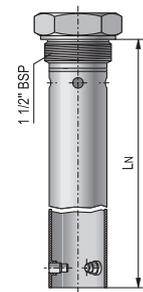
Probe length

C F - 1

0 2 0.2 m

0 3 - 3 0 0.3-3 m; each started 0.1 m

C F - 1



NIVOCAP CAF-1

NIVOCAP C, reference rod probe

Reference rod probes for NIVOCAP rod probe capacitance transmitters

Probe length: 0.2-3 m

Type

C - 1

Connection type

C - 1

F BSP
E NPT

Connection size / Insulation

C - 1

R 1" / Fully PFA insulated stainless steel

P 1" / Partially PFA insulated stainless steel

Probe length

C - 1

Fully PFA insulated

0 2 0.2 m

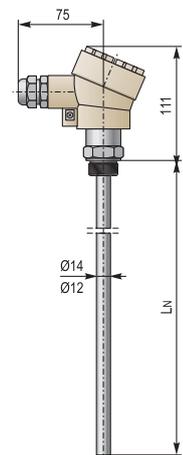
0 3 - 3 0 0.3-3 m; each started 100 mm

Partially PFA insulated

0 2 0.2 m

0 3 - 3 0 0.3-3 m; each started 100 mm

C - 1



NIVOCAP CFP_

NIVOCAP C, cable probe

2-wire capacitance level transmitter with cable probe for liquids
 Stainless steel process connection
 Power supply: 12-36 V DC
 Probe length: 1-20 m
 Ex marking: ATEX II 1 G EEx ia IIB T6
 Programming
 With 4 buttons: 4/20 mA (with real level), Error indication and Damping time
 With SAP-202 programmer: Complete programming, 32-point linearisation
 Remote programming: for HART capable units with HART modem and the EView software or with the MultiCONT controller. The EView light software (on DVD) is provided free of charge.

Type

C - -

Version / Max. temperature

C - -
 T Transmitter / 130°C
 B Transmitter with local LCD indicator / 130°C

Process connection / Cable type

C - -
 K 1" BSP / Fully FEP insulated steel
 L 1" BSP / Partially FEP insulated stainless steel
 E 1" NPT / Fully FEP insulated steel
 G 1" NPT / Partially FEP insulated stainless steel

Housing

C - -
 2 Aluminium (paint coated)
 3 Plastic, PBT, glass fibre reinforced

Probe length

C - -
Fully FEP insulated
 0 1 1 m
 0 2 - 2 0 2-20 m; each started 1 m
Partially FEP insulated
 0 1 1 m
 0 2 - 2 0 2-20 m; each started 1 m

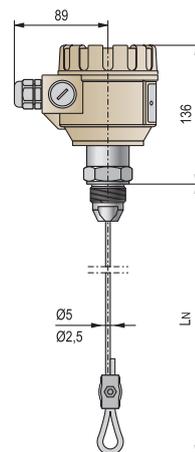
Output / Approval

C - -
 2 4-20 mA / none
 4 4-20 mA + HART / none
 6 4-20 mA / Ex ia
 8 4-20 mA+ HART / Ex ia

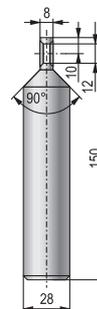
C - -

Accessories to order

Type
 CTK-103-0M-400-01 St.st. counterweight Ø 30x150 mm (Discount class: 3)
 S A P - 2 0 2 Plug-in display module (See "Electronic accessories")
 S A S - 3 0 3 EView 2 software package (See "Electronic accessories")
 S A T - 3 0 4 HART-USB modem (See "Electronic accessories")
 S A K - 3 0 5 - 2 HART-USB/RS485 modem
 S A K - 3 0 5 - 6 HART-USB/RS485 modem / Exia



NIVOCAP CTK_



NIVOCAP CTK-103-0M-400-01

GENERAL DESCRIPTION

NIVOPRESS D hydrostatic level- and pressure transmitters operate in 2-wire systems and convert relative or absolute pressure (input signal) into 4...20 mA (output signal). The piezoresistive sensor measures the hydrostatic pressure and it compares the water head with the actual atmospheric pressure. The sensor is protected by a stainless steel flush diaphragm which transfers the pressure value to the piezoresistive sensor through silicon oil. Intelligent electronics provides on-site programming with SAP-200 plug-in display or remote programming with HART communication. Intrinsically safe (Ex ia approved) models are available for use in hazardous environments.

NIVOPRESS D hydrostatic gauge pressure transmitters are suitable for level- and pressure measurement tasks in tanks, vessels and pipes especially in food and beverages industry (for example milk and any other food dollops) applications. The flat surface of the diaphragm avoids the risk of material build up and the maximum medium temperature of 125 °C allows proper (CIP) cleaning required by the regular cleaning processes of the food industry and similar hygienic applications.

MAIN FEATURES

- 0,25% accuracy
- Gauge or absolute pressure transmitter
- Piezoresistive sensor with stainless steel diaphragm
- Wide pressure range selection
- Temperature compensation
- HART communication
- Plug-in display
- Wide variety of process connections
- IP 65 protection
- Ex version

APPLICATIONS

- Liquids and masses in tanks and vessels
- Gas pressure measurement
- Chemicals with dense vapour or gas layers above the surface
- Foaming liquids
- Viscous or corrosive materials

CERTIFICATIONS

- ATEX  II 1G EEx ia IIC T6...T4

TECHNICAL DATA

Type	NIVOPRESS D	
Measured process value	level, pressure	
Sensor	Piezoresistive sensor, with protection front diaphragm	
Measurement range	As per order codes	
Maximum pressure	As per order codes	
Turndown ratio	≈ 1 : 2	
Zero point offset	50% of measurement range	
Output	4 ... 20 mA, HART 4...20 mA (limit values: 3.9...20.5 mA) HART (minimum loop resistance: 250 ohm)	
Damping time	0 ... 30 s, adjustable	
Error indication	3.8 mA or 22 mA	
Maximum load	$R_t = (U_t - 12 V) / 0,02 A$, $U_t =$ supply voltage	
Display module	6-digit plug-in LCD display, units and bargraph	
Power supply (for standard version)	12 ... 36 V DC	
Intrinsically safe data	$U_{max}: 30 V$, $I_{max}: 140 mA$, $P_{max}: 1W$, $C_i < 10 nF$, $L_i < 200 \mu H$	
Accuracy (linearity error, hysteresis: repeatability error)	$p > 0.4 bar \pm 0.25 \%$ $p \leq 0.4 bar \pm 0.5 \%$	
Range of temperature compensation	0 °C ... 70 °C $P \leq 0.4 bar: 0 °C ... 50 °C$	
Ambient temperature	-40 °C ... +70 °C, with display: -25 °C ... +70 °C	
Medium temperature	-25 °C ... +125 °C	
Electrical protection	Class III.	
Ingress protection	IP 65	
Ex marking	ATEX  II 1 G EEx ia IIC T6 ... T4	
Process connection	As per order codes	
Electrical connection	M20x1.5 cable gland, outer cable diameter: $\varnothing 6 ... \varnothing 12 mm$, wire cross section: max. 1.5 mm ²	
Housing	Paint coated aluminium or plastic (PBT)	
Material of wetted parts	Protection diaphragm: stainless steel Process connection: stainless steel Sealing: VITON® NBR EPDM	DIN 1.4435 DIN 1.4435 $p < 100 bar$ $p > 100 bar$ on special request
Pressure transmitting medium	Silicon oil*	
Mass	Aluminium housing ≈ 2 kg; ; Plastic housing: ≈ 1.6 kg	

* Food industry compatible oil on special request



DT-500



SAP-203 display

NIVOPRESS D-500/D-600

2-wire programmable hydrostatic pressure level transmitter with flush diaphragm
 Fully temperature compensated
 Accuracy: < 0.25% (p < 0,4 bar: 0,5 %)
 Wetted parts stainless steel (DIN 1.4435)
 Housing: aluminium or plastic with IP67 / NEMA 6
 Power supply: 10-36 V DC
 Ex marking: ATEX II 1 G EEx ia IIC T6...T4
 Programming
 With SAP-203 programmer: complete programming
 Remote programming: for HART capable units with HART modem and the EView software or with the MultiCONT controller. The EView light software (on DVD) is provided free of charge

Type

D - 1 -

Version

D - 1 -

- T Transmitter
- B Transmitter with local LCD indicator

Process connection

D - 1 -

- C 1/2" BSP (p > 2,5 bar) (Ex version not available)
- E 1" BSP (p ≥ 1 bar)
- S 1" NPT (p ≥ 1 bar)
- F 1 1/2" BSP
- T 1 1/2" NPT
- L ← 1" Triclamp (ISO 2852)
- M ← 1 1/2" Triclamp (ISO 2852)
- N ← 2" Triclamp (ISO 2852)
- O ← DN 25 Pipe coupling (DIN 11851)
- P ← DN 40 Pipe coupling (DIN 11851)
- R ← DN 50 Pipe coupling (DIN 11851)

Housing

D - 1 -

- 5 Aluminium (paint coated)
- 6 Plastic, PBT, glass fibre

Range (gauge) / Overpressure

D - 1 -

- 0 ← - 1 - 0 bar / 3 bar
- 1 0 - 0.16 bar / 0,5 bar (with min. 1 1/2" process connection)
- 2 0 - 0.25 bar / 1 bar (with min. 1 1/2" process connection)
- 3 0 - 0.4 bar / 1 bar (with min. 1 1/2" process connection)
- 4 0 - 0.6 bar / 3 bar (with min. 1 1/2" process connection)
- 5 0 - 1 bar / 3 bar (with min. 1" process connection)
- 6 0 - 1,6 bar / 6 bar (with min. 1" process connection)
- 7 0 - 2.5 bar / 6 bar
- 8 0 - 4 bar / 20 bar
- 9 0 - 6 bar / 20 bar
- A ← 0 - 10 bar / 20 bar
- B ← 0 - 16 bar / 60 bar
- C ← 0 - 25 bar / 60 bar
- D ← 0 - 40 bar / 100 bar
- E ← 0 - 60 bar / 120 bar
- F ← 0 - 100 bar / 250 bar
- G ← 0 - 160 bar / 500 bar
- H ← 0 - 250 bar / 500 bar
- J ← 0 - 400 bar / 600 bar

Output / Approval

D - 1 -

- 2 4-20 mA / none
- 4 4-20 mA + HART / none
- 6 4-20 mA / Ex
- 8 4-20 mA + HART / Ex

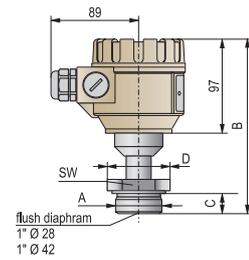
D - 1 -

Service to order

Customised 4-20 mA output calibration for ranges other than ranges above

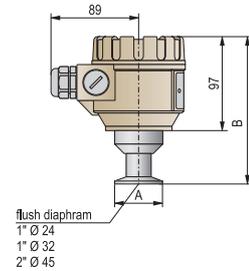
Accessories to order

- S A P - 2 0 3 Plug-in display module (See "Electronic accessories")
- S A S - 3 0 3 EView 2 software package (See "Electronic accessories")
- S A T - 3 0 4 HART-USB modem (See "Electronic accessories")
- S A K - 3 0 5 - 2 HART-USB/RS485 modem
- S A K - 3 0 5 - 6 HART-USB/RS485 modem / Exia



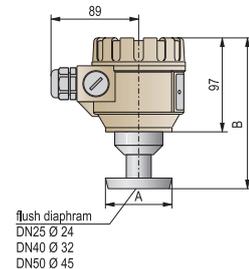
Threaded version

Type	DTE	DTF	DTS	DTT
A	1" BSP	1 1/2"	1" NPT	1 1/2" NPT
B	193	185	197	189
C	19	22	26	27
D	50	65	52	70
SW	40	55	40	55



Triclamp

Type	DTL	DTM	DTN
Tri-Clamp	1"	1 1/2"	2"
A	50.3	50.3	64
B	183	183	167



Pipe coupling

Type	DTO	DTP	DTR
Pipe coupling	DN 25	DN 40	DN 50
A	44	56	68,5
B	186	170	166

NIVOPRESS DT

GENERAL DESCRIPTION

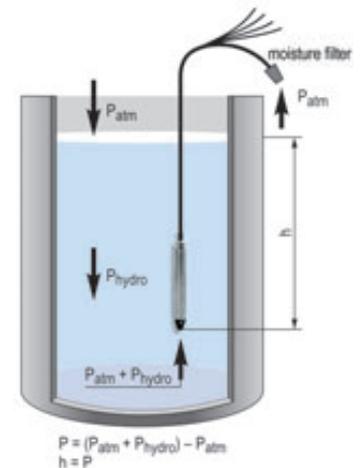
The NIVOPRESS N hydrostatic level transmitters are designed to measure the level of clean or contaminated liquids. The pressure sensor at the bottom of the probe measures the sum of the hydrostatic pressure (P_{hydr}) of the liquid column above it and the atmospheric pressure (P_{atm}). The atmospheric pressure is led to the sensor through a breathing capillary which is equipped with a moisture filter that prevents the moisture reaching and damaging the electronics. This enables the atmospheric pressure to be subtracted from the measured pressure to get the hydrostatic pressure which is proportional to the height of the liquid column (h). The electronics converts the sensor's signal into an output signal. If temperature measurement (of the liquid) is needed beside the level measurement a combined (level + temperature) transmitter should be used. The installation and wiring of the transmitter is helped by the wide variety of accessories. A sewage adapter working on the principle of the diving bell can be snapped into the place of the protecting cap to avoid the direct contact between the sensor and the measured contaminated liquid. An extra mechanical protection is built in the NZ type transmitters in the form of a mechanical filter. The N-500 types can be used in hazardous environments. The NZ screw-in types are recommended for applications where there is a risk of flooding.

MAIN FEATURES

- Measuring range up to 200m
- IP68 protection
- Submersible or screw-in types
- Ø 22 mm tube
- HART communication
- 2- or 3-wire versions
- Ex versions
- 2 x 4...20mA output (level + temperature)
- Built-in Pt100 temperature sensor
- Overvoltage and inverse polarity protection
- Wide range of accessories

APPLICATIONS

- Level and temperature measurement of drinking water wells, tanks, pools
- Submersible pump control
- Screw-in submersible type with IP68 protection for applications with risk of flooding
- Clean or slightly polluted, contaminated liquids
- Sewage waters
- Draw-down protection
- Sewage lift station control



CERTIFICATIONS

- ATEX II 1G Ex ia IIC T6



NIVOPRESS NP



NIVOPRESS NC



NIVOPRESS NZ



NIVOPRESS NP+NAW-104
sewage adapter



OVP-32/33
overvoltage
protection unit



NAA-105
cable holding sliding sleeve



OVP-22/33
overvoltage protection unit



NAA-101 / NAA-102
cable terminal box



NAA-209
cable mounting unit

TECHNICAL DATA

Type	2-wire		3-wire
	NP / NZ	NC	NPH / NZH
Measurement range	0 ... 200 m water head	0 ... 20 m water head	0 ... 200 m water head
	As order code, for units with HART output the range can be downscaled to 50% of the nominal range		
Overload allowed (versus range)	3 x	20x (h ≤ 3 mvo) 10x (h > 3 mvo)	3 x
Output	4 ... 20 mA + HART	4 ... 20 mA	0...+10V (0 V ≤ 80 mV) measured to the power supply
Power supply	12 ... 30 V DC		18 ... 30 V DC / 6mA
Max. load (Ut = power supply; Umin = min. power supply)	$R_{min} = \frac{(U_t - U_{min})}{0.02 A}$		≥ 5 kohm
Temperature transmitter NPD, NZD types	Power supply: 12...30 VDC/4...20mA; 0...+60°C, accuracy: ±3°C		
Temperature sensor Pt100 B	NPP and NZP types	NCP types	-
Linearity error (level)	± 0.25 %		
Temperature error	≤ ± 0.1 % / 10 K		≤ ± 0.2 % / 10 K
Process temperature range*	-10 ... +60 °C	0 ... +60 °C	-10 ... +60 °C
Process connection	NAA-209 cable mounting wedge clamp, NZ types: 3/4" BSP		
Ingress protection	IP 68		
Electrical protection	Class III.		
Electrical connection	Shielded cable with breathing capillary		
Cable	Ø 7 mm; 0.34 mm ²		
Cable length	0 ... 300 m as order code		
Dimension	NP: Ø 22x179 mm NZ: Ø 38x158 mm	Ø40x146 mm	NP: Ø 22x179 mm NZ: Ø 38x158 mm
Mass	Probe: 0.2 kg	Probe: 0.4 kg Cable: ~ 0.06 kg/m	Probe: 0.2 kg
Material of wetted	Sensor	1.4404	Al ₂ O ₃ ceramic
	Housing		1.4571
	Cable coating		Polyurethane / FEP
	Sealing		VITON (FKM)
	Protective cap	NP: ABS	-

SPECIAL DATA FOR EX CERTIFIED MODELS

Type	NP / NZ – 500 types
Power supply	14...30 V DC
Ex marking	ATEX II 1G Ex ia IIC T6
Intrinsically safe data	Ui = 30 V, li = 100 mA, Pi = 0.8 W, Ci = 12 nF + h x 0.4 nF; Li = 1.3mH + h x 0.9 µH (h = cable length in meter)
Operation temperature range	-10 °C ... +60 °C

TECHNICAL DATA OF ACCESSORIES

Cable terminal box	NAA-101
Dimensions	93 x 93 x 55 mm
Ingress protection	IP 65
Process temperature range	-40 °C ... +70 °C
Material	Polystyrene
Cable gland	M20x1.5 (cable outer diameter: 5 ... 10 mm)
Electrical connection	Terminal block (for max. 2.5 mm ² wire cross section)
Cable terminal box with overvoltage protection	NAA-102
Data	See NAA-101
Electrical data	See OVP

Cable mounting wedge clamp	NAA-209	
Max. mechanical load	300 m cable	
Material	Polyamide	
Process temperature range	-20 °C ... + 60 °C	
Overvoltage protection unit	OVP22/33 **	OVP32/33 **
Type	field use	DIN 35 mm rail mountable
Dimensions	72 x 42 x 19 mm	62 x 65 x 18 mm
Ingress protection	IP 54	IP 20
Breakdown voltage	33 V	
Absorbed energy	600 W / 1 ms	
Serial resistance	13 ohm	
Leakage current	≤ 10 µA	

* High temperature (up to 75°C) version is available on special request

** Only for 2-wire 4 ... 20 mA versions!

HYDROSTATIC LEVEL TRANSMITTERS

NIVOPRESS N

LEVEL TRANSMITTERS

NIVOPRESS N-200

Hydrostatic pressure level transmitter, 2-wire version

Cable: Polyurethane

Max. medium temperature: 60°C

Humidity filter: fixed to breathing cable

Power supply: 12-30 V DC

Type

N - -
 C Capacitive sensor (up to 20 m w.h.)

Output

N - -
 K Two-wire, 4-20 mA output
 P Level: 4-20mA
 + Temperature: Pt100 sensor

Version

N - -
 2 Standard

Range

N - 2 -
 1 0-100 mbar (0-1 m w.h.)
 2 0-200 mbar (0-2 m w.h.)
 3 0-500 mbar (0-5 m w.h.)
 4 0-1.000 mbar (0-10 m w.h.)
 5 0-2.000 mbar (0-20 m w.h.)

Breathing cable length

N - 2 -
 0 1 - 9 9 1-99 m; each started 1 m
 A 0 - A 9 100-190 m; each started 1 m
 B 0 - B 9 200-290 m; each started 1 m
 C 0 300 m; each started 1 m

N - 2 -

High temperature (up to 75°C) version should be given in the text of the order.

Service to order

Customised 4-20 mA output calibration

Accessories to order

Terminal box with filter and optional OVP (Overvoltage protection unit), IP65

N A A - 1 0 1 Without OVP

N A A - 1 0 2 With OVP-12/33 (only for N_K versions)

Cable fastening accessory

N A A - 1 0 5 Sliding sleeve 1 1/2" BSP

N A A - 2 0 9 Cable mounting wedge clamp

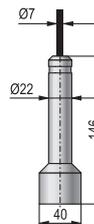
NIVOPRESS OVP

Overvoltage protection unit

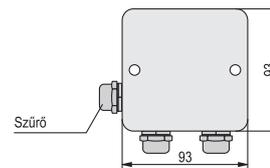
Type

O V P - 2 2 / 3 3 IP54

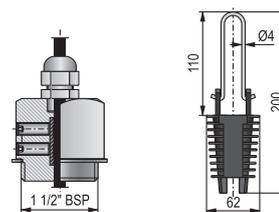
O V P - 3 2 / 3 3 IP20, DIN rail mounting



NIVOPRESS NC

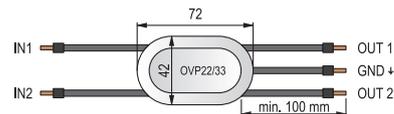


NAA-101 / NAA-102

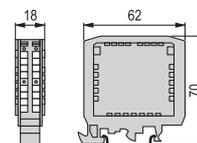


NAA-105

NAA-209



OVP-22 / 33



OVP-32 / 33

HYDROSTATIC LEVEL TRANSMITTERS

NIVOPRESS N

LEVEL TRANSMITTERS

NIVOPRESS N-400, N-500

Hydrostatic pressure level transmitter

Cable: Polyurethane, FEP

Max. medium temperature: 60°C

Humidity filter: fixed to breathing cable

Power supply:

2-wire version: 12-30 V DC

Ex version: 14-30 V DC

3-wire version: 18-30 V DC

Ex marking: ATEX II 1 G Ex ia IIC T6

Programming: for HART capable units with HART modem and the NPCal software or with the MultiCONT controller. The EView light software (on DVD) is provided free of charge.

Type

N - -

- P Piezoresistive sensor / PUR
- Z Piezoresistive sensor, 3/4" BSP process connection
- F * Piezoresistive sensor / FEP

Output

N - -

- K Two-wire, 4-20 mA + HART
- H * Three-wire, 0-10 VDC output
- D * Level: 4-20mA + HART
+ Temperature: 4-20mA (electronic temp. sensor)
- P Level: 4-20mA + HART
+ Temperature: Pt100 sensor

Version

N - -

- 4 Standard
- 5 Ex

Range**

N - -

- 1 0-100 mbar (0-1 m w.h.)
- 2 0-200 mbar (0-2 m w.h.)
- 3 0-500 mbar (0-5 m w.h.)
- 4 0-1.000 mbar (0-10 m w.h.)
- 5 0-2.000 mbar (0-20 m w.h.)
- 6 0-5.000 mbar (0-50 m w.h.)
- 7 0-10.000 mbar (0-100 m w.h.)
- 8 0-20.000 mbar (0-200 m w.h.)

Breathing cable length

N - -

PUR cable

- 0 1 - 9 9 1-99 m; each started 1 m
- A 0 - A 9 100-190 m; each started 1 m
- B 0 - B 9 200-290 m; each started 1 m
- C 0 300 m; each started 1 m

FEP cable

- 0 1 - 9 9 1-99 m; each started 1 m
- A 0 - A 9 100-190 m; each started 1 m
- B 0 - B 9 200-290 m; each started 1 m
- C 0 300 m; each started 1 m

N - -

* Ex version not available

** With HART capable units the turn down ratio is 2:1

High temperature (up to 75°C) version should be given in the text of the order. (Ex version not available.)

Service to order

Customised 4-20 mA output calibration

Accessories to order

Terminal box with filter and optional OVP (Overvoltage protection unit), IP65

- N A A - 1 0 1 Without OVP
- N A A - 1 0 2 With OVP-12/33 (only for N_K versions)

Cable fastening accessory

- N A A - 1 0 5 Sliding sleeve 1 1/2" BSP
- N A A - 2 0 9 Cable mounting wedge clamp

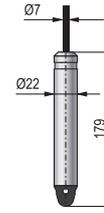
Other accessories

- N A W - 1 0 4 Adapter for waste water applications (for NP version)
- S A T - 3 0 4 HART-USB modem (See "Electronic accessories")
- S A K - 3 0 5 - 2 HART-USB/RS485 modem
- S A K - 3 0 5 - 6 HART-USB/RS485 modem / Exia

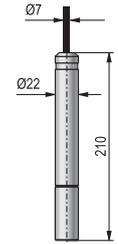
NIVOPRESS OVP

Overvoltage protection unit

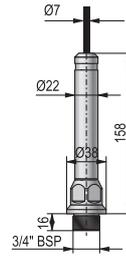
- O V P - 2 2 / 3 3 IP54
- O V P - 3 2 / 3 3 IP20, DIN rail mounting



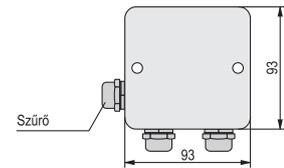
NIVOPRESS NP



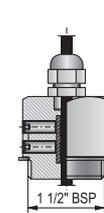
NIVOPRESS NP + NAW-104 sawage adapter



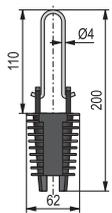
NIVOPRESS NZ



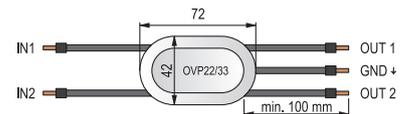
NAA-101 / NAA-102



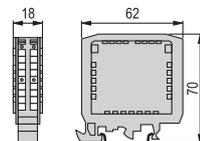
NAA-105



NAA-209



OVP-22 / 33



OVP-32 / 33

GENERAL DESCRIPTION

The **NIVOFLIP** is a bypass level indicator for pressurized vessels with up to 5.5 m flange distance containing liquids. The device has the international PED (Pressure Equipment Directive) approval, so it can be used for level indication of pressurized vessels up to 100 bar process pressure. The high temperature types are applicable up to 250 °C process temperature. The **NIVOFLIP** can be equipped with optional limit switches or with **NIVELCO's NIVOTRACK** high-precision magnetostrictive level transmitter if level transmission is needed.

MAIN FEATURES

- Clearly visible optical display
- Measuring range: 500-5500 mm
- ± 10 mm accuracy
- Max. 100 bar process pressure
- High temperature version
- Optional level switches
- Optional magnetostrictive level transmitter
- PED approval

APPLICATIONS

- Oil and gas industries
- Chemical industry
- Power generation
- Boilers
- Pressurized vessels
- Tanks

OPERATION

The welded bypass chamber that is the body of the indicator and the tank form one pressurized system. Mounted on suitable connection flanges located on the side of the tank the liquid level in the bypass tube and the tank is equal. A float in the bypass tube incorporating a polarized magnet tracks the level of the liquid. The bi-coloured magnetic flaps mounted on the tube composing a bar are serving as visual indicators by changing their colour as the float passes. The rotated flaps represent the actual level. The lower 100 mm of the bottom section of the indicating bar has different colour providing for an optical error signal in case the liquid level drops below the lower connection point of the instrument.

NIVOFLIP LEVEL INDICATOR SYSTEM

The **NIVOFLIP** bypass liquid level indicator can be equipped with **MAK-100** external level switches and this way it can provide limit level indication. In case of using **MAK-100** level switch the minimal medium density should be 0.1 kg/dm³ more than the specified. When the provided accuracy of the magnetic flaps is not enough, the high-precision **NIVOTRACK M** or **L-500/600** magnetostrictive level transmitters are recommended to use. Equipped with the OIML R85 approved **NIVOTRACK** the measurement system is applicable for custody transfer measurements. The rigid probe magnetostrictive transmitter without float and process connection can be mounted externally by clamps to the bypass chamber. All optional units are operated via magnetic coupling, there is no direct contact with the measured medium.



PROPERTIES

NIVOFLIP	Normal type	High temperature type
Viscous version	■	–
Stainless steel float	■	■
Titan float	■	■
PED approval	■	■
Max. 100 bar medium pressure	■	–
Max. 250 °C medium temperature	–	■
Optional level switch	■	–
Optional level transmitter	■	–

TECHNICAL DATA

Type	Normal type		High temperature type
	Standard	Viscous	
Optical display	Bi-coloured magnetic flaps		
Display	scale	cm	
	accuracy	± 10 mm	
	resolution	5 mm	
	error indication	lower 100 mm, inverse polarized flaps	
Tube diameter	Ø 60.3 mm	Ø 73.3 mm	Ø 60.3 mm
Flange distance (center to center)	500 –5500 mm (as per order code)		
Process connection	DIN, ANSI flanges (as per order code)		
Aerating connection	M20x1,5		
Process pressure ¹	max. 100 bar	max. 40 bar	max. 88 bar
Medium temperature	-40°C ... +130°C		-40°C ... +250°C
Ambient temperature	-40°C ... +60°C		
Medium density ²	with stainless steel float: 0.8-1.2 kg/dm ³ , with titan float: 0.55-1.1 kg/dm ³		
Level switch	optional, freely adjustable MAK-100 level switch		–
Level transmitter	optional NIVOTRACK M□L-500 magnetostrictive level transmitter		–

¹ Above 40 bar only with titan float

² In case of using MAK-100 level switch the minimal medium density should be 0.1 kg/dm³ more than the above specified

MAK-100 MAGNETIC LEVEL SWITCHES

GENERAL DESCRIPTION

The MAK-100 type magnetic level switches are optional accessories for NIVOFLIP bypass level indicators. In the stainless steel bypass tube the float of NIVOFLIP tracks the liquid level.

The float (incorporating a permanent magnet) operates the freely positioned MAK-100 level switch via magnetic coupling and provides non-contact signal transfer to the microswitch. There should be at least 100 mm distance between two switching points.

TEMPERATURE DATA FOR Ex CERTIFIED MODELS

TEMPERATURE CLASSES		
Classes	Max. medium temp	Max. ambient temp
T6	+80°C	-20...+60°C
T5	+95°C	-20...+70°C
T4	+130°C	-20...+80°C

TECHNICAL DATA

Type	MAK-100-0	MAK-100-6
Medium temperature	max.: 130°C	See: Temperature classes table
Ambient temperature	-20°C ... +80°C	
Material of the switch-housing	Paint coated aluminium cast	
Switch	1 microswitch, with NO, NC contacts	
Switching data	250V 2.5A AC12, 220V 0.3A DC13	only Ex ia certified and approved contact isolator should be used for supply
Electrical connection	cable gland: M20x1,5 terminal for max. 2.5 mm ²	
Ingress protection	IP 65	
Electrical protection	Class I.	
Ex marking	–	⊕ II 1G
Mass	1.5 kg	

NIVOFLIP ML

Liquid bypass level indicator with optical display and magnetic float
 Material of wetted parts: stainless steel 1.4571
 Housing of the optical flap display: casted aluminium
 Medium density: 0.8-1.2 kg/dm³ (1.4571) or 0.5-0.9 kg/dm³ (Titan)
 Process connection: flange (as order code)

Type

M X X - X X - X

Version

M 0 - X X - X

- L Standard version, max. 130°C
- H High temperature version, max. 250°C, only for tube Ø 60,3 mm, as per pressure diagram

Process connection

M X - X X - X

- A DN15
- B DN20
- C DN25
- D DN40
- E DN50
- F ANSI 1/2"
- G ANSI 3/4"
- H ANSI 1"
- J ANSI 1 1/2"
- K ANSI 2"

Bypass tube / Pressure

M X - X X - X

- 1 60.3 mm tube diameter / PN40; 400 psi
- 2 73.3 mm tube diameter / PN40; 400 psi
- 3 60.3 mm tube diameter / PN64; 600 psi (only with Titan float)
- 4 60.3 mm tube diameter / PN100; 900 psi (only with Titan float)

Measuring range (center to center)

M X X - X X - X

- 0 5 - 5 5 0.5-5.5 m Ø60.3 / PN40; 400 psi; each started 0.1 m
- 0 5 - 5 5 0.5-5.5 m Ø73.3 / PN40; 400 psi; each started 0.1 m
- 0 5 - 5 5 0.5-5.5 m Ø60.3 / PN64; 600 psi; each started 0.1 m
- 0 5 - 5 5 0.5-5.5 m Ø60.3 / PN100; 900 psi; each started 0.1 m

Float material*

M X X - X X -

- 0 1.4571
- 1 Titan

M - -

* Special float is available to order for phase-separation indication

The instrument can be equipped with high resolution Nivotrack M_L-500 magnetostrictive level transmitter! (Centre to centre distance + 300mm/1.4571 float or centre to centre distance + 400mm/titanium float.)

NIVOFLIP MAK-100

Magnetic coupling limit switch for NIVOFLIP ML bypass level indicator, with contact output, factory positioned at ordered distances
 Min. medium density: 0.9 kg/dm³ (1.4571) or 0.6 kg/dm³ (Titan)
 Alu housing with IP65
 Ex marking: ATEX II 1G Exia

Type

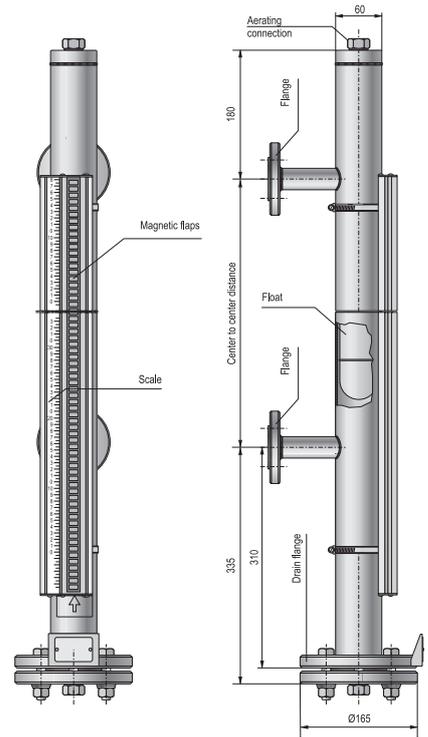
M A K - 1 0 0 - X

Approval

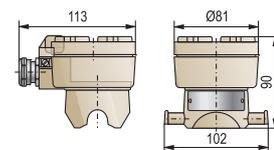
M A K - 1 0 0 -

- 0 None
- 6 Exia

M A K - 1 0 0 -



NIVOFLIP ML



NIVOFLIP MAK-100

GENERAL DESCRIPTION

NIVOTRACK magnetostrictive level transmitters are an ideal solution for high accuracy measurement of clean fluids. Its high precision renders the NIVOTRACK suitable for custody transfer measurement of liquids such as fuels, solvents, alcohol derivatives etc. Units with flexible tube do not only make this accurate measurement for higher tanks possible, but offer a more convenient way for shipment and installation. Plastic coated versions of the NIVOTRACK substantially expand the field of application by a wide range of aggressive materials. Integrating the transmitter into a process control system is easy thanks to the intelligent signal processing and communication software as well as the wide of range of accessories offered.

MAIN FEATURES

- 0.1 mm or 1 mm resolution
- Insertion length maximum 15 m
- OIML R85 international certification
- Compact type
- Rigid or flexible guide tube
- Plastic coated version for chemicals
- 4-20 mA and HART output
- Graphic display
- 99 point linearization table
- Measurement optimisation
- Volume measurement
- ATEX certified versions
- IP 67 protection

APPLICATIONS

- Custody transfer measurement
- Oil and gas industry
- Fuels and gasoline products
- Pharmaceutical industry
- Chemical industry
- Food industry
- Alcohols and beverages
- Installation in bypass tubes feasible
- Supplementary level transmitter for NIVOFLIP magnetic flip indicator

CERTIFICATIONS

- ATEX II 1G Ex ia IIB T6...T5
- ATEX II 2G Ex d IIB T6...T5
- ATEX II 1/2G Ex d ia IIB T6...T5
- OIML R85 international certification
- IEC Ex ia IIB T6 Ga
- IEC Ex d IIB T6 Gb
- IEC Ex dia IIB T6 Ga

FLOATS



Type	MBA-505-2M-200-00*	MBK-530-2M-400-00**	MBA-505-2M-900-00**	MGU-505-2M-200-00**		MCA-504-3M-000-00*
Dimensions						
Medium density (min.)	0.8 kg/dm ³ 0.55 kg/dm ³ (Titan)	0.55 kg/dm ³	0.4 kg/dm ³	0.7 kg/dm ³	0.4 kg/dm ³	0.7 kg/dm ³
Medium pressure	2.5 MPa (25 bar)	1.6 MPa (16 bar)	2.5 MPa (25 bar)	0.6 MPa (6 bar)	0.3 MPa (3 bar)	1 MPa (10 bar)
Material		1.4404		PVDF	PP	316L

* Designed for min. 2" process connection, only order with rigid probe

** Flange to be ordered separately

TECHNICAL DATA

Type	Rigid probe version	Flexible probe version	Plastic coated, rigid probe version	Mini version with rigid probe
Measured process value	Liquid level, distance, volume			
Nominal length (L)	0.5 m ... 4,5 m	2 m ... 15 m	0.5 m ... 3 m	0.5 m ... 1.5 m
Material of the tube	Stainless steel: DIN 1.4571		PFA coated stainless steel	Stainless steel: DIN 1.4571
Max. medium pressure*	2.5 MPa (25 bar)	1.6 MPa (16 bar)	0.3 MPa (3 bar)	1 MPa (10 bar)
Medium temperature	-40 °C ... +90 °C, see the manual: temperature diagram			
Resolution	0.1 mm or 1 mm			
Linearity with dry calibration	± 0.25 mm or ± 1 mm			
Temperature coefficient	0.04 mm / 10 °C (between -40 °C...+70 °C)			
Range span	Maximum range: see the manual: dimensions ; Minimum range: 200 mm			
Zero point offset	Anywhere within the range			
Standard float diameter / material**	Ø 53.5 x 60 mm cylindrical / 1.4404	Ø 95 mm ball / 1.4404	Ø 76 x 87 mm cylindrical / PVDF / PP	Ø 27 x 29 mm cylindrical / 316L
Medium density	Depends on the applied float			
Material of wetted parts	Stainless steel: DIN 1.4571, 1.4404		PFA, PVDF, PP	Stainless steel: DIN 1.4571, 316L
Ambient temperature	-40 °C...+70 °C, plastic housing: -25 °C...+70 °C, with display: -25 °C...+70 °C, Ex: see manual			
Output	Analogue	4 – 20 mA (limit values: 3.9 – 20.5 mA)		
	Serial comm.	HART		
	Display	SAP-300 graphic display		
Damping time	0 s ... 99 s			
Error indication	22 mA or 3.8 mA or holding			
Output load	$R_t = (U_t - 12.5V) / 0.02 A$, $U_t =$ power supply voltage			
Power supply	12.5 V – 36 V DC			
Electrical protection	Class III.			
Ingress protection	IP 67			
Process connection	As per order code			
Electrical connection	Cable gland M 20 x 1.5, cable outer diameter: Ø6 ... Ø12 mm, wire cross section: max.1.5 mm ²			
Housing	Paint coated aluminium or plastic (PBT)			
Mass	1.7 kg + m. probe: 0.6 kg/m	2.9 kg + m. probe: 0.3 kg/m + weight 3.5 kg	1.7 kg + m. probe: 0.7 kg/m	1.7 kg + m. probe: 0.6 kg/m

* Depends on selected float

** Requested float type should be specified when placing an order

SPECIAL DATA FOR EX CERTIFIED MODELS

Protection type	ia	d	d ia
Ex marking	ATEX	⊕ II 1 G Ex ia IIB T6...T5 0.5 ... 15 m	⊕ II 2 G Ex d IIB T6...T5 0.5 ... 10 m
	IEC Ex	Ex ia IIB T6 Ga	Ex d IIB T6 Gb
Power supply and signal circuit limits	$U_{imax} = 30 V$	$I_{imax} = 140 mA$	$P_{imax} = 1 W$ $C_i < 60 nF$ $L_i < 200 \mu H$
Cable gland	Steel M 20 x1.5 cable gland	Steel M 20 x1.5 Ex d approved cable gland	
Cable outer diameter	Ø 7 ...13 mm		Ø 9 ...11 mm

NIVOTRACK M-500, M-600, rigid probe

2-wire magnetostrictive level transmitter with rigid probe
 Resolution: 0.1 mm or 1 mm
 All wetted parts: stainless steel
 Housing: aluminium or plastic (PBT glass fibre reinforced) with IP67 / NEMA 6
 Power supply: 12.5-36 V DC
 Probe lengths: 0.5-3.0 m
 Float, standard: Ø 53,5 x 60 mm (min. 0.8 g/cm³)
 Ex marking: ATEX II 1G Ex ia IIB T6...T5 IEC Ex ia IIB T6 Ga*
 ATEX II 2G Ex d IIB T6...T5 IEC Ex d IIB T6 Gb*
 ATEX II 1/2G Ex d ia IIB T6...T5 IEC Ex dia IIB T6 Ga*

Programming
 With SAP-300 programmer: Complete programming, 99-point linearisation
 Remote programming: for HART capable units with HART modem and the EView software or with the MultiCONT controller. The EView light software (on DVD) is provided free of charge.

Ball float Ø 95 mm (min. 0.55 g/cm³) or Ø 54 mm titanium (min. 0.55 g/cm³) or Ø 124 mm (min. 0.4 g/cm³) available on request. This request and the need for side viewed model (Position "B") should be given in the text of the order.

Type

M [X] [X] - [X] [X] [X] - [X]

Version

M [X] [X] - [X] [X] [X] - [X]

- T Transmitter
- B Transmitter with local LCD indicator

Process connection

M [X] [X] - [X] [X] [X] - [X]

- A 1" BSP
- C 2" BSP
- D 1" NPT
- G 2" NPT
- U Without process connection for sliding sleeve
- L ** Without float, for Nivoflip

Housing

M [X] [X] - [X] [X] [X] - [X]

- 5 Aluminium (paint coated)
- 6 Plastic, PBT, glass fibre reinforced (Ex version not available)

Probe length

M [X] [X] - [X] [X] [X] - [X]

- 0 5 - 1 0 0.5-1 m
- 1 1 - 3 0 1.1-3 m; each started 100 mm

Output / Resolution / Approval

M [X] [X] - [X] [X] [X] - [X]

- 1 4-20 mA / 0.1 mm
- 2 4-20 mA / 1 mm
- 3 4-20 mA + HART / 0.1 mm
- 4 4-20 mA + HART / 1 mm
- 5 4-20 mA / 0.1 mm / Exia
- 6 4-20 mA / 1 mm / Exia
- 7 4-20 mA + HART / 0.1 mm / Exia
- 8 4-20 mA + HART / 1 mm / Exia
- A 4-20 mA / 0.1 mm / Exd
- B 4-20 mA + HART / 0.1 mm / Exd
- C 4-20 mA / 0.1 mm / Exd + Exia
- D 4-20 mA + HART / 0.1 mm / Exd + Exia

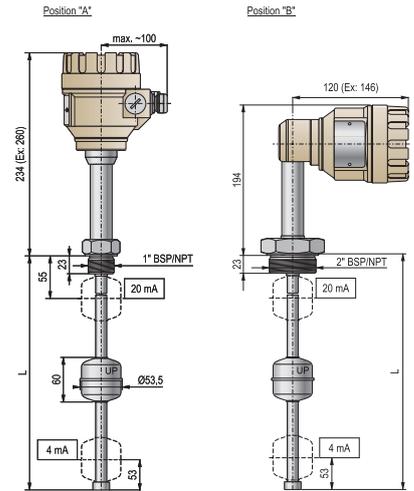
M [X] [X] - [X] [X] [X] - [X]

Only devices with 2" process connection and Ø 54 floats can be installed without previous disassembly.

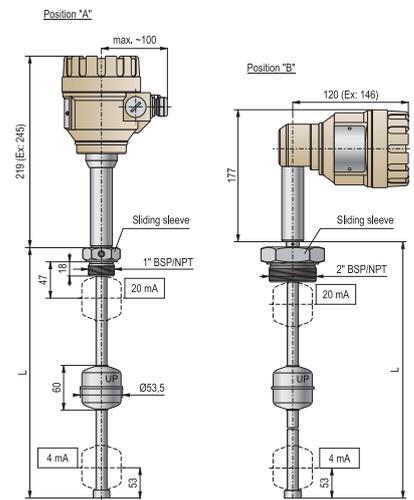
* Need of IEC is to be specified with order ** Length = center to center of Nivoflip + 300 mm

Accessories to order

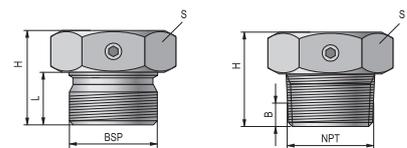
- Type
- S A P - 3 0 0 Plug-in display module (See "Electronic accessories")
- MBH-105-2M-300-00 Sliding sleeve: 1" BSP
- MBK-105-2M-300-00 Sliding sleeve: 2" BSP
- MBL-105-2M-300-00 Sliding sleeve: 1" NPT
- MBN-105-2M-300-00 Sliding sleeve: 2" NPT
- S A S - 3 0 3 EView 2 software package (See "Electronic accessories")
- S A T - 3 0 4 HART-USB modem (See "Electronic accessories")
- S A K - 3 0 5 - 2 HART-USB/RS485 modem
- S A K - 3 0 5 - 6 HART-USB/RS485 modem / Exia



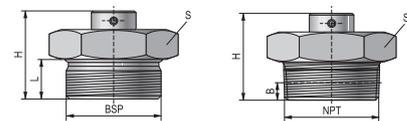
NIVOTRACK MTA/D-5 NIVOTRACK MTC/G-5



NIVOTRACK MTU-5



NIVOTRACK MBH / MBL-105



NIVOTRACK MBK / MBN-105

Type	Mat.	Proc. conn.	Dimensions			
			S (mm)	H (mm)	L (mm)	B (mm)
MBH-105-2M-300-00	1.4571	1" BSP	41	36	20	-
MBK-105-2M-300-00	1.4571	2" BSP	70	56	25	-
MBL-105-2M-300-00	1.4571	1" NPT	41	38	-	10
MBN-105-2M-300-00	1.4571	2" NPT	70	55	-	11

NIVOTRACK M-500, M-600, flexible probe

2-wire magnetostrictive level transmitter with flexible probe and with weight for spanning

Resolution: 0.1 mm or 1 mm

All wetted parts: stainless steel

Housing: aluminium or plastic (PBT glass fibre reinforced) with IP67 / NEMA 6

Power supply: 12.5-36 V DC

Probe lengths: 2-15 m

Float: ball Ø 95 mm (min. 0.55 g/cm³)

Ex marking: ATEX II 1G Ex ia IIB T6...T5

ATEX II 2G Ex d IIB T6...T5

ATEX II 1/2G Ex d ia IIB T6...T5

Programming

With SAP-300 programmer: Complete programming, 99-point linearisation

Remote programming: for HART capable units with HART modem and the EView software

or with the MultiCONT controller. The EView light software (on DVD) is provided free of charge.

Ball float Ø 124 mm (min. 0.4 g/cm³) available on request. This request and the need for side viewed model (Position "B") should be given in the text of the order.

Type

M - -

Version

M - -

T Transmitter

B Transmitter with local LCD indicator

Process connection

M - -

K 2" BSP

N 2" NPT

Housing

M - -

5 Aluminium (paint coated)

6 Plastic, PBT, glass fibre reinforced (Ex version not available)

Probe length

M - -

2 0 - 3 0 2-3 m

3 1 - F 0 3.1-15 m; each started 100 mm

Output / Resolution / Approval

M - -

1 4-20 mA / 0.1 mm

2 4-20 mA / 1 mm

3 4-20 mA + HART / 0.1 mm

4 4-20 mA + HART / 1 mm

5 4-20 mA / 0.1 mm / Exia

6 4-20 mA / 1 mm / Exia

7 4-20 mA + HART / 0.1 mm / Exia

8 4-20 mA + HART / 1 mm / Exia

A 4-20 mA / 0.1 mm / Exd (up to 10 m)

B 4-20 mA + HART / 0.1 mm / Exd (up to 10 m)

C 4-20 mA / 0.1 mm / Exd + Exia (up to 10 m)

D 4-20 mA + HART / 0.1 mm / Exd + Exia (up to 10 m)

M - -

Accessories to order

Type

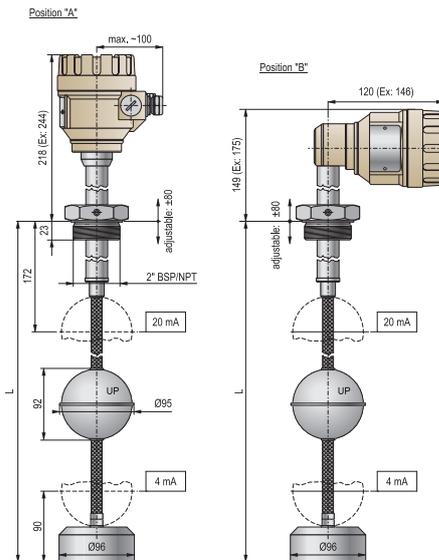
S A P - 3 0 0 Plug-in display module (See "Electronic accessories")

S A S - 3 0 3 EView 2 software package (See "Electronic accessories")

S A T - 3 0 4 HART-USB modem (See "Electronic accessories")

S A K - 3 0 5 - 2 HART-USB/RS485 modem

S A K - 3 0 5 - 6 HART-USB/RS485 modem / Exia



NIVOTRACK MTK-5

NIVOTRACK M-500, M-600, plastic version

2-wire magnetostrictive level transmitter with rigid probe

Resolution: 0.1 mm or 1 mm

Housing: aluminium or plastic (PBT glass fibre reinforced) with IP67 / NEMA 6

Materials:

Probe	PFA coated stainless steel
Float	PVDF

Power supply: 12.5-36 V DC

Probe lengths: 0.5-3.0 m

Float: Ø 76x87 mm (min. 0.8 g/cm³)

Ex marking: ATEX II 1G Ex ia IIB T6...T5
 ATEX II 2G Ex d IIB T6...T5
 ATEX II 1/2G Ex d ia IIB T6...T5

Programming

With SAP-300 programmer: Complete programming, 99-point linearisation

Remote programming: for HART capable units with HART modem and the EView software or with the MultiCONT controller. The EView light software (on DVD) is provided free of charge.

The need for side viewed model (Position "B") should be given in the text of the order.
 Float 122x37 mm (min. 0.7 g/cm³) available on request.

Type

M - -

Version

M - -

E Transmitter
 G Transmitter with local LCD indicator

Process connection

M - -

U Without process connection

Housing

M - -

5 Aluminium (paint coated)
 6 Plastic, PBT, glass fibre reinforced (Ex version not available)

Probe length

M - -

0 5 - 1 0 0.5-1 m
 1 1 - 3 0 1.1-3 m; each started 100 mm

Output / Resolution / Approval

M - -

- 1 4-20 mA / 0.1 mm
- 2 4-20 mA / 1 mm
- 3 4-20 mA + HART / 0.1 mm
- 4 4-20 mA + HART / 1 mm
- 5 4-20 mA / 0.1 mm / Exia
- 6 4-20 mA / 1 mm / Exia
- 7 4-20 mA + HART / 0.1 mm / Exia
- 8 4-20 mA + HART / 1 mm / Exia
- A 4-20 mA / 0.1 mm / Exd
- B 4-20 mA + HART / 0.1 mm / Exd
- C 4-20 mA / 0.1 mm / Exd + Exia
- D 4-20 mA + HART / 0.1 mm / Exd + Exia

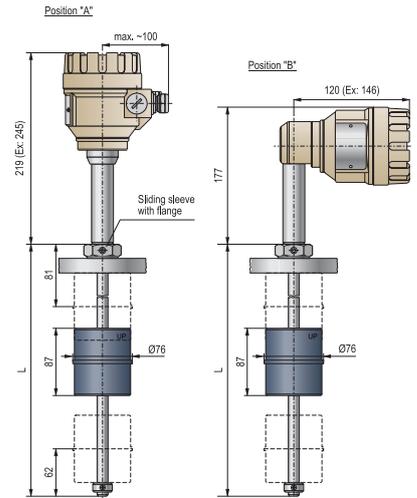
M - -

Process connection

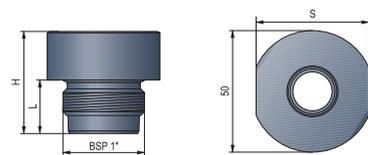
- M F T - 3 3 1 - 2 PP flange drilled like DN100, PN16 + 1" BSP sliding sleeve should be ordered
- M F T - 3 2 1 - 2 PP flange drilled like DN80, PN16 + 1" BSP sliding sleeve in should be ordered
- MGH-105-2M-300-00 Sliding sleeve: 1" BSP
- MGL-105-2M-300-00 Sliding sleeve: 1" NPT

Accessories to order

- S A P - 3 0 0 Plug-in display module (See "Electronic accessories")
- S A S - 3 0 3 Eview 2 software package (See "Electronic accessories")
- S A T - 3 0 4 HART-USB modem (See "Electronic accessories")
- S A K - 3 0 5 - 2 HART-USB/RS485 modem
- S A K - 3 0 5 - 6 HART-USB/RS485 modem / Exia



NIVOTRACK MEU-5



NIVOTRACK MGH-105

Type	Mat.	Proc. conn.	Dimensions		
			S (mm)	H (mm)	L (mm)
MGH-105-2M-300-00	PVDF	1" BSP	46	42	22
MGL-105-2M-300-00	PVDF	1" NPT	46	42	22

LEVEL TRANSMITTERS

NIVOTRACK M-500, M-600, rigid probe, mini version

2-wire magnetostrictive level transmitter with rigid probe, mini version with 1" BSP/NPT process connection

Resolution: 0.1 mm or 1 mm

All wetted parts: stainless steel

Housing: aluminium or plastic (PBT glass fibre reinforced) with IP67 / NEMA 6

Max. medium pressure: 10 bar

Power supply: 12.5-36 V DC

Probe lengths: 0.5-1.5 m

Float: Ø 27 x 29 mm (min. 0.7 g/cm³)

Ex marking: ATEX II 1G Ex ia IIB T6...T5

Programming

With SAP-300 programmer: Complete programming, 99-point linearisation

Remote programming: for HART capable units with HART modem and the EView software

or with the MultiCONT controller. The EView light software (on DVD) is provided free of charge.

Type

M - -

Version

M - -

M Transmitter

C Transmitter with local LCD indicator

Process connection

M - -

A 1" BSP

D 1" NPT

Housing

M - -

5 Aluminium (paint coated)

6 Plastic, PBT, glass fibre reinforced (Ex version not available)

Probe length

M - -

0 5 - 1 0 0.5-1 m

1 1 - 1 5 1.1-1.5 m; each started 100 mm

Output / Resolution / Approval

M - -

1 4-20 mA / 0.1 mm

2 4-20 mA / 1 mm

3 4-20 mA + HART / 0.1 mm

4 4-20 mA + HART / 1 mm

5 4-20 mA / 0.1 mm / Exia

6 4-20 mA / 1 mm / Exia

7 4-20 mA + HART / 0.1 mm / Exia

8 4-20 mA + HART / 1 mm / Exia

M - -

Accessories to order

Type

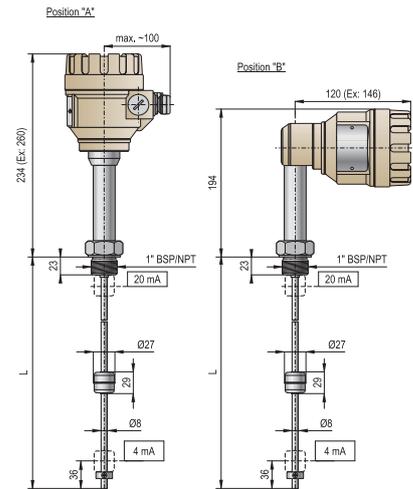
S A P - 3 0 0 Plug-in display module (See "Electronic accessories")

S A S - 3 0 3 EView 2 software package (See "Electronic accessories")

S A T - 3 0 4 HART-USB modem (See "Electronic accessories")

S A K - 3 0 5 - 2 HART-USB/RS485 modem

S A K - 3 0 5 - 6 HART-USB/RS485 modem / Exia



NIVOTRACK MMA-5

GENERAL DESCRIPTION

EasyTREK is a rugged, high performance ultrasonic level measurement transmitter, having transducer and processing electronics incorporated in one single housing. **EasyTREK SAVES COSTS** - EasyTREK is a low cost transmitter unit from **NIVELCO**: it has all the sophisticated echo detection features of the well accepted EchoTREK measurement systems, packed into the 2 wire EasyTREK sensor housing. For multiple tank applications 2-wire transmitters are recommended using HART multi-drop systems linked to the NIVELCO MultiCONT controller, or a modem plus PC.

LIQUID MEASUREMENT - whether for liquid level measurement in sumps or tanks, for tank contents measurement, or open channel flow measurement, EasyTREK transmitters provide the answer. All EasyTREK transmitters use the same processing electronics and communications, the transducer itself varies only to give different range.

MAIN FEATURES

- 2-wire Integrated compact transmitter
- Low cost
- Non-contact level measurement
- Temperature compensated
- Narrow 5° beam angle
- Excellent signal processing via QUEST+ software
- PP or PVDF housing
- HART communication
- Ex versions
- IP 68 protection



SPA-380-4

EASYTREK FUNCTIONS

EasyTREK	Liquid
	2-wire
Relay	●
HART	●
Intrinsically safe	●

APPLICATIONS

- For most liquids, including explosive liquids
- Level, volume and open channel flow measurement
- Low or high fail safe indication

CERTIFICATES

- ATEX II 1G EEx ia IIB T6



PROGRAMMING

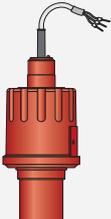
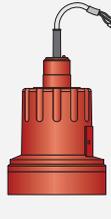
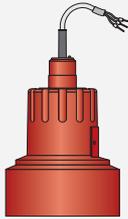
Using a PC and UNICOMM HART modem, it is possible to create your own multi-drop HART network, where the PC displays all EasyTREK measurement data and also allows reprogramming of the units as necessary.

In this way the outputs derived from the displayed data can be programmed via the PC, which acts as the master.

Programmable features via HART communication:

- Assign 4 mA to low level
- Assign 20 mA to high level
- Error indication output current value
- Power relay switch points
- Damping time
- Measurement configuration (Units, function, close-end blocking)
- Measurement optimisation (Damping, tracking speed, sound velocity correction)
- Tank contents profiles: 14 different shapes
- Open Channel Flow Metering: 21 different profiles
- Relay functions (differential, flow pulse etc)
- 32 point linearization, measurement simulation
- Information/diagnostics (Echo map and signal/noise)

TECHNICAL DATA

EasyTREK level transmitters for liquids						
2-wire version	SP□-39□	SP□-38□	SP□-37□	SP□-36□	SP□-34□	SP□-32□
Measuring range ²	0.2...4 m	0.25...6 m	0.35...8 m	0.35...10 m	0.45...15 m	0.6...25 m
Total beam angle	6°	5°	7°	5°	5°	5°
Ambient temperature	-30 °C ... +80 °C					
Medium temperature	-30 °C ... +90 °C					
Process pressure (absolute)	0.03 ... 0.3 MPa (0.3 ... 3 bar)					
Process connection	1" or 1 1/2" BSP / NPT	1" or 2" BSP / NPT	1" or 2" BSP / NPT	1" BSP	1" BSP	1" BSP
Applied materials ¹	PP or PVDF housing; PP, PVDF or PTFE transducer, EPDM cable sealing, PVC cable isolation					
Accuracy ²	± (0.2 % of measured distance + 0.05 % of range)					
Resolution (dep. on distance)	<2 m: 1 mm		2 ... 5 m: 2 mm	5 ... 10 m: 5 mm	>10m: 10 mm	
Ingress protection	IP 68					
Ex marking	ATEX II 1 G EEx ia II B T6					-
Outputs	2-wire	Standard: 4-20 mA +HART, max. 600 Ohm, Relay (SPDT, 30 V DC, 1 A DC; 48 V / 0.5 A AC)				
Power supply	2-wire	12 ... 36 V DC / 44 ... 800 mW				
Connecting cable	2-wire	LIYCY type 2 x 0.5 mm ² shielded cable, Ø 6 mm ; standard length 5 m (can be ordered max. 30 m)				

¹ PTFE transducer is available for SP-39, SP-38, SP-37 series only

² Under optimal circumstances of reflection and stabilised transducer temperature



SAT-304 HART modem



MultiCONT



SPA-340-4



SPA-360-4



SPB-360-8Ex

EasyTREK SP-39/38/37/36/34/32 - 2-wire versions

Integrated compact ultrasonic level transmitters with process current and HART communication as standard for liquid applications only
 SenSonic transducer technology, QUEST+ advanced, process adaptive signal processing, secondary lightning protection, fully temperature compensated
 Transducer and enclosure material PP with IP68; 5 m integrated cable
 Power supply: 12-36 V DC
 Ex marking: ATEX II 1 G EEx ia IIB T6
 Full feature programming: standard with flow metering, 32-point linearisation, application optimisation, fixed target suppression, etc. with HART modem and the EView software or with the MultiCONT controller. The EView light software (on DVD) is provided free of charge.

Type

S P - 3 -

9	0.2-4 m*	(80 kHz)	1" and 1 1/2" mounting
8	0.25-6 m*	(80 kHz)	1" and 2" mounting
7	0.35-8 m*	(60 kHz)	1" and 2" mounting
6	0.35-10 m	(60 kHz)	1" mounting
4	0.45-15 m	(40 kHz)	1" mounting
2 **	0.6-25 m	(20 kHz)	1" mounting

Transducer material

S P - 3 -

A	PP
B	PVDF
T	PTFE

Mounting

S P - 3 -

0	BSP thread
N	1 1/2" or 2" NPT and 1" BSP (Only for SP <input type="checkbox"/> -39 <input type="checkbox"/> /38 <input type="checkbox"/> /37 <input type="checkbox"/>)

Output / Approval

S P - 3 -

3	4-20 mA + HART + Data logging feature
4	4-20 mA + HART
7	4-20 mA + HART + Data logging feature / Ex
8	4-20 mA + HART / Ex
A	4-20 mA with data logging feature / HART / Relay
H	4-20 mA / HART / Relay

S P - 3 -

* Measuring ranges for the PTFE version:

	PTFE
S-39	0.2-3 m
S-38	0.25-5 m
S-37	0.35-6 m

** Ex version not available

Cable

Maximum length 30 m; each started 1 m over the standard 5 m

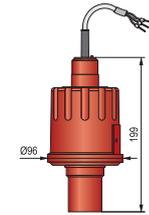
Accessories to order

Type

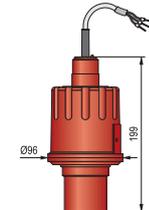
S F A - <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Flanges (See "Mounting accessories")
S A S - 3 0 3	EView 2 software package (See "Electronic accessories")
S A T - 3 0 4	HART-USB modem (See "Electronic accessories")
S A K - 3 0 5 - 2	HART-USB/RS485 modem
S A K - 3 0 5 - 6	HART-USB/RS485 modem / Exia

Mounting brackets for process connection: BSP 1"

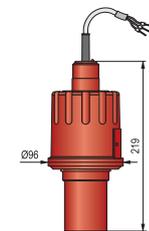
S A A - 1 0 1	Fast connecting gland for pipe mounting devices with 1" process connection
S A A - 1 0 7 - 0	200 mm mounting bracket (Paint coated steel)
S A A - 1 0 8 - 0	500 mm mounting bracket (Paint coated steel)
S A A - 1 0 9 - 0	700 mm mounting bracket (Paint coated steel)
S A A - 1 0 6	Damping gland for mounting SC and SP devices to thin metal roofs



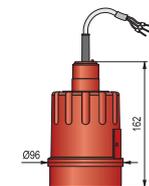
EasyTREK SP_-39



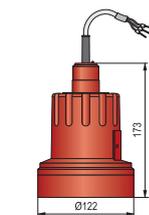
EasyTREK SP_-38



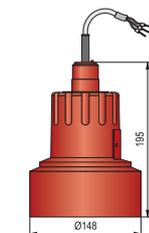
EasyTREK SP_-37



EasyTREK SP_-36



EasyTREK SP_-34



EasyTREK SP_-32

NIV24
EasyTREK SPA-380-4
SAT-304

GENERAL DESCRIPTION

NIVELCO, the expert in solids level measurement, now presents **EasyTREK**, its COMPACT integrated transmitter for solids. EasyTREK for solids includes all the capabilities and technology of higher costs separated units, such as the high efficiency SenSonic transducer, with its superb signal transmission, as well as the advanced QUEST+ process adaptive signal processing software. QUEST+ allows reliable echo monitoring to overcome filling noise, dusting and irregular surface formation. All transmitters are HART capable, and are particularly cost effective when applied to multidrop systems, using MultiCONT or other HART based systems.

MAIN FEATURES

- 4-wire Integrated compact transmitter
- Low cost
- Non-contact level measuring
- Temperature compensated
- Narrow 5° beam angle
- Excellent signal processing via QUEST+ software
- Relay output, HART communication
- Dust-Ex approval
- IP 68 protection

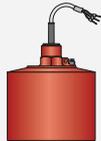
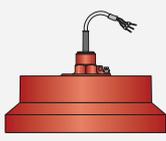
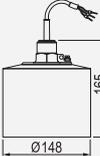
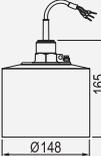
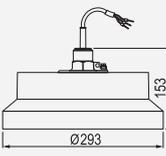
APPLICATIONS

- For most free-flowing solids
- Level, volume or weight calculation
- Reliable measurement in challenging applications such as dusting during filling

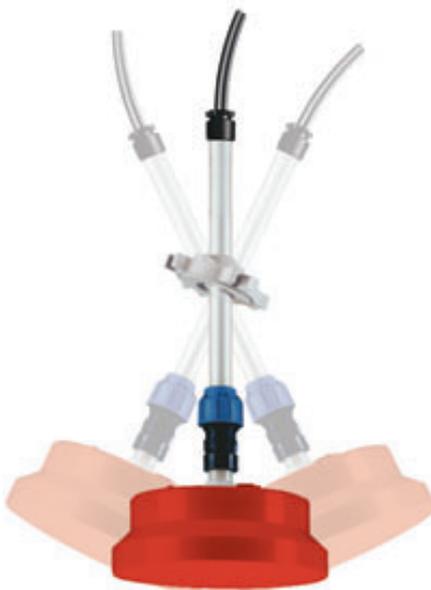
CERTIFICATIONS

- ATEX II 1 D IP 68 T130°C

TECHNICAL DATA

EasyTREK level transmitters for solids			
4-wire	SCD-34□	SCD-33□	SCD-31□
Dimensions (mm)			
Measuring range *	0,6...15 m	0,6...30 m	1,2...60 m
Total beam angle	5°		
Ambient temperature	-30 °C ... +60 °C		
Process pressure	Atmospherical		
Process connection	1" BSP or flange with aimer		
Applied materials	Housing: PP or aluminium, sensor protector: polyurethane foam EPDM cable sealing, PVC cable isolation		
Accuracy*	± (0.2 % of measured distance + 0.1 % of range)		
Resolution (dep. on distance)	<2 m: 1 mm	2 ... 5 m: 2 mm	5 ... 10 m: 5 mm
Ingress protection	IP 6X		
Ex marking	ATEX II 1 D IP68 T130°C		
Outputs	4-20 mA max. 600 Ω, Relay (SPST, 48VAC, 5A AC12), HART		
Power supply	11.4 ... 40 V DC / 4.1 W 11.4 ... 28 V AC / 4.6 VA		
Connecting cable	LIYCY type 7x0.5 mm ² shielded cable, Ø 7.5 mm; standard length: 3 m (can be ordered up to 30 m)		

* Under optimal circumstances of reflection and stabilised transducer temperature



MultiCONT

EASYTREK FUNCTIONS

EasyTREK	For solids
	4-wire
Relay	●
HART	●
Dust Ex	●

EasyTREK SCD-34/33/31 - 4-wire versions

Integrated compact ultrasonic level transmitters with process current and HART communication as standard for solids
 SenSonic transducer technology, QUEST+ advanced, process adaptive signal processing, secondary lightning protection, fully temperature compensated
 Transducer: Polypropylene, Polyurethane foam face, IP65 / NEMA 4; 5 m integrated cable
 Power supply: 11.4-40 V DC and 11.4-28 V AC
 Ex marking: ATEX II 1D IP68 T130°C
 Full feature programming: standard with 32-point linearisation, application optimisation, fixed target suppression, etc. with HART modem and the EView software or with the MultiCONT controller. The EView light software (on DVD) is provided free of charge.

Type

SCD - 3 -
 4 0.6-15 m
 3 0.6-30 m
 1 1.2-60 m

Mounting

SCD - 3 -
 0 BSP thread
 J With aiming device

Output / Approval

SCD - 3 -
 4 4-20 mA + HART+ Relay / none
 8 4-20 mA + HART + Relay / Ex

SCD - 3 -

Cable

Maximum length 30 m; each started 1 m over the standard 5 m

Accessories to order

Type

SFA - Flanges (See "Mounting accessories")
 SAS - 3 0 3 EView 2 software package (See "Electronic accessories")
 SAT - 3 0 4 HART-USB modem (See "Electronic accessories")
 SAK - 3 0 5 - 2 HART-USB/RS485 modem
 SAK - 3 0 5 - 6 HART-USB/RS485 modem / Exia

NIVOSONAR SAA-101

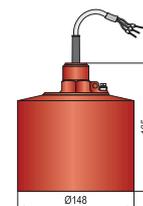
Fast connecting gland for pipe mounting devices with 1" process connection
 Material: PP

NIVOSONAR SAA-102

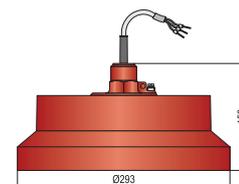
Aiming device, 500 mm, Aluminium, Pg9, drilled as DN50 PN16
 Do not forget to order the appropriate flange separately

NIVOSONAR SAA-106

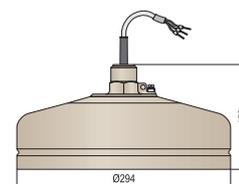
Damping gland for mounting SC and SP devices to thin metal roofs
 Material: PP



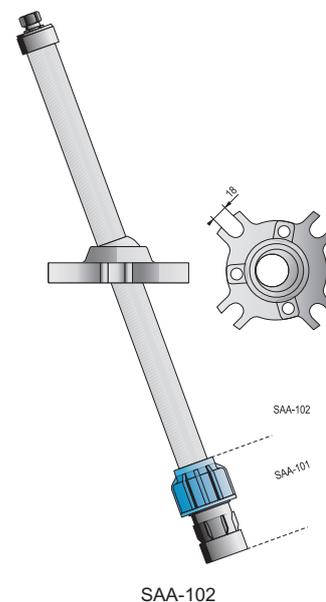
EasyTREK SCD-340 / SCD-330
 EasyTREK SCD-340 Ex / SCD-330 Ex



EasyTREK SCD-310



EasyTREK SCD-310 Ex



GENERAL DESCRIPTION

EchoTREK ultrasonic transmitters offer the best in liquid level measurement in a compact simple package. Developed using the established SenSonic range of Narrow beam angle pulse echo transducers, EchoTREK units are available with measurement ranges up to 25 meters - with standard plastic, PTFE or stainless steel sensor faces. Installed on the tank roof, or above the liquid level surface to be measured, the transmitter gives an analogue output proportional to liquid level. Initial set-up is achieved using the simple plug-in display module: then the intelligent QUEST+ process adaptive signal processing software system ensures that the electronics identifies and validates the liquid surface signal, giving reliable level monitoring.

MAIN FEATURES

- Max. 25 m measuring range
- Digital communication
- Power relay output for control and alarm
- Full temperature compensation
- From water through chemical applications
- Complete open channel flow metering package
- 32 point linearization
- Ex versions
- Data-logging facility. The data logger incorporated in the two-wire EchoTREK can store 10.000 sets of data. Recording can be triggered by a specific event or by time. The EchoTREK holds data available for downloading it via HART protocol
- IrDA communication port on the programming module (Infrared communication for the data-logger)

EchoTREK SELECTION CHART

EchoTREK	For liquids	
	SE/SG-300	ST/SB-400
Relay	■	■
HART	■	■
Ex ia (Intrinsically safe)	■	-
IrDa	■	■
Logger	■	■
Display	SAP-200	SAP-200

APPLICATIONS

- For most liquids, including explosive liquids
- Also suitable for hydrocarbons, solvents, chemicals
- Level, volume and open channel flow measurement
- Reliable measurement in challenging applications

CERTIFICATIONS

- ATEX II 1G EEx ia IIB T6



SG 380-4 (2-wire)



SB 480-4 (4-wire)



SEV-390-8 Ex + SFA-306

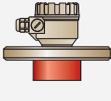
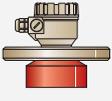
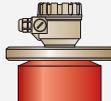
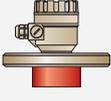
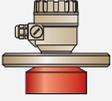
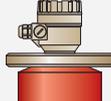


SAT-304 HART modem



MultiCONT

TECHNICAL DATA

Type	SE/SG-39□-□	SE/SG-38□-□	SE/SG-37□-□	SE/SG-36□-□	SE/SG-34□-□	SE/SG-32□-□
EchoTREK level transmitters for liquids (2-wire)						
Type	ST/SB-49□-□	ST/SB-48□-□	ST/SB-47□-□	ST/SB-46□-□	ST/SB-44□-□	ST/SB-42□-□
EchoTREK level transmitters for liquids (4-wire, with 2 relays)						
Application	Small vessels, with 1 1/2" process connection	Small vessels with 2" process connection		Small vessels with flange	Mid-size vessels with flange	Tall vessels with flange
Max. measuring range	4 m / PTFE 3 m	6 m / PTFE 5 m	8 m / PTFE 6 m	10 m	15 m	25 m
Min. measuring range	0.2 / PTFE 0.25 m	0.25 m	0.35 m	0.35 m	0.45 m	0.6 m
Total beam angle	6°	5°	7°	5°	5°	7°
Process connection	1 1/2" BSP / NPT	2" BSP / NPT	2" BSP / NPT	DN80 flange	DN125 flange	DN150 flange
Sensor material	PP, PVDF or PTFE			PP or PVDF		
Housing material	Paint coated aluminium or plastic (PBT)					
Accuracy *	± (0.2% of measured distance + 0.05 % of range)					
Ingress protection	Sensor: IP 68 Housing: IP 67					
Process temperature	- 30°C ... + 90°C					
Output	SE/SG-3	4...20 mA max. 600 Ohm, HART, Relay (SPDT) 30V DC, 1A DC				
	ST/SB-4**	4...20 mA max. 600 ohm, HART, Relay 1 (SPDT) 250V AC, 3 A AC1, Relay 2 (SPDT) 30 V DC, 1 A DC				
Power supply	SE/SG-3	12...36 V DC / 48 ...720 mW				
	ST/SB-4	85...255 V AC / 2 VA or 20...28 V AC/DC / 3 VA/3 W				
Electrical connection	Standard version: 2 x M20x1.5 plastic cable gland: Cable: Ø6 ... 12 mm Ex version: 2 x M20x1.5 metal cable gland: Cable: Ø 7 ... 13 mm Wire cross section: 0.5 ... 1.5 mm ²					
Ex marking	ATEX  II 1 G EEx ia IIB T6 (available for 2-wire series only!)					-

* Under optimum conditions and stabilized transducer temperature.

** Two parallel operating relays.



SAP-100 display

SAP-200 display

STAINLESS STEEL SENSOR VERSION

Type	SOS-□6□-□ SOM-□6□-□	SOS-□4□-□ SOM-□4□-□	SOS-□2□-□ SOM-□2□-□
EchoTREK transmitters with stainless steel flush face transducers for liquids (2 or 4 wire)			
Max. measuring range	7 m	12 m	15 m
Min. measuring range	0.4 m	0.55 m	0.65 m
Process connection	DN80 flange	DN125 flange	DN150 flange
Sensor material	Stainless steel		
Housing material	Paint coated aluminium or plastic (PBT)		
Process temperature	-30°C ... + 100°C (CIP 120°C for max. 2 hours)		

EchoTREK S-49/48/47 - 4-wire versions

Compact ultrasonic level transmitters with process current / HART and DPDT control relay output for liquids. SenSonic transducer technology, QUEST+ advanced, process adaptive signal processing, secondary lightning protection, fully temperature compensated.

Housing: aluminium or plastic with IP67 / NEMA 6

Local programming: full feature programming with SAP-200 including

flow metering, relay, 32-point linearisation, application optimisation, fixed target suppression, etc.

Remote programming: for HART capable units with HART modem and the EView software

or with the MultiCONT controller. The EView light software (on DVD) is provided free of charge.

Data logging feature: Datascope software (included on DVD)

Type

S	[X]	[X]	-	4	[X]	[X]	-	[X]
	9				0.2-4 m*			(80 kHz, Process connection: 1 1/2")
	8				0.25-6 m*			(80 kHz, Process connection: 2")
	7				0.35-8 m*			(60 kHz, Process connection: 2")

Programmer and local indicator (SAP-200)

S	[X]	[X]	-	4	[X]	[X]	-	[X]
	T				Not included			
	B				Included			

Housing / Transducer material

S	[X]	[X]	-	4	[X]	[X]	-	[X]
	P				Polypropylene (PP)			
	V				PVDF			
	F				PTFE			
	Aluminium housing (Paint coated)							
	A				Polypropylene (PP)			
	B				PVDF			
	T				PTFE			

Mounting

S	[X]	[X]	-	4	[X]	[X]	-	[X]
					0			BSP thread
					N			NPT thread

Power supply / Output

S	[X]	[X]	-	4	[X]	[X]	-	[X]
					1			4-20 mA + DPDT Relay
					3			4-20 mA + HART + DPDT Relay
					G			4-20 mA + HART + DPDT Relay + Data logging feature
					K			4-20 mA + DPDT + Data logging feature
					85-255 V AC			
					24 V AC/DC			
					2			4-20 mA + DPDT Relay
					4			4-20 mA + HART + DPDT Relay
					H			4-20 mA + HART + DPDT Relay + Data logging feature
					L			4-20 mA + DPDT + Data logging feature

S [] [] - 4 [] [] []

* Measuring ranges for the PTFE version:

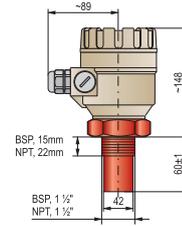
	PTFE
S-49	0.2-3 m
S-48	0.25-5 m
S-47	0.35-6 m

Accessories to order

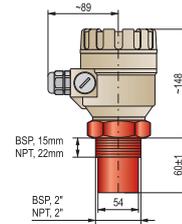
Type	
S A P - 2 0 0	Plug-in programmer/display module (See "Electronic acc.")
S A S - 3 0 3	EView 2 software package (See "Electronic accessories")
S A T - 3 0 4	HART-USB modem (See "Electronic accessories")
S A K - 3 0 5 - 2	HART-USB/RS485 modem

Mounting brackets

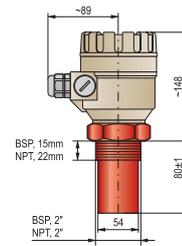
for process connection: BSP 2"	
S A A - 1 0 7 - 3	200 mm
S A A - 1 0 8 - 3	500 mm
S A A - 1 0 9 - 3	700 mm
for process connection: BSP 1 1/2"	
S A A - 1 0 7 - 4	200 mm
S A A - 1 0 8 - 4	500 mm
S A A - 1 0 9 - 4	700 mm



EchoTREK S-49



EchoTREK S-48



EchoTREK S-47

NIV24
EchoTREK STA-480-1
SAP-200
SAT-304

EchoTREK S-46/44/42 - 4-wire versions

Compact ultrasonic level transmitters with process current / HART and DPDT output for liquids
 Secondary lightning protection, fully temperature compensated
 Housing: aluminium or plastic with IP67 / NEMA 6
 Local programming: full feature programming with SAP-200 including
 flow metering, relay, 32-point linearisation, application optimisation, fixed target suppression, etc.
 Remote programming: for HART capable units with HART modem and the EView software
 or with the MultiCONT controller. The EView light software (on DVD) is provided free of charge.
 Data logging feature: Datascope software (included on DVD)

Type

S - 4 -

6	0.35-10 m	(60 kHz, Min. required flange size: DN80)
4	0.45-15 m	(40 kHz, Min. required flange size: DN125)
2	0.6-25 m	(20 kHz, Min. required flange size: DN150)

Programmer and local indicator (SAP-200)

S - 4 -

T	Not included
B	Included

Housing / Transducer material

S - 4 -

Plastic housing (PBT glass fibre reinforced)

P	Polypropylene (PP)
V	PVDF

Aluminium housing (Paint coated)

A	Polypropylene (PP)
B	PVDF

Mounting

S - 4 -

DIN flanges: Polypropylene (PP), drilled like PN16

2	DN80 PN16
3	DN100 PN16
4	DN125 PN16
5	DN150 PN16
6	DN200 PN16

RF ANSI flanges: Polypropylene (PP), drilled like 150 psi

A	3" RF 150 psi
B	4" RF 150 psi
C	5" RF 150 psi
D	6" RF 150 psi
E	8" RF 150 psi

JIS flanges: Polypropylene (PP), drilled like 10K

G	10K 80A
H	10K 100A
P	10K 125A
R	10K 150A
S	10K 200A

Mounting brackets

K	200 mm mounting bracket, paint coated steel
L	500 mm mounting bracket, paint coated steel
M	700 mm mounting bracket, paint coated steel

Power supply / Output

S - 4 -

85-255 V AC

1	4-20 mA + DPDT
3	4-20 mA + HART + DPDT
G	4-20 mA + HART + DPDT + Data logging feature
K	4-20 mA + DPDT + Data logging feature

24 V AC/DC

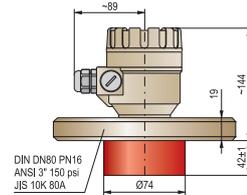
2	4-20 mA + DPDT
4	4-20 mA + HART + DPDT
H	4-20 mA + HART + DPDT + Data logging feature
L	4-20 mA + DPDT + Data logging feature

S - 4 -

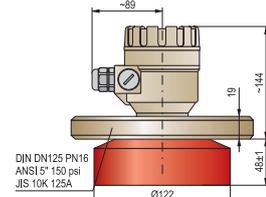
Accessories to order

Type

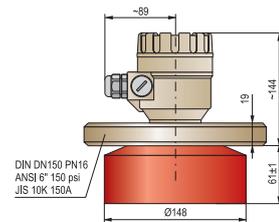
S A P - 2 0 0	Plug-in programmer/display module (See "Electronic acc.")
S A S - 3 0 3	EView 2 software package (See "Electronic accessories")
S A T - 3 0 4	HART-USB modem (See "Electronic accessories")
S A K - 3 0 5 - 2	HART-USB/RS485 modem



EchoTREK S-46



EchoTREK S-46



EchoTREK S-46

EchoTREK S-46/44/42 - 4-wire versions - with stainless steel face

Compact ultrasonic level transmitters with process current / HART and DPDT output for liquids with flush flange mounting

Secondary lightning protection, fully temperature compensated

Housing: aluminium or plastic with IP67 / NEMA 6

Local programming: full feature programming with SAP-200 including

flow metering, relay, 32-point linearisation, application optimisation, fixed target suppression, etc.

Remote programming: for HART capable units with HART modem and the EView software

or with the MultiCONT controller. The EView light software (on DVD) is provided free of charge.

Data logging feature: Datascope software (included on DVD)

Type

S	[X][X]	-	4	[X]	-	[X]	
	6	←		0.4-7 m			(60 kHz, flange size: DN80)
	4	←		0.55-12 m			(40 kHz, flange size: DN125)
	2	←		0.65-15 m			(20 kHz, flange size: DN150)

Programmer and local indicator (SAP-200)

S	[X]	-	4	[X][X]	-	[X]	
	T						Not included
	B						Included

Housing / Transducer material

S	[X]	-	4	[X][X]	-	[X]	
	M						Stainless Steel (AISI SS316Ti, DIN 1.4571)
							Aluminium housing (Paint coated)
	S						Stainless Steel (AISI SS316Ti, DIN 1.4571)

Mounting

S	[X][X]	-	4	[X]	-	[X]	
				2			DN80 PN16 (only for S-46)
				4			DN125 PN16 (only for S-44)
				5			DN150 PN16 (only for S-42)

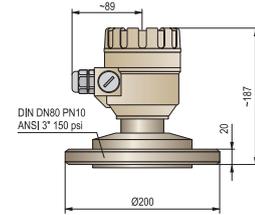
Power supply / Output

S	[X][X]	-	4	[X][X]	-	[]	
				1			4-20 mA + DPDT
				3			4-20 mA + HART + DPDT
				G			4-20 mA + HART + DPDT + Data logging feature
				K			4-20 mA + DPDT + Data logging feature
							24 V AC/DC
				2			4-20 mA + DPDT
				4			4-20 mA + HART + DPDT
				H			4-20 mA + HART + DPDT + Data logging feature
				L			4-20 mA + DPDT + Data logging feature

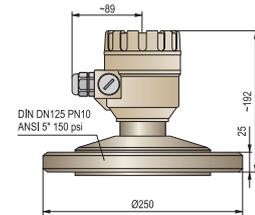
S [] [] - 4 [] [] - []

Accessories to order

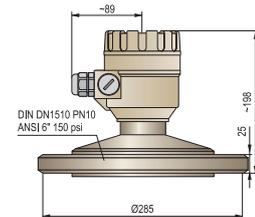
Type	
S A P - 2 0 0	Plug-in programmer/display module (See "Electronic acc.")
S A S - 3 0 3	EView 2 software package (See "Electronic accessories")
S A T - 3 0 4	HART-USB modem (See "Electronic accessories")
S A K - 3 0 5 - 2	HART-USB/RS485 modem



EchoTREK S-46



EchoTREK S-44



EchoTREK S-42

EchoTREK S-39/38/37 - 2-wire versions

Compact ultrasonic level transmitters with current / HART and control relay output for liquids

Housing: aluminium or plastic with IP67 / NEMA 6

Power supply: 12-36 V DC

Ex marking: ATEX  II 1 G EEx ia IIB T6

Programming

With 4 buttons: 4/20 mA (with real level), Error indication and Damping time

With SAP-200 display: full feature programming, including: flow metering, 32-point linearisation, application optimisation, fixed target suppression, etc.

Remote programming: for HART capable units with HART modem and the EView software or with the MultiCONT controller. The EView light software (on DVD) is provided free of charge.

Type

S	<input type="checkbox"/>	<input type="checkbox"/>	-	3	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
	9	0.2-4 m*			(80 kHz, Process connection: 1 1/2")			
	8	0.25-6 m*			(80 kHz, Process connection: 2")			
	7	0.35-8 m*			(60 kHz, Process connection: 2")			

Programmer and local indicator (SAP-200)

S	<input type="checkbox"/>	<input type="checkbox"/>	-	3	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
	E	Not included						
	G	Included						

Housing / Transducer material

S	<input type="checkbox"/>	<input type="checkbox"/>	-	3	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
Plastic housing (PBT glass fibre reinforced)								
	P	Polypropylene (PP)						
	V	PVDF						
	F	PTFE						
Aluminium housing (Paint coated)								
	A	Polypropylene (PP)						
	B	PVDF						
	T	PTFE						

Mounting

S	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-	3	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
			0	BSP thread					
			N	NPT thread					

Output / Approval

S	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-	3	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
	1	4-20 mA with data logging feature / none							
	2	4-20 mA / none							
	3	4-20 mA with HART and data logging feature / none							
	4	4-20 mA with HART / none							
	5	4-20 mA with data logging feature / Ex							
	6	4-20 mA / Ex							
	7	4-20 mA with HART and data logging feature / Ex							
	8	4-20 mA with HART / Ex							
	L	4-20 mA with data logging feature / Relay							
	R	4-20 mA / Relay							
	A	4-20 mA with data logging feature / HART / Relay							
	H	4-20 mA / HART / Relay / none							
	P	Profibus							
	E	Profibus / Ex **							

S - 3 -

* Measuring ranges for the PTFE version:

	PTFE
S-39	0.25-3 m
S-38	0.25-5 m
S-37	0.35-6 m

** Under development

Accessories to order

Type					
S F A	-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Flanges (See "Mounting accessories")
S A P	-	2	0	0	Plug-in display module (See "Electronic accessories")
S A S	-	3	0	3	EView 2 software package (See "Electronic accessories")
S A T	-	3	0	4	HART-USB modem (See "Electronic accessories")
S A K	-	3	0	5	- 2 HART-USB/RS485 modem
S A K	-	3	0	5	- 6 HART-USB/RS485 modem / Exia

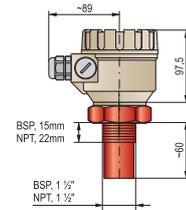
Brackets

for process connection: **BSP 2"**

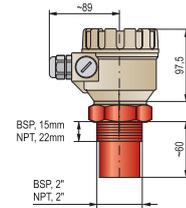
S A A	-	1	0	7	-	3	200 mm
S A A	-	1	0	8	-	3	500 mm
S A A	-	1	0	9	-	3	700 mm

for process connection: **BSP 1 1/2"**

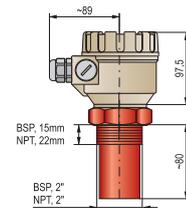
S A A	-	1	0	7	-	4	200 mm
S A A	-	1	0	8	-	4	500 mm
S A A	-	1	0	9	-	4	700 mm



EchoTREK S-39



EchoTREK S-38



EchoTREK S-37

NIV24
EchoTREK SEP-380-2
SAP-200
SAT-304

EchoTREK S-36/34/32 - 2-wire versions

Compact ultrasonic level transmitters with current / HART and control relay output for liquids

Housing: aluminium or plastic with IP67 / NEMA 6

Power supply: 12-36 VDC

Ex marking: ATEX II 1 G EEx ia IIB T6

Programming

With 4 buttons: 4/20 mA (with real level), error indication and damping time

With SAP-200 display: full feature programming, including: flow metering, 32-point linearisation, application optimisation, fixed target suppression, etc.

Remote programming: for HART capable units with HART modem and the EView software or with the MultiCONT controller. The EView light software (on DVD) is provided free of charge.

Type

S - 3 -

6	0.35-10 m	(60 kHz, Min. required flange size: DN 80)
4	0.45-15 m	(40 kHz, Min. required flange size: DN 125)
2 *	0.6-25 m	(20kHz, Min. required flange size: DN 150)

Programmer and local indicator (SAP-200)

S - 3 -

E	Not included
G	Included

Housing / Transducer material

S - 3 -

Plastic housing (PBT glass fibre reinforced)

P	Polypropylene (PP)
V	PVDF

Aluminium housing (Paint coated)

A	Polypropylene (PP)
B	PVDF

Mounting

S - 3 -

DIN flanges: Polypropylene (PP), drilled like PN16:

2	DN80 PN16
3	DN100 PN16
4	DN125 PN16
5	DN150 PN16
6	DN200 PN16

RF ANSI flanges: Polypropylene (PP), drilled like 150 psi

A	3" RF 150 psi
B	4" RF 150 psi
C	5" RF 150 psi
D	6" RF 150 psi
E	8" RF 150 psi

JIS flanges: Polypropylene (PP), drilled like 10K

G	10K 80A
H	10K 100A
P	10K 125A
R	10K 150A
S	10K 200A
K	200 mm mounting bracket (Paint coated steel)
L	500 mm mounting bracket (Paint coated steel)
M	700 mm mounting bracket (Paint coated steel)

Output / Approval

S - 3 -

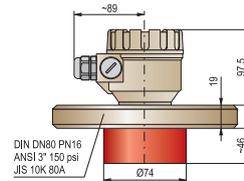
- 1 4-20 mA with data logging feature / none
- 2 4-20 mA / none
- 3 4-20 mA with HART and data logging feature / none
- 4 4-20 mA with HART / none
- 5 4-20 mA with data logging feature / Ex
- 6 4-20 mA / Ex
- 7 4-20 mA with HART and data logging feature / Ex
- 8 4-20 mA with HART / Ex
- L 4-20 mA with data logging feature / Relay
- R 4-20 mA / Relay
- A 4-20 mA with data logging feature / HART / Relay
- H 4-20 mA / HART / Relay
- P Profibus
- E Profibus / Ex**

S - 3 -

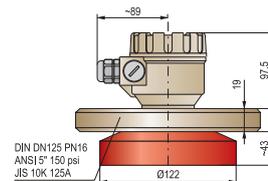
Accessories to order

Type

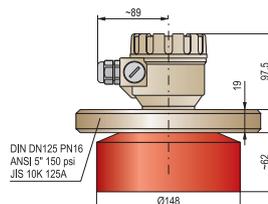
S A P - 2 0 0	Plug-in display module (See "Electronic accessories")
S A S - 3 0 3	EView 2 software package (See "Electronic accessories")
S A T - 3 0 4	HART-USB modem (See "Electronic accessories")
S A K - 3 0 5 - 2	HART-USB/RS485 modem
S A K - 3 0 5 - 6	HART-USB/RS485 modem / Exia



EchoTREK S-36



EchoTREK S-34



EchoTREK S-32

* Ex version not available

** Under development

EchoTREK S-36/34/32 - 2-wire versions – with stainless steel face

Compact ultrasonic level transmitters with current output / HART communication for liquids. SenSonic transducer technology, QUEST+ advanced, process adaptive signal processing, secondary lightning protection, fully temperature compensated, optional HART and data logging feature

Housing: aluminium or plastic with IP67 / NEMA 6

Power supply: 12-36 VDC

Ex marking: ATEX  II 1 G EEx ia IIB T6

Programming:

With 4 buttons: 4/20 mA (with real level), error indication and damping time

With SAP-200 display: full feature programming, including: flow metering, 32-point linearisation, application optimisation, fixed target suppression, etc.

Remote programming: for HART capable units with HART modem and the EView software or with the MultiCONT controller. The EView light software (on DVD) is provided free of charge.

Type

S	<input type="checkbox"/>	<input type="checkbox"/>	-	3	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
	6				0.4-7 m			(60 kHz, flange size: DN 80)
	4				0.55-12 m			(40 kHz, flange size: DN 125)
	2 *				0.65-15 m			(20 kHz, flange size: DN 150)

Programmer and local indicator (SAP-200)

S	<input type="checkbox"/>	<input type="checkbox"/>	-	3	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
	E							Not included
	G							Included

Housing / Transducer material

S	<input type="checkbox"/>	<input type="checkbox"/>	-	3	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
	M							Stainless Steel (AISI SS316Ti, DIN 1.4571)
								Aluminium housing (Paint coated)
	S							Stainless Steel (AISI SS316Ti, DIN 1.4571)

Mounting

S	<input type="checkbox"/>	<input type="checkbox"/>	-	3	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
								DIN flanges: drilled as PN16:
					2			DN80 PN16 (only for S-36)
					4			DN125 PN16 (only for S-34)
					5			DN150 PN16 (only for S-32)

Output / approval

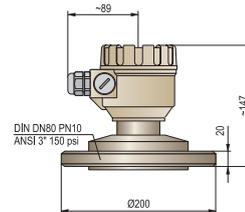
S	<input type="checkbox"/>	<input type="checkbox"/>	-	3	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
	1							4-20 mA with data logging feature / none**
	2							4-20 mA / none
	3							4-20 mA with HART and data logging feature / none
	4							4-20 mA with HART / none
	5							4-20 mA with data logging feature / EEx**
	6							4-20 mA / EEx
	7							4-20 mA with HART and data logging feature / EEx
	8							4-20 mA with HART / EEx
	L							4-20 mA with data logging feature / Relay
	R							4-20 mA / Relay
	A							4-20 mA with data logging feature / HART / Relay
	H							4-20 mA / HART / Relay
	P							Profibus
	E							Profibus / Ex**

S - 3 -

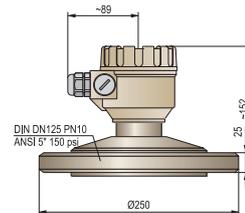
* Ex version not available
** Under development

Accessories to order

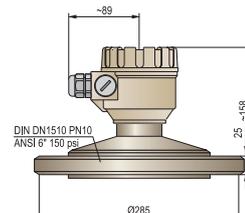
Type	
S A P - 2 0 0	Plug-in display module (See "Electronic accessories")
S A S - 3 0 3	EView 2 software package (See "Electronic accessories")
S A T - 3 0 4	HART-USB modem (See "Electronic accessories")
S A K - 3 0 5 - 2	HART-USB/RS485 modem
S A K - 3 0 5 - 6	HART-USB/RS485 modem / Exia



EchoTREK S-36



EchoTREK S-34



EchoTREK S-32

GENERAL DESCRIPTION

EchoTREK compact level transmitters for free flowing solids featuring SenSonic narrow beam angle transducers are offered for solids level monitoring - where previously only more complex, two part systems have performed. With the high efficiency SenSonic transducers, giving superb signal transmission, plus the QUEST+ software, using advanced process adaptive signal processing for reliable echo monitoring, EchoTREK units overcome filling noise, dusting and irregular surface formations in most cases to give a high performance, compact, powder and solids level measurement transmitter.

MAIN FEATURES

- Power relay output for control and alarm
- Measuring range up to 60 m
- Possibility of metering during filling
- Narrow beam angle, highly efficient transducers
- Spurious echo rejection
- Full temperature compensation
- Dust-Ex approval

APPLICATIONS

- For almost all free flowing solids
- Level, volume or weight calculation
- Reliable measurement in challenging applications such as dusting during filling

CERTIFICATIONS

- ATEX II 1/2 D IP 65 T130°C



SAP-100 display

EchoTREK FUNCTIONS

EchoTREK	For solids STD/SBD-300
Relay	■
HART	■
Dust Ex	■
Display	SAP-100



TECHNICAL DATA

Type	STD/SBD-34□-□	STD/SBD-33□-□	STD/SBD-31□-□
EchoTREK level transmitters for solids (4-wire)			
Application	Monitoring of small tanks, chutes, conveyor belts with narrow measuring range	Powders, powdery granules with narrow/medium measuring range. Non-powdery granules with medium measuring range	Powders, powdery granules, non-powdery granules with wide measuring range
Max. measuring range	15 m	30 m	60 m
Min. measuring range	0.5 m	0.6 m	1 m
Total beam angle	5°		
Process connection	Flange with aimer		
Sensor material	Plastic or aluminium sensor with foam facing		
Housing material	Paint coated aluminium		
Accuracy *	± (0.2% of measured distance + 0.05 % of range)		
Ingress protection	Sensor: IP 65 Housing: IP 67		
Ambient temperature	-30°C ... +60°C, with SAP-100 display: -25°C ... +60°C		
Process temperature	-30°C ... +75°C		
Output	4...20 mA max. 600 Ohm, HART, Relay (SPDT) 250V AC 3A AC1		
Power supply	85...255 V AC / 6.8 VA or 11.4...40 V DC / 4.1 W and 11.4...28 V AC / 4.6 VA		
Ex marking	ATEX II 1/2 D IP65 T130°C		

* Under optimum conditions and stabilized transducer temperature

EchoTREK S-34/33/31 - 4-wire versions

Compact ultrasonic level transmitters with process current / HART and control relay output for solids

SenSonic transducer technology, QUEST+ advanced, process adaptive signal processing, secondary lightning protection, fully temperature compensated

Electronics: Paint coated Aluminium enclosure, IP67 / NEMA 6

Transducer: Paint coated Aluminium, Polyurethane face, IP65 / NEMA 4

Ex marking: ATEX II 1/2 D IP 65 T 130°C

Programming:

With SAP-100 display: full feature programming, including: 32-point linearisation, application optimisation, fixed target suppression, etc.

Remote programming: for HART capable units with HART modem and the EView software or with the MultiCONT controller. The EView light software (on DVD) is provided free of charge.

Type

S D - 3 J - X

4	0.6-15 m
3	0.6-30 m
1	1.2-60 m

Programmer and local indicator (SAP-100)

S D - 3 J - X

T	Not included
B	Included

Power supply / Output / Approval

S D - 3 J - X

85-255 V AC

1	4-20 mA + Relay / none
3	4-20 mA + HART + Relay / none
5	4-20 mA + Relay / Ex
7	4-20 mA + HART + Relay / Ex

11.4-40 V DC and 11.4-28 V AC

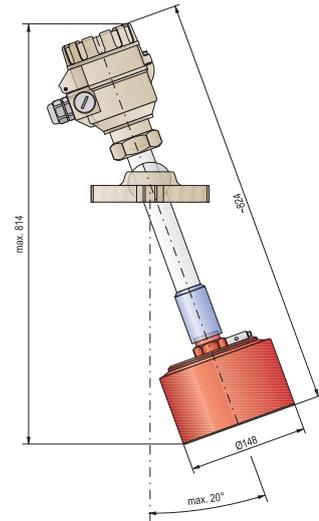
2	4-20 mA + Relay / none
4	4-20 mA + HART + Relay / none
6	4-20 mA + Relay / Ex
8	4-20 mA + HART + Relay / Ex

S D - 3 J - X

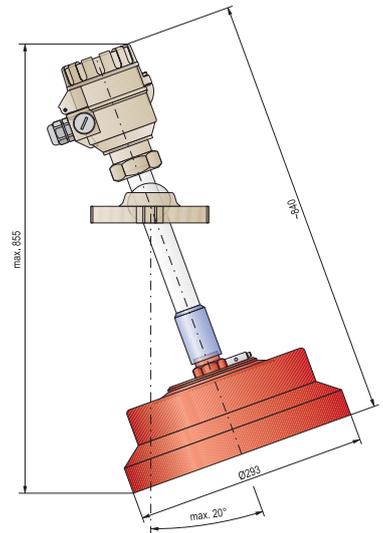
Accessories to order

Type

S A P - 1 0 0	Plug-in Programmer/display module (See "Electronic acc.")
S F A - <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Flanges (See "Mounting accessories")
S A S - 3 0 3	EView 2 software package (See "Electronic accessories")
S A T - 3 0 4	HART-USB modem (See "Electronic accessories")
S A K - 3 0 5 - 2	HART-USB/RS485 modem
S A K - 3 0 5 - 6	HART-USB/RS485 modem / Exia



EchoTREK STD-33, STD-34



EchoTREK STD-31

ULTRASONIC ACCESSORIES

LEVEL TRANSMITTERS

Order codes for separate flanges

NIVOSONAR SFA

Flanges for ultrasonic devices
Material: Polypropylene (PP)

Type

S F A - 3

Flange size

S F A - 3

DIN flanges, drilled like PN16

- 2 DN80 PN16
- 3 DN100 PN16
- 4 DN125 PN16
- 5 DN150 PN16
- 6 DN200 PN16
- 7 DN250 PN16
- 8 DN300 PN16

RF ANSI flanges, drilled like 150 psi

- A ← 3" FF 150 psi
- B ← 4" FF 150 psi
- C ← 5" FF 150 psi
- D ← 6" FF 150 psi
- E ← 8" FF 150 psi
- Y ← 12" FF 150psi

JIS flanges, drilled like 10K

- G ← 10K 80A
- H ← 10K 100A
- P ← 10K 125A
- R ← 10K 150A
- S ← 10K 200A
- Z ← 10K 300A

Flange type

S F A - 3

- 1 For units with 1" BSP process connection
- 3 For units with 2" BSP process connection
- 4 For units with 2" NPT process connection
- 5 For mounting to SAA-102 aiming device
- 6 For units with 1 1/2" BSP process connection
- 7 For units with 1 1/2" NPT process connection

S F A - 3

Order codes for separate mounting brackets

Type

for process connection: BSP 1"

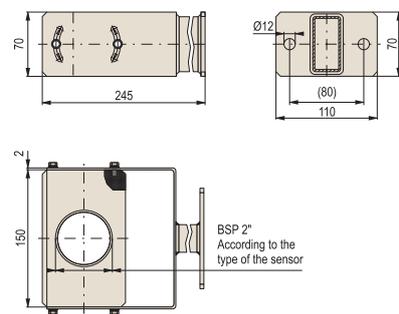
- S A A - 1 0 7 - 0 200 mm mounting bracket
- S A A - 1 0 8 - 0 500 mm mounting bracket
- S A A - 1 0 9 - 0 700 mm mounting bracket

for process connection: BSP 2"

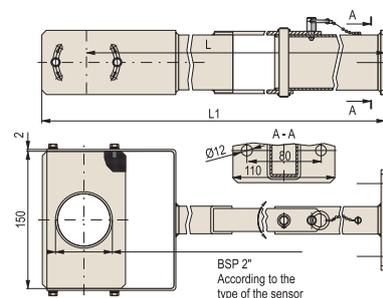
- S A A - 1 0 7 - 3 200 mm mounting bracket
- S A A - 1 0 8 - 3 500 mm mounting bracket
- S A A - 1 0 9 - 3 700 mm mounting bracket

for process connection: BSP 1 1/2"

- S A A - 1 0 7 - 4 200 mm mounting bracket
- S A A - 1 0 8 - 4 500 mm mounting bracket
- S A A - 1 0 9 - 4 700 mm mounting bracket



SAA-107



SAA-108, SAA-109

TRANSMITTER ACCESSORIES

UNIDISP SAP-100

Plug-in programming and display module for 4-wire EchoTREK ST-300
 Field indications: 6 digits LCD, icons and bargraph
 Housing: PBT glass fibre reinforced plastic
 Ambient temperature: -25°C...+60°C

Type

S A P - 1 0 0

UNIDISP SAP-200

Plug-in display module for 2-wire transmitters; see below (same module with different labels)
 Field indications: 6 digits LCD, icons and bargraph
 Ambient temperature: -25°C...+60°C

Label type

S A P - 2 0

- 0 Module with label for 2-wire and S-400 EchoTREK
- 1 Module with label for NIVOTRACK
- 2 Module with label for NIVOCAP, THERMOCONT, UNICONT PD
- 3 Module with label for NIVOPRESS

UNIDISP SAP-300

Plug-in dot matrix (128x64) graphical display for 2-wire transmitters
 Measured value, bar graph display

Type

S A P - 3 0 0 For MicroTREK, NIVOTRACK, AnaCONT

UNICOMM SAT-306

eLINK
 Plug-in unit for software/firmware updates

Type

S A T - 3 0 6

EView 2 SAS-303

Eview 2 HART configuration software package
 for remote programming and viewing of primary measurement values in HART multidrop
 systems (up to 15 field devices)
 Operating system: Windows XP, Windows 7

Type

S A S - 3 0 3



SAP-100



SAP-200



SAP-300

LEVEL TRANSMITTERS

NIV24
EchoTREK SAP-100
SAP-200
SAP-300

GENERAL DESCRIPTION

The most frequent level instrumentation task is the level controlling and limit level switching even if the measurement medium is liquid or solid.

This is the reason why NIVELCO focus on level switches besides the level transmitters. The totally own developed and manufactured instruments offer reliable level controlling and limit level switching solution for most media from potable water to sewage, aggressive alkalis and acids, or free-flowing, powdered, bulk or granular solids.

Thanks to this very wide level switch selection we are able to provide suitable instruments for most level instrumentation applications.

Most of our level switches have explosion-proof versions (in accordance to ATEX and/or IEC Ex).

Moreover we offer suitable solutions for special requirements, for example the ship-building industry with a need for Germanischer Lloyd (GL), Det Norske Veritas (DNV), Bureau Veritas (BV) or SIL approvals.

FLOAT SWITCHES

NIVOFLOAT



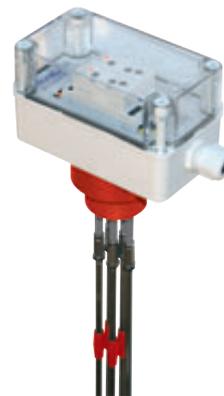
- Hermetically moulded, double chamber
- Adjustable switch differential
- Max. 20 m cable length
- Max. +50°C medium temperature
- Max. 2 bar process pressure
- Level switch from potable water to sewage
- Low specific weight of the floating body
- Fail-safe indication and pump control
- Suitable also for tanks and basins

page 59

LEVEL SWITCHES

CONDUCTIVE LEVEL SWITCHES

NIVOCONT K



- Low cost level switch
- Limit switch or differential switch versions
- Adjustable sensitivity
- Adjustable time delay
- All wetted parts stainless steel
- Compact and separated types
- For liquids with min. 10 µS/cm conductivity
- Rod probes up to 3 m

page 61

MAGNETIC COUPLING SWITCHES

NIVOMAG



- Operation without power supply
- Micro-switch separated from the process
- All wetted parts stainless steel
- Fixed or adjustable switch differential
- Submersible versions
- For liquids with min. 0.7 kg/dm³ density
- Explosion-proof models
- Marine approvals, SIL approval

page 65

MAGNETIC TRACKING SWITCHES

NIVOPOINT



- Operation without power supply
- Reed switches separated from process
- Stainless steel probe and float
- PFA coated probe version with plastic float
- Up to 5 switch points
- For liquids with min. 0.5 kg/dm³ density
- Multi-point level switch in closed tanks
- Explosion-proof models

page 69

VIBRATING FORK LEVEL SWITCHES

NIVOSWITCH for LIQUIDS



- For most liquids with min. 0.7 kg/dm³ density and max. 10⁴ mm²/s viscosity
- No moving parts
- Self-cleaning for most mediums
- Stainless steel and plastic coated forks
- Rigid rod extension up to 3 m
- Explosion-proof models
- IP67, IP68 protection

page 80

VIBRATING ROD LEVEL SWITCHES

NIVOCONT R



- For granular solids with min. 0.05 kg/dm³ density
- Rod or cable extension up to 20 m
- Stainless steel vibrating section
- Selectable density
- Plastic or aluminium housing
- Relay or electronic switch output
- IP67 protection
- Explosion-proof models

page 74

ROTARY PADDLE LEVEL SWITCHES

NIVOROTA



- For granular solids with min. 0.1 kg/dm³ density
- Plastic or aluminium housing
- Stainless steel wetted parts
- Motor shut-off feature
- Single or 3-vane paddles
- Rod or cable extended versions up to 3 m
- High temperature version
- IP67 protection
- Explosion-proof models

page 90

VIBRATING FORK LEVEL SWITCHES

NIVOSWITCH for SOLIDS



- For powdered solids with min. 0.01 kg/dm³ density
- No moving parts
- Stainless steel forks
- Self-cleaning for most mediums
- Rigid rod extension up to 3 m
- IP67, IP68 protection
- Explosion-proof models

page 80

RF CAPACITANCE LEVEL SWITCHES

NIVOCAP CK



- For solids with $\epsilon_r \geq 1.5$ and liquids
- For adhering, sticky materials
- Easy calibration
- Selectable sensitivity
- Not sensitive to deposits
- Rod or cable extended versions up to 10 m
- High temperature version
- IP67 protection
- Explosion-proof models

page 94

GENERAL DESCRIPTION

The **NIVOFLOAT NL-100** type floating level switch is suitable for level switching of various kinds of water, the **NIVOFLOAT NW-100** type tilting float level switch is suitable for level switching of various liquids, especially sewage in shafts, tanks, basins or cisterns. The double-chambered float is made of injection moulded tough polypropylene that ensures good waterproof protection. The contacting microswitch is incorporated in the float.

The cable of the **NIVOFLOAT** level switch is fed through the waterproof passage into the monolithic structure of the injection moulded plastic housing. The cable of the level switch is a flexible insulated copper cable with 3x1 mm² cross section and PVC or Neopren outer insulation. Different control tasks such as liquid level monitoring and pump control can be realized successfully with **NIVOFLOAT**.

NIVOFLOAT NL-100

MAIN FEATURES

- Double-chambered float
- Switching differential is adjustable by counterweight
- Maximum 20 m cable length
- Medium temperature max. +50°C
- Process pressure max. 1 bar
- IP 68 protection

APPLICATIONS

- For potable water
- For industrial and communal sewage
- Tank filling / emptying control
- For overflow protection



NMW-100 counterweight

NL-100 float level switch

NIVOFLOAT NW-100

MAIN FEATURES

- Special float shape
- Double-chambered float
- Maximum 20 m cable length
- Medium temperature max. +50°C
- Process pressure max. 2 bar
- IP 68 protection

APPLICATIONS

- For industrial and communal sewage
- Suitable also for drinking water
- Tank filling / emptying control
- For overflow protection



NW-100 float level switch

TECHNICAL DATA (NL)

Type	NL□-1-□□-□
Switching angle	± 45°
Medium temperature	0°C ... +50°C
Medium pressure	0,1 MPa (1 bar)
Material of the float	Polypropylene
Material of the counterweight	Polystyrene
Float volume	430 cm ³
Rating of the microswitch	10(4) A, 250V AC, AC1
Electrical life-span	10 ⁷ switches
Mechanical protection	IP 68
Cable	Ø 9 mm / 3 x 1 mm ²
Cable length	5 m, 10 m, 20 m
Mass	250 g, without cable

TECHNICAL DATA (NW)

Type	NW□-1-□□-1
Switching differential	~ 400 mm (constant)
Medium temperature	0°C ... +50°C
Medium pressure	0,2 MPa (2 bar)
Material of the float	Polypropylene
Float volume	1000 cm ³
Rating of the microswitch	10(3) A, 250V AC, AC1
Electrical life-span	10 ⁷ switches
Mechanical protection	IP 68
Cable	Ø 9 mm, 3 x 1 mm ²
Cable length	5 m, 10 m, 20 m
Mass	1.1 kg, without cable

NIVOFLOAT N

Double-chamber float level switch with mercury-free operated micro-switch, with PVC or Neoprene cable

Housing material: Non toxic copolymer polypropylene

Max. temperature: 50°C

Type

N - 1 - 1

L For clean water

W For waste water

Cable material

N - 1 - 1

N Neoprene

P PVC

Cable length

N - 1 - 1

PVC cable

0 5 5 m

1 0 10 m

2 0 20 m

Neoprene cable

0 5 5 m

1 0 10 m

2 0 20 m

N - 1 - 1

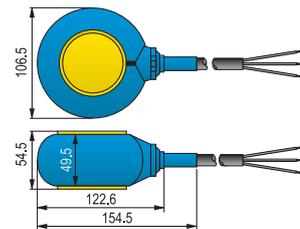
NIVOFLOAT NL counterweight (only for NL_ type)

N M W - 1 0 0

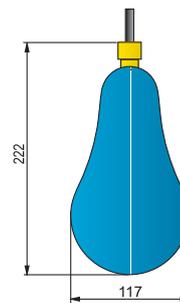
Material: Polystyrene

Available on request:

⇒ Non-standard lengths for over 100 pcs.



NIVOFLOAT NL-100



NIVOFLOAT NW-100



NIVOFLOAT NMW-100

LEVEL SWITCHES

GENERAL DESCRIPTION

Level switches, based on the conductivity principle, can be applied to liquids with conductivity higher than 10 $\mu\text{S}/\text{cm}$. For detecting the level, probes are immersed into the tank. These probes (and the tank wall if conductive) serve as contacts of an electric circuit. Probes can be of single or multiple rod versions. A maximum of 4 probe rods can fit in the multiple probe with an additional reference probe if tank wall is not conductive. The probe length should be in accordance with the level to be detected. When the liquid level reaches the probe, it will create a short-circuit and the output relay will be activated. The device senses the conductivity difference between the probes and the reference probe. The KLP separators should be used at every 0.5 m to provide suitable distance between the probes.

MAIN FEATURES

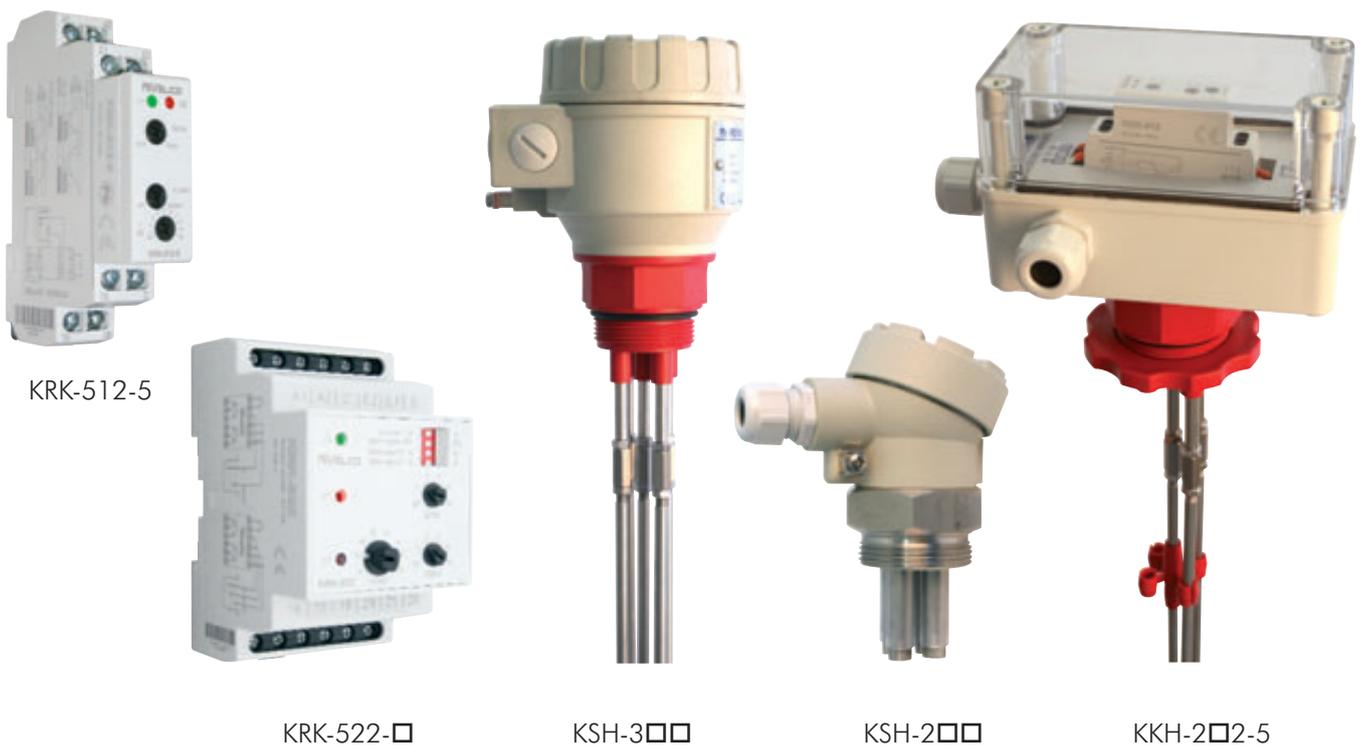
Level switches	
KRK-512	KRK-522
<ul style="list-style-type: none"> Level switching Filling-emptying control Selectable NO/NC relay function Adjustable sensitivity Adjustable delay ON and delay OFF time Delay time display AC/DC versions 	<ul style="list-style-type: none"> 2 independent relay outputs for 1 level 2 independent relay outputs for 2 independent levels 2 relay outputs for pump control Selectable NO/NC relay function Adjustable sensitivity Adjustable delay ON and delay OFF time AC/DC versions
Compact level switches	
KKH-2□2	
<ul style="list-style-type: none"> Probe and relay in one unit 1 or 2 incorporated KRK-512 electronics 1 or 2 independent relay outputs for pump control or differential level switching Selectable NO/NC relay function Adjustable sensitivity Adjustable delay ON and delay OFF time Delay time display AC/DC versions 	

VERSIONS

Level switch and probe	
<ul style="list-style-type: none"> DIN rail mounted 1 or 2 channel switching unit Probe set with aluminium or plastic housing featuring 1 1/2" BSP process connection Probe-rods up to 3m 	
Compact level switch	
<ul style="list-style-type: none"> 1 or 2 channel switching unit in plastic housing with 1 1/2" BSP process connection Probe-rods up to 3m 	

APPLICATIONS

- For conductive liquids with min 10 $\mu\text{S}/\text{cm}$ conductivity
- For emptying / filling control or level switch tasks
- Fail-safe indication and pump control
- Water inrush indicator



LEVEL SWITCHES

TECHNICAL DATA

Probes	Single Probe			Multi Probe							Submersible
	KSP-201	KSS-201	KSN-201	Aluminium housing			Plastic housing				
				KSH-202	KSH-203	KSH-204	KSH-301	KSH-302	KSH-303	KSH-304	
Number of probes	1			2+s*	3+s*	4+s*	1+s*	2+s*	3+s*	4+s*	1
Process connection	3/8" BSP			1 1/2" BSP							Cable mountable
Probe socket material	PP	carbon steel	1.4571	1.4571			PP				-
Housing	-			Aluminium cast			PBT				ABS
Insulation of socket	PP	PFA			-				-		
Medium temperature	max. +80 °C	max. +200 °C			max. +80 °C						
Pressure max	max. 0.3 MPa (3 bar)	max. 1.6 MPa (16 bar)			max. 0.3 MPa (3 bar)				-		
Electrical connection	With rubber cap			M20x1.5 cable gland, cable diameter: 6...12mm							Pg9**
Ingress protection	IP 20			IP 65							IP 68
Mass (without probe)	0.1 kg			0.4 kg				0.05 kg			

*s = reference probe ** Cable: Ø 4...7 mm

LEVEL SWITCHES

Type	KRK-512-5	KRK-522-□	
Power supply (U _N)	Galvanic isolated 24...240 V AC/DC	110 V AC, 230 V AC	24 V AC/DC
	-15 %...+10%		
Power consumption	max. 2.5 VA / W	max. 4.5 VA / W	
Ambient temperature	-20 °C...+55 °C		
Probe voltage	3.5 V AC	5 V AC	
Probe current	max. 0.2 mA AC	max. 1 mA AC	
Sensitivity	Adjustable: 5 kOhm...100 kOhm		
Cable capacitance	100 nF (100 kOhm sens.) 800 nF (5 kOhm sens.)	max. 4 nF	
Fixed on-delay (t ₁)	1.5 sec	-	
On and off-delay	0.5...10 sec		
Relay output	1x SPDT 250 V 8A, AC1 24 V DC min. 500 mW	2x SPDT 250V 16A, AC1 24 V DC min. 500 mW	
Electrical connection	Terminal block, max. 2.5 mm ² / with insulation 1.5 mm ²		
Electrical protection	Class II.	Class II.	Class III.
Mechanical connection	DIN EN 60715 rail		
Ingress protection	IP 20		
Mass	72 g	240 g	

COMPACT LEVEL SWITCHES

Type	KKH-212-5	KKH-222-5
Power supply (U _N)	24 V...240 V AC/DC	
	-15 %...+10%	
Power consumption	max. 2.5 VA / W	max. 5 VA / W
Ambient temperature	-20 °C...+50 °C	
Medium temperature	max. +80 °C	
Medium pressure	1 bar	
Number of probe	2+s*	4+s*
Probe voltage	3.5 V AC	
Probe current	max. 0.2 mA	
Sensitivity	Adjustable: 5 kOhm...100 kOhm	
Fixed on-delay	1.5 sec	
On and off-delay	0.5...10 sec	
Relay output	1x SPDT 250 V 8A AC1 / DC 24V 8A	2x SPDT 250V 8A, AC1 / DC 24V 8A
Electrical connection	Cable gland: 2x M20x1,5 Ø8...15 mm cables, Terminal block, max. 2.5 mm ² / with insulation 1.5 mm ²	
Electrical protection	Class II.	
Process connection	1 1/2" BSP	
Material of probe socket	PP	
Housing material	Polycarbonate	
Ingress protection	IP 67	
Mass	660 g (without probe)	800 g (without probe)

*s=reference probe



KSP-201 Single probe socket KSK-201 Submersible probe KLN-200 Probe



KLP-201 Separator for KSH-300 KLP-204 Separator for KSH-200

NIVOCONT KS

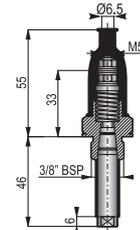
Single-probe socket for level detection of electrically conductive liquids with KLN electrodes and KR level control unit
 Process connection: 3/8" BSP, material: stainless steel

Type
 K S - 2 0 1

Socket- / Insulation material

K S - 2 0 1
 P PP / PP
 S Steel / PFA
 N Stainless steel / PFA

K S - 2 0 1



NIVOCONT KSN-201

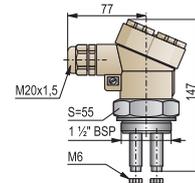
NIVOCONT KSH

Multi-probe socket for level detection of electrically conductive liquids with KLN electrodes and KR level control unit
 Stainless steel, 1 1/2" BSP process connection with PFA insulation and paint coated IP65
 Alu-cast housing

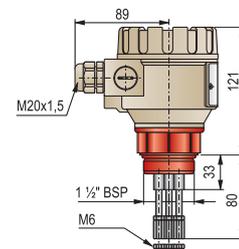
Type
 K S H 0
 2 Aluminium house
 3 Plastic house

Probes
 K S H 0
 2 2-probes + reference electrode
 3 3-probes + reference electrode
 4 4-probes + reference electrode

K S H 0



NIVOCONT KSH-202



NIVOCONT KSH-303

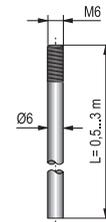
NIVOCONT KLN

Stainless steel electrode with M6 thread for KS and KKH probe socket

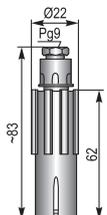
Type
 K L N - 2

Length
 K L N - 2
 0 5 0.5 m
 1 0 - 3 0 1-3 m; each started 0.5 m

K L N - 2



NIVOCONT KLN-2



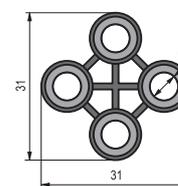
NIVOCONT KSK-201

NIVOCONT KLN, PE coated

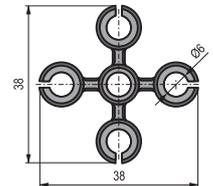
Use the order code extension below after the standard order code of the device:

Special version

X03 ← PE coated (up to 100°C); each started 0.5 m
 Order example: KLN-210-0-X03



NIVOCONT KLP-204



NIVOCONT KLP-201

NIVOCONT KLP

Separator

Type
 K L P - 2 0 4 (for KSH-2)
 K L P - 2 0 1 (for KSH-3)

NIVOCONT KSK

Submersible probe for conductive liquids
 For connection to KR level control unit
 Electrode: stainless steel, enclosure: ABS, Ø 22x85 mm

Type
 K S K - 2 0 1

NIV24
NIVOCONT KSP-201
NIVOCONT KSS-201
NIVOCONT KSN-201
NIVOCONT KSH-202
NIVOCONT KSH-203
NIVOCONT KSH-204
NIVOCONT KLN-205, 210, 215, 220, 225 and 230
NIVOCONT KLP-204

NIVOCONT KRK-512

Conductive level control switch for KS sockets and KLN probes with one SPDT power relay, 250 V AC, 8 A, AC1 for limit switching or differential switching with time delay
Mounting: DIN-rail (EN 60715)
Power supply: 24-240 V AC/DC

Type
K R K - 5 1 2 - 5

NIVOCONT KRK-522

Conductive level control switch for KS sockets and KLN probes with two SPDT power relay, 250 V AC, 16 A, AC1 for limit switching or differential switching with time delay
Mounting: DIN-rail (EN 60715)
Power supply: 230 V AC, 110 V AC, 24 V AC/DC

Type
K R K - 5 2 2 -

Power supply
K R K - 5 2 2 -
1 230 V AC
2 110 V AC
4 24 V AC/DC

K R K - 5 2 2 -

NIVOCONT KKH

Compact conductive level switch with 2-probe socket + 1 reference probe or 4-probe socket + 1 reference probe
Complete with plastic housing
Including 1 or 2 KRK-512 level control switches
Process connection: 1 1/2" BSP (plastic) with plastic counter nut
Output: 1 or 2 x SPDT, 8 A / 250 V AC, AC1
Power supply: 24-240 V AC/DC

Type
K K H - 2 2 - 5
1 Single channel (3 probes)
2 Double channel (5 probes)

K K H - 2 2 - 5

NIVOCONT KLN

Stainless steel electrode with M6 thread for KS and KKH probe socket

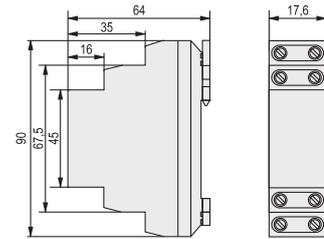
Type
K L N - 2

Length
K L N - 2
0 5 0.5 m
1 0 - 3 0 1-3 m; each started 0.5 m

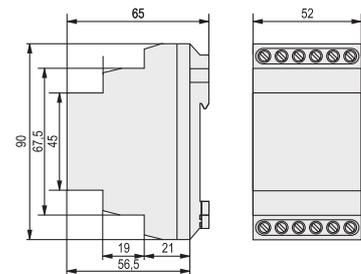
K L N - 2

NIVOCONT KLP

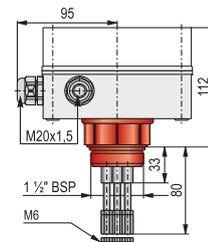
Type
K L P - 2 0 1 Separator (for KKH-2_ _)



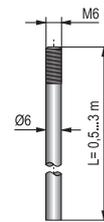
NIVOCONT KRK-512



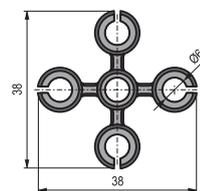
NIVOCONT KRK-522



NIVOCONT KKH-222



NIVOCONT KLN-2



NIVOCONT KLP-201

NIV24
NIVOCONT KRK-512-5
NIVOCONT KRK-522-1
NIVOCONT KLN-205, 210, 215, 220, 225 and 230
NIVOCONT KKH-212-5

LEVEL SWITCHES

GENERAL DESCRIPTION

NIVOMAG MK-200 series magnetic float level switches are used for point level detection and level control of liquids in all types of vessels. Operation principle: the permanent magnet of the float activates the output microswitch by a non-contact coupling system.

The great variety of both the top and side mounted versions makes it easy to install the switch in any tank at any location. For the simplest level switching you can select models with fixed hysteresis, while for level control application we offer NIVOMAG switches with adjustable hysteresis. Models with rubber or silicon sleeves can be applied for contaminated liquids. You can fit the NIVOMAG switch with an MMK type tester, to check the switching function even when the liquid levels aren't changing.

MAIN FEATURES

- Magnetic coupling between the switch and the float
- Operation w/o external power supply
- Side or top mounted versions
- Underwater version
- Fixed or variable hysteresis
- Max. 250°C medium temperature
- Explosion proof version
- IP 65/68 protection

APPLICATIONS

- Overflow protection
- Level controls
- Supplementary fail safe switch if combined with other devices
- Water tanks, feedwater tanks
- Fuel tanks
- Power plants

CERTIFICATIONS

- ATEX  II 1/2 G EEx dme II C T6...T2 (TÜV)
- IECEx  II 2 G EEx dme IIC T6...T2
- SIL 1 Safety Integrity Level
- Germanischer Lloyd (GL)
- Det Norske Veritas (DNV)
- Bureau Veritas (BV)

TYPE SELECTION

To assist in the selection of the correct model the following tables and diagrams are provided. When selecting a model due consideration must be given to liquid density, mounting position and process connection and to determine if there is a need for adjustable or fixed hysteresis or a rubber sleeve.

Minimum liquid density (kg/dm ³)				
Arm length (mm)	0 – 100	200	300	1000-3000
Max. float Ø (mm)				
52	0.7	0.8	0.85	–
64	0.7	0.8	0.8	–
124	–	–	–	0.7

Type	MK-21	MK-22	MK-23
Fixed switching differential	■		
Adjustable switching differential		■	■
Straight arm	■	■	■
L or Z arm	■		
Side mounted	■	■	
Top mounted	■ (with „L” arm)		■
Submersible	■	■	■
Rubber protection sleeve	■		
Flanged process connection	■	■	■*
Threaded process connection	■		
Ex version	■	■	■
Tester	■	■	

* Only with 92x92 flange



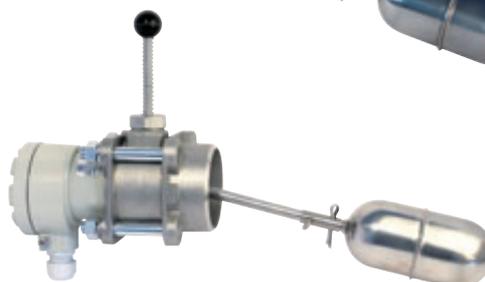
MKA-210-□



MKG-210-□



MKA-220-□



MKA-210-□ + MMK-120 tester



MKA-230-□

TECHNICAL DATA

Type	Cylindrical float (side and top mounting)				Ball float (top mounting)
	MKA-21 MKU-21	MKA-22	MKG-21 MKV-21	MKS-21 MKZ-21	MKA-23
Nominal pressure	2.5 MPa (25 bar) [MKU: 0.2/2.5 MPa (2 bar/25 bar)]				2.5 MPa (25 bar)
Medium temperature	see temperature diagram				
Ambient temperature	-20°C...+80°C, Ex version: see temperature specification for Ex version table				
Liquid density	min. 0.7-0.85 kg/dm ³ , see min. liquid density table				
Switching differential	Fixed	Adjustable	Fixed	Fixed	Adjustable
Insertion length	202...521 mm	245...573 mm	202...521 mm		1265...3265 mm
Material of wetted parts	Stainless steel (1.4571, 1.3960, 1.4404), and MKG: rubber, MKS: silicone				
Housing material	Paint coated aluminium				
Microswitch	1 micro-switch with 1 closing and 1 opening contact (NO and NC) *				
Switch rating	Standard	250V 10A AC12; 220V 0.6A DC13			
	Ex version	250V 2.5A AC12; 220V 0.3A DC13			
Electrical connection	M20x1.5 cable gland, terminal (MKU, MKV, MKZ integrated cable NSSHöu-J 5x1.5 mm ² Ø15 mm) **				
Ingress protection	IP65 (MKU, MKV, MKZ IP68 up to 20 m underwater)				
Electrical protection	Class I.				
Safety integrity level	SIL1				
Ex marking	ATEX 1/2 G EEx dme IIC T6...T2 (TÜV) ; IEC Ex 2 G EEx dme IIC T6...T2				
Mass	≈ 1.8 – 3.5 kg				

* NO and NC terminals should be connected to equipotential circuits

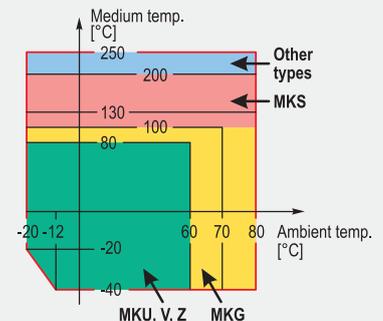
** Cable length should be specified when ordered

ADDITIONAL DATA FOR EX CERTIFIED MODELS

Temperature specification for Ex versions

Temperature diagram:

Class	Temperature classes				
	T6	T5	T4	T3	T2
Max. medium temperature	+80°C	+95°C	+130°C	+200°C	+250°C
Ambient temperature	-20°C... +60°C	-20°C... +70°C	-20°C... +80°C	-20°C... +80°C	-20°C... +80°C





NIVOMAG MK-21

Germanischer Lloyd (GL) and Det Norske Veritas certified magnetic float level switch with fixed switch differential
 All wetted parts stainless steel (1.4571, 1.3960, 1.4404), paint coated Alu-housing with IP65
 Ex marking: ATEX II 1/2 G EEx dme IIC T6...T2; IEC Ex 2G EEx dme IIC T6...T2*

Type

M K - 2 1 -

Version

M K - 2 1 -

- A Standard
- G With rubber protection sleeve (not available in Ex version)
- S With silicon protection sleeve (not available in Ex version)
- U Underwater (IP68)
- V Underwater (IP68), with rubber protection sleeve (not available in Ex version)
- Z Underwater (IP68), with silicon protection sleeve (not available in Ex version)

Process connection

M K - 2 1 -

- 0 Square flange
- B 2"BSP**
- N 2"NPT**
- 1 DIN DN 80 PN 40, steel**
- 2 DIN DN 100 PN 40, steel**
- 5 DIN DN 80 PN 40, stainless steel**
- 6 DIN DN 100 PN 40, stainless steel**

Protrusion / Arm length / Approval

M K - 2 1 -

- 0 202 mm (189 mm for **MKA-21B**, 178 mm for **MKA-21N**)
- 1 321 / 100 mm
- 2 421 / 200 mm
- 3 521 / 300 mm
- 4 L or "Z" profile (specify dimensions when ordering)
- 9 202 mm (189 mm for **MKA-21B**, 178 mm for **MKA-21N**) / Ex
- 5 321 / 100 mm / Ex
- 6 421 / 200 mm / Ex
- 7 521 / 300 mm / Ex
- 8 "L" or "Z" profile (specify dimensions when ordering) / Ex

M K - 2 1 -

* Need of IEC is to be specified with order ** Not available with protection sleeve

NIVOMAG MK-22

Germanischer Lloyd (GL) and Det Norske Veritas certified magnetic float level switch with adjustable switch differential
 All wetted parts stainless steel (1.4571, 1.3960, 1.4404), paint coated Alu-housing with IP65
 Ex marking: ATEX II 1/2 G EEx dme IIC T6...T2

Type

M K - 2 2 -

Version

M K - 2 2 -

- A Standard
- U Underwater (IP68)

Process connection

M K - 2 2 -

- 0 Square flange
- 1 DIN DN 80 PN 40, steel
- 2 DIN DN 100 PN 40, steel
- 5 DIN DN 80 PN 40, stainless steel
- 6 DIN DN 100 PN 40, stainless steel

Protrusion / Arm length / Approval

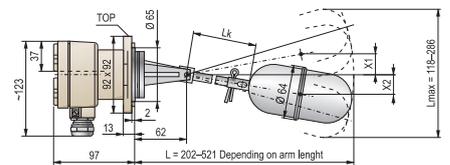
M K - 2 2 -

- 0 254 mm
- 1 373 / 100 mm
- 2 473 / 200 mm
- 3 573 / 300 mm
- 9 254 mm / Ex
- 5 373 / 100 mm / Ex
- 6 473 / 200 mm / Ex
- 7 573 / 300 mm / Ex

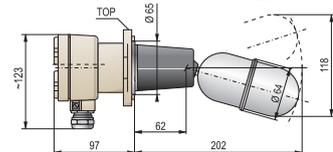
M K - 2 2 -

Cable for MKU underwater version

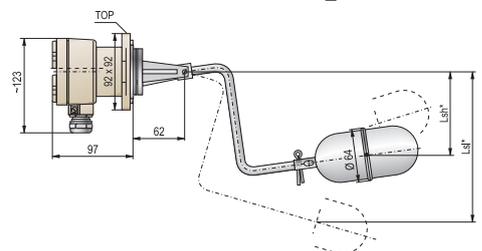
To be specified in the order; each started 1 m



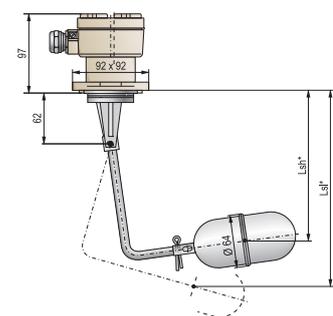
NIVOMAG MKA-210-0



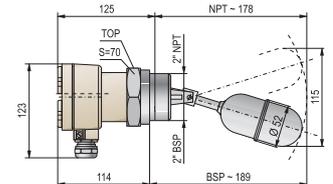
NIVOMAG MKA-210-1



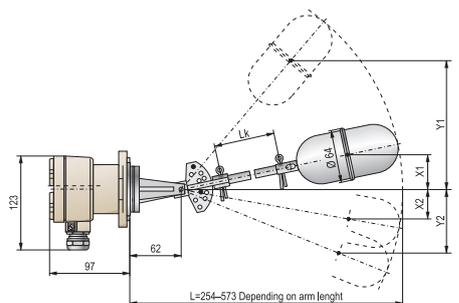
NIVOMAG MKA-210-2



NIVOMAG MKA-210-3



NIVOMAG MKA-210-4



NIVOMAG MKA-210-5

NIV24
NIVOMAG MKA-210-0



NIVOMAG MK-23

Germanischer Lloyd (GL) certified magnetic float level switch with vertical float arm and adjustable switch differential
 All wetted parts are made of stainless steel (1.4571, 1.3960, 1.4404), paint coated Alu-housing with IP65
 Ex marking: ATEX II 1/2 G EEx dme IIC T6...T2

Type
 M K - 2 3 -

Version
 M K - 2 3 -
 A Standard

Process connection
 M K - 2 3 -
 0 Square flange

Maximum switch differential (S)
Protrusion / Arm length / Approval
 M K - 2 3 -
 1 1265 mm / 1000 mm
 2 2265 mm / 2000 mm
 3 3265 mm / 3000 mm
 5 1265 mm / 1000 mm / Ex
 6 2265 mm / 2000 mm / Ex
 7 3265 mm / 3000 mm / Ex

M K - 2 3 -

NIVOMAG MFF

Counter flange for MK magnetic floats

Type
 M F F - 1

Material
 M F F - 1
 1 Steel
 2 Stainless steel (1.3960, 1.4404)

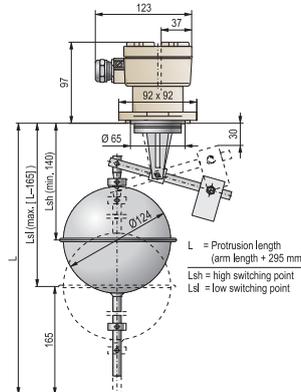
Version
 M F F - 1
 0 Standard
 1 For units with MMK-100 tester

M F F - 1

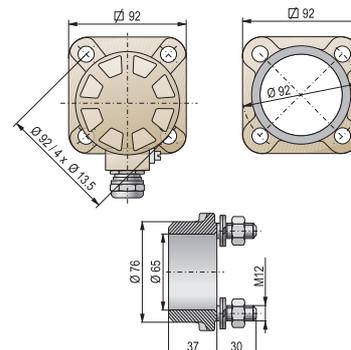
NIVOMAG MMK

Tester for MK magnetic floats

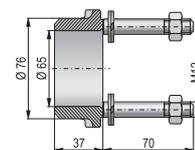
Type
 M M K - 1 1 0 Steel
 M M K - 1 2 0 Stainless steel



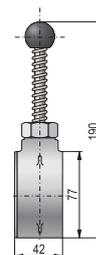
NIVOMAG MKA-230



NIVOMAG MFF-110



NIVOMAG MFF-111



NIVOMAG MMK-110

LEVEL SWITCHES

GENERAL DESCRIPTION

NIVOPOINT magnetic float level switches are suitable for level detection, level switching and one- or multipoint level controlling tasks in normal as well as in hazardous areas. The device consists of a probe tube, a float incorporating a magnet and a housing containing the connection terminals. A maximum of 5 switches can be incorporated in the probe. A sliding sleeve on the top of the probe provides for a simultaneous ± 25 mm adjustment possibility of the positioning of the switches. The wetted parts of the level switch are made of stainless steel. The plastic coated versions are suitable for level detecting of aggressive liquids, and the ATEX certified versions are applicable for level switching of explosive materials. Floats and process connections can be selected according to the measured medium and the application.

The mini type **NIVOPOINT** magnetic float level switches are suitable for maximum level indication in small tanks. The small size and easy mounting of the switch allows maximum level detection in appliances or tanks using process connections made for different other purposes.

MAIN FEATURES

- Level switching without auxiliary power
- Maximum 5 switching points
- Stainless steel and
- Plastic coated versions
- 150 °C medium temperature
- Mini version
- Wide variety of floats
- Ex version
- IP65/68 protection

APPLICATIONS

- Multipoint level switching
- For controlling pumps, valves
- Level detection of aggressive liquids
- Level switching of explosive liquids

CERTIFICATIONS

- ATEX $\text{II 2 G EEx d II C T3...T6}$
- Bureau Veritas (BV) (only for MZ□ types)

TEMPERATURE DATA FOR EX VERSIONS

Class	T6	T5	T4	T3
Max. ambient temp. from -20 °C	+80 °C	+95 °C	+85 °C	+70 °C
Max. medium temp. from -20 °C	+85 °C	+100 °C	+135 °C	+150 °C

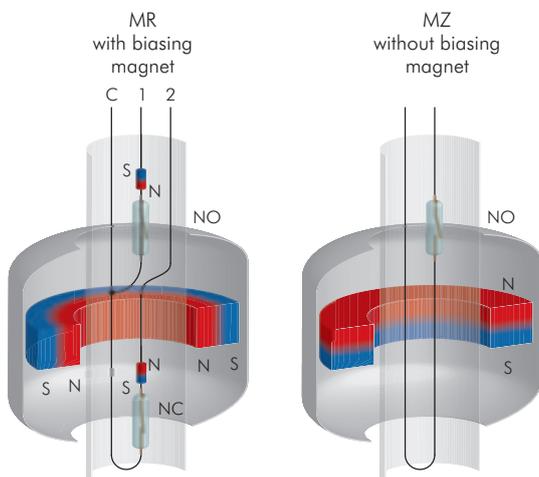


MZS-100
Mini type

MP□-100
Plastic coated
version

MZC-300

MR□-100
Standard version



OPERATION

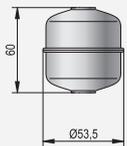
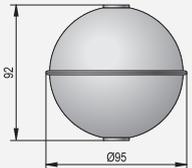
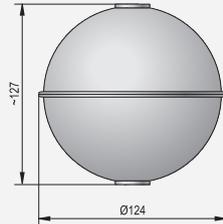
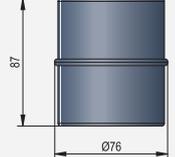
NIVOPOINT magnetic float level switches work on the basis of the interaction of the built-in magnet in the float and the reed switches in the probe. The float of **NIVOPOINT** level switch devices moves alongside the probe tube tracking the level of the measured liquid and activating the reed switches. When the float moves ahead the reed switches, it changes the default state (NO or NC) of the reed switches, which stay in self-holding state with the help of opposite polarized magnets next to the reed switches. When the liquid level decreases, the float moves ahead the reed switches again, breaks off the self-holding state and restores the previous state of the reed switches. The mini type **NIVOPOINT** level switches do not contain biasing magnets. By tracking the level, the magnetic float activates the reed switch in the probe. The reed switch opens or closes according to the position of the magnetic float. The default state is meant with bottom positioned float, the normally opened or closed state of the reed switch can be changed by the inversion of the float.

TECHNICAL DATA

Type	Standard	Plastic coated	Explosion-proof	Mini type
Insertion length	0.25 m ... 3 m			0.1 m ... 0.5 m
Material of wetted parts	1.4404 float / 1.4571	PVDF or PP float / PFA coated probe tube	1.4404 float / 1.4571	1.4404 float / 1.4571
Max. process pressure	2.5 MPa (25 bar)	0.5 MPa (5 bar)	2.5 MPa (25 bar)	
Min. medium density	0.8 kg/dm ³	0.4 / 0.7 kg/dm ³	0.8 kg/dm ³	0.8 kg/dm ³
Float sizes	see: float selection table			
Medium temperature	-40 °C...+150 °C	-40 °C...+80 °C	see: temperature data for Ex versions table	-40 °C ... +120 °C
Ambient temperature	-40 °C...+100 °C			-20 °C ... +70 °C
Output	1 ... 5 pcs reed-switches, one connecting point of each is common, NO/NC			1...3 pcs reed-switches, NO or NC depending on float orientation
Switching rate	120 W / VA, 250 V AC/DC, 3 A reed relay, summary max. 9 A			120 W/VA 250 V AC/DC max. 3 A
Switching point	see: auxiliary table of order codes			40 mm ± 3 mm from the bottom of the protection tube
Switching differential	< 10 mm			–
Distance between reed-switches	minimum 110 mm			–
Electrical connection	M 20x1.5 cable gland, cable outer diameter: 6...12 mm	M 20x1.5 cable gland, cable outer diameter: 9.5... 10 mm		0.5 m long*, 2 x 0.75 mm ² cable with silicon insulation (outer diameter: 5 mm)
	terminal, 0.5 ... 2.5 mm ² wire cross section			
Process connection	as per order code			
Gasket	Klingerit	–	Klingerit	
Electrical protection	Class I.			Class II.
Ingress protection	IP 65			IP 68 (20 m)
Certification	–		ATEX II 2 G EEx d IIC T3...T6	Bureau Veritas
Dimension of the housing	116 x 80 x 65 mm		124 x 80 x 65 mm	–
Mass	0.4 kg + 0.3 kg/m		0.45 kg + 0.3 kg/m	0.15 kg + cable: 0.05 kg/m

* available to order with different cable length

FLOAT SELECTION

Type	MRC-105-7M-600	MRC-105-7M-700	MRC-105-7M-800	MPP-105-3M-200	MPP-105-3M-900
	MZS-101-3M-700 ⁽¹⁾				
Dimensions					
Standard type	■ ⁽²⁾	■	■		
Plastic co. type				■ ⁽²⁾	■
Ex type	■ ⁽²⁾	■	■		
Mini type	■				
Medium-density (min.)	0.8 kg/dm ³	0.55 kg/dm ³	0.4 kg/dm ³	0.7 kg/dm ³	0.4 kg/dm ³
Material	1.4404			PVDF	PP
Medium pressure	2.5 MPa (25 bar)	1.6 MPa (16 bar)	2.5 MPa (25 bar)	0.6 MPa (6 bar)	0.3 MPa (3 bar)

(1) Mini type (2) Standard float, can be ordered with different float as per the float selection table

NIVOPOINT MR

Magnetic float switch with up to 5 switch points. Output: NO or NC
 All wetted parts are made of stainless steel (1.4571, 1.4404); paint coated Aluminium housing with IP65
 Float: Ø 53.5 mm (min. 0.8 g/cm³), probe lengths: 0.5-3 m
 Ex marking: ATEX II 2 G EEx d IIC T6...T3

Type

MR

Process connection

MR
 A 1" BSP
 C 2" BSP
 D 1" NPT
 G 2" NPT

Number of switching points

MR
 1 1 switch
 2 2 switches
 3 3 switches
 4 4 switches
 5 5 switches

Probe length (Ln)

MR
 0 5 0.5 m
 0 6 - 3 0 0.6-3 m; each started 0.1 m

Approval

MR
 3 For non-hazardous area
 7 EExd

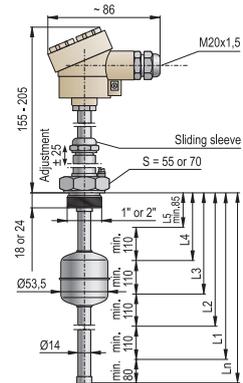
MR

Only devices with 2" process connection can be installed without removing the float.
 Ball float Ø 95 mm (min. 0.55 g/cm³) or Ø 124 mm (min. 0.4 g/cm³) available on request.
 This request should be given in the text of the order.

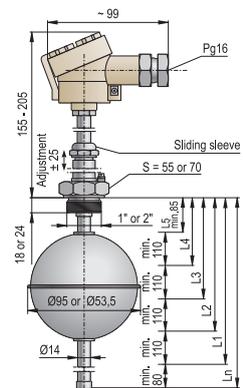
Specification is required as below:

Total probe length (Ln)=	
Switching points: distance from process connection in mm	Switch type (NO / NC)
L1=	
L2=	
L3=	
L4=	
L5=	

NO or NC represents open or closed contacts when the float is at the bottom i.e. empty tank



NIVOPOINT MR



NIVOPOINT MR EExd

NIVOPOINT MP, plastic version maximum pressure 5 bar !!

Magnetic float switch with up to 5 switching points
 Aluminium housing, IP65, Paint coated, Float: Ø 76x87 mm
 Materials of the wetted parts:

Flange	PP
Probe	PFA coated st. st.
Float	PVDF or PP

Output: NO or NC

Type

M P

Process connection

M P
 P DIN DN 80, PN16
 R DIN DN 100, PN16

Number of switching points

M P
 1 1 switch
 2 2 switches
 3 3 switches
 4 4 switches
 5 5 switches

Probe length

M P
 0 5 0.5 m
 0 6 - 3 0 0.6-3 m; each started 0.1 m

Float / Material

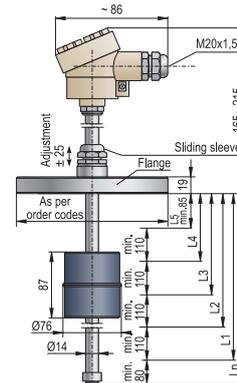
M P
 3 Ø 76x87 / PVDF or PP

M P

Specification is required as below:

Total probe length (Ln)=	
Switching points: distance from process connection in mm	Switch type (NO / NC)
L1=	
L2=	
L3=	
L4=	
L5=	

NO or NC represents open or closed contacts when the float is at the bottom i.e. empty tank



NIVOPOINT MPP

LEVEL SWITCHES

NIVOPOINT MZC

Magnetic float switch with up to 3 switch points
 Materials of the wetted parts: stainless steel (1.4571, 1.4404)
 Cable length: 0.5 m
 Float: Ø 53.5 mm (min. 0.8 g/cm³)
 Insertion length: 0.1-0.5 m, process connection: 2" BSP
 Marine approval: Bureau Veritas

Type

M Z C - 0 - 3

Number of switching points / Number of floats

M Z C - 0 - 3

- 1 1 switch / 1 float
- 2 2 switches / 2 floats
- 3 3 switches / 3 floats

Probe length

M Z C - 0 - 3

- 1 - 5 0.1-0.5 m; each started 0.1 m

M Z C - 0 - 3

NIVOPOINT MZS

Magnetic float switch with 1 switch point, cable length: 0.5 m
 Materials of the wetted parts: stainless steel 1.4571
 Float: Ø 53.5 mm (min. 0.8 g/cm³)
 Process connection: 1/4" BSP
 Marine approval: Bureau Veritas

Type

M Z S - 1 0 - 3

Probe length

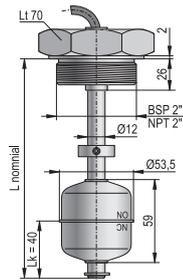
M Z S - 1 0 - 3

- 1 0.1 m
- 2 0.2 m

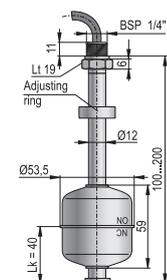
M Z S - 1 0 - 3

Cable

Each started 1 m over the standard 0.5 m



NIVOPOINT MZC

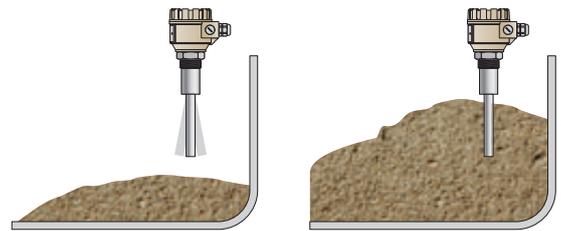


NIVOPOINT MZS

NIV24
MZS-101-3

GENERAL DESCRIPTION

The **NIVOCONT R** series of vibrating rod level switches are robust instruments designed for low and high level indication of granules and powders with a minimum of 0.05 kg/dm³ density. Mounted on tanks, silos or hopper bins it can control filling / emptying, or give fail-safe alarm signals. The highly polished version is recommended to use for abrasive mediums. The operation principle is based on that the electronic circuit excites a vibration in the rod probe. When the medium reaches and covers the rod, its vibration stops, when the medium leaves the rod it returns to vibrate freely. The electronics senses the change of vibration and gives output signal after a selected delay.



MAIN FEATURES

- Extension up to 20 m
- Adjustable sensitivity
- Max. medium temperature: 160°C
- Universal supply voltage
- Dust explosion protection
- Fine polished probe
- IP 67 protection

APPLICATIONS

- Powders, pellets, granulates
- Grains
- Ground products
- Stone-powder, chippings
- Cement, sand
- Coal, slag

CERTIFICATIONS

- ATEX II 1/2 D tD A20/A21 IP67 T* °C
- IEC Ex t IIIIC T* Da/Db IP67

TYPE SELECTION

Position of the switching point (high, low) and the mounting (side, bottom, top) determines the selection of the appropriate type.

Version		Standard	Pipe extended	Cable extended
High limit switch		Side mounted	Top mounted	Top mounted
Low limit switch		Side or bottom mounted		
Loadability				
Max. load	Force	500 N	–	45 kN
	Torque	100 Nm	100 Nm	–



RKH-500/600



RKR-500/600



RKK-500/600

TECHNICAL DATA

Version		Standard	Pipe extended	Cable extended
Insertion length		207 mm	0.3 ... 3 m	1 ... 20 m
Material of wetted parts		1.4571		vibrating part: 1.4571 cable: PE cover
Process connection		1 1/2" BSP; 1 1/2" NPT as per order code		
Output		see output data		
Temperature range		standard: -30 °C...+110 °C; High temp. version: -30 °C...+160 °C; Ex version: see temperature data		
Medium pressure		max. 2.5 MPa (25 bar)		max. 0.6 MPa (6 bar)
Max. load	Force	500 N	–	45 kN
	Torque	100 Nm	100 Nm	–
Medium density*		min. 0.05 kg/dm ³ (granular size 10 mm)		
Response time (selectable)		< 2 sec or 5 sec ±1.5 sec		
Power supply		20...255 V AC/DC, Ex: 20...250 V AC, 20...50 V DC		
Power consumption		≤ 2.5 VA / 2 W		
Housing material		Paint coated aluminium or plastic PBT		
Electrical connection		2 x M20x1.5 plastic cable glands for Ø 6...12 mm cable For Ex version: 2 x M20x1.5 cable glands: protection Ex tD (ATEX) for Ø 9...13 mm cable 2 x M20x1.5 cable glands: protection Ex IIIC IP67 (IEC Ex) for Ø 6...12 mm cable 2 pcs. terminal blocks for max. 1.5 mm ² wire cross section		
Electrical protection		Class I.		
Ingress protection		IP67		
Ex marking **	ATEX	⊕ II 1/2 D tD A20/A21 IP67 T* °C (see temperature limit values for Ex versions)		
	IEC Ex	Ex t IIIC T* Da/Db IP67 (see temperature limit values for Ex versions)		
Mass	Metal housing	1.88 kg	1.88 kg + 1.4 kg/m	1.88 kg + 0.6 kg/m
	Plastic housing	1.5 kg	1.5 kg + 1.4 kg/m	1.5 kg + 0.6 kg/m

* Depends on the internal friction and the granular size of the medium

** Only with metal housing

OUTPUT DATA

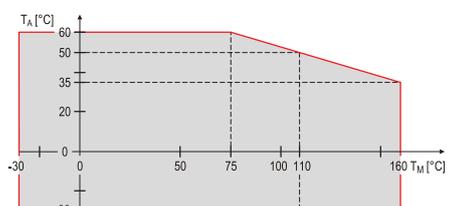
Output	Relay	Electronic
Output type and rating	SPDT 250 V AC, 8 A, AC1	SPST 50 V, 350 mA
Output protection	–	Overvoltage, overcurrent and overload
Voltage drop (switched on)	–	< 2.7 V 350 mA
Residual current (switched off)	–	< 10 µA

TEMPERATURE DATA

Temperature limit values for Ex versions:

Temperature data	Cable extended			Standard and pipe extended			High temp.	
Medium temp. (T _M) Min.: -30°C	+60°C	+70°C	+95°C	+60°C	+70°C	+95°C	+110°C	+160°C
Ambient temp. (T _A) Min.: -30°C	+60°C	+50°C	+60°C	+60°C	+50°C	+60°C	+50°C	+35°C
Max. surface temp. of process connection	+85°C	+85°C	+95°C	+85°C	+85°C	+95°C	+95°C	+135°C
Max. surface temp.	+85°C	+85°C	+95°C	+85°C	+85°C	+95°C	+110°C	+160°C
Temp. classes	T90°C	T100°C	T90°C	T100°C	T115°C	T170°C		

Temperature diagram



NIVOCONT R, standard probe

Vibrating rod level switch for powders and granular solids
 Stainless steel probe. Probe length: 207 mm
 Power supply: 20-255 V AC/DC; Ex version: 20-250 V AC / 20-50 V DC
 Selectable response time: standard response: 5 ± 1.5 sec, fast response < 2 sec
 Selectable standard and high energy vibration mode
 Housing aluminium or plastic with IP67 / NEMA 6
 Ex marking: ATEX II 1/2D tD A20/A21 IP67 T*
 IEC Ex t IIIC T* Da/Db IP67**

Type

R - 0 2 -

Versions

R - 0 2 -

- K Standard version (110°C)
- H High temperature version (160°C)

Process connection

R - 0 2 -

- H 1 1/2" BSP
- N 1 1/2" NPT

Housing

R - 0 2 -

- 5 Aluminium (paint coated)
- 6 Plastic, PBT, glass fibre reinforced (not available in Ex version)

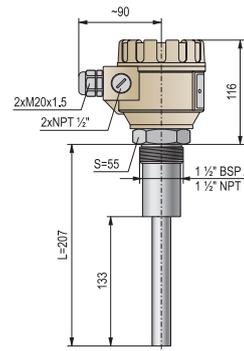
Output / Approval

R - 0 2 -

- 1 SPDT, potential free relay; 8 A 250 V AC
- 3 Solid state output
- 5 Dust Ex, SPDT, potential free relay; 8 A 250 V AC

R - 0 2 -

** Need of IEC is to be specified with order



NIVOCONT RKH-502-1

NIV24
NIVOCONT RKH-502-1

VIBRATING ROD LEVEL SWITCHES

NIVOCONT R

NIVOCONT R, pipe extended probe

Vibrating rod level switch with pipe extended probe for powders and granular solids
 Stainless steel probe with length up to 3 m
 Power supply: 20-255 V AC/DC; Ex version: 20-250 V AC / 20-50 V DC
 Selectable response time: standard response: 5 ± 1.5 sec, fast response < 2 sec
 Selectable standard and high energy vibration mode
 Housing aluminium or plastic with IP67 / NEMA 6
 Ex marking: ATEX II 1/2D tD A20/A21 IP67 T*

Type

R - -

Versions

R - -

- K Standard version (110°C)
- H High temperature version (160°C)

Process connection

R - -

- R 1 1/2" BSP
- L 1 1/2" NPT

Housing

R - -

- 5 Aluminium (paint coated)
- 6 Plastic, PBT, glass fibre reinforced (not available in Ex version)

Probe length

R - -

- 0 3 - 0 5 0.3-0.5 m
- 0 6 - 3 0 0.6-3 m; each started 0.1 m

Output / Approval

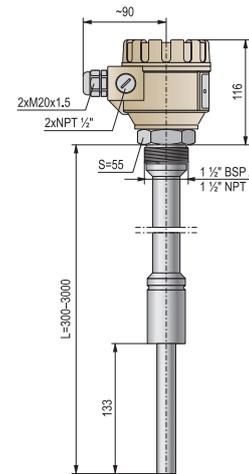
R - -

- 1 SPDT, potential free relay; 250 V AC, 8 A
- 3 Solid state output
- 5 Dust Ex, SPDT, potential free relay; 250 V AC, 8 A

R - -

Available on request

- ⇒ Remote mounting electronics
- ⇒ Version with sliding sleeve



NIVOCONT RKR

LEVEL SWITCHES

NIVOCONT R, cable extended probe

Vibrating rod level switch with cable extended probe for powders and granular solids

Stainless steel probe, PE coated steel cable, Probe length up to 20 m

Power supply: 20-255 V AC/DC; Ex version: 20-250 V AC / 20-50 V DC

Selectable response time: standard response: 5 ± 1.5 sec, fast response < 2 sec

Selectable standard and high energy vibration mode

Housing aluminium or plastic with IP67 / NEMA 6

Ex marking: ATEX II 1/2D tD A20/A21 IP67 T*

Type

R K - -

Process connection

R K - -

K 1 1/2" BSP

C 1 1/2" NPT

Housing

R K - -

5 Aluminium (paint coated)

6 Plastic, PBT, glass fibre reinforced (not available in Ex version)

Probe length

R K - -

0 1 1 m

0 2 - 2 0 2-20 m; each started 1 m

Output / Approval

R K - -

1 SPDT, potential free relay; 8 A 250 V AC

3 Solid state output

5 Dust Ex, SPDT, potential free relay; 8 A 250 V AC

R K - -

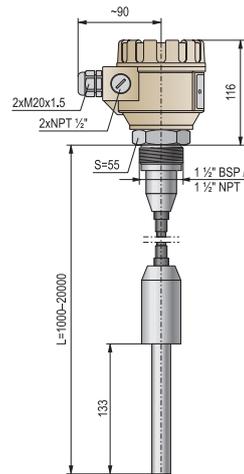
Order examples for non-standard probe lengths:

1). 470 mm probe: RK-505-_/ 470 mm

Price: price of next standard length (RK-505-_)

2). 1520 mm probe: RK-516-_/ 1520 mm

Price: price of next standard length (RK-516-_)



NIVOCONT RKK

VIBRATING ROD LEVEL SWITCHES

NIVOCONT R

NIVOCONT R, custom extended probe

Vibrating rod level switch with custom extended probe for powders and granular solids
 Extension pipe: max. 2 m
 Parts protruding into tank: stainless steel with probe
 Power supply: 20-255 V AC/DC
 Selectable response time: standard response: 5 ± 1.5 sec, fast response < 2 sec
 Selectable standard and high energy vibration mode
 Enclosure of electronics: IP67 / NEMA 6

Type

R - 0 2 -

Versions

R - 0 2 -

- K Standard version (110°C)
- H High temperature version (160°C) with high energy electronics

Process connection

R - 0 2 -

- E 1 1/2" BSP
- F 1 1/2" NPT

Housing

R - 0 2 -

- 5 Aluminium (paint coated)
- 6 Plastic, PBT, glass fibre reinforced

Output

R - 0 2 -

- 1 SPDT, potential free relay; 8 A 250 V AC
- 3 SPST, Solid state output

R - 0 2 -

NIVOCONT R, with remote-mounted electronics

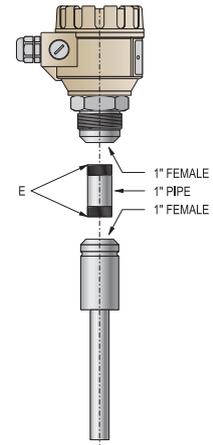
Special version with electronics separated from probe
 Use the order code extension below after the standard order code of the device:

Special versions

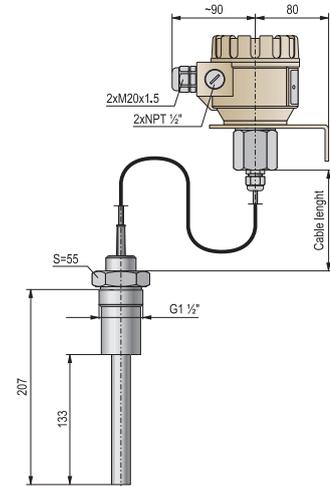
X09 ←

Cable extension

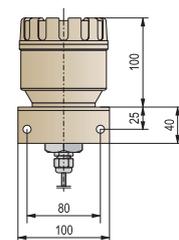
Max. 10 m; each started 1 m
 Order example:
 Remote-mounted version with standard probe and 3 m extension: RKH-502-1-X09/3m



NIVOCONT RKE



NIVOCONT RKH-500-X09



NIVOCONT RKH-500-X09

GENERAL DESCRIPTION

NIVOSWITCH vibrating fork level switches are suitable for level detection of liquids or granular, powdered solids. Units with parallel vibrating fork are suitable for liquids, units with non parallel vibrating fork are suitable for solids. Mounted on pipes, silos, tanks or hopper bins it can control filling / emptying, also can generate fail-safe alarms providing overflow- or dry run protection. The operation principle is based on that the electronic circuit excites a vibration in the fork probe. When the medium reaches and covers the fork, its vibration changes or stops. The fork will start vibrating again as the medium sets it free. The electronics senses the change of vibration and gives output signal after a selected delay. The plastic coated version is recommended to use for aggressive mediums, the highly polished version is recommended to use for abrasive mediums. The PNP/NPN transistor output versions can be connected directly to PLC, or relay unit. NIVOSWITCH vibrating forks are able to solve switching tasks of high-current loads with the help of UNICONT PKK switching amplifiers. UNICONT PKK-312-8 Ex is a recommended intrinsically safe switching unit designed for Ex rated vibrating forks.

MAIN FEATURES

- Compact and mini compact type
- Rod extension up to 3 meters
- Plastic PFA coated version
- Polished vibrating part
- Hygienic versions with various process connections and 0.5 micron fine polishing
- Selectable sensitivity
- Relay or electronic output
- Switching performance does not depend on the change of liquid conductivity, dielectric constant, viscosity, pressure and temperature
- Medium temperature max. 130°C
- Output test with optional test magnet
- Ex version
- IP 67, 65/68 protection

APPLICATIONS

- For liquids: min. 0.7 kg/dm³ density and max. 10⁴ mm²/s viscosity, for solids: min. 0.01 kg/dm³ density
- Level switch of liquids, powders, granules
- Food & beverages industry, animal feed, chemical industry, oil industry
- For normal or hazardous, aggressive (acids, solvents) liquids
- For free-flowing, powdered solids, granules
- Covers a large variety of level detection, applications such as high/low fail safe limit switch, overflow or dry run protection, pump controls

CERTIFICATIONS

- ATEX II 1G Ex ia IIC T4...T6 G4
- ATEX II 1G Ex ia IIB T4...T6 G4
- ATEX II 1/2 D IP6x T160°C
- Germanischer Lloyd (only for RF-400 compact types for liquids)

TYPE SELECTION

Type selection is aided by this table for choosing the proper version to a given level switching task. Most essential aspect is the consistency (liquid or solid) of the measurement medium.

Application	Liquids	Solids		
Features	 Mini compact	 Compact	 Mini compact	 Compact
Steel housing	■	■	■	■
Plastic housing		■		■
Extension	■	■	■	■
Highly polished version	■	■		
Plastic coated fork	■	■		
1" process connection	■	■		
1 1/2" process connection			■	■
Relay output		■		■
Electronic output	■		■	
Electronic connection	terminal		■	■
	connector	■	■	
	cable	■	■	
Intrinsical safe version	■			
Dust Ex version			■	■
Function setting (low-high level)	■ *	■	■ *	■
Function indication	■	■	■	■
Density selection			■	■
Output test magnet	■		■	

* only for 3-wire DC versions



TECHNICAL DATA

Type	Mini compact		Compact	
	For liquids	For solids	For liquids	For solids
Insertion length	69-3000 mm	137-3000 mm	69-3000 mm	137-3000 mm
Material of wetted parts	DIN 1.4571 PFA coating	DIN 1.4571	DIN 1.4571 PFA coating	DIN 1.4571
Process connection	As per order code			
Medium temperature	- 40°C ... +130°C (see: temperature diagrams)			
Ambient temperature	- 40°C ... +70°C (see: temperature diagrams)		- 30°C ... +70°C	- 40°C ... +70°C
Medium pressure	max. 4 MPa (40bar) (see: pressure diagrams)			
Medium density	> 0.7 kg/dm ³	≥ 0.01 kg/dm ³	> 0.7 kg/dm ³	≥ 0.01 kg/dm ³
Medium viscosity	≤ 10000 mm ² /s (cSt)	-	≤ 10000 mm ² /s (cSt)	-
Power supply	2-wire DC: 15-29 V DC 2-wire AC: 20-255 V AC; 3-wire DC: 12-55 V DC	2-wire DC: 15-27 V DC	20-255V AC, 20-60V DC	
Power consumption	AC: depending on load; DC: < 0,6 W		AC:1.2-17 VA; DC: < 3 W	
Housing material	DIN 1.4571		Paint coated aluminium or plastic PBT	
Electrical connection	Connector, or 3m integrated cable ^(1.) 2x0.5 mm ² / 4x0.75 mm ² /5x0.5 mm ²		2xM20x1.5 cable gland, for 6-12mm cable, terminal, for 0.5 – 1.5mm ² wire cross section	
Electrical protection	AC version: Class I.; DC version: Class III.		Class I.	
Mechanical I protection	Connector: IP65; cable: IP68		IP67	
Mass	≈ 0.5 kg+1.2 kg/m extension		≈ 1.3 kg + 1.2 kg/m extension	

1.) available cable length: max. 30m

LEVEL SWITCHES

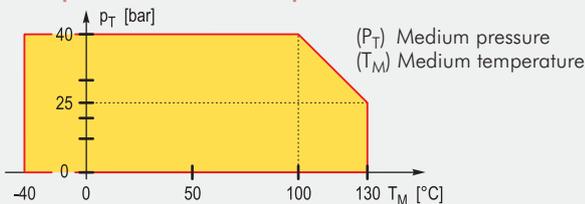
SPECIAL DATA FOR EX CERTIFIED MODELS

Type	Stainless steel vibrating part	Coated vibrating part	
Mini compact vibrating forks for liquids (2-wire DC version)			
Ex marking	ATEX II 1 G Ex ia IIC T4...T6 Ga	ATEX II 1 G Ex ia IIB T4...T6 Ga	
Power supply and signal circuit limits ^(2.)	U _i =29 V, I _i =100 mA, P _i =1.4W, C _i =7 nF, L _i =0 mH		
Mini compact and compact vibrating forks for solids	Connector version (IP 65) ^(3.)	Cable version (IP 68) ^(3.)	Compact type (IP 67) ^(4.)
Ex marking	ATEX II 1/2 D Ex IP6xT160°C		

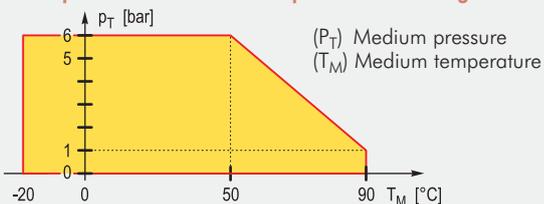
2.) Intrinsically safe vibrating forks should be powered by Ex ia certified and approved devices 3.) only for 2-wire AC, or 3-wire DC version 4.) only with aluminium housing

TEMPERATURE DATA

Medium pressure - Medium temperature



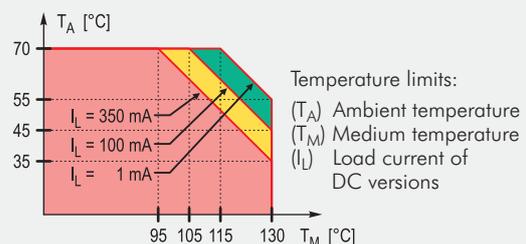
Medium pressure - Medium temperature PP flange version



Mini compact Ex types for liquids

Temperature classes	T6	T4	T3
T _A	+70°C	+60°C	+60°C
T _M	+70°C	+75°C	+130°C

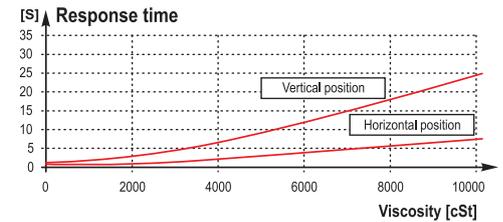
Mini - Compact version



OUTPUT DATA

RESPONSE TIME DIAGRAM

Compact type			
Output	For liquids	For solids	
Relay	1 or 2 (SPDT) relays 250VAC, 8A, AC1/250 V AC, 6A, AC1		
Response time	when immersed	≤ 0.5 sec	
	when free	≤ 1sec*	≤ 1 sec – H density 3 sec – L density



Mini compact type					
Type	Output	For liquids	For solids		
2-wire DC	DC current change	When immersed: 14 mA ± 1 mA			
		When free: 9 mA ± 1 mA			
2-wire AC	AC output for serial connection	Voltage drop (in switched-on state): < 10.5 V			
		Residual current (in switched-off state): < 6mA			
		Current load	max. continuous	350 mA, AC 13	350 mA, AC 13 (Ex version: 140 mA)
			min. continuous	10 mA / 255V; 25 mA / 24V	
max. impulse	1.5 A / 40 msec				
3-wire DC	Transistor switch	Connector: Field selectable NPN- and PNP			
		Cable: galvanically isolated PNP/NPN			
		Voltage drop (in switched-on state)	< 4.5 V	< 1.8 V	
		Current load (max. continuous)	350 mA / Umax=55V	350 mA / Umax=55V (Ex version: 200 mA)	
Response time	when immersed	0.5 sec			
	when free	< 1sec*	≤ 1 sec – H density < 3 sec – L density		

* see viscosity diagram

OPERATION

Compact and Mini compact type						
Power supply	Switching	Fail-Safe switch *	Status LED	Output		
				Relay	Electronic	
ON	High level	high				
		high				
	Low level	low				
		low				
OFF	–	High or Low				

2-wire DC version			
Power supply	Switching	Status LED	Output
ON			14 ± 1 mA
			9 ± 1 mA
OFF	Fork immersed, or fork is free		–

OPERATION MODE SWITCHES

Compact Fail-Safe		Compact Density	
high	Fail-safe alarm is indicated with de-energised relay or open state of the output	high	Medium density ≥ 0.5 kg/dm ³
low		low	Medium density < 0.5 kg/dm ³

* Mini compact type: With appropriate wiring or with Fail-Safe switch on the connector
Compact type: with Fail-Safe switch

NIVOSWITCH RC

Compact vibrating fork level switch for liquids only
 All wetted parts and housing stainless steel; IP65/IP68
 DIN connector (IP65) or 3 m integrated cable (IP68)
 Ex marking: ATEX II1G Exia IIB T6-T4 Ga
 ATEX II1G Exia IIC T6-T4 Ga

Type

- R - 4 0 0 - "SHORTY" probe, Probe length: 69 mm
- R - 4 0 1 - Standard probe, Probe length: 125 mm
- R - 4 - Extended probe, Probe length: 0.2-3 m

Fork finishing

- R - 4 -
- C Polished stainless steel
- G ← Highly polished stainless steel
- A ← PFA coated stainless steel fork (only 1" BSP or flange process connection)
- E Without function test reed

Process connection

- R - 4 -
- M 1" BSP
- P 1" NPT
- T 1 1/2" Triclamp (ISO2852)
- R 2" Triclamp (ISO2852)
- D DN 40 Pipe coupling (DIN 11851)
- E DN 50 Pipe coupling (DIN 11851)

Stainless steel flanges; not welded unless specifically ordered so
 Flanges conform to: DIN 2501, DIN 2526, Form C / ANSI B 16.5

- G DIN DN 50 PN 40 / 25
- B ANSI 2" RF 600 / 300 psi
- K JIS 40K 50A

PFA coated stainless steel flange; not welded

Flanges conform to: DIN 2501, DIN 2526, Form C / ANSI B 16.5

- G DIN DN 50 PN 40/25
- B ANSI 2" RF 600/300 psi
- K JIS 40K 50A

PP flanges (max. 6 bar; -20°C to +90°C), drilled like DIN PN16 / ANSI 150 psi

- F DIN DN 50 PN 16
- A ANSI 2" RF 150 psi
- J JIS 10K 50A

Probe length

- R - 4 -
- 0 0 0.069 m
- 0 1 0.125 m
- For standard polished forks (RC)
 - 0 2 0.2 m
 - 0 3 - 3 0 0.3-3 m; each started 0.1 m
- For highly polished forks (RG)
 - 0 2 0.2 m
 - 0 3 - 3 0 0.3-3 m; each started 0.1 m
- For PFA coated stainless steel forks (RA)
 - 0 2 0.2 m
 - 0 3 - 3 0 0.3-3 m; each started 0.1 m

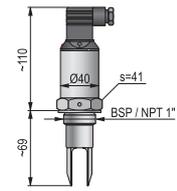
Output / Approval

- R - 4 -
- 1 2-wire AC / DIN connector
- 2 2-wire AC / cable
- 3 3-wire PNP-NPN / DIN connector
- 4 3-wire PNP-NPN / cable
- 6 2-wire DC / DIN connector
- 7 2-wire DC / cable
- 8 2-wire Ex / DIN connector
- 9 2-wire Ex / cable
- K 2-wire DC / M12 connector
- L 2-wire Ex / M12 connector
- M 3-wire PNP-NPN / M12 connector

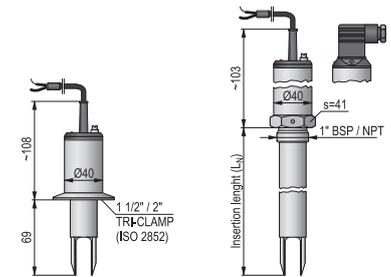
R - 4 -

Cable

Maximum length 30 m; each started 1 m over the standard 3 m

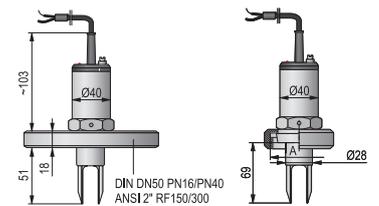


RCM-400-1/3/6/8



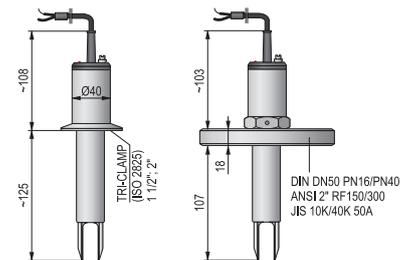
RCT-400-2/4/7/9
RCR-400-2/4/7/9

RCM/P-401-1/3/6/8
RCM/P-430-1/3/6/8



RCG-400-2/4/7/9

RCD-400-2



RCT-401-2/4
RCR-401-__

RCG-401-2/4/7/9
RCF-401-2/4/7/9

Type	RCD	RCE
Nominal size	DN 40	DN 50
A	RD 65x1/6	RD 78x1/6

NIV24
NIVOSWITCH RCM-400-3
NIVOSWITCH RCM-401-3

NIVOSWITCH RF

Vibrating fork level switch for light free flowing solids

Materials: Stainless steel probe, paint coated Aluminium housing, IP67 / NEMA 6

Power supply: 20-255 V AC and 20-60 V DC; universal

Output: 1 or 2 SPDT, potential free relay, 8A 250 V AC

Ex marking: ATEX II 1/2 D IP 6X T160°

Type

R F 0 1 Standard probe, Probe length: 125 mm

R F 0 Extended probe, Probe length: 0.2-3 m

Process connection

R F 1" BSP

M 1" BSP

P 1" NPT

Stainless steel flanges; not welded unless specifically ordered so

Flanges according to DIN 2501, finishing: DIN 2526, Form C / ANSI B 16.5

G DIN DN 50 PN 40/25

B ANSI 2" RF 600/300 psi

K JIS 40K 50A

PP flanges (max. 6 bar; -20°C to +90°C), drilled as DIN PN16 / ANSI 150 psi

F DIN DN 50 PN 16

A ANSI 2" RF 150 psi

J JIS 10K 50A

Housing

R F

2 Plastic housing (PBT, glass fibre reinforced)

3 Aluminium housing (paint coated)

Probe length

R F

0 1 0.125 m

0 2 0.2 m

0 3 - 3 0 0.3-3 m; each started 0.1 m

Output / Approval

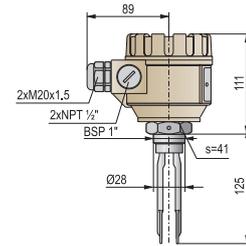
R F

0 1 SPDT relay: 250 V AC, 8 A

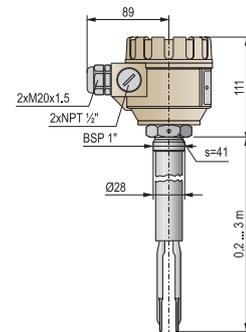
A 2 SPDT relays (1 x 250 V AC, 8 A and 1 x 250 V AC, 6 A)

B 1 SPDT relay: 250V AC, 8 A / Dust Ex

R F



NIVOSWITCH RFM-301-
NIVOSWITCH RFP-3-_-_-



NIVOSWITCH RFM-3-_-_-
NIVOSWITCH RFP-3-_-_-

VIBRATING FORK LEVEL SWITCHES

NIVOSWITCH

NIVOSWITCH RC

Compact vibrating fork level switch for light, free-flowing solids
 All wetted parts and housing are made of stainless steel IP65/IP68
 DIN connector (IP65) or 3 m integrated cable (IP68)
 Ex marking: ATEX II 1/2 D IP 6X T160°

Type

RC 3 0 1 - Standard probe, Probe length: 125 mm
 RC 3 - Extended probe, Probe length: 0.2-3 m

Process connection

RC 3
 M 1" BSP
 P 1" NPT

Stainless steel flanges; not welded unless specifically ordered so
 Flanges conform to: DIN 2501, finishing: DIN 2526, Form C / ANSI B 16.5

- G DIN DN 50 PN 40/25
- B ANSI 2" RF 600 / 300 psi
- K JIS 40K 50A

PP flanges (max.: 6 bar; -20°C to +90°C), drilled like DIN PN16 / ANSI 150 psi

- F DIN DN 50 PN 16
- A ANSI 2" RF 150 psi
- J JIS 10K 50A

Probe length

RC 3 -
 0 1 0.125 m
 0 2 0.2 m
 0 3 - 3 0 0.3-3 m; each started 0.1 m

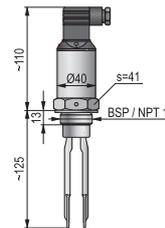
Output / Approval

RC 3 -
 1 2-wire AC / connector
 2 2-wire AC / cable
 3 3-wire PNP-NPN / connector
 4 3-wire PNP-NPN / cable
 6 2-wire DC / connector
 7 2-wire DC / cable
 C 2-wire AC / DIN connector / Dust Ex
 D 2-wire AC / integrated cable / Dust Ex
 E 3-wire PNP-NPN / DIN connector / Dust Ex
 F 3-wire PNP-NPN / integrated cable / Dust Ex

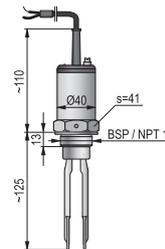
RC 3 -

Cable

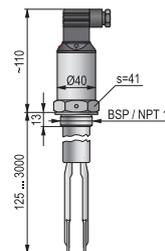
Maximum length 30 m; each started 1 m over the standard 3 m



R_M-301-1/3/6
 R_P-301-1/3/6



R_M-301-2/4/7
 R_P-301-2/4/7



R_M-3__-1/3/6
 R_P-3__-1/3/6

LEVEL SWITCHES

NIVOSWITCH RR

Vibrating level switch for powder and granules with welded fork
 Plastic or aluminium housing with IP67 / NEMA 6
 Power supply: 20-255 V AC, 20-60 V DC
 Output: 1 or 2 SPDT, relay 8 A 250 V AC
 Ex marking: ATEX II 1/2 D IP 6X T160°

Type

- RR 0 1 Standard probe, Probe length: 137 mm
- RR 0 2 Standard probe, Probe length: 175 mm
- RR Extended probe, Probe length: 0.3-3 m

Process connection

- RR H 1 1/2" BSP
- N 1 1/2" NPT

Stainless steel flanges; not welded unless specifically ordered so
 Flanges according to DIN 2501, finishing: DIN 2526, Form C / ANSI B 16,5

- G DIN DN 50 PN 40/25
 - B ANSI 2" RF 600 / 300 psi
 - K JIS 40K 50A
- PP flanges (maximum 6 bar; -20°C to +90°C), DIN PN16 / ANSI 150 psi
- F DIN DN 50 PN 16
 - A ANSI 2" RF 150 psi
 - J JIS 10K 50A

Housing

- RR 2 Plastic housing (PBT, glass fibre reinforced)
- 3 Aluminium housing (paint coated)

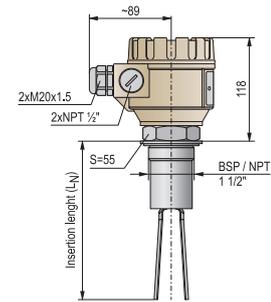
Probe length

- RR 0 1 0.137 m
- 0 2 0.175 m
- 0 3 0.300 m
- 0 4 - 3 0 0.4-3 m; each started 0.1 m

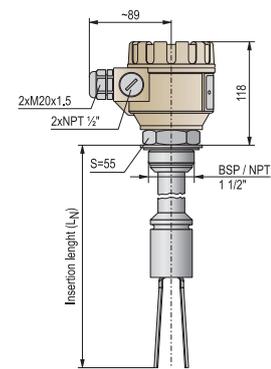
Output / Approval

- RR 0 1 SPDT relay: 250V AC, 8 A
- A 2 SPDT relays (1 x 250 V AC, 8 A and 1 x 250 V AC, 6 A)
- B 1 SPDT relay: 250V AC, 8 A / Dust Ex

RR



NIVOSWITCH RRH-02-



NIVOSWITCH RRH-03-30

LEVEL SWITCHES

NIVOSWITCH RL

Vibrating level switch for powder and granules with welded fork
 All wetted parts and housing are made of stainless steel IP65/IP68
 DIN connector (IP65) or 3 m integrated cable (IP68)
 Ex marking: ATEX II 1/2 D IP 6X T160°

Type

- R L - 3 0 1 - Standard probe, Probe length: 137 mm
- R L - 0 2 - Standard probe, Probe length: 175 mm
- R L - 3 - Extended probe, Probe length: 0.3-3 m

Process connection

- R L - 3 -
 - H 1 1 / 2" BSP
 - N 1 1 / 2" NPT

Stainless steel flanges; not welded unless specifically ordered so
 Flanges according to DIN 2501 finishing DIN 2526, Form C / ANSI B 16.5

- G DIN DN 50 PN 40 / 25
- B ANSI 2" RF 600 / 300 psi
- K JIS 40K 50A

PP flanges (max. 6 bar; -20°C to +90°C), DIN PN16 / ANSI 150 psi

- F DIN DN 50 PN 16
- A ANSI 2" RF 150 psi
- J JIS 10K 50A

Probe length

- R L - 3 -
 - 0 1 0.137m
 - 0 2 0.175
 - 0 3 0.300
- 0 4 - 3 0 0.4-3 m; each started 0.1 m

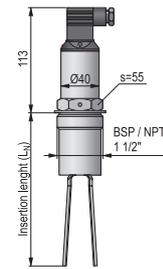
Output / Approval

- R L - 3 -
 - 1 2-wire AC / DIN connector
 - 2 2-wire AC / integrated cable
 - 3 3-wire PNP-NPN / DIN connector
 - 4 3-wire PNP-NPN / integrated cable
 - 6 2 wire DC / DIN connector
 - 7 2 wire DC / integrated cable
 - C 2-wire AC / DIN connector / Dust Ex
 - D 2-wire AC / integrated cable / Dust Ex
 - E 3-wire PNP-NPN / DIN connector / Dust Ex
 - F 3-wire PNP-NPN / integrated cable / Dust Ex

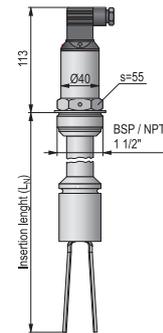
R L - 3 -

Cable

Maximum length 30 m; each started 1 m over the standard 3 m



NIVOSWITCH RLH-302-



NIVOSWITCH RLH-330-1

LEVEL SWITCHES

UNICONT PKK-312-8, Remote Switching unit

Intrinsically safe remote switching unit dedicated to the Ex "ia" version of the NIVOSWITCH R-400 series vibrating forks

Mounting: DIN-rail EN 50022-35

Output: SPDT, potential free relay, 250 V AC, 8A, AC1

Power supply: 24 V AC/DC

Ex marking: ATEX II (1) G [EEx ia] IIC

Type

P K K - 3 1 2 - 8 Ex

UNICONT PK-300

Programmable current controlled remote switching unit featuring 1-22 mA input current and powering capabilities for transmitters

Output: SPDT, potential free relay, 250 V, 8 A, AC1

Power supply: 230 V AC, 110 V AC, 24 V AC or 24 V AC/DC (according to the order code below)

Ex marking: ATEX II (1) G [EEx ia] IIC

Type

P K K - 3 1 2 - 1 230 V AC

P K K - 3 1 2 - 2 110 V AC

P K K - 3 1 2 - 3 24 V AC

P K K - 3 1 2 - 4 24 V AC/DC

P K K - 3 1 2 - 7 24 V AC/DC / Ex

NIVOSWITCH RP, sliding sleeve

Sliding sleeve for NIVOSWITCH R-300 and R-400 series vibrating forks and

NIVOROTA E-700 series rotary paddle

Only for extended versions without coating and with a minimum length of 300 mm

Max. pressure: 6 bar

Material: stainless steel

Type

R P H - 1 1 2 1 1/2" BSP

R P N - 1 1 2 1 1/2" NPT

NIVOSWITCH RPG, weld-in socket

Stainless steel weld-in socket for flush mounting NIVOSWITCH R..M-400 type vibrating forks

Type

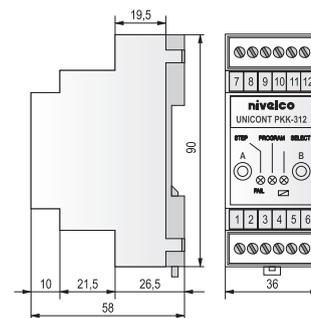
R P G - 1 0 1

NIVOSWITCH RPS, screwdriver with test magnet

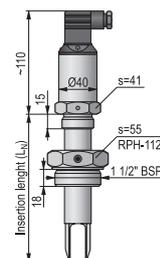
Magnetic screwdriver for operation test of NIVOSWITCH Compact vibration fork

Type

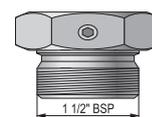
R P S - 1 0 1



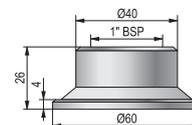
UNICONT PKK-312



NIVOSWITCH RCM-400 + RPH-112



NIVOSWITCH RPH-112



NIVOSWITCH RPG-101

GENERAL DESCRIPTION

The new **NIVOROTA** rotary paddle level switch series of well-known NIVELCO design can be used for detecting the level of lumpy or powdery materials and granules. Mounted to tanks, silos and hoppers it can monitor and control level, filling and emptying of stored materials such as stone, fly ash, sand, coal, feed, beet slice, etc. A small power electric motor drives the paddle which rotates freely in the absence of the material. When the paddle is immersed by the material reaching it, the motor will be switched off the same time triggering the output contact switch. When the material level drops the paddle runs free again, the motor is reactivated and the switch returns to its original state. The new series **NIVOROTA E-700 & E-800** rotary paddle level switches provide all the advantageous features of the previous series in one unit. Dust Ex versions are available for use in hazardous environments.

MAIN FEATURES

- Level switching of free flowing solids
- Cable or rod extended versions up to 3 m
- Automatic motor shutdown
- High temperature version
- IP 67 protection
- Dust-Ex certified version

APPLICATIONS

- **Food industry:** sunflower, sunflower cod, coffee and, cacao powder, flour, sugar, etc.
- **Chemical industry:** plastic powders, granules, pellets
- **Building industry:** cement, sand, calcium powder, gypsum
- **Energy industry:** active soot, coal powder, fly ash

TYPE SELECTION

NIVOROTA	E-700	E-800
Metal housing	■	–
Plastic housing	–	■
Single vane paddle	■	■
Multi-vane paddle	■	■
Flexible coupling	■	■
Cable extension	■	■
DC power supply	■	■
Dust Ex version	■	–
High temperature version	■	–
1" process connection	■	■
1 1/2" process connection	■	■
Torque adjustment	■	■

CERTIFICATIONS

- ATEX  II 1/2D Ex tb IIIC T__ °C IP67

TYPE SELECTION

For appropriate model selection the following should be taken into consideration:

- **Insertion length:**
 - Level switching application (low or high level switch) and the position of installation determine the insertion length.
- **Number of vanes:**
 - Specific gravity and particle size of the material provides orientation for the number of vanes.
 - Most commonly used is the stainless steel, single vane paddle. This paddle can be passed through the respective threaded connection.
 - For lighter materials the use of 3-vane paddle is recommended.
- **Flexible coupling:**
 - Use if the shaft of the instrument has to be protected against falling materials. (rocks, larger lumpy materials)



EK-700
1-vane paddle with
flexible coupling

EH-700
High temperature type,
rod extended version



EK-700
3-vane paddle

Material	Density (kg/dm ³)*
Wheat	0.4 – 0.5
Flour	0.6 – 0.8
Wood chip	0.3 – 0.4
Sawdust	0.3 – 0.35
Whiting	0.8 – 1
Lime hydrate dust	0.4 – 0.5
PVC dust	0.3 – 0.6
PVC granule	0.3 – 0.6
Sunflower corn	0.3 – 0.5
Sunflower cod	0.1 – 0.2
Feed	0.2 – 0.6
Ground paprika	0.8 – 1

* Informative data

TECHNICAL DATA

TYPE	NIVOROTA EK□-700/800 Normal type	NIVOROTA EH□-700 High temperature type
Insertion length	Standard: 200 mm, max. 3 m	
Paddle material, number of vanes	Stainless steel DIN 1.4571 / 1, 3; as per order code	
Rotation speed	≈ 1 rotation / min.	
Material of wetted parts	Stainless steel DIN 1.4571	
Medium density (guidline value)	min. 0.1 kg / dm ³	
Material of the sealing	NPR	FPM
Medium temperature	EK-700: -20 °C ... +120 °C EK-800: -20 °C ... +80 °C	-20 °C ... +200 °C
Ambient temperature	Ex type: See special data for Ex certified models table -30 °C ... +60 °C	
Medium pressure	max. 0.3 MPa (3 bar)	
Output	microswitch: SPDT 250 VAC, 10 A, AC1	
Paddle-rotation / shutdown indication	Bi-colour (green/red) LED	
Process connection	1", 1½", as per order code	
Power supply	24 V AC, 24 V DC, 120 V AC, 230 V AC (+10% -15%)	
Power consumption	max. 4 VA (4W)	
Electrical connection	Cable gland: 2 pcs. plastic M20x1.5; for Ø6..12 mm cable, screw terminal for: 0.5..2.5 mm ² wire cross section	
Electrical protection	Class I.	
Ingress protection	IP67	
Housing material	Paint coated aluminium or plastic (PBT)	Paint coated aluminium
Mass	1.7 kg, cable extension: 1.4 kg/m, counterweight: 1 kg, rod extension: 1.6 kg/m	

LEVEL SWITCHES

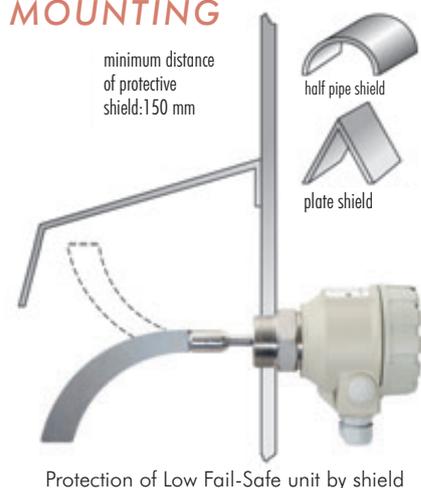
SPECIAL DATA FOR EX CERTIFIED MODELS

Protection type	tD						
Ex marking	ATEX II 1/2 D Ex tb IIIC T ₁ °C IP67						
Electrical connection	2 pcs. steel M20x1.5 cable glands for Ø 8 ... 13 mm cable						
Temperature data	Normal type			High temperature type			
Temperature class	T85 °C	T100 °C	T135 °C	T85 °C	T100 °C	T135 °C	T200 °C
Medium temperature	85 °C	100 °C	120 °C	85 °C	100 °C	120 °C	200 °C
Ambient temperature	65 °C	65 °C	50 °C	65 °C	65 °C	65 °C	65 °C
Max. surface temperature	85 °C	100 °C	120 °C	85 °C	100 °C	120 °C	200 °C
Waiting time for opening the cover	30 min.	20 min.	5 min.	30 min.	20 min.	5 min.	0 min.

OPERATION MODES

Power supply	Status LED	Output microswitch	Paddle
ON	 Green	 De-Energised	Rotate
	 Red	 Energised	Not rotate
OFF	 Dark	 De-Energised	Not rotate

MOUNTING



NIVOROTA E-700/800

Rotary paddle level switch for powders and granular solids

Insertion length: Standard: 200 mm
 Rod extended version: 3 m
 Cable extended version: 3 m
 Flexible coupling can be ordered separately

Medium density: min. 0.1 kg/dm³

Housing: Aluminium or plastic

Motor on/shutdown indication

Ingress protection: IP67

Ex marking: ATEX II 1/2 D Ex tb IIIC T_{__} °C IP67

Type

E - -

Version

E - -

- K Standard version
- H High temperature version

Probe version / Paddle / Process connection

E - -

- A Standard / 1-vane paddle / 1" BSPT
- H Standard / 1-vane paddle / 1 1/2" BSPT
- K With cable extension / 1-vane paddle / 1 1/2" BSPT
- R With rod extension / 1-vane paddle / 1 1/2" BSPT
- F * Standard / 3-vane paddle / 1 1/2" BSPT
- L * With cable extension / 3-vane paddle / 1 1/2" BSPT

Housing / Material of process connection

E - -

- 7 Aluminium (paint coated) / 1.4571
- 8 Glass fibre reinforced plastic / 1.4571 (Ex version not available)

Insertion length

E - -

- 0 2 Standard version 200 mm
- 0 3 - 3 0 0.3-3 m probe with rod extension; each started 0.1 m
- 1 0 - 3 0 1, 2 or 3 m probe with cable extension; each started 1 m

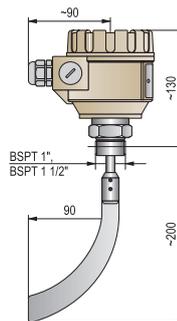
Power supply / Approval

E - -

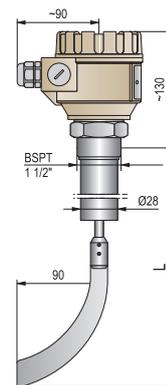
- 1 230 V AC
- 2 120 V AC
- 3 24 V AC
- 4 24 V DC
- 5 230 V AC / Ex
- 6 120 V AC / Ex
- 7 24 V AC / Ex
- 8 24 V DC / Ex

E - -

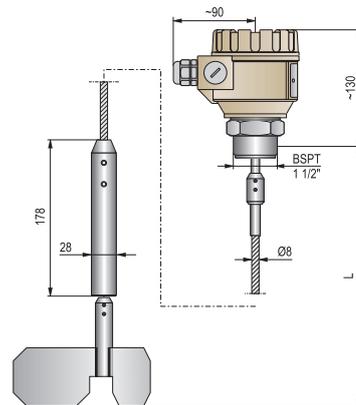
* Mounting plate should be ordered separately



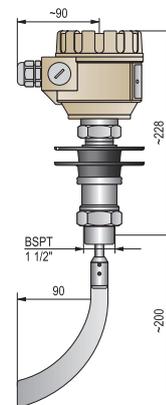
NIVOROTA EK_-02-



NIVOROTA EKR- - -



NIVOROTA EKL- - -



NIVOROTA EH_-02-

NIV24
NIVOROTA EKA-702-1
NIVOROTA EKH-702-1

ROTARY PADDLE LEVEL SWITCHES

NIVOROTA

NIVOROTA E-700

Accessories to order

Mounting / Material

E A M - 7 0

- 1 1" female nut / 1.4571
- 2 1 1/2" female nut / 1.4571
- 3 Sliding sleeve for rod extended version / 1.4571
- 4 Mounting plate, 1" hole / 1.4571
- 5 Mounting plate, 1" hole / carbon steel
- 6 Mounting plate, 1 1/2" hole / 1.4571
- 7 Mounting plate, 1 1/2" hole / carbon steel

E A M - 7 0

Flexible coupling

E A S - 7 0 1 Stainless steel

Adapter

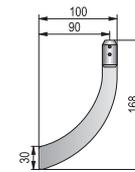
- E A A - 6 0 1** 1" BSP / 1 1/2" BSP (1.4571)
- E A A - 6 0 2** 1" BSP / 1 1/2" NPT (1.4571)
- E A A - 6 0 3** 1 1/2" BSP / 2" BSP (1.4571)
- E K H - 4 0 2 - 1 M 0 0 0 0 1** 1 1/2" BSP / 1 1/4" NPT (1.4571)

Paddles / Material

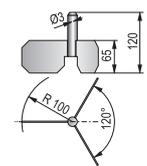
- E K A - 7 0 2 - 1 M 3 0 0 0 0** 1-vane / 1.4751
- E K F - 7 0 2 - 1 M 3 0 0 0 0** 3-vane / 1.4751

Accessories

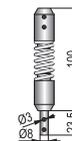
E A W - 7 0 1 Weight, 1.4571



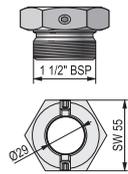
EKA-702-1M30000



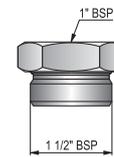
EKF-702-1M30000



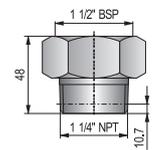
EAS-701



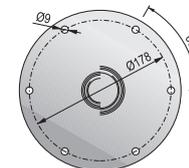
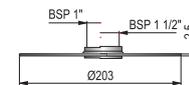
EAM-703



EAA-601



EKH-402



EAM-704 - EAM-707

To be launched in the 2nd quarter! Technical specification is only informative data. For further details please call or sales department!

GENERAL DESCRIPTION

The NIVOCAP CK-100 series new generation capacitive level switches unlike the traditional capacitive principle they operate as capacitance meters in the RF (radio-frequency) range. The most advantageous feature of this technique is that the instrument is less sensitive to deposits, therefore the NIVOCAP CK-100 is an excellent choice for those adhering, sticky substances where the vibrating or the other contacting level switches are not applicable.

The mechanical construction consists of a stainless steel probe and a reference probe between two insulations and the electronics always measure the voltage level proportional to the capacitance difference between the two probes and the housing. This way it provides more stable measurement compared to the analogue capacitance switches. The high temperature Dust-Ex models are suitable for harsh environmental power generation applications.

MAIN FEATURES

- Intelligent electronic level switch
- Not sensitive to deposits
- Easy calibration
- Selectable sensitivity
- Fail-safe operation mode
- Rod or cable extended version
- High temperature version
- Dust-Ex models

APPLICATIONS

- For solids with $\epsilon_r \geq 1.5$ relative dielectric constant and liquids
- For adhering, sticky materials
- Pharmaceutical and food industry
- Power generation processes

TECHNICAL DATA

Type	Normal type	High temperature type
Maximal probe length	Rod extended: 3 m Cable extended: 10 m	
Process connection	3/4", 1", 1 1/2" BSP / NPT threaded connection	
Housing material	Paint coated aluminium	
Material of wetted parts	DIN 1.4571 stainless steel + PPS insulation	
Medium temperature	-30 C°...+90 °C	-30 °C...+220 °C
Process pressure	3 bar (at 25 °C)	
Sensitivity	Selectable with push button; 4 LED display Fine: adjustable with potentiometer within the selected range	
Fail-safe mode	Low, high (selectable with DIP-switch)	
ϵ_r	Min. 1.5	
Output	Relay: SPDT 250 V AC; 8A, or electronic switch: 250 V AC; 3.5A	
Electrical protection	Class I.	
Power supply	20-255 V AC/DC	
Ingress protection	IP 67	



NIVOCAP CK-100

NIVOCAP CK-100

High frequency (RF) capacitance level switch, for powders and granular solids, and for liquids

Probe length: standard: 300-600 mm
rod extended: max. 3 m
cable extended: max. 10 m

Stainless steel (1.4571) probe, PPS insulation

Power supply: 20-255 V AC/DC

Ingress protection: IP67

Type

C - -

Version

C - -

K Standard version

M High temperature version (cable extension not available)

Probe version / Process connection

C - -

D Standard / 3/4" BSP

G Standard / 3/4" NPT

M Standard / 1" BSP

P Standard / 1" NPT

H Standard / 1 1/2" BSP

N Standard / 1 1/2" NPT

R With rod extension / 1 1/2" BSP

L With rod extension / 1 1/2" NPT

K With cable extension / 1 1/2" BSP

C With cable extension / 1 1/2" NPT

Housing

C - -

1 Aluminium (paint coated)

Probe length

C - -

0 3 - 0 6 Standard version 0,3-0,6 m

0 7 - 3 0 0,7-3 m probe with rod extension; each started 0.1 m

1 0 - A 0 1-10 m probe with cable extension; each started 0.5 m

Output / Ex

C - -

1 SPDT, potential free relay; 250 V AC, 8 A

3 Solid state output

5 Dust Ex, SPDT, potential free relay; 250 V AC, 8 A *

C - -

* Approval is pending

GENERAL DESCRIPTION

There is a constant demand for analytical measurements in practically all industries.

Analysis of fluids and reliable control over the feeding of various chemicals is especially crucial in the water and wastewater, pharmaceutical, chemical, food and beverage, power industries.

NIVELCO's AnaCONT analytical range provides HART-capable transmitters for pH, ORP, dissolved oxygen and conductivity measurement.

- The AnaCONT LEP pH transmitters are able to cover the whole 0-14 pH scale.
- The AnaCONT LER ORP transmitters measure in ± 1000 mV measuring range.
- The AnaCONT LED Dissolved Oxygen transmitters use 10 ppm or 20 ppm probes.

All the three transmitters are available in compact, integrated and separated types.

The AnaCONT LCK mini compact conductivity transmitters provide various mounting positions making possible their use in diverse industrial applications.

pH and ORP TRANSMITTERS

AnaCONT



- 2-wire pH and ORP transmitters
- Compact and integrated transmitters
- Measuring range:
pH: 0 - 14, ORP: ± 1000 mV
- Replaceable electrodes
- Temperature compensated
- 4-20 mA, HART communication
- Separated versions up to 10 m
- IP67, IP68 protection
- Explosion-proof models

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DISSOLVED OXYGEN TRANSMITTERS

AnaCONT



- 2-wire DO transmitters
- Compact and integrated transmitters
- Measuring range: 0 - 20 ppm
- Replaceable probes
- Temperature compensated
- 4-20 mA, HART communication
- Power relay output
- Separated versions up to 10 m
- IP67, IP68 protection
- Explosion-proof models

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CONDUCTIVITY TRANSMITTERS

AnaCONT



- 2-wire EC transmitters
- Mini compact type
- Measuring range:
1 μ S/cm - 2 mS/cm
- Optional plug-in
4-digit LED display
- 4-20 mA, HART communication
- IP68 / IP65 protection
- Explosion-proof models

page 110



GENERAL DESCRIPTION

The AnaCONT instruments are designed to measure pH and redox potential values of liquids and aqueous solutions.

pH measurement: Continuous measurement of acidity (pH < 7) and of basicity (pH > 7) liquids can be performed by the help of AnaCONT transmitters. The necessary feeding of chemicals and other technological functions can be controlled by the processed measured values. The potential difference between the submerged measuring and reference probe generates a voltage proportional to the concentration of the hydrogen ion in the measured fluid. This voltage is evaluated by the signal processing electronic module of the instrument. Based on the signals of the submerged probe and the temperature sensor the smart signal processing electronic module calculates a pH value normalized to 25°C and generates a proportional output signal. The long term stability and accuracy of the measurement requires a periodic calibration of the sensors using the standard buffer solutions.

Redox potential (ORP) measurement: Similarly to the pH measurement, the measurement of the redox potential is based on the potential difference between measuring and reference probes. Oxidation or reduction occurs on the platinum surface of the measuring probe. Redox potential is a parameter that indicates the sum of oxidants and reducers in the measured medium. The output signals of the probes are processed by the electronic unit and it converts them into a proportional output signal. In order to get the desired medium parameters the reduction of liquids or feeding of suitable oxidant is executed based on the formerly processed values.

MAIN FEATURES

- Compact and integrated types
- Separated versions up to 10 m
- Measuring range: pH: 0-14 ;
ORP: ±1000 mV
- Wide probe selection according to the application
- User friendly software, graphic display
- 4-20 mA, HART, relay output
- Measurement simulation
- Wide range of accessories
- IP67 / IP68 protection

APPLICATIONS

- Checking of water quality
- Water production, Wastewater treatment
- Pharmaceutical industry
- Food and beverage industry

CERTIFICATIONS

- ATEX II 1G Ex ia IIB T6 Ga



LPP-100 / LPR-100 with PVDF housing



LEP-200 / LER-200 with Aluminium housing and PVDF probe housing



Compact LEP-100 / LER-100 with plastic housing and PP probe housing



Integrated LPP-100 / LPR-100 with PP housing



pH, ORP electrodes



SAP-300 display



Cleaning solution



Calibration solution



MultiCONT

TECHNICAL DATA

General data		LQP , pH transmitter	LOR , ORP transmitter
Measuring values		Range: 0...14pH Reserve: ± 2 pH Resolution: 0.01pH (internal resolution 0.004 pH) Linearity: ± 0.004 pH	Range: ± 1000 mV Reserve: ± 200 mV Resolution: 0.1 mV (internal resolution 0.8 mV) Linearity: $\pm 0.001\%$
		Accuracy*: 0.1%- of the measured value ± 1 digit $\pm 0.01\%/^{\circ}\text{C}$, Measuring rate: 300 msec, on the display (refreshing rate): 1 sec	
Temperature measurement (semiconductive sensor)		Range: -50...130 $^{\circ}\text{C}$, Accuracy: $\pm 0.5^{\circ}\text{C}$, Resolution: 0.1 $^{\circ}\text{C}$	
Liquid-potential (complementary) electrode		Stainless steel housing of the temperature sensor (1.4571), connection: SN6	
Probe input		Combined probe, galvanic isolation, input impedance: $>10^{12}$ ohm, connection: SN6	
Power supply / Power consumption		12...36 V DC / 48 mW...720 mW, galvanic isolated, protection against surge transients	
Output	Analogue	4...20 mA, (3.9...20.5 mA), $R_{tmax} = 1200 \Omega$ galvanic isolated, protection against surge transients	
	Relay	SPDT - 30 V DC, 1A DC	
	Display	SAP-300 LCD graphic display, units of measure and bar graph (only for compact type)	
	Digital communication	HART interface	
Medium temperature (pressure dependent) *		PP probe housing: -10 $^{\circ}\text{C}$...+90 $^{\circ}\text{C}$, PVDF probe housing: -15 $^{\circ}\text{C}$...+100 $^{\circ}\text{C}$	
Pressure (absolute) *		0.05...1 MPa (0.5...10 bar) at 25 $^{\circ}\text{C}$	
Ambient temperature		With metal housing: -30 $^{\circ}\text{C}$...+70 $^{\circ}\text{C}$, with plastic housing: -25 $^{\circ}\text{C}$...+70 $^{\circ}\text{C}$, both with display: -20 $^{\circ}\text{C}$...+70 $^{\circ}\text{C}$	
Sealing		PP probe housing: EPDM, All other probe housing: FPM (Viton)	
Ingress protection		Probe housing: IP 68, Electronic housing: IP 67; Integrated type: IP 68	
Housing material		Compact type: Paint coated aluminium or plastic PBT, Integrated type: Same as the probe housing	
Probe housing material		Polypropylene (PP), KYNAR (PVDF)	
Electrical connection		Compact type: 2 x M20x1.5 metal cable gland for cable: $\varnothing 7 \dots 13$ mm, or 2 x M20x1.5 plastic cable gland for cable: $\varnothing 6 \dots 12$ mm connecting cable cross section: 0.5 ... 1.5 mm ² (shielded cable is recommended) + internal thread 2x NPT 1/2" cable protective pipe, Integrated type: 6x0.5mm ² shielded cable $\varnothing 6$ mm x 5 m (up to max. 30 m cable length)	
Electrical protection		Class III. electric shock protection	

* Depends on the applied probe

Special data for Ex certified models

Ex marking	ATEX  II 1G Ex ia IIB T6 Ga
Intrinsic safe data	$C_i \leq 15$ nF, $L_i \leq 200$ μH , $U_i \leq 30$ V, $I_i \leq 140$ mA, $P_i \leq 1$ W, For Ex transmitter only Ex ia power supply should be used!
Ex power supply, max. load	$U_o < 30$ V, $I_o < 140$ mA, $P_o < 1$ W, , Supply voltage range: 12 V – 30 V, $R_t \text{ max} = (U_t - 12 \text{ V}) / 0.022 \text{ A}$
Medium temperature	PP probe housing: -10...+70 $^{\circ}\text{C}$, PVDF probe housing: -15...+80 $^{\circ}\text{C}$
Ambient temperature	Metal housing: -30 $^{\circ}\text{C}$...+70 $^{\circ}\text{C}$, with display: -20 $^{\circ}\text{C}$...+70 $^{\circ}\text{C}$, Plastic housing: -20 $^{\circ}\text{C}$...+70 $^{\circ}\text{C}$

In analytics the primary requirements of accurate and reliable measurement is the right selection of probes.

pH probes

Medium	Max. temp. ($^{\circ}\text{C}$)	Max. pressure (bar)	Min. conductivity ($\mu\text{S}/\text{cm}$)	pH	Material	Mounting angle	Application areas
Clean liquid	60	0,5	150	1-12	glass	max. 45 $^{\circ}$	potable water, pool
	60	3		1-12			potable water, pool
	80	6		1-12			process water, galvanic
	80	8		1-12			process water, treated wastewater
	100	3/100 $^{\circ}\text{C}$; 6/25 $^{\circ}\text{C}$		3-14			chemical industry
	60	3		1-12			polycarbonate
Solid particles in the medium	80	6	50	1-12	glass	max. 45 $^{\circ}$	treated wastewater
	100	6 / 100 $^{\circ}\text{C}$; 16 / 25 $^{\circ}\text{C}$	500	1-12			sludge, emulsion

ORP probes

Medium	Max. temp. ($^{\circ}\text{C}$)	Max. pressure (bar)	Min. conductivity ($\mu\text{S}/\text{cm}$)	Material	Mounting angle	Application areas		
Clean liquid	60	1	150	glass	max. 45 $^{\circ}$	potable water, pool		
	60	3				potable water, pool		
	80	6				process water		
	60	3				polycarbonate	max. 90 $^{\circ}$	potable water, pool, treated wastewater
	80	6				50	glass	max. 45 $^{\circ}$
100	6 / 100 $^{\circ}\text{C}$; 16 / 25 $^{\circ}\text{C}$	500	sludge, emulsion					

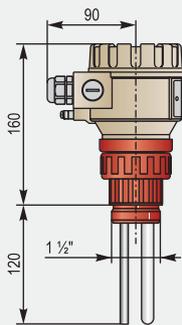
MOUNTING VERSIONS

The constructions of the sensors on the compact and integrated versions are identical, so all accessories are applicable for both types.

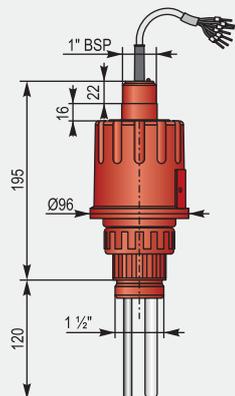
The applications of the special accessories make the optimal installation of the transmitters into the technologic process easier.

By using extension pipes or extension cables the separated versions allow the mounting of the electronics and the electrode part at any distance from each other.

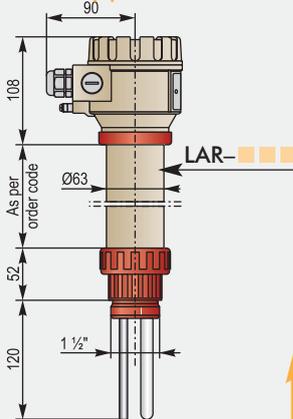
COMPACT TRANSMITTER



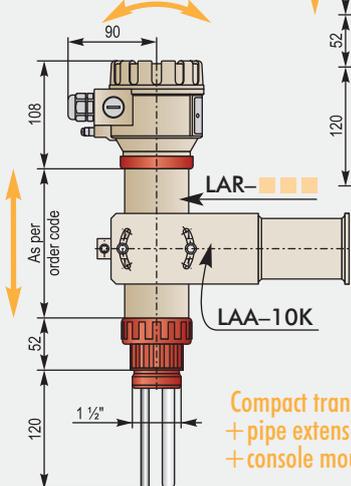
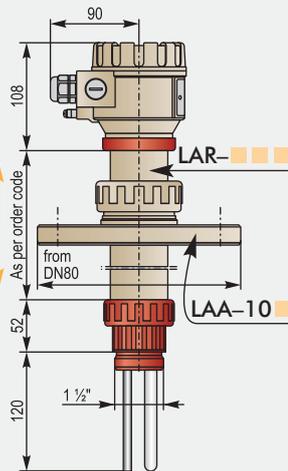
Integrated transmitter



Compact transmitter + pipe extension

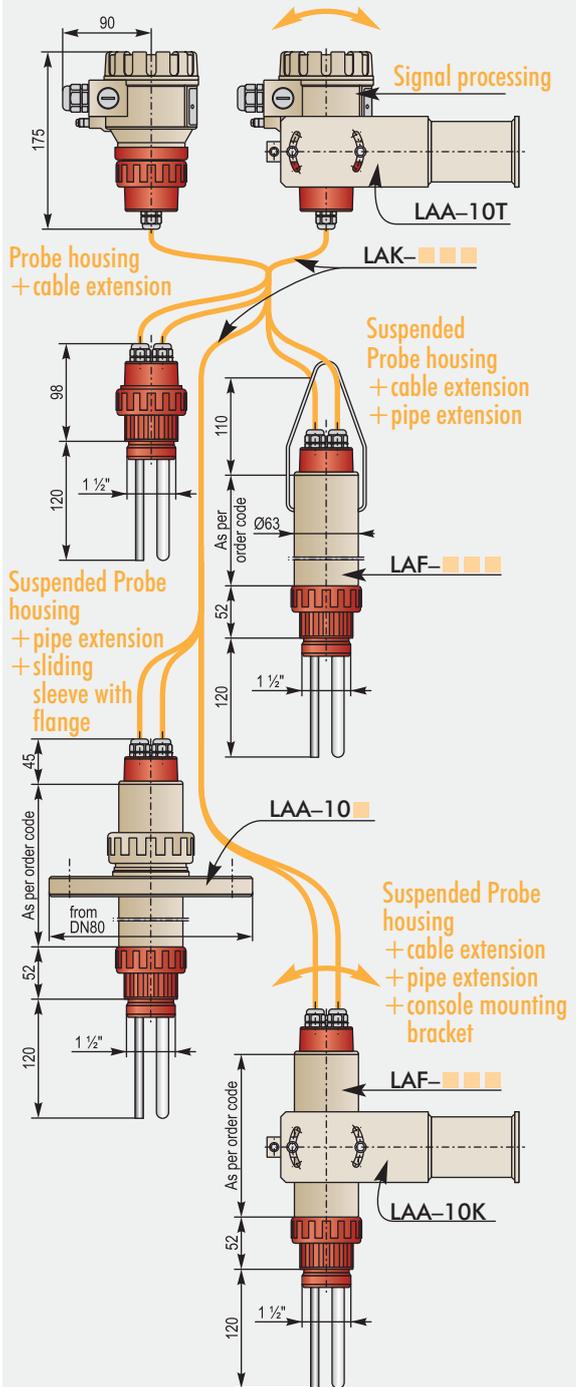


Compact transmitter + pipe extension + sliding sleeve with flange

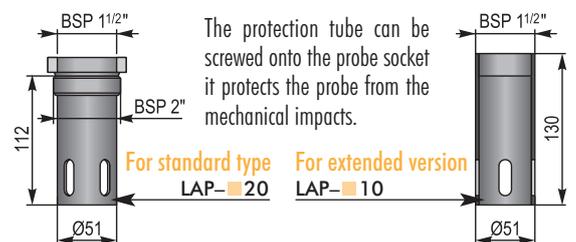


Compact transmitter + pipe extension + console mounting bracket

SEPARATED COMPACT TRANSMITTER



SENSOR PROTECTION TUBE



pH TRANSMITTERS

AnaCONT

AnaCONT L - 2-wire version

Integrated compact pH transmitter

Plastic housing

Combined electrode

pH measuring range: 0-14 pH

Temperature sensor socket: Stainless steel

Ingress protection: IP68

Power supply: 12-36 V DC

Ex marking: ATEX  II 1 G Exia II B T6 Ga

Remote programming: for HART capable units with HART modem and the EView software or with the MultiCONT controller. The EView light software (on DVD) is provided free of charge.

TypeL P - 1 -

P

Integrated compact pH transmitter

Probe / pH range / Max. pressure / Max. temperature / MediumL P - 1 -

- | | |
|-------|---|
| 1 | 1-12 / 6 bar / 80°C / with solid particles |
| → 2 | 1-12 / 8 bar / 80°C / clear fluid |
| 3 | 1-12 / 16 bar@25°C / 100°C / with solid particles |
| → 4 | 3-14 / 6 bar / 100°C / clear fluid |
| 5 | 1-12 / 0.5 bar / 60°C / clear fluid |
| 6 | 1-12 / 3 bar / 60°C / clear fluid |
| 7 | 1-12 / 6 bar / 80°C / clear fluid |
| → 8 * | 1-12 / 3 bar / 60°C / clear fluid |

Process connection / MaterialL P - 1 -

- | | |
|---|-------------------|
| 1 | 1 1/2" BSP / PP |
| 2 | 1 1/2" BSP / PVDF |
| 4 | 1 1/2" NPT / PP |
| 5 | 1 1/2" NPT / PVDF |

Output / ApprovalL P - 1 -

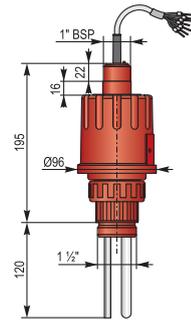
- | | |
|---|---------------------------|
| 4 | 4-20 mA with HART / none |
| 8 | 4-20 mA with HART / Ex |
| H | 4-20 mA with HART + relay |

L P - 1 -

* Horizontally mountable

Accessories to order**Type**

- | | |
|-------------------|---|
| S A S - 3 0 3 | EView 2 software package (See "Electronic accessories") |
| S A T - 3 0 4 | HART-USB modem (See "Electronic accessories") |
| S A K - 3 0 5 - 2 | HART-USB/RS485 modem |
| S A K - 3 0 5 - 6 | HART-USB/RS485 modem / Exia |



AnaCONT LPP

AnaCONT L - 2-wire version

Integrated compact ORP (Redox potential) transmitter

Plastic housing

Combined electrode

ORP measuring range: ± 1000 mV

Temperature sensor socket: Stainless steel

Ingress protection: IP68

Power supply: 12-36 V DC

Ex marking: ATEX  II 1 G Exia II B T6 IP67

Remote programming: for HART capable units with HART modem and the EView software or with the MultiCONT controller. The EView light software (on DVD) is provided free of charge.

TypeL P - 1 -

R

Integrated compact ORP transmitter

Probe / Min. conductivity / Max. pressure / Max. temperature / MediumL P - 1 -

- | | |
|-------|---|
| 1 | 50 μ S/cm / 6 bar / 80°C / with solid particles |
| 2 | 500 μ S/cm / 16 bar@25°C / 100°C / with solid particles |
| 3 | 150 μ S/cm / 0.5 bar / 60°C / clear fluid |
| 4 | 150 μ S/cm / 3 bar / 60°C / clear fluid |
| → 5 | 150 μ S/cm / 6 bar / 80°C / clear fluid |
| → 6 * | 150 μ S/cm / 3 bar / 60°C / clear fluid |

Process connection / MaterialL P - 1 -

- | | |
|---|-------------------|
| 1 | 1 1/2" BSP / PP |
| 2 | 1 1/2" BSP / PVDF |
| 4 | 1 1/2" NPT / PP |
| 5 | 1 1/2" NPT / PVDF |

Output / ApprovalL P - 1 -

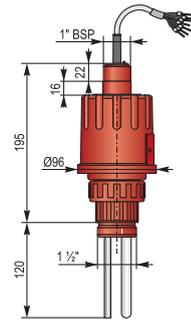
- | | |
|---|---------------------------|
| 4 | 4-20 mA with HART / none |
| 8 | 4-20 mA with HART / Ex |
| H | 4-20 mA with HART + relay |

L P - 1 -

* Horizontally mountable

Accessories to order**Type**

- | | |
|-------------------|---|
| S A S - 3 0 3 | EView 2 software package (See "Electronic accessories") |
| S A T - 3 0 4 | HART-USB modem (See "Electronic accessories") |
| S A K - 3 0 5 - 2 | HART-USB/RS485 modem |
| S A K - 3 0 5 - 6 | HART-USB/RS485 modem / Exia |



AnaCONT LPR

GENERAL DESCRIPTION

The dissolved oxygen (DO) measurement gives the quantity of dissolved oxygen gas in the liquid, in ppm or mg/l values. The sensor with oxygen-permeable membrane immersed in the liquid provides an electronic signal proportional to the oxygen concentration. The intelligent electronics calculates and transmits the DO value normalized to 25°C on the basis of the output current of the DO sensor and the potential of the temperature sensor immersed in the medium.

MAIN FEATURES

- Compact and integrated versions
- Separated versions up to 10m
- Measurement range: pH: 0-14, ORP: ±1000 mV, DO: 0-20 ppm
- Wide probe selection suitable for most applications
- Temperature compensation
- Graphic display
- 4-20 mA, HART, relay output
- IP67 / IP68 protection
- Ex version

APPLICATIONS

- Checking of water quality
- Wastewater treatment
- Pharmaceutical industry
- Food and beverage industry
- Effluent treatment
- Checking of aeration in potable water
- Pools

CERTIFICATIONS

- ATEX II 1G Ex ia IIB T6 Ga



Compact LED-200 with Aluminium housing and PVDF probe housing



Compact LED-100



Integrated LPD-100



SAT-304 HART modem



SAP-300 graphic display

PROBE SELECTION

DO sensors			
Type	4x085g0023ydo	4x085g0022ydo	
DO sensor	Application area	Fish- and crawfish farms, water conditioning of large aquariums. Controlling of oxygen concentration in water plants, determination of biological condition in surface water. 	Potable water production, river monitoring, water treatment sites, controlling of dissolved oxygen level in wastewater plants, determination of biological condition in surface water. 
	DO range	0-20 ppm	0-10 ppm
	Process temperature	max. 50°C	
	Process pressure	max. 1 bar	
	Speed of medium-flow	min. 0.05m/s	
	Material / thickness of membrane	PTFE / 125 µm	PTFE / 50 µm

ANALYTICS

TECHNICAL DATA

General data		LCD - DO transmitter
Measurement data	Range	0 – 20 ppm v. 0 – 10 ppm
	Reserve	20%
	Resolution	0.01 ppm (internal resolution 0.005 ppm)
	Linearity	±0.05 ppm
	Accuracy*	0.5% of the measured value ±1 digit ±0.01% / °C
	Measuring cycle	300 msec, on display: 1 sec
Temperature measuring (semiconductive sensor)		Range: -50...130 °C, Accuracy: ±0.5 °C, Resolution: 0.1 °C
Liquid potential (complementary) electrode		Housing of the temperature sensor: stainless steel (1.4571), connection: SN6
Electrode input		DO sensor input: Galvanic isolated current input, 0.725V polarisation voltage, connection: SN6
Power supply / Power consumption		12...36 V DC / 48 mW...720 mW, galvanic isolated, protection against surge transients
Output	Analogue	4 – 20 mA, (3.9 – 20.5 mA), $R_{tmax} = 1200$ Ohm galvanic isolated, protection against surge transients (only for compact type)
	Relay	SPDT: 30 V DC, 1A DC
	Display	SAP-300 LCD graphic display, units of measure and bar graph (only for compact type)
	Digital communication	HART interface, terminal resistance ≥ 250 Ohm
Medium temperature (pressure dependent)*		PP probe housing: -10 °C...+90 °C, PVDF probe housing: -15 °C...+100 °C
Pressure (absolute)*		Max. 0.1 MPa (1 bar) at +25 °C
Ambient temperature		Aluminium housing: -30 °C...+70 °C, Plastic housing: -25 °C...+70 °C, With display: -20 °C...+70 °C
Sealing		PP probe housing: EPDM, all other probe housing: FPM (Viton)
Ingress protection		Compact type: Probe housing: IP 68, Electronic housing: IP 67; Integrated type: IP 68
Housing material		Compact type: plastic (PBT) or paint coated aluminium, Integrated type: same as probe housing
Material of probe housing		Polypropylene (PP), KYNAR (PVDF)
Electrical connection		Compact type: 2xM20x1,5 plastic cable glands for cable: $\varnothing 6...12$ mm, or 2xM20x1.5 metal cable glands for cable: $\varnothing 7...13$ mm wire cross section: 0.5...1.5 mm ² (shielded cable is recommended), + 2 x NPT 1/2" internal thread for cable protective pipe Integrated type: 6x0.5 mm ² shielded cable, $\varnothing 6$ mm x 5 m standard (up to max. 30 m cable length)
Electrical protection		Class III. electric shock protection

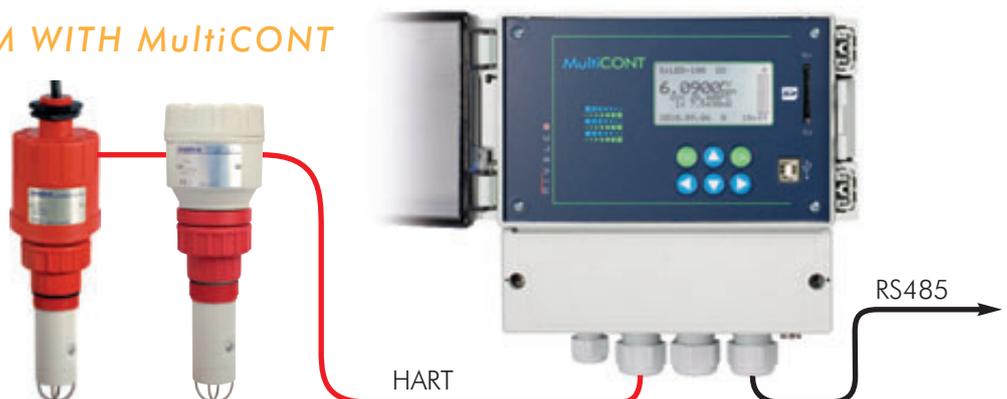
* Depends on the applied probe

Special data for Ex certified models

Ex marking	ATEX II 1G Ex ia IIB T6 Ga
Intrinsically safe data	$C_i \leq 15$ nF, $L_i \leq 200$ μ H, $U_i \leq 30$ V, $I_i \leq 140$ mA, $P_i \leq 1$ W, For Ex transmitter only Ex ia power supply should be used!
Ex power supply, max. load	$U_0 < 30$ V, $I_0 < 140$ mA, $P_0 < 1$ W, Supply voltage range: 12 V ... 30 V, $R_{tmax} = (U_t - 12 V) / 0.02$ A
Medium temperature	PP probe housing: -10 °C...+70 °C, PVDF probe housing: -15 °C...+80 °C; DO transmitter: 0 °C...+50 °C
Ambient temperature	Aluminium housing: -30 °C...+70 °C, Plastic housing: -20 °C...+70 °C, With display: -20 °C...+70 °C

AnaCONT IN SYSTEM WITH MultiCONT

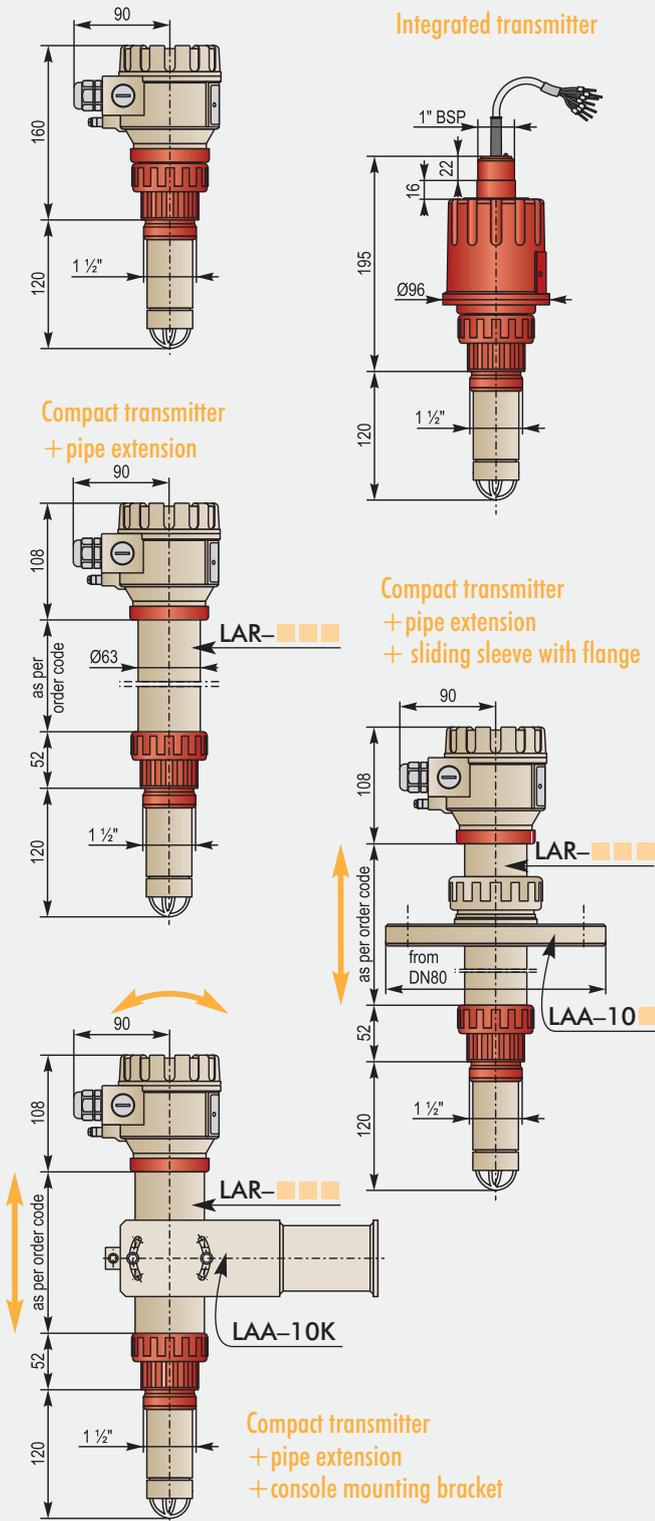
The MultiCONT can handle digital data from up to 15 HART transmitters for the measuring of different values (e.g. DO temperature, level, pressure). The digital (HART) information is processed, displayed and if needed it can be transmitted via RS485 communication line to a PC. Remote programming of the transmitter is also possible. Visualisation on a PC can be accomplished with NIVISION process visualisation software.



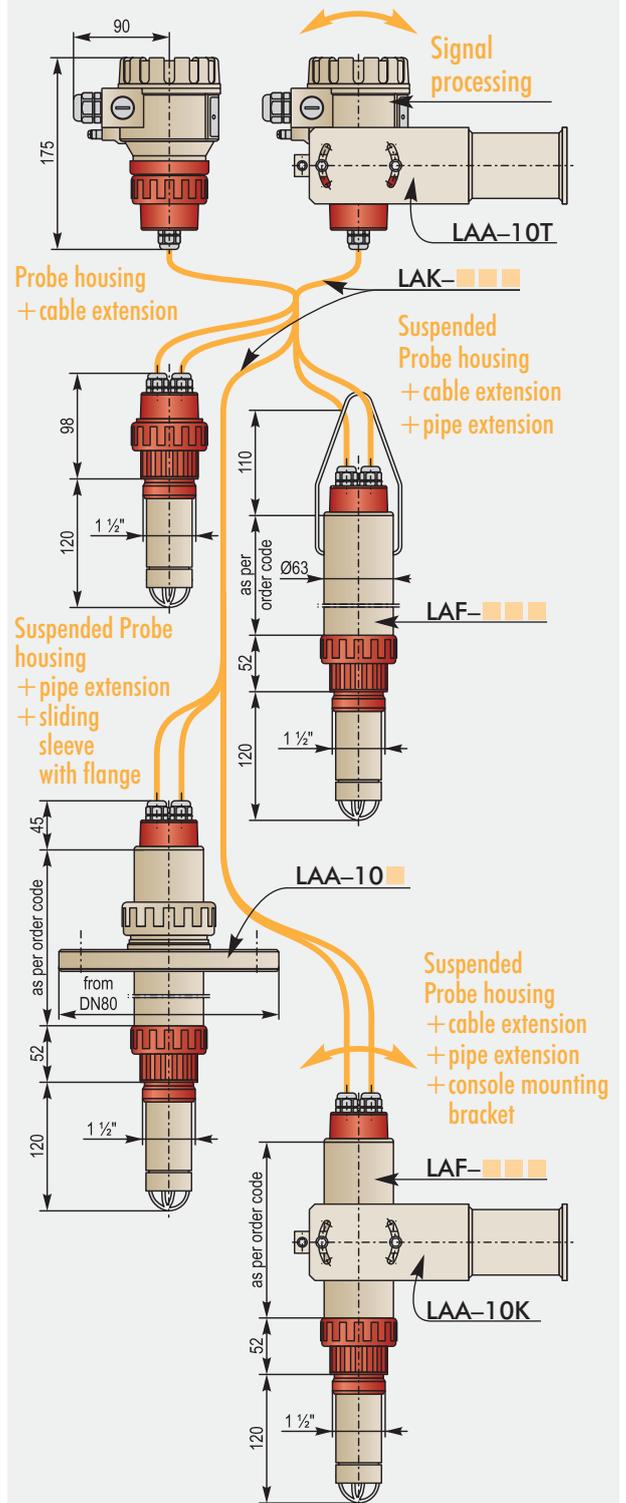
MOUNTING VERSIONS

The constructions of the sensors on the compact and integrated versions are identical, so all accessories are applicable for both types. The applications of the special accessories make the optimal installation of the transmitters into the technologic process easier. By using extension pipes or extension cables the separated versions allow the mounting of the electronics and the sensor part at any distance from each other.

COMPACT TRANSMITTER



SEPARATED COMPACT TRANSMITTER



ANALYTICS

AnaCONT L - 2-wire version

Compact analytical dissolved oxygen transmitter with current / HART and control relay output

Housing: aluminium or plastic

Sensor: 20 ppm or 10 ppm

Integrated temperature compensation to 25°C

Ingress protection: IP67/IP68

Power supply: 12-36 V DC

Ex marking: ATEX  II 1 G Exia II B T6 Ga

Programming

With SAP-300 display: full feature programming

Remote programming: for HART capable units with the MultiCONT controller.

Type

L - - -
 D Compact DO transmitter

Programmer and local indicator (SAP-300)

L - - -
 E Not included
 G Included

Housing

L - - -
 1 Plastic, PBT, glass fibre reinforced
 2 Aluminium (paint coated)

Probe

L - - -
 2 DO1-mA-10 (10 ppm)
 1 DO1-mA-20 (20 ppm)

Process connection / Material

L - - -
 1 1 1/2" BSP / PP
 2 1 1/2" BSP / PVDF
 4 1 1/2" NPT / PP
 5 1 1/2" NPT / PVDF

Output / Approval

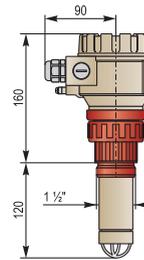
L - - -
 2 4-20 mA / none
 4 4-20 mA with HART / none
 6 4-20 mA / Ex
 8 4-20 mA with HART / Ex
 R 4-20 mA + relay
 H 4-20 mA with HART + relay

L - - -

Accessories to order

Type

- S A P - 3 0 0 Plug-in display module (See "Electronic accessories")
- S A S - 3 0 3 EView 2 software package (See "Electronic accessories")
- S A T - 3 0 4 HART-USB modem (See "Electronic accessories")
- S A K - 3 0 5 - 2 HART-USB/RS485 modem
- S A K - 3 0 5 - 6 HART-USB/RS485 modem / Exia



AnaCONT LED

GENERAL DESCRIPTION

The AnaCONT 2-wire mini compact conductivity transmitters are designed to measure the conductivity of a liquid and convert the input signal to 4–20mA output. They are suitable for measuring clean, non-crystallisable liquids. The design of the transmitter, the wide temperature range and various mounting positions make possible the use in diverse industrial applications. Two probes are immersed into the measured liquid. The distance between the probes and their surface define the cell constant (K) of the instrument. The cell constant defines the measuring range and thus the application area.

MAIN FEATURES

- Mini compact type
- Application oriented measuring range selection
- Optional plug-in display
- 4-20 mA, HART
- IP68 protection

APPLICATIONS

- Water production
- Water processing
- Water purification
- Wastewater treatment
- Pharmaceutical industry
- Food and beverage industry

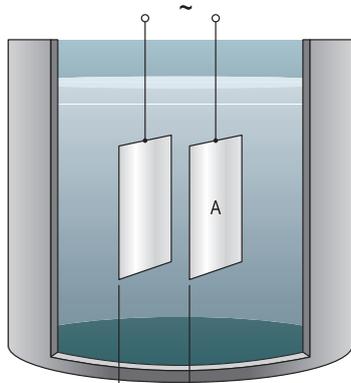


Mini compact LCK-21□+PLK-501

TECHNICAL DATA

TYPE		AnaCONT LCK mini compact
Measurement data	Range	1 μS/cm – 20 μS/cm 10 μS/cm – 200 μS/cm 100 μS/cm – 2000 μS/cm
	Accuracy	±3 % ±1 digit
Power supply		12-36 V DC galvanic isolated, protection against surge transients
Probe		2-electrodes , built-in
Cell constant		K=0.01, K=0.1; K=1
Output	Analogue	4 – 20 mA
	Relay	–
	Display	Optional UNICONT PLK-501 display
	Digital communication	HART
Medium temperature		-10 °C ... +70 °C
Process pressure		0-1.6 MPa (0-16 bar)
Ambient temperature		0 °C ... +70 °C
Sealing		Viton
Ingress protection		Probe housing: IP 68, Electronic housing: IP 65
Housing material		Stainless steel 1.4571
Probe housing material		1.4571 + PP
Electrical connection		Pg9 DIN 43650 connector
Electrical protection		Class III.

PROBE



$K = \frac{l}{A}$ l = distance between electrodes
A = electrode surface

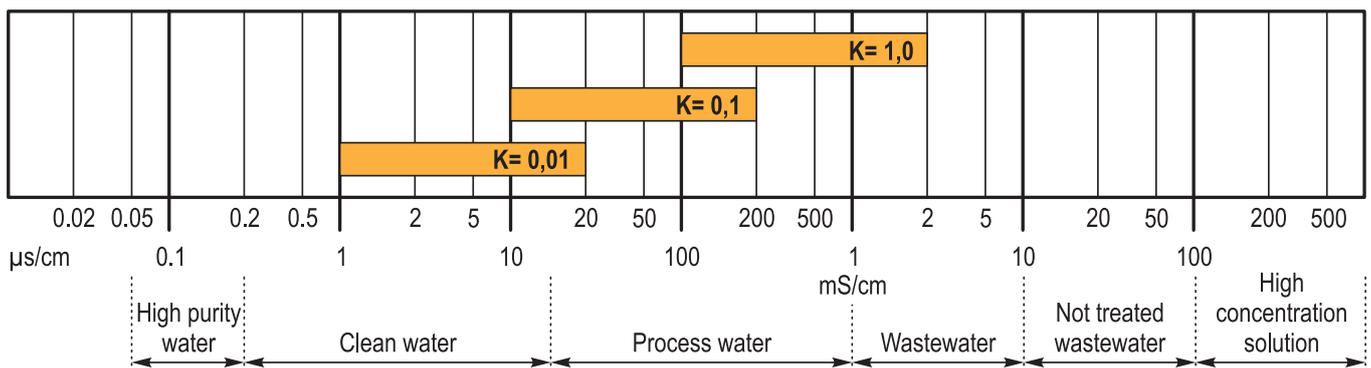


Mini compact LCK-21□



Mini compact LCK-23□

OPERATION



AnaCONT LCK - 2-wire version

Mini compact conductivity transmitter
 Stainless steel housing and probe
 Material of wetted parts: 1.4571
 Output: 4-20 mA + HART
 Power supply: 12-36 V DC
 Conduit connection: DIN43650 connector
 Ingress protection: IP67

Type

L C K - 2 -

Measuring range

L C K - 2 -

- | | |
|---|--|
| 1 | 1-20 $\mu\text{S}/\text{cm}$ (min. 3/4" BSP) |
| 2 | 10-200 $\mu\text{S}/\text{cm}$ (min. 3/4" BSP) |
| 3 | 100-2000 $\mu\text{S}/\text{cm}$ (min. 1" BSP) |

Process connection

L C K - 2 -

- | | |
|---|----------|
| 1 | 3/4" BSP |
| 2 | 1" BSP |

Output

L C K - 2 -

- | | |
|---|----------------|
| 2 | 4-20 mA |
| 4 | 4-20 mA + HART |

L C K - 2 -

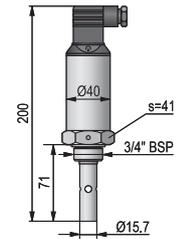
Accessories to order**UNICONT PLK-501**

2-wire loop indicator
 Plug-in display that can be inserted between connectors according to DIN43650
 Input: 4-20 mA
 Output: 4-20 mA
 Display: LED 4 digits; height: 7.6 mm
 Plastic housing: IP65

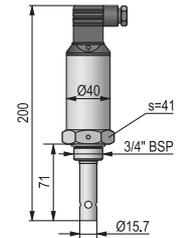
Type

P L K - 5 0 1 - 2 Plug-in display

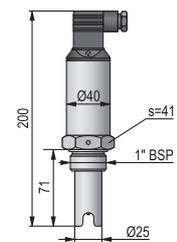
P L K - 5 0 1 - 3 Plug-in display with PNP output



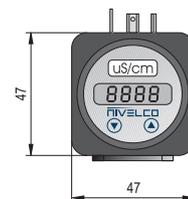
AnaCONT LCK-210



AnaCONT LCK-220



AnaCONT LCK-230



UNICONT PLK-501

GENERAL DESCRIPTION

The AnaCONT 2-wire compact conductivity transmitters are designed to measure the conductivity of a liquid and convert the input signal to 4..20mA output. They are suitable for measuring clean, non-crystallisable liquids. The design of the transmitter, the wide temperature range and various mounting positions make possible the use in diverse industrial applications. Two probes are immersed into the measured liquid. The distance between the probes and their surface define the cell constant (K) of the instrument. The cell constant defines the measuring range and thus the application area.

Coming soon!
 Technical specification is only informative data.
 For further details, please call our sales department.

MAIN FEATURES

- Compact and integrated types
- Measuring range: 0,05µS/cm – 200 mS/cm
- Replaceable probes
- Application oriented probe selection
- Temperature compensation
- Graphic display
- 4-20 mA, HART, relay output
- Wide range of accessories
- IP67/68 protection
- Ex version

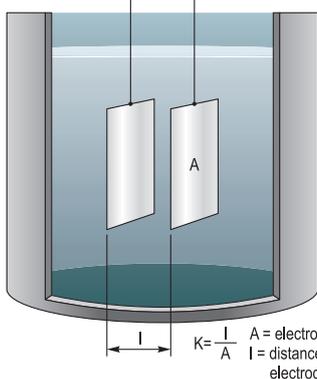
APPLICATIONS

- Water production
- Water processing
- Water purification
- Wastewater treatment
- Pharmaceutical industry
- Food and beverage industry

CERTIFICATIONS

- ATEX II 1G Ex ia IIB Ga

PROBE



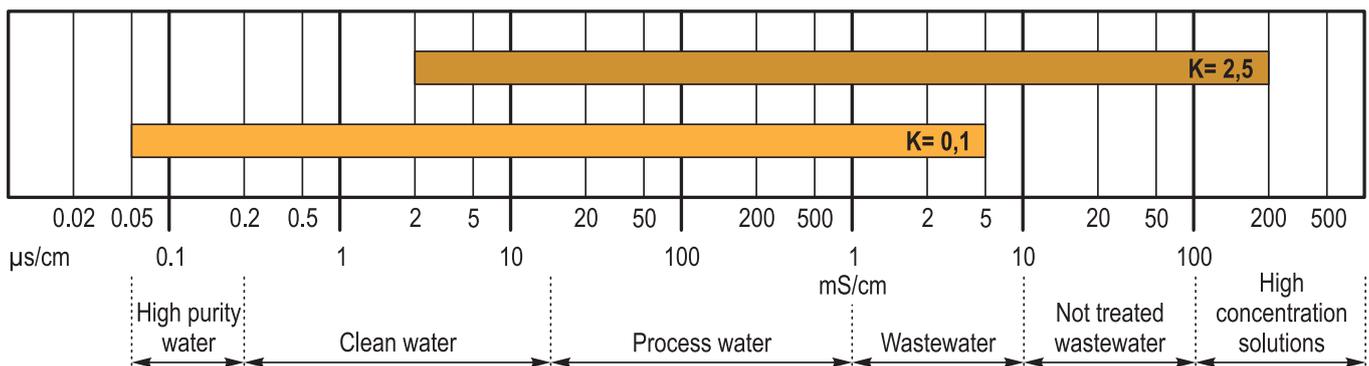
TECHNICAL DATA

TYPE		AnaCONT LEK, LGK Compact type	AnaCONT LPK Integrated type
Measure- ment data	Range	0.05 µS/cm – 200 mS/cm *	
	Accuracy	1 % ±1 digit ±0,1 % / °C	
Temperature measurement		Range: -50 °C ... +130 °C Accuracy: ±0.5 °C ; Resolution: 0.1 °C	
Probe		4-electrodes, replaceable	
Power supply		12-36 V DC galvanic isolated, protection against surge transients	
Cell constant		K=0.1; K=2.5	
Output	Analogue	4 – 20 mA	
	Relay	(SPDT) 30 V DC, 1 A DC	
	Display	SAP-300 graphic display	–
	Digital communication	HART	
Medium temperature		-10 °C ... +90 °C	-10 °C ... +90 °C (only for probe housing)
Process pressure		0-1 MPa (0-10 bar)	0-1 MPa (0-10 bar) (only for probe housing)
Ambient temperature		-25 °C ... +70 °C	-25 °C ... +70 °C (only for probe housing)
Process connection		As per order code	
Sealing		EPDM, Viton	
Housing material		Paint coated aluminium or plastic (PBT)	Same as the probe housing
Probe housing material		Plastic (PP, PVDF)	
Electrical connection		2 x M20 x1.5, cable gland	6 x 0,5 mm ² shielded cable Ø6 mm x 5 m (up to max. 30 m cable length)
Electrical protection		Class III.	
Ingress protection		Probe housing: IP 68, Housing: IP67	IP 68
Ex marking		ATEX II 1 G Ex ia IIB Ga**	

* According to the diagram under

** Under approval

OPERATION



AnaCONT L - 2-wire version

Compact analytical conductivity transmitter with current / HART and control relay output

Housing: aluminium or plastic

Sensor: 50 nS/cm - 200 mS/cm

Integrated temperature compensation to 25°C

Ingress protection: IP67/IP68

Power supply: 12-36 V DC

Ex marking: ATEX  II 1 G Exia II B T6 IP67

Programming

With SAP-300 display: full feature programming

Remote programming: for HART capable units with the MultiCONT controller.

Type

L - -

K

Compact conductivity transmitter

Programmer and local indicator (SAP-300)

L - -

E

Not included

G

Included

Housing

L - -

1

Plastic, PBT, glass fibre reinforced (Ex version not available)

2

Aluminium (paint coated)

Probe

L - -

1

50 nS/cm - 5 mS/cm

2

2 μ S/cm - 200 mS/cm

Process connection / Material

L - -

1

1 1/2" BSP / PP

2

1 1/2" BSP / PVDF

4

1 1/2" NPT / PP

5

1 1/2" NPT / PVDF

Output / Approval

L - -

2 4-20 mA / none

4 4-20 mA with HART / none

6 4-20 mA / Ex*

8 4-20 mA with HART / Ex*

R 4-20 mA + relay

H 4-20 mA with HART + relay

L - -

* Approval is pending

Accessories to order**Type**

S A P - 3 0 0 Plug-in display module (See "Electronic accessories")

S A S - 3 0 3 EView 2 software package (See "Electronic accessories")

S A T - 3 0 4 HART-USB modem (See "Electronic accessories")

S A K - 3 0 5 - 2 HART-USB/RS485 modem

S A K - 3 0 5 - 6 HART-USB/RS485 modem / Exia

Various installations can be achieved with usage of the accessories

Extension pipe

Type

L A R Pipe extension

Material

L A R
1 PP

Extension length

L A R
0 2 - 3 0 0.2-3 m; each started 0.1 m

L A R

Pipe extension = L

All cables of required length and terminals are included!

Pipe extension for separate mounting

L A F

Material

L A F
1 PP

Extension length

L A F
0 2 - 3 0 0.2-3 m; each started 0.1 m

L A F

Pipe extension = L

Attention! Cables and terminals NOT included! The cable and terminal set LAK-□□□ for the pipe extended version for separate mounting has to be ordered separately (L + the distance between the mounting point and the electronics)!

Cable extended version

L A K

Material

L A K
1 PP

Extension length

L A K
1 0 - A 0 1-10 m cable set; each started 1 m

L A K

Terminals are included in the cable set!

Sliding sleeve/ Console

Type

L A A - 1 0

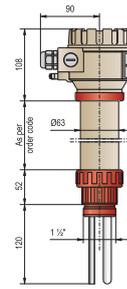
Process connection / Material

- L A A - 1 0 2 DN80 PN16 / PP
- 3 DN100 PN16 / PP
- 4 DN125 PN16 / PP
- 5 DN150 PN16 / PP
- 6 DN200 PN16 / PP

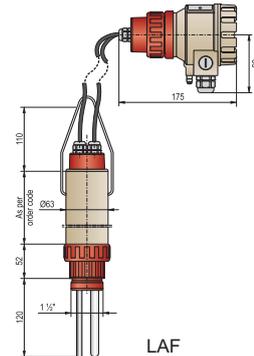
L A A - 1 0

Consoles

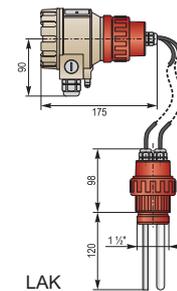
- L A A - 1 0 K 200 mm mounting bracket for extended version
- L A A - 1 0 T 200 mm mounting bracket for basic version



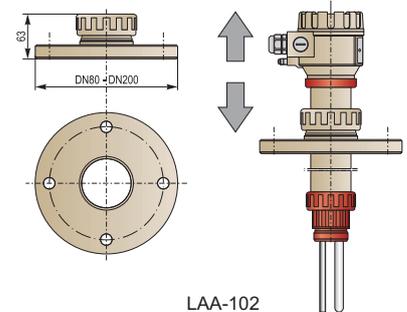
LAR



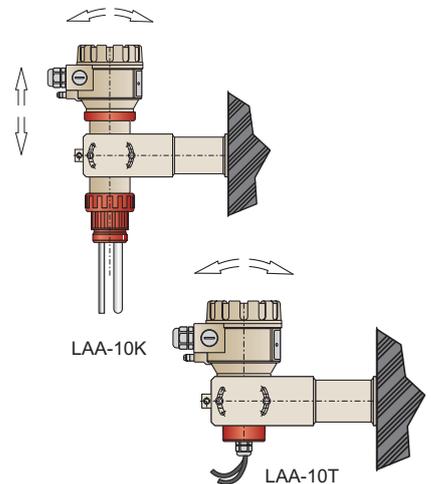
LAF



LAK



LAA-102



LAA-10K

LAA-10T

Probe protection tube**Type**L A P - 0**Material**L A P - 0
1

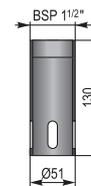
PP

SizeL A P - 0
1

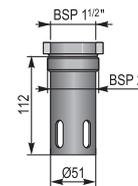
1 1/2" internal thread for extended version

2

2" external thread for basic version

L A P - 0

LAP-110



LAP-120

Other components, accessories**pH probes**

4xpher112seph	1-12 / 6 bar / 80°C / with solid particles
4xphed112seph	1-12 / 8 bar / 80°C / clear fluid
4xpheh112seph	1-12 / 16 bar@25°C / 100°C / with solid particles
4xpheph314sep	3-14 / 6 bar / 100°C / clear fluid
4xphe1120seph	1-12 / 0.5 bar / 60°C / clear fluid
4xphe112seph	1-12 / 3 bar / 60°C / clear fluid
4xphep112seph	1-12 / 6 bar / 80°C / clear fluid
4xphek112sep*	1-12 / 3 bar / 60°C / clear fluid

Solutions for pH probes

4vpuf4ph50mph	Buffer solution pH4 / 50 ml
4vpuf4ph250ph	Buffer solution pH4 / 250 ml
4vpuf4ph100ph	Buffer solution pH4 / 1 l
4vpuf7ph50mph	Buffer solution pH7 / 50 ml
4vpuf7ph250ph	Buffer solution pH7 / 250 ml
4vpuf7ph100ph	Buffer solution pH7 / 1 l
4vpuf10ph50ph	Buffer solution pH10 / 50 ml
4vpuf10ph25ph	Buffer solution pH10 / 250 ml
4vpuf10ph10ph	Buffer solution pH10 / 1 l
4vtarkcl 350ph	Storage solution KCl 3 mol / 50 ml
4vtarkcl 250ph	Storage solution KCl 3 mol / 250 ml
4vtarkcl 310ph	Storage solution KCl 3 mol / 1 l
4vtiszold 25ph	Cleaning solution / 250 ml

ORP probes

4xortherpseor	50 µS/cm / 6 bar / 80°C / with solid particles
4xorhexpseor	500 µS/cm / 16 bar@25°C / 100°C / with solid particles
4xorheptseor	150 µS/cm / 0.5 bar / 60°C / clear fluid
4xorrespseor	150 µS/cm / 3 bar / 60°C / clear fluid
4xorrehpseor	150 µS/cm / 6 bar / 80°C / clear fluid
4xorrehkseor*	150 µS/cm / 3 bar / 60°C / clear fluid

Solutions for ORP probes

4vpuf46550mor	Buffer solution ORP 465 mV / 50 ml
4vpuf465250or	Buffer solution ORP 465 mV / 250 ml
4vpuf465100or	Buffer solution ORP 465 mV / 1 l
4vpuf22050mor	Buffer solution ORP 220 mV / 50 ml
4vpuf220100or	Buffer solution ORP 220 mV / 1 l
4vtarkcl 350ph	Storage solution KCl 3 mol / 50 ml
4vtarkcl 250ph	Storage solution KCl 3 mol / 250 ml
4vtarkcl 310ph	Storage solution KCl 3 mol / 1 l
4vtiszold 25ph	Cleaning solution / 250 ml

DO probes

4x085g0022ydo	085G0027 DO 10 ppm
4x085g0023ydo	085G0030 DO 20 ppm

* Horizontally mountable

GENERAL DESCRIPTION

NIVELCO's open channel flow metering system offers 9 different sizes, compact types of PARSHALL flumes made of plastic (PP). The flume together with EasyTREK ultrasonic level transmitter and MultiCONT process controller is able to create a complete flow-measurement system.

The NIVOSONAR GPA enables flow measurements on gravitational sewers, brook channels, irrigation channels or any other open channel with the help of a PARSHALL flume.

OPEN CHANNEL FLOW MEASUREMENT

NIVOSONAR



- 9 different sizes, compact types of PARSHALL flumes made of plastic (PP)
- Factory calibrated dimensions
- Range: 0.28 l/s to 1850 l/s
- Level transmitter to be ordered separately: EasyTREK or EchoTREK
- 4-20 mA, HART communication
- For open channels, treated effluent sewage measurements
- Certification of measurement

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FLOW MEASUREMENT



GENERAL DESCRIPTION

The **NIVOSONAR GPA** enables flow measurements on gravitational sewers, brook channels, irrigation channels or any other open channel with the help of a **PARSHALL** flume. The flume with **EasyTREK** integrated ultrasonic transmitter and **MultiCONT** process controller is able to create a complete flow-measurement system. The measuring flume is easy to install in new or existing channel structures.

The **PARSHALL** flume is a rigid structure, manufactured out of polypropylene with narrow tolerances to ensure high accuracy of metering, therefore during transport and installation great care should be taken to prevent the flume from getting deformed.

APPLICATION

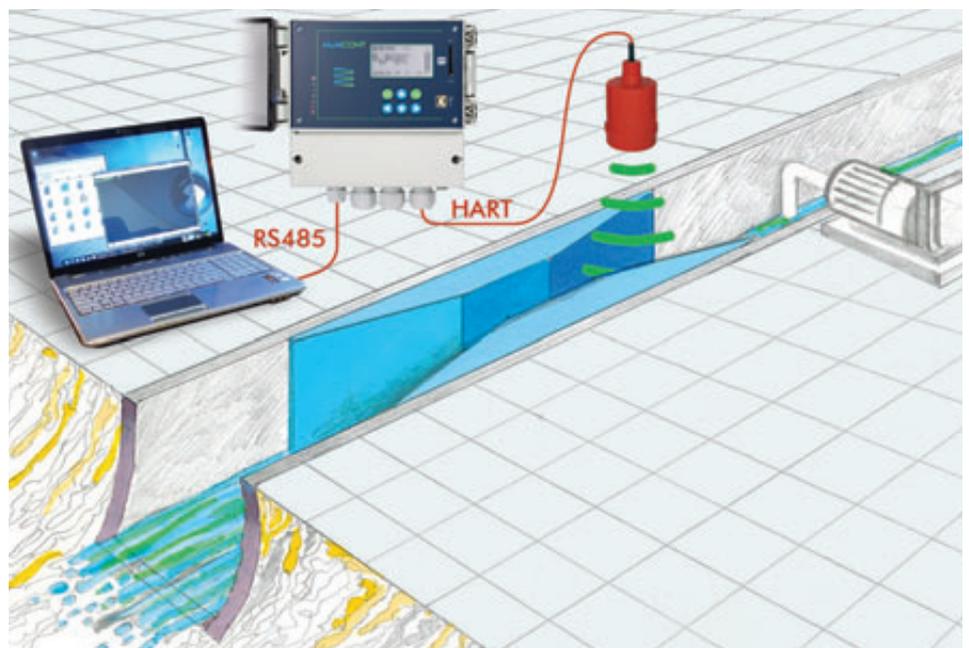
With the **PARSHALL** flume applied as a reducing element, the stagnation pressure causes the liquid level to rise. This change in level is in proportion with the velocity of the liquid and the flow rate. **EasyTREK** ultrasonic level transmitter measures the change in level and transmits measurement data via HART communication to the **MultiCONT** multichannel process controller. **EasyTREK** transmitters can be remote programmed via HART by **MultiCONT** and data logging can be also realized besides displaying or transmitting measurement data on RS 485 line into PC.

MAIN FEATURES

- 9 different sizes, compact types of **PARSHALL** flumes made of plastic (PP)
- Reliable measurement with ultrasonic level transmitter
- Level transmitter can be used for all flume types
- Displaying of flow measurement and average or total flow

APPLICATIONS

- For open channels, gravitational channels
- Measurement of feed or process water
- Yield measurement of irrigation canals
- Treated sewage effluent measurement

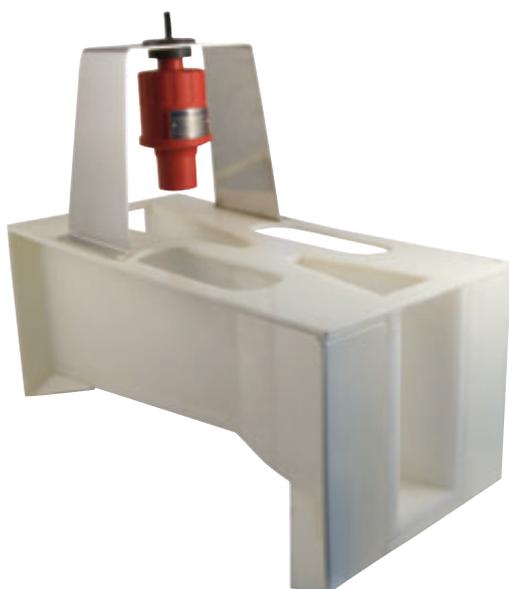


FLOW MEASUREMENT

TECHNICAL DATA

TYPE	NIVOSONAR GPA									
	P1	P2	P3	P4	P5	P6	P7	P8	P9	
Q _{min}	m ³ /h	0.94	1.88	2.8	5.5	8.1	10.5	15.8	20.8	31.3
Q _{max}	m ³ /h	22.3	54.4	196	604	1324	2152	3232	4359	6627
W	cm	2.54	5.08	7.62	15.24	22.86	30.48	45.7	61	91.4
B	cm	30	34	39	53	75	120	130	135	150
C	cm	9.29	13.49	17.8	39.4	38.1	61	76.2	91.44	121.9
D	cm	16.75	21.35	25.88	39.69	57.47	84.46	102.6	120.7	157.2
E	cm	23	26.4	46.7	62	80	92.5	92.5	92.5	92.5
L	cm	63.5	77.5	91.5	152.4	162.6	286.7	294.3	301.9	316.9
O	cm	5	5	5	10	10	10	10	10	10
U	cm	24.8	28.6	49.2	69.6	87.6	100.1	100.1	100.1	100.1
V	cm	30.7	35.35	39.9	54	80	100	120	140	180
m	kg	9	10.6	19.1	49	81	146	183	231	252
a		0.0609	0.1197	0.1784	0.354	0.521	0.675	1.015	1.368	2.081
b		1.552	1.553	1.555	1.558	1.558	1.556	1.560	1.564	1.569

Q=a·h^b [m³/s], where h= the measured level in meters



NIVOSONAR GPA

Parshall flume for open channel flow metering through level measurement
 Welded construction of PP-sheets

Type

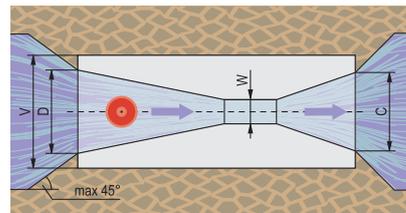
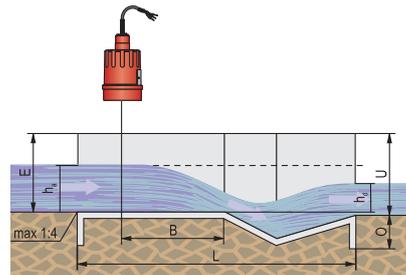
G P A – 1 P

Measuring range

G P A – 1 P

- 1 $Q_{min} = 0.94 \text{ m}^3/\text{h}, Q_{max} = 22.3 \text{ m}^3/\text{h}$
- 2 $Q_{min} = 1.88 \text{ m}^3/\text{h}, Q_{max} = 54.4 \text{ m}^3/\text{h}$
- 3 $Q_{min} = 2.8 \text{ m}^3/\text{h}, Q_{max} = 196 \text{ m}^3/\text{h}$
- 4 $Q_{min} = 5.5 \text{ m}^3/\text{h}, Q_{max} = 604 \text{ m}^3/\text{h}$
- 5 $Q_{min} = 8.1 \text{ m}^3/\text{h}, Q_{max} = 1324 \text{ m}^3/\text{h}$
- 6 $Q_{min} = 10.5 \text{ m}^3/\text{h}, Q_{max} = 2152 \text{ m}^3/\text{h}$
- 7 $Q_{min} = 15.8 \text{ m}^3/\text{h}, Q_{max} = 3232 \text{ m}^3/\text{h}$
- 8 $Q_{min} = 20.8 \text{ m}^3/\text{h}, Q_{max} = 4359 \text{ m}^3/\text{h}$
- 9 $Q_{min} = 31.3 \text{ m}^3/\text{h}, Q_{max} = 6627 \text{ m}^3/\text{h}$

G P A – 1 P



NIVOSONAR GPA

GENERAL DESCRIPTION

The most frequently measured physical parameter in the modern process automation industry is the temperature. NIVELCO's THERMOCONT product range is designed specially for the purpose of measuring this important parameter. The product line starts with a simple Pt100 temperature sensor and ends with high temperature version transmitters with Ex d flameproof housing and HART communication. Number of the order code variations and special types is very high, so NIVELCO is able to provide suitable solution for most applications from the wide range of THERMOCONT instruments.

The THERMOCONT product family can be divided into two major parts considering the output possibilities.

THERMOCONT T temperature sensors

THERMOCONT TT temperature transmitters

The THERMOCONT T types are the following:

- THERMOCONT TGP - Bearing temperature sensor
- THERMOCONT TFP - Pt100 temperature sensor
- THERMOCONT TSP - Standard temperature sensor
- THERMOCONT TNP - Heavy duty temperature sensor

sensor

- THERMOCONT TXP - Temperature sensor for gases

The THERMOCONT TT transmitters have 4-20mA output and as an option these devices are digital HART communication capable. The temperature sensors have a robust outer protection tube which can PFA coated. The max. medium temperature of these instruments is 600°C.

MULTIPOINT TRANSMITTERS

THERMOPOINT



- 2-wire multipoint temperature transmitter
- Temperature measurement of powdered, granular solids or liquids
- Max. 15 sensors / probe
- Max. 30 m probe length
- Temperature trend monitoring
- -40°C... +125°C range
- HART communication
- Explosion-proof models

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TEMPERATURE TRANSMITTERS

THERMOCONT TT



- -50°C... +600°C range
- Plug-in display module
- 4-20 mA, HART communication
- Integral A or B class Pt 100 probe
- Probe length up to 3 m
- Stainless steel or PFA coated probes
- Heavy duty field mountable housing
- Multiple head positions
- Explosion-proof models

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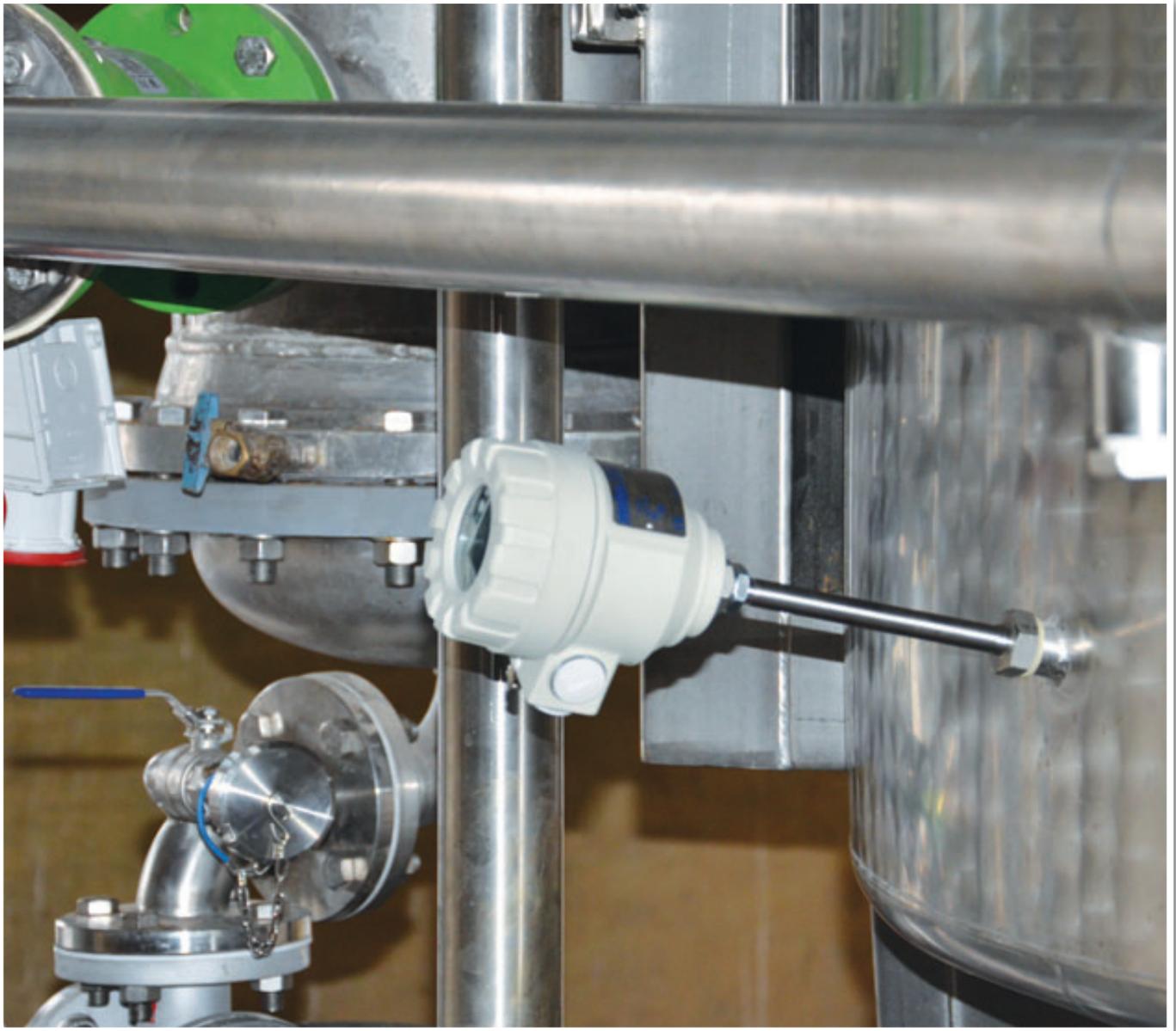
TEMPERATURE SENSORS

THERMOCONT T



- -50°C... +600°C range
- Resistance Temperature Detectors
- A or B accuracy class
- 2- or 4-wire types
- Fast response sensor version
- Probe length up to 3 m
- Stainless steel or PFA coated probes
- Vibration-resistant version
- Temperature sensors for gases
- Explosion-proof models

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TEMPERATURE MEASUREMENT



TECHNICAL DATA

Type	For liquids		For solids
	Rigid Probe version	Flexible Probe version	Flexible Plastic coated Probe version
Insertion length	0.5 m ... 4 m	2 m ... 30 m	5 m ... 30 m
Number of temperature sensors	Max. 15		
Position of sensors*	up to 10 m: 1 sensor at every one meter, between 11 and 30 m: 1 sensor at every two meters from the bottom positioned sensor		
Temperature range	-40 °C ... +125 °C		-10 °C ... +85 °C
Max. medium pressure	2.5 MPa (25 bar)	1.6 MPa (16 bar)	0.3 MPa (3 bar)
Resolution (digital)	0.1 °C		
Accuracy	± 0.5 °C		
Measurement cycle	max. (Nx1) sec, where N is the number of sensors		
Probe	Tensile force	-	
	Dimension	Ø 12 mm	Ø 16 mm
Material of wetted parts	Stainless steel: DIN 1.4571		Stainless steel: DIN 1.4571 + Antistatic PP
Ambient temperature	With plastic housing: -20 °C...+65 °C; with metal housing: -30 °C...+65 °C; with SAP-300 display: -20 °C...+65 °C		
Output	Digital	HART communication	
	Display	SAP-300 LCD	
Output load	$R_t = (U_t - 12.5V) / 0.004 A$		
Power supply	Standard version: 12V...36 V DC, Ex version: 12.5 V ... 30 V DC		
Electrical protection	Class III.		
Ingress protection	IP 67		
Process connection	As per order codes		
Electrical connection	M 20 x1.5 cable gland, cable outer diameter: Ø 6 ...Ø12 mm, wire cross section: max.1.5 mm ²		
Housing material	Paint coated aluminium cast or plastic (PBT)		
Mass	1.7 kg + probe: 0.6 kg/m	2.9 kg + probe cable: 0.3 kg/m + weight 3 kg	2.9 kg + probe cable: 0.7 kg/m

SPECIAL DATA FOR Ex CERTIFIED MODELS

Protection type	ia	ia D	tD
Ex marking	⊕ II 1 G Ex ia IIB T6..T4	⊕ II 1 D Ex iaD A20/A21 T85°C IP67	⊕ II 1 D Ex ta/tb IIIC T85°C Da IP67
Ex electrical limit data	U _{im} = 30 V I _{im} = 80 mA, P _{im} = 0.8 W C _i < 30 nF L _i < 100 µH		U _{max} = 30 V
Electrical connection	M 20 x 1.5 cable gland, cable outer diameter 7...13mm , wire cross section: 0.5...1.5 mm ²		
Ambient temperature	With display: -20°C ... +65°C, Without display: see temperature limit data table		With display: -20°C ... +65°C Without display and with steel housing: -30°C ... +65°C

TEMPERATURE LIMIT DATA IN CASE OF Ex ia AND iaD MODELS

Metal housing with flexible probe			
Temperature class	T6	T5	T4
Medium temperature	-40 °C ... +80 °C	-40 °C ... +95 °C	-40 °C ... +125 °C
Ambient temperature	-30 °C ... +65 °C		
Plastic housing with flexible probe			
Temperature class	T6	T5	T4
Medium temperature	-40 °C ... +80 °C	-40 °C ... +95 °C	-40 °C ... +80 °C
Ambient temperature	-20 °C ... +65 °C		
Metal housing with plastic coated flexible probe			
Temperature class	T6	T5	
Medium temperature	-10 °C ... +80 °C	-10 °C ... +85 °C	
Ambient temperature	-30 °C ... +65 °C		



THERMOPOINT TM

2-wire multipoint temperature transmitter
 Flexible cable version for liquids
 Maximum cable length: 30 m
 All wetted parts: stainless steel
 Maximum number of temperature sensors/transmitter: 15
 Paint coated aluminium housing
 Power supply: 12-36 V DC
 Output: HART
 Ex marking: ATEX II 1 G Ex ia IIB T6-T4
 HART communication via HART modem and NIVISION software or MultiCONT controller

Type

T [X][X] - [X][X][X] - [X]

Version

T [X] - [X][X][X] - [X]

- M Multipoint transmitter
- J Multipoint transmitter with local LCD indicator

Process connection

T [X] - [X][X][X] - [X]

- K 1 1/2" BSP
- E 1 1/2" NPT

Housing

T [X][X] - [X][X] - [X]

- 5 Aluminium (paint coated)
- 6 Plastic, PBT, glass fibre reinforced

Number of sensors

T [X][X] - [X][X] - [X]

- 1 - 9 1-9; each sensor
- A - F 10-15; each sensor

Cable length

T [X][X] - [X][X] - [X]

- 2 - 9 2-9 m; each started 1 m
- A - Z 10-30 m; each started 1 m

Output / Approval

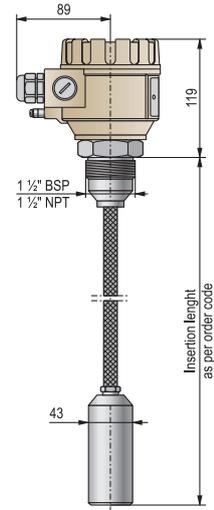
T [X][X] - [X][X][X] - [X]

- 4 HART
- 6 HART / Ex ia

T [] - [] - []

Accessories to order

- Type
- S A P - 3 0 0 Plug-in display module (See "Electronic accessories")
- TMK-555-4M-200-01 St. St. Counterweight, Ø 42x77 mm
- S A S - 3 0 3 EView 2 software package (See "Electronic accessories")
- S A T - 3 0 4 HART-USB modem (See "Electronic accessories")
- S A K - 3 0 5 - 6 HART-USB/RS485 modem / Exia



THERMOPOINT TMK-500

THERMOPOINT TM

2-wire multipoint temperature transmitter
 Rigid probe version for liquids
 Probe length: max. 3 m
 All wetted parts: stainless steel
 Maximum number of temperature sensors/transmitter: 15
 Housing: paint coated aluminium or plastic (PBT glass fibre reinforced)
 Power supply: 12-36 V DC
 Output: HART
 Ex marking: ATEX II 1 G Ex ia IIB T6-T4
 HART communication via HART modem and NIVISION software or MultiCONT controller

Type

T [X][X] - [X][X][X] - [X]

Version

T [X][X] - [X][X][X] - [X]

- M Multipoint transmitter
- J Multipoint transmitter with local LCD indicator

Process connection

T [X][X] - [X][X][X] - [X]

- R 1" BSP
- A 1" NPT
- J M20x1.5

Housing

T [X][X] - [X][X][X] - [X]

- 5 Aluminium (paint coated)
- 6 Plastic, PBT, glass fibre reinforced

Number of sensors*

T [X][X] - [X][X][X] - [X]

- 1 - 9 1-9; each sensor
- A - F 10-15; each sensor

Probe length**

T [X][X] - [X][X][X] - [X]

- 1 - 4 1-4 m; each started 1 m

Output / Approval

T [X][X] - [X][X][X] - [X]

- 4 HART
- 6 HART / Ex ia

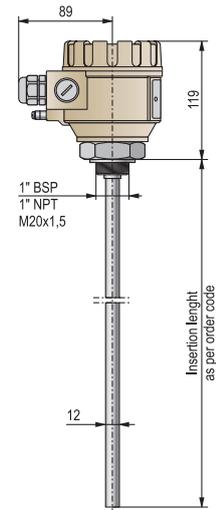
T [] [] - [] [] [] - []

* Number of temperature sensors is depending on the insertion length
 ** Special probe length is available on request

Accessories to order

Type

- S A P - 3 0 0 Plug-in display module (See "Electronic accessories")
- S A S - 3 0 3 EView 2 software package (See "Electronic accessories")
- S A T - 3 0 4 HART-USB modem (See "Electronic accessories")
- S A K - 3 0 5 - 2 HART-USB/RS485 modem
- S A K - 3 0 5 - 6 HART-USB/RS485 modem / Exia



THERMOPOINT TMR-500

THERMOPOINT TM

2-wire multipoint temperature transmitter
 PE coated antistatic cable
 Maximum cable length: 30 m
 Maximum allowed tensile force: 3.5 t
 Maximum number of temperature sensors/transmitter: 15
 Paint coated aluminium or plastic housing
 Power supply: 12-36 V DC
 Output: HART
 Ex marking: ATEX II 1 G Ex ia IIB T6-T4 or
 ATEX II 1 D Ex ta/tb IIIC T85°C Da IP67 or
 ATEX II 1 D Ex iaD A20/A21 IP67 T85°C
 HART communication via HART modem and NIVISION software or MultiCONT controller

Type

T - -

Version

T - -
 M Multipoint transmitter
 J Multipoint transmitter with local LCD indicator

Process connection

T - -
 H 1 1/2" BSP
 C 1 1/2" NPT

Housing

T - -
 5 Aluminium (paint coated)

Number of sensors

T - -
 1 - 9 1-9; each sensor
 A - F 10-15; each sensor

Cable length

T - -
 2 - 9 2-9 m; each started 1 m
 A - Z 10-30 m; each started 1 m

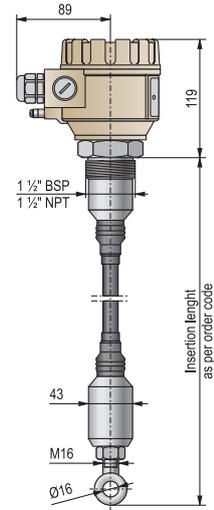
Output / Approval

T - -
 5 HART / Ex iaD
 6 HART / Ex ia
 8 HART / Ex tD

T - -

Accessories to order

Type
 S A P - 3 0 0 Plug-in display module (See "Electronic accessories")
 CTN-103-0M-400-00 St. St. Counterweight, Ø 76x150 mm
 S A S - 3 0 3 EView 2 software package (See "Electronic accessories")
 S A T - 3 0 4 HART-USB modem (See "Electronic accessories")
 S A K - 3 0 5 - 6 HART-USB/RS485 modem / Exia



THERMOPOINT TMH-500

GENERAL DESCRIPTION

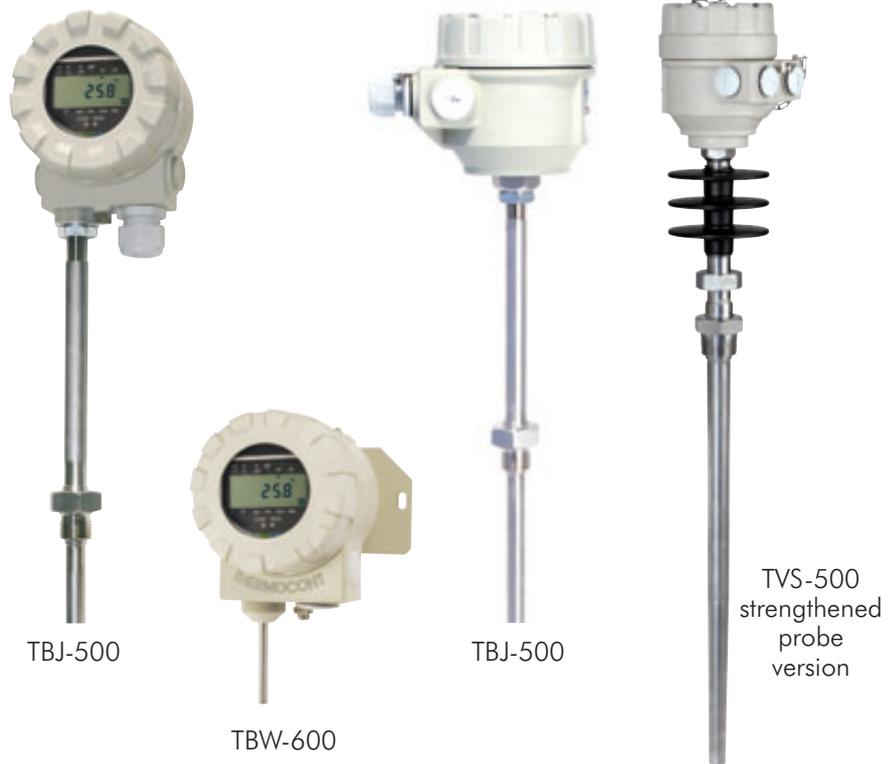
THERMOCONT TT field devices incorporating Pt100 sensor are 2-wire temperature transmitter with 4 ... 20 mA analogue output or transmitter/indicator if equipped with plug in display. Intrinsically safe version of each model is available in ordinary or flame-proof housing. The measured temperature can also be transmitted by HART communication. The THERMOCONT TT temperature transmitters are suitable for temperature measurement of liquids in tanks and pipes and free flowing or powdered solids, but also applicable for gases. Wall mounted versions are available for ambient temperature measurements. The PFA coated stainless steel probe makes measurement of very aggressive materials also possible. The reinforced temperature probe version is an ideal solution for meeting the requirements of the oil-, gas- and heavy chemical industries, but also a good choice when robustness of the probe is advantageous. As special version of the unit a remote transmitter is also available which can be connected to a standard Pt 100 sensor through a simple 4-wire cable.

MAIN FEATURES

- Temperature transmitting and displaying
- Measurement range: from -50 °C up to +600 °C
- 4 ... 20 mA output
- HART communication
- Variety of head positions
- Stainless steel probe
- Plastic coated version
- Flameproof casing
- Strengthened probe version
- Ex versions
- IP 65 protection

APPLICATIONS

- For normal and hazardous mediums
- For temperature metering of liquids, vapours, gases
- Temperature transmitting for far distances
- Temperature metering in tanks, tubes, furnaces or boilers
- Temperature metering of halls or rooms



TBJ-500

TBW-600

TBJ-500

TVS-500 strengthened probe version

CERTIFICATIONS

- ATEX II 1G EEx ia IIB T6...T1
- ATEX II 2G EEx d IIB T6...T1
- ATEX II 1/2G EEx d ia IIB T6...T1

POSITION OF THE DISPLAY

"A" is the default head position



SAP-202 display

Requested head position differing from standard ("A") version should be specified when placing an order

TECHNICAL DATA

Type		Standard	High temperature version	Plastic coated version	Strengthened probe version
Measurement range		-50 °C ... +200 °C	-50 °C ... +600 °C ⁽³⁾	-40 °C ... +70 °C	-50 °C ... +600 °C ⁽³⁾
Insertion length		As per order code, max. 3000 mm			Max. 800 mm
Process connection		As per order code			½" NPT / 1" NPT threaded
Maximum process pressure		2.5 MPa (25 bar) at +20 °C, 1.6 MPa (16 bar) at +400 °C			4 MPa (40 bar)
Material of wetted parts ⁽²⁾		stainless steel DIN 1.4571		stainless steel DIN 1.4571 + PFA / PFTE	stainless steel DIN 1.4571
Probe		Class A or Class B Pt100 temperature sensor, as per order code			
Accuracy ⁽¹⁾	Output current	Class „A“ Pt 100	± (0.3+ 0.0025 t) °C	± (1.5+ 0.004 t) °C	± (0.3+ 0.0025 t) °C
		Class „B“ Pt 100	± (0.4+ 0.0055 t) °C	± (1.5+ 0.006 t) °C	± (0.4+ 0.0055 t) °C
		Temperature error	± 0.02°C / °C		
	Displayed-current	Class „A“ Pt 100	± (0.2+ 0.0025 t) °C	± (1.5+ 0.004 t) °C	± (0.2+ 0.0025 t) °C
		Class „B“ Pt 100	± (0.35+ 0.0055 t) °C	± (1.5+ 0.006 t) °C	± (0.35+ 0.0055 t) °C
		Temperature error	± 0.02°C / °C		
Power supply		10 V ... 36 V DC; Ex: 12 V - 30 V DC, see: special data for Ex certified models			
Output	Analogue	44...20 mA, output limit values: 3.9 mA ... 20.5 mA			
	Digital communication	HART			
	Output load	Rt = (Us-10V) / 0.022 A, Us = power supply voltage			
	Display	type	SAP-202		
resolution		0.1 °C	0.4 °C	0.1 °C	
Error indication		3.8 mA or 22 mA			
Ambient temperature		-40 °C ... +70 °C, with display: -25 °C ... +70 °C; see: special data for Ex certified models			
Electrical protection		Class III.			
Ingress protection		IP 65			
Electrical connection		Plastic or steel cable gland: M20 x 1.5; Cable outer diameter: Ø 6...12 mm; Wire cross section: 0.25...1.5 mm ² / see: special data for Ex certified models			
Housing material		Paint coated aluminium or plastic (PBT)	Paint coated aluminium	Paint coated aluminium or plastic (PBT)	Paint coated aluminium
Mass	with aluminium housing	~ 0.9kg + probe 0.5kg/m (for T □ W types ~ 0.9kg total)			~ 1.55kg + probe 0.25kg / 100 mm
	with plastic housing	~ 0.5kg + probe 0.5kg/m (for T □ W.... types ~ 0.5kg total)	-	~ 0.5kg + probe 0.5kg/m (for T □ W.... types ~ 0.5kg total)	-

⁽¹⁾ t = measured temperature
⁽²⁾ Not valid for T □ W types
⁽³⁾ with heatsink above 200 °C

SPECIAL DATA FOR EX CERTIFIED MODELS

Protection type	Intrinsically safe	Strengthened probe version	Flameproof casing	Intrinsically safe with flameproof casing
Ex marking	⊕ II 1 G EEx ia IIB T6...T1		⊕ II 2 G EEx d IIB T6...T1	⊕ II 1/2 G EEx d ia IIB T6...T1
Intrinsically safe data	U _{max} = 30 V, I _{max} = 140 mA, P _{max} = 1.0 W C _i ≤ 20 nF, L _i ≤ 200 μH		-	U _{max} = 30 V, I _{max} = 140 mA, P _{max} = 1.0 W, C _i ≤ 20 nF, L _i ≤ 200 μH
Ambient temperature	-40 °C ... +70 °C, with display: -25 °C ... +70 °C			-40 °C ... +70 °C, with display: -20 °C ... +70 °C
Cable gland	Steel, M 20 x1.5 cable outer diameter: 6...12 mm			Steel, M 20 x1.5 cable outer diameter: 9...11 mm

Temperature classes	T6	T5	T4	T3	T2	T1
Ambient temperature	+60 °C			+70 °C		
Medium temperature	+80 °C	+95 °C	+130 °C	+195 °C	+295 °C	+440 °C

TEMPERATURE MEASUREMENT

TEMPERATURE TRANSMITTERS

THERMOCONT TT

THERMOCONT T

2-wire temperature indicator / transmitter

All wetted parts: stainless steel

Housing: Aluminium or plastic with IP65 / NEMA 4

Output: 4-20 mA, HART

Power supply: 12-30 V DC

Ex marking: ATEX II 1 G EEx ia IIB T6...T1 or
ATEX II 2 G EEx d IIB T6...T1 or
ATEX II 1/2 G EEx d ia IIB T6...T1

Position A,B,C,D must be specified according to the figure

Type

T - -

Version

T - -

- T Transmitter, up to 200°C
- V Transmitter, up to 600°C
- W Transmitter, up to 200°C, PFA coated
- B Transmitter with local LCD indicator, up to 200°C
- L Transmitter with local LCD indicator, up to 600°C
- R Transmitter with local LCD indicator, up to 200°C, PFA coated

Process connection*

T - -

- W With console for wall mounting
- C 1/2" BSP
- D 3/4" BSP
- H 1/2" NPT
- J M20x1,5
- L 1" Triclamp
- K 1 1/2" Triclamp
- N 2" Triclamp
- O DN 25 Pipe coupling (DIN 11851)
- P DN 40 Pipe coupling (DIN 11851)
- R DN 50 Pipe coupling (DIN 11851)
- F DN 50, PN 16, DIN flange, 1.4571+PTFE lining
- A 2" ANSI, 1.4571+PTFE lining

Housing

T - -

- 5 Aluminium (paint coated)
- 6 Plastic, PBT glass fibre reinforced (Ex version not available)

Sensor

T - -

- 0 Without (Ex type only for EExia)
- 1 Pt100, class A
- 2 Pt100, class B

Probe length

T - -

- 0 60 mm
- 1 160 mm
- 2 250 mm
- 3 400 mm
- 4 500 mm
- 5 1000 mm
- 6 1500 mm
- 7 2000 mm
- 8 2500 mm
- 9 3000 mm

Output / Approval

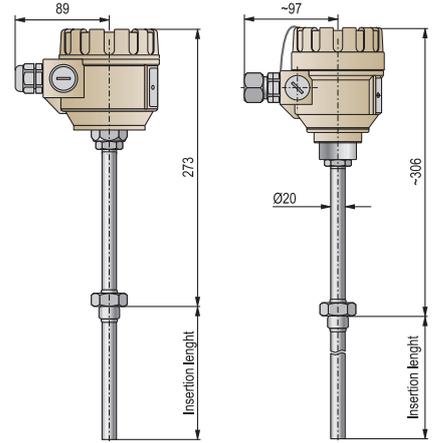
T - -

- 2 4-20 mA / none
- 4 4-20 mA + HART / none
- 6 4-20 mA / EExia
- 8 4-20 mA + HART / EExia
- A 4-20 mA / EExd
- B 4-20 mA + HART / EExd
- C 4-20 mA / EExd ia
- D 4-20 mA + HART / EExd ia

T

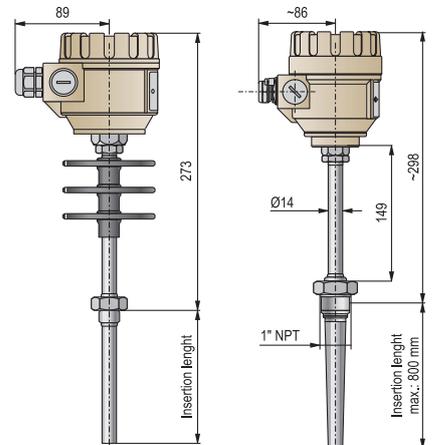
Accessories to order

- S A P - 2 0 2 Plug-in display module (See "Electronic accessories")
- S A S - 3 0 3 EView 2 software package (See "Electronic accessories")
- S A T - 3 0 4 HART-USB modem (See "Electronic accessories")
- S A K - 3 0 5 - 2 HART-USB/RS485 modem
- S A K - 3 0 5 - 6 HART-USB/RS485 modem / Exia



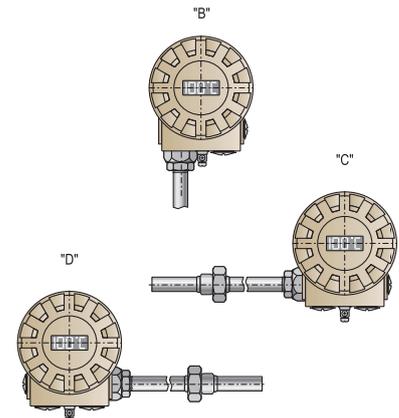
THERMOCONT TTJ-521

THERMOCONT TTJ-500 Ex



THERMOCONT TVJ-500

THERMOCONT TTS-500*



Requested head position differing from standard („A”) version should be specified when placing an order!

* Price on request for the TTZ and TTS strengthened probe versions

GENERAL DESCRIPTION

The wide range of **THERMOCONT** temperature sensors is able to cover almost all demands in the area of industrial temperature measurement. The numerous versions and multiple kinds of applicable probes make **THERMOCONT** suitable choice for all industries. PFA coated probe versions with teflon inserted steel flange are applicable for chemical and petrochemical applications where aggressive mediums could damage steel probes. The vibration-resistant versions are suitable for special applications where the measurement is exposed to high vibrations. The strengthened probe versions are designed primarily for oil, gas and steam pipeline industrial applications. The shock proof stainless steel construction includes the inner and outer (double) tube and well, the welded flange. This type is also provides suitable solution for all applications where robust design is advantageous. Suiting for unique technologies and industrial processes, special versions are also available along with the standard models.

MAIN FEATURES

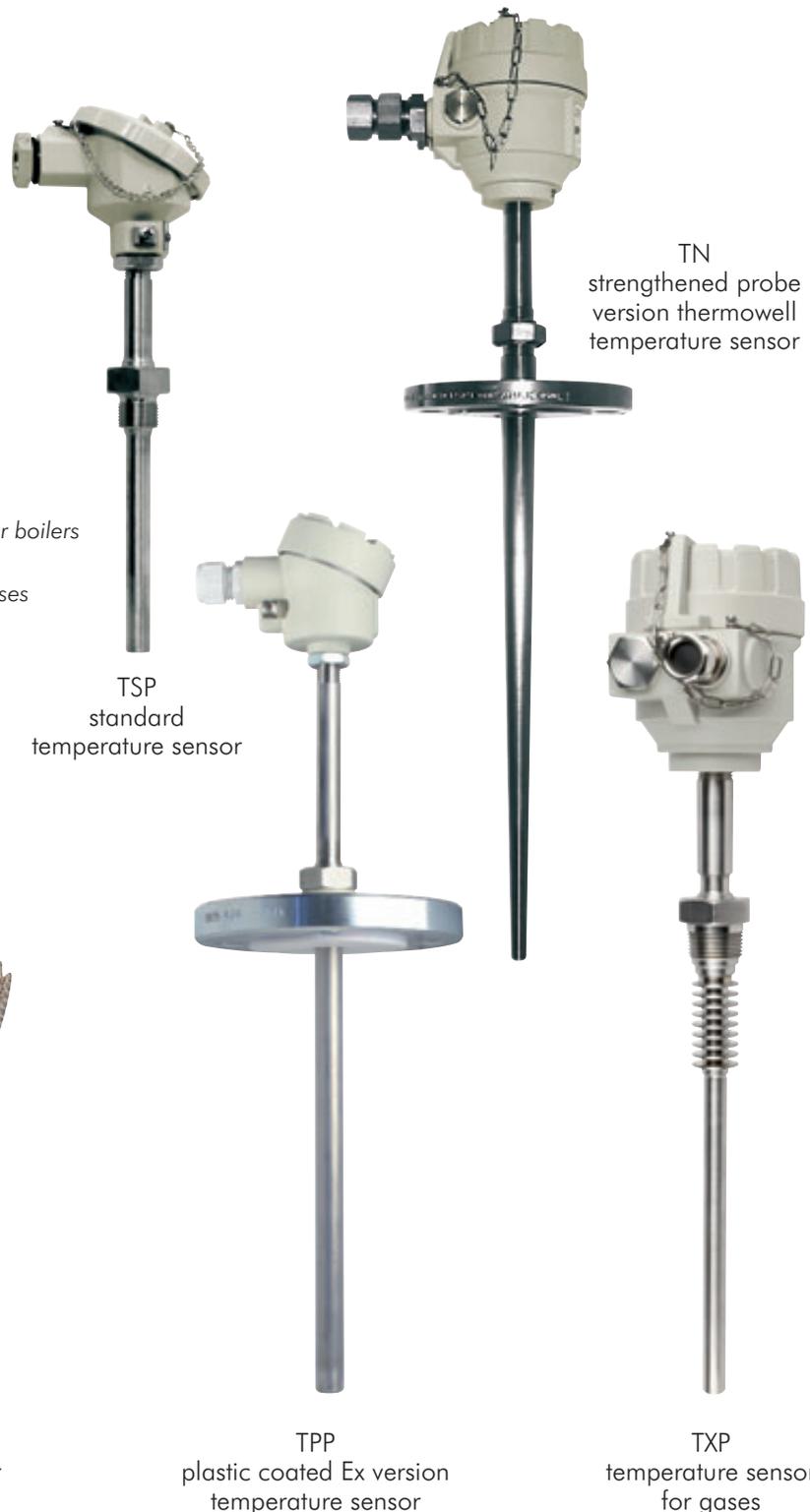
- Thermocouples and RTDs (Resistance Temperature Detectors)
- Temperature range from -50 °C up to +600 °C
- Multiple kinds of thermo-sensors
- Stainless steel probes
- Fast response sensor version
- Plastic coated version
- Vibration-resistant version
- Heavy-duty robust version
- Ex versions
- IP 65 protection

APPLICATIONS

- Temperature metering in tanks, tubes, furnaces or boilers
- Can be mounted to special technological places
- For temperature metering of liquids, vapours, gases
- Temperature metering in bearings
- Special versions for unique applications

CERTIFICATIONS

- ATEX  II 2G EEx d IIC T6...T1, 600 °C
- ATEX  II 1/2G EEx d ia IIC T6...T1, 600 °C
- ATEX  II 1G EEx ia IIC T6...T1, 600 °C



TPP plastic coated Ex version temperature sensor

TXP temperature sensor for gases

TECHNICAL DATA

Features	Type	THERMOCONT temperature sensors				
		Normal	Vibration-resistant	Fast response	Plastic coated	Strengthened probe
Sensor	Accuracy class	A or B accuracy class in accordance to EN 60751				A class
	Type	Single or dual		Only with single sensor	Single or dual	
	Vibration resistance	-	EN 60751.4.4.2	-	EN 60751.4.4.2	
	Grounding	Ground-independent				
	Material of inner protecting tube	A38			DIN 1.4571	PTFE
Head	Housing material	EN 573-3 (DIN 1712) Aluminium			Paint coated EN AC 43100	
	Cable gland	M 20 x 1.5 plastic			M 20 x 1.5 metal	
	Cable	Ø 7 – 10 mm, see: special data for Ex certified models table			Ø7.5 - 12 mm	
	Electrical connection	Screw type terminal				
Outer protection	Material	DIN 1.4571 stainless steel		PFA coating	DIN 1.4571	
	Probe length	160 – 3000 mm			160 – 1000 mm	120 – 500 mm
	Process connection	As per order codes				M33x2 1"NPT
General data	Range	-50 °C ... +600 °C		-50 °C ... +200 °C	-50 °C ... +600 °C	-50 °C ... +150 °C
	Medium pressure	2.5 MPa (25 bar) at 20 °C 1.6 MPa (16 bar) at 400 °C		0.1 Mpa (1 bar)	1"NPT- 4MPa (40bar) or pressure rating of flanges	Max. 8MPa (80 bar)
	Time-constant	< 3 min.		< 20 sec.	4.5 min.	-
	Ambient temperature	-20 °C...+80 °C see: special data for Ex certified models table			-40 °C ... 80 °C	-30 °C ... +80 °C
	Grounding	Outer, grounding screw on the housing				
	Electrical protection	Class III.				
	Ingress protection	IP 65				
	Ex marking	-	see: special data table	-	see: special data for Ex certified models table	

⁽¹⁾ In the standard temperature ranges (about up to 400 °C) the temperature error of „A“ temperature class resistance temperature sensors is below ±1 °C, while it is max. ±2.3 °C in case of „B“ temperature class temperature sensors.

SPECIAL DATA FOR Ex CERTIFIED MODELS

Features	Type	THERMOCONT T bearing temperature sensors	THERMOCONT T temperature sensors
Operating temperature		-50 °C...+180 °C	-30 °C...+200 °C
Senzor		Pt100	
Sensor diameter		Ø 8 mm	Ø 6, Ø 8 mm
Accuracy class		A or B accuracy class in accordance to EN 60751	
Measuring current		1 mA	max. 5 mA
Material of sensor tube		Stainless steel, DIN 1.4571 / Cu protector cover	DIN 1.4571
Mechanical connection		As per order codes	
Electrical connection		SIT type silicone rubber and shield, 3x0.75 mm ²	Teflon coated, 0.25 mm ² wire cross section cable
Cable protection		tinned copper-braid protective jacket	
Cable length		6 m, diameter: 7 mm	max. 3 m, as per order codes
Insertion length		As per order codes	
Ingress protection		IP 65	IP 40
Electrical protection		Class III.	
Insulation resistivity		min. 10 MΩ, at 20 °C ±5 °C min. 1 MΩ at the highest value operating temperature	
Voltage-test		500 V, 50 Hz AC for 1 min., at 20 °C ±5 °C	
Mass		0.55 kg	0.05 kg
Time constant		< 20 mp	
Pressure		max. 6 MPa	

Temperature sensors						
Ex marking	ⓧ II 2 G EEx d IIC T6...T1, 600 °C ⓧ II 1 G EEx d ia IIC T6...T1, 600 °C ⓧ II 1 G EEx ia IIC T6...T1					
Cable	for EEx ia cable gland: Ø 7 - 10 mm for EEx d cable gland: Ø 9.5 - 10 mm for EEx d ia cable gland: Ø 7.5 - 12 mm					
Temperature sensors with strengthened probe						
Ex marking	ⓧ II 2 G EEx d IIC T6...T1, 600 °C ⓧ II 1/2 G EEx d ia IIC T6...T1, 600 °C ⓧ II 1 G EEx ia IIC T6...T1, 600 °C					
Cable	Ø 7.5 - 12 mm					
Temperature sensors for gases						
Ex marking	ⓧ II 2 G Ex d IIC T6... +150 °C Gb ⓧ II 1/2 G Ex d ia IIC T6... +150 °C Gb					
Cable	Ø 8 - 16 mm					
For Ex ia protection type						
Intrinsically safe limit data	U _i = 30 V, I _i = 100mA, P _i ≤ 750 mW C ₀ =0 nF, L ₀ =0 mH					
Temperature classes						
T6	T5	T4	T3	T2	T1	T600
Ambient temperature from -20 °C						
+65 °C	+70 °C	+70 °C	+80 °C	+80 °C	+80 °C	+80 °C
Medium temperature from -20 °C						
+85 °C	+100 °C	+135 °C	+200 °C	+300 °C	+450 °C	+600 °C

TEMPERATURE MEASUREMENT

THERMOCONT T

Temperature element with strengthened case

Ingress protection: IP 65

Housing: aluminium casting

Process connection and well: stainless steel DIN 1.4571

Ex marking: ATEX II 1G EEx ia IIC T6...T1, 600°C
 ATEX II 2G EEx d IIC T6...T1, 600°C
 ATEX II 1/2G EEx d ia IIC T6...T1, 600°C

Type

T - -

Well (DIN 1.4571)

T - -

- N Drilled, tapered
- U Drilled straight

Sensor

T - -

- K Thermocouple NiCr-Ni (IEC 584)
- P Resistance Temperature Sensor Pt100 (IEC 751)

Process connection*

T - -

- 1 1" NPT
- 2 DIN DN40 PN40 [PN25]
- 5 DIN DN50 PN40 [PN25]
- F 2" ANSI 300RF
- T 1 1/2" ANSI 300RF

Sensor classification / Arrangement

T - -

Thermocouple

- 1 Class 1, single
- 4 Class 1, dual

Resistance Temperature Sensor

- 1 Class A, single, 2-wire
- 4 Class A, dual, 3-wire
- 7 Class A, single, 4-wire

Protrusion length

T - -

TN - Drilled, tapered

- 1 160 mm
- 3 250 mm
- 6 400 mm
- 8 500 mm
- 9 600 mm
- A 700 mm
- B 800 mm
- C 900 mm
- D 1000 mm

TU - Drilled strait

- 1 160 mm
- 3 250 mm
- 6 400 mm
- 8 500 mm
- 9 600 mm
- A 700 mm
- B 800 mm
- C 900 mm
- D 1000 mm

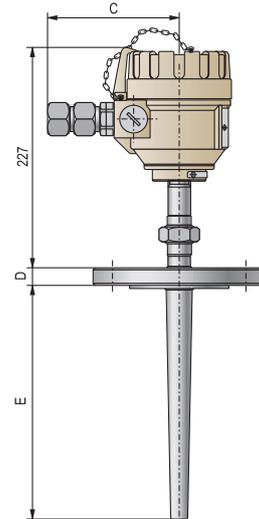
Ex certificate

T - -

- 0 None
- 7 EExia
- 8 EExdia
- 9 EExd

T - -

* On request: other process connections



THERMOCONT TN
 C: Dimension is dependig on the applied cable gland
 D, E: As per order code

THERMOCONT TX

Temperature element with strengthened case and heat stabilizer

Ingress protection: IP 65

Housing: aluminium casting

Process connection and well: stainless steel DIN 1.4571

Ex marking: ATEX  II 2G Ex d IIB T4-T6 150°C Gb
ATEX  II 1/2G Ex d ia IIB T4-T6 150°C Gb

Type

T X

Sensor

T X Resistance Temperature Sensor Pt100 (IEC 751)

Process connection*

T X
1 1" NPT
V M33x2

Sensor classification / Arrangement

T X
1 Class A, single, 2-wire
4 Class A, dual, 3-wire
7 Class A, single, 4-wire

Protrusion length

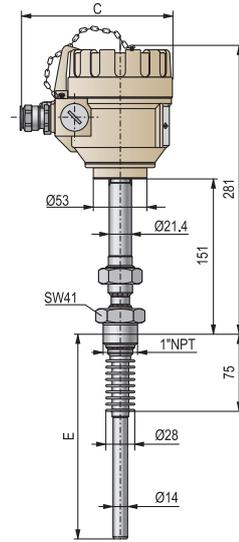
T X
0 120 mm
1 160 mm
2 200 mm
3 250 mm
4 300 mm
5 350 mm
6 400 mm
7 450 mm
8 500 mm

Ex certificate

T X
0 None
8 Ex dia
9 Exd

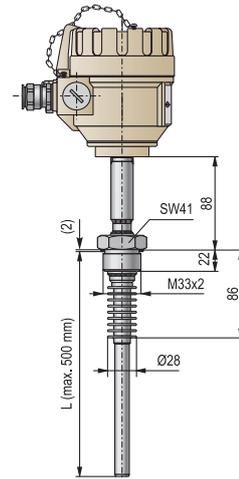
T X

* On request: other process connections



THERMOCONT TXP-1_ _ _

C: Dimension is dependig on the applied cable gland
E: As per order code



THERMOCONT TXP-V_ _ _

TEMPERATURE MEASUREMENT

THERMOCONT TF

Resistance thermometer (RTD), Pt100 sensor
 Process temperature: max. 200°C
 Protecting tube made of 1.4571, integrated cable

Type

T F P - -

Process connection

T F P - -

1	∅ 6mm 1.4571
2	∅ 8mm 1.4571
3	M 12 x 1.5
4	M 8 x 1

Pt 100 sensor

T F P - -

1	Class A, single
2	Class B, single
4 *	Class A, dual
5 *	Class B, dual
6 *	Class B, single, 4-wire
7 *	Class A, single, 4-wire

Probe length

T F P - -

1	60 mm
2	100 mm
3	160 mm
4	250 mm
5 **	10 mm
6 **	30 mm

Cable length

T F P - -

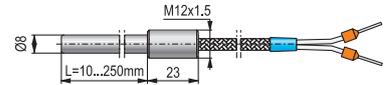
0	0,6 m
1	1 m
2	2 m
3	3 m

T F P - -

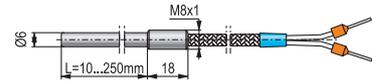
* only with ∅ 8 mm tube diameter
 ** only with threaded process connection



THERMOCONT TFP-1, TFP-2



THERMOCONT TFP-3



THERMOCONT TFP-4



THERMOCONT TFP-5, TFP-6

THERMOCONT TG

Bearing RTD sensor, Pt 100
 Protecting tube made of A38, integrated cable
 Process temperature: max. 180°C

Type

T G P - -

Process connection

T G P - -

1	Rimmed
2	M 20 x 1,5

Pt 100 sensor

T G P - -

1	Class A Pt 100, 3-wire
2	Class B Pt 100, 3-wire

Probe length

T G P - -

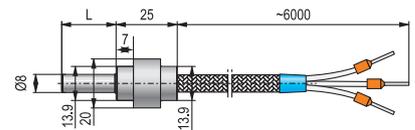
1	30 mm
2	50 mm
3	100 mm
4	160 mm
5	380 mm

Cable length

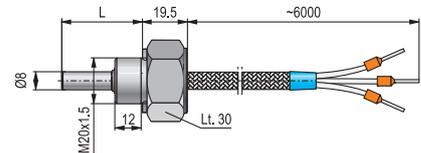
T G P - -

3	3 m
4	6 m

T G P - -



THERMOCONT TGP-1



THERMOCONT TGP-2

THERMOCONT TS

RTD temperature sensor

Ingress protection: IP 65

With silvered output terminals, 1.4571 or PFA coated stainless steel tube

Ex marking: ATEX II 2G EExd IIC T6-T1 600°C
 ATEX II ½ G EExdia IIC T6-T1 600°C
 ATEX II 1 G EExia IIC T6-T1 600°C

Type

T - -

Version

T - -

S 1.4571 (stainless steel)
 P PFA coated stainless steel (only with flange)

Sensor

T - -

P Pt 100
 V Pt 100 shock proof
 G Pt 100 fast-response

Process connection

T - -

0 Flange DN 25 PN 25, 1.4571
 1 M 20 x 1.5
 2 1/2" BSP
 3 1/2" NPT
 4 3/8" BSP
 5 Flange DN 40 PN 25/16, 1.0037
 6 Flange DN 50 PN 25/16, 1.0037
 7 Flange DN 80 PN 25/16, 1.0037
 8 Flange DN 100 PN 25, 1.0037
 9 Flange DN 150 PN 25, 1.0037

Pt100 Sensor

T - -

1 Class A
 2 Class B
 4 Class A, dual
 5 Class B, dual
 6 Class B + 4-wire
 7 Class A + 4-wire

Probe length

T - -

1 160 mm
 2 250 mm
 3 400 mm
 4 500 mm
 5 1000 mm
 6 1500 mm
 7 2000 mm
 8 2500 mm
 9 3000 mm

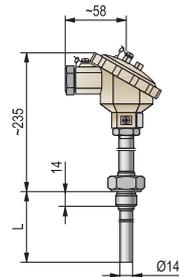
Ex Approval

T - -

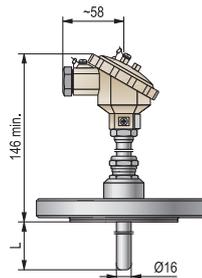
0 None
 7 EEx ia
 8 EEx dia
 9 EEx d

T - -

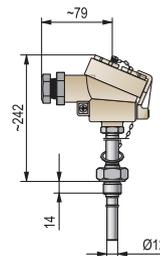
On special request: other process connections and probe lengths



THERMOCONT TSP, TSV



THERMOCONT TPP



THERMOCONT TSP
EExd, EExdia

TEMPERATURE MEASUREMENT

GENERAL DESCRIPTION

Another important non-electrical quantity of the industrial process automation is the pressure.

The NIPRESS D mini compact type gauge / absolute pressure transmitters offer wide selection of models and provide possibility to complete almost all relative or absolute pressure measurement tasks requiring different accuracy.

Their design, high overload capability and the possibility to install the units in any physical position allows for a wide range of industrial applications.

The non-contact proximity switches are also very popular devices of the industrial process automation.

The MICROSONAR ultrasonic proximity sensors provides ideal choice for simple applications where the use of higher performance units such as EasyTREK or EchoTREK is not needed.

The MICROSONAR proximity sensors use non-contact ultrasonic principles to detect and measure the position of an object. They act as proximity switches, or transmit the measurement of the distance from sensor face to the target.

PRESSURE TRANSMITTERS

NIPRESS



- Gauge or absolute pressure transmitters
- -1 - 600 bar range
- Piezoresistive or ceramic sensor
- High accuracy: 0.25 %, or 0.5%
- Mini compact 2- or 3-wire transmitters
- Stainless steel housing
- Sanitary process connections
- 4-20 mA, 0-10 V DC output

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ULTRASONIC PROXIMITY SENSORS

MICROSONAR



- Non-contact distance metering
- Narrow 5° beam angle
- Max. 6 m measuring range
- Position, distance detection
- Local programming with magnet or cable
- 4-20 mA, 0-10 V, PNP or NPN switch output
- Short circuit and reverse polarity protection

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SENSORS

GENERAL DESCRIPTION

NIPRESS pressure transmitters working in 2- or 3-wire systems convert pressure (input signal) to direct current or voltage (output signal) proportional with the pressure. The wide selection of models provides possibility to complete almost all relative or absolute pressure measurement tasks requiring different accuracy. Their design, high overload capability and the possibility to install the units in any physical position allows for a wide range of industrial applications.

NIPRESS D-200 series featuring capacitance ceramics transducer is applicable to the measurement of normal or corrosive mediums such as gases, fumes or liquids but not suggested for materials tending to sedimentation, crystallisation or stiffening. These units are suitable to measure overpressure as well.

NIPRESS D-300 series with piezoresistive transducer and stainless steel diaphragm is also suitable to dynamic pressure changes. It is not recommended to liquids tending to sedimentation, crystallisation and solidification. Absolute pressure measurement is feasible at ranges over 0.1 bar. Transmitters are available for use in 2- or 3-wire systems with standard 4 ... 20 mA or 0 ... 10 V DC outputs.

NIPRESS D-400 series with piezoresistive or capacitive transducer behind its flush face diaphragm is especially suitable to contaminated liquids and for tanks with bottom measurement of pressure (level). The high temperature versions are able to be used up to 150 °C. Units in the pressure range of 0 ... 40 bar operate up to 300 °C. Absolute pressure measurement in the range of over 0.1 bar is possible.

The standard pressure transmitting liquid of the sensors is silicone oil, but the units can also be ordered with a pressure transferring liquid suitable for food industry. Transmitters can be applied both in 2- and 3-wire systems.

All **NIPRESS** transmitters can be equipped with the loop powered, programmable, plug in display **UNICONT PLK-501** to be ordered separately.

MAIN FEATURES

- Gauge or absolute pressure transmitters
- Pressure range from -1 up to 400 bar
- Piezoresistive or ceramic sensor
- Mini compact type
- Stainless steel housing
- High accuracy: 0.25% or 0.5%
- Standard plug type connector
- IP 65, IP 67 protection

APPLICATIONS

- Measuring of gases, vapours and liquids
- Overpressure and level measuring tasks
- Mounted on tanks, pipes or pressurized vessels



NIPRESS D-200



NIPRESS D-300



NIPRESS D-400 +
UNICONT PLK-501
optional display

TECHNICAL DATA

Type	NIPRESS D-200	NIPRESS D-300	NIPRESS D-400	
Measurement range	0 – 400 bar	-1 – 600 bar	-1 – 400 bar	
Overload capability	As per order codes			
Accuracy	0.5 %	P > 0.4 bar: 0.25 or 0.5% as per order codes P ≤ 0.4 bar: 0.5%		
Medium temperature	– 25 °C ... +125 °C		– 25 °C...+125 °C High temperature version: up to 300 °C	
Ambient temperature	– 25°C ... +85 °C			
Sensing type	Capacitance	Piezoresistive	Piezoresistive, above 40 bar: Capacitance	
Material of Wetted parts	Sensor	Alu. oxide ceramics Al ₂ O ₃ (internal diaphragm)	Stainless steel: DIN 1.4435 (internal diaphragm)	
	Sensor sealing	FKM (Viton)	FKM (Viton) ≤ P 40 bar < NBR	
	Connection	Stainless steel: DIN 1.4301	Stainless steel: DIN 1.4571	1/2" BSP or 1" BSP and P > 40 bar Stainless steel: DIN 1.4571 1" BSP connection and ≤ P 40 bar: 1.4435
	Housing	Stainless steel: DIN 1.4301		
Output	4...20 mA	4...20 mA; 0...10 V		
Power supply	8...32 V DC	4...20 mA output: 12 V...36 V DC 0...10 V DC output: 14 V...36 V DC		
Load resistance	$R_t \leq \frac{U_1 - 8V}{0.02A} \Omega$	2-wire current output: $R_t \leq \frac{U_1 - 8V}{0.02A} \Omega$ 3-wire voltage output: $R_t > 10 \text{ k}\Omega$		
Process connection	As per order codes			
Electrical connection	Pg 9 DIN 43650	Pg 9 DIN 43650 connector (1)		
Electrical protection	Class III.			
Ingress protection	IP 65	IP 65 / IP 67 (integrated cable version)		
Mass	~ 0.14 kg		~ 0.5 kg	

(1) Integrated cable version is available on special order

NIPRESS D-200

2-wire pressure transmitter for gauge pressure measurement
 Output: 4-20 mA
 Power supply: 8-32 VDC
 Accuracy: $\leq \pm 0,5\%$ FSO
 Housing/Process connection: stainless steel DIN 1.4301
 Diaphragm: ceramic Al₂O₃
 Sealing: FKM
 Electrical connection: DIN 43650

Type

D R X - 2 X - 2

Process connection

D R - 2 X - 2

- A 1/4" BSP according to EN837 (manometer)
- C 1/2" BSP according to EN837 (manometer)

Range / Overpressure

D R X - 2 X - 2

- 5 0-1 bar / 3 bar
- 6 0-1.6 bar / 4 bar
- 7 0-2.5 bar / 4 bar
- 8 0-4 bar / 10 bar
- 9 0-6 bar / 10 bar
- A 0-10 bar / 20 bar
- B 0-16 bar / 40 bar
- C 0-25 bar / 40 bar
- D 0-40 bar / 100 bar
- E 0-60 bar / 100 bar
- F 0-100 bar / 200 bar
- G 0-160 bar / 400 bar
- H 0-250 bar / 400 bar
- J 0-400 bar / 650 bar

Accuracy

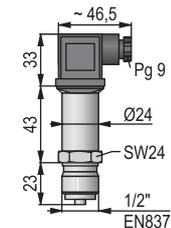
D R X - 2 X - 2
 2 0.5%

D R - 2 - 2

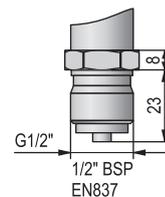
Accessories to order

Type

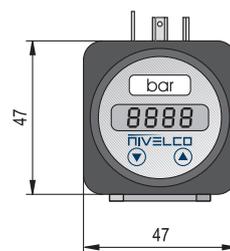
- P L K - 5 0 1 - 2 Plug-in indicator
- P L K - 5 0 1 - 3 Plug-in indicator with PNP output



NIPRESS D-200



1/2" BSP EN837



UNICONT PLK-501

PRESSURE TRANSMITTERS

NIPRESS D

NIPRESS D-300

2- or 3-wire pressure transmitter for absolute and gauge pressure measurement, with internal membrane
 Output: 4-20 mA or 0-10 V
 Power supply: 12-36 V DC
 Accuracy: $\leq \pm 0.25\%$ or $\pm 0.5\%$ FSO ($p \leq 0.4$ bar: 0.5%)
 Housing: stainless steel DIN 1.4301
 Process connection: stainless steel DIN 1.4571
 Sensor: stainless steel DIN 1.4435 with recessed diaphragm
 Sealing: FKM ≤ 40 bar < NBR
 Electrical connection: DIN 43650

Type

D - 3 -

Measuring method

D - 3 -

- R Gauge
- E Absolute (above 0.1 bar only)

Process connection

D - 3 -

- A 1/4" BSP
- C 1/2" BSP
- G 1/4" NPT
- H 1/2" NPT

Range / Overpressure

D - 3 -

- 0 -1-0 bar / 3 bar
- 1 0-0.1 bar / 0,5 bar
- 2 0-0.25 bar / 1 bar
- 3 0-0.4 bar / 1 bar
- 4 0-0.6 bar / 3 bar
- 5 0-1 bar / 3 bar
- 6 0-1.6 bar / 6 bar
- 7 0-2.5 bar / 6 bar
- 8 0-4 bar / 20 bar
- 9 0-6 bar / 20 bar
- A 0-10 bar / 20 bar
- B 0-16 bar / 60 bar
- C 0-25 bar / 100 bar
- D 0-40 bar / 100 bar
- E 0-60 bar / 140 bar
- F 0-100 bar / 340 bar
- G 0-160 bar / 340 bar
- H 0-250 bar / 600 bar
- J 0-400 bar / 600 bar
- K 0-600 bar / 1000 bar

Accuracy

D - 3 -

- 1 0.25% ($p > 0.4$ bar)
- 2 0.5%

Output

D - 3 -

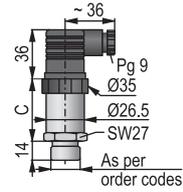
- 2 4-20 mA
- 3 0-10 V

D - 3 -

Accessories to order

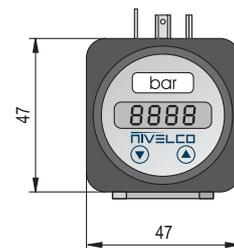
Type

- P L K - 5 0 1 - 2* Plug-in indicator
 - P L K - 5 0 1 - 3* Plug-in indicator with PNP output
- * only for 2-wire version



P \leq 40 bar: C = 45 mm
 P > 40 bar: C = 59 mm

NIPRESS D-300



UNICONT PLK-501

NIPRESS D-400

2- or 3-wire pressure transmitter for absolute and gauge pressure measurement
 Output: 4-20 mA or 0-10 V
 Power supply: 12-36 VDC
 Accuracy: $\leq \pm 0.25\%$ or $\pm 0.5\%$ FSO ($p \leq 0.4$ bar: 0.5%)
 Housing: stainless steel DIN 1.4301
 Process connection: stainless steel DIN 1.4571 or DIN 1.4435
 Sensor: stainless steel DIN1.4435, with flush face membrane, filled with silicone oil
 Sealing: FKM ≤ 40 bar < NBR
 Electrical connection: DIN 43650

Type

D - 4 -

Measuring method

D - 4 -

- R Gauge up to 125°C
- E Absolute up to 70°C (above 0.6 bar only)
- H Gauge up to 150°C (up to 150 bar only)
- J Gauge up to 300°C (up to 150 bar only) (up to 70 bar 200°C)

Process connection

D - 4 -

- B 1/2" BSP (over 2.5 bar)
- C 1/2" BSP (sensor: 1.4404) max. 125°C, -0.3-40 bar; without media separator
- E 1" BSP (over 0.25 bar)
- F 1 1/2" BSP
- L 1" Triclamp (ISO 2852) 0.6-40 bar
- M 1 1/2" Triclamp (ISO 2852) 0.4-40 bar
- N 2" Triclamp (ISO 2852) 0.25-40 bar
- O DN 25 Pipe coupling (DIN 11851) 0.6-40 bar
- P DN 40 Pipe coupling (DIN 11851) 0.4-40 bar
- R DN 50 Pipe coupling (DIN 11851) 0.25-40 bar

Range / Overpressure

D - 4 -

- 0 -1-0 bar / 3 bar
- 1 0-0.1 bar / 0,5 bar
- 2 0-0.25 bar / 1 bar
- 3 0-0.4 bar / 1 bar
- 4 0-0.6 bar / 3 bar
- 5 0-1 bar / 3 bar
- 6 0-1.6 bar / 6 bar
- 7 0-2.5 bar / 6 bar
- 8 0-4 bar / 20 bar
- 9 0-6 bar / 20 bar
- A 0-10 bar / 20 bar
- B 0-16 bar / 60 bar
- C 0-25 bar / 60 bar
- D 0-40 bar / 100 bar
- E 0-60 bar / 120 bar
- F 0-100 bar / 250 bar
- G 0-160 bar / 500 bar
- H 0-250 bar / 500 bar
- J 0-400 bar / 600 bar

Accuracy

D - 4 -

- 1 0.25% (0.4 bar < p < 40 bar)
- 2 0.5%

Output

D - 4 -

- 2 4-20 mA
- 3 0-10 V

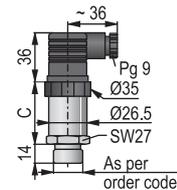
D - 4 -

⇒ Available on request: filled with food compatible oil (not available for C--

Accessories to order

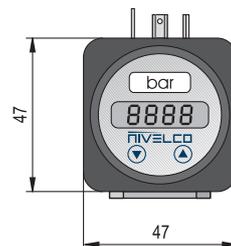
Type

- P L K - 5 0 1 - 2* Plug-in indicator
 - P L K - 5 0 1 - 3* Plug-in indicator with PNP output
- * only for 2-wire version



P ≤ 40 bar: C = 45 mm
 P > 40 bar: C = 59 mm

NIPRESS D-400



UNICONT PLK-501

GENERAL DESCRIPTION

MICROSONAR proximity sensors use non-contact ultrasonic principles to detect and measure the position of an object. They act as proximity switches, or transmit the measurement of the distance from sensor face to the target. For transmitter models the output signal is either 4–20 mA or 0–10 V, which can be assigned to any part of the nominal range. Switching points of the proximity switch option can be set to any point within the range.

MAIN FEATURES

- Non-contacting sensor
- Analogue or switch output
- Narrow beam angle
- 2 measuring ranges (1 m, or 6 m)
- Adjustable sensing distance
- Selectable processing parameters
- Error indication output
- Maintenance-free operation
- LED indication
- Protection against short circuit and inverse polarity
- Local and remote programming

APPLICATIONS

- Sensing distance of objects
- Proximity sensing and switching
- For small transport vehicles, trolleys, fork-lifts
- For packaging equipments
- For positioning equipments



URS-213



URP-263

TECHNICAL DATA

General data		UT□-211	UT□-212	UR□-213 UR□-214	UTP-261	UTP-262	URP-263 URP-264
Nominal range	X _{min} (m)		0.2			0.4	
	X _{max} (m)		1.0			6.0	
Ultrasonic frequency		160 kHz			60 kHz		
Total beam angle		5°					
Measure sequence time (T _p)		25 ms			80 ms		
Resolution		0.25 mm	0.25 mm	0.1 mm	1.5 mm	1.5 mm	0.1 mm
Output		4–20 mA	0–10 V	switch	4–20 mA	0–10 V	switch
Programming		With contact of PRG wire, or with magnet					
Ambient temperature		–20 ... +70 °C					
Power supply		10.8 ... 30 V					
Consumption Us = 12 V		< 55 mA	< 41 mA	< 31 mA *	< 54 mA	< 40 mA	< 30 mA *
Consumption Us = 24 V		< 63 mA	< 49 mA	< 39 mA *	< 61 mA	< 47 mA	< 37 mA *
Input protection		Reverse polarity, transient surge, ESD					
Integrated cable		Shielded cable with PVC coating L = 3 m					
Cable core		4 x 0.5 mm ²					
Electrical protection		Class III.					
Ingress protection		U□S – 2□□: IP 67, U□P – 2□□: IP 68		IP 68			
Housing material		U□S : Stainless steel with PP covering U□P : PP housing			PP housing moulded with resin		
Mass		400 g			530 g		

* unloaded

Output data	UT□-2□1-4	UT□-2□2-4	UR□-2□3-4	UR□-2□4-4
Type of output				
Voltage rating	–	–	Max. 30 V DC	
Current rating	–	–	Max. 200 mA	
Residual voltage	–	–	< 2,5 V	
Switching delay or damping time (T _p *)	U□□-21□-4: 25 ms (a=1), 100 ms (a=4), 200 ms (a=8), 400 ms (a=16) **			
	U□□-26□-4: 80 ms (a=1), 320 ms (a=4), 640 ms (a=8), 1280 ms (a=16) **			
Temperature error	± 0.02% / °C			
Linearity error	± 0.35 %		–	–
Repeatability	1.5 mm		1 mm	
Output signal	4 ... 20 mA	0 ... 10 V (Us > 13 V)	–	–
Load resistance	≤ 500 Ohm (Us > 14 V)	≥ 1 kOhm	–	–
Output protection	EMC	EMC, short circuit	EMC, short circuit, overload	

* Under proper reflection conditions ** value of „a“ can be programmed

MICROSONAR U-2

Programmable Ultrasonic proximity switches and transmitters for object sensing

Process connection:

U **S**-**21** **-4**: M30x1,5

U **P**-**21** **-4**: G1"

U **P**-**26** **-4**: to be fixed on a flat surface by 4 screws

Ingress protection:

U **S**-**21** **-4**: IP65

U **P**-**2** **-4**: IP68

Integrated cable (3 m)

Power supply: 10.8-30 V DC

Type

U - 2 - 4
 1 0.2-1 m
 6 0.4-6 m (only with plastic housing)

Function

U - 2 - 4
 R Switch
 T Transmitter

Housing

U - 2 - 4
 P Plastic (PP), IP68
 S Stainless steel, IP65

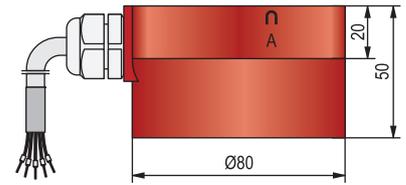
Output

U - 2 - 4
 1 4-20 mA (only with UT...)
 2 0-10 V (only with UT...)
 3 PNP (only with UR...)
 4 NPN (only with UR...)

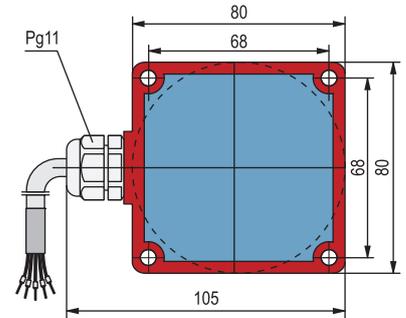
U - 2 - 4

Cable

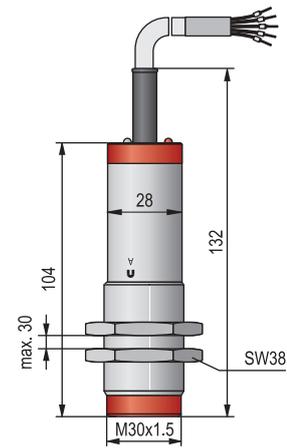
Maximum length 30 m; each started 1 m over the standard 3 m



MICROSONAR URP-26



MICROSONAR URP-26



MICROSONAR URS-21

GENERAL DESCRIPTION

The wide product portfolio of NIVELCO requires many types of system accessory components. These devices facilitate the integration of NIVELCO's level instruments to process control systems.

The system component range consists of process controller units, universal displays, loop displays, interface and other expanding modules, time relays, etc.

The newly developed UNICONT PGK intrinsically safe isolator power supply modules provides intrinsically safe power for 2 wire transmitters operating in hazardous locations and ensure galvanic insulation between input and output. The special feature of the unit is its high accuracy signal conversion.

The UNICOMM SAK-305 communication modules are able to communicate between the HART-capable field transmitters and the process controller PC-s or PLC-s, via USB or RS485 communication line.

MULTICHANNEL PROCESS CONTROLLERS

MultiCONT



- Programmer, display and controller for transmitters with HART protocol
- 1 to 15 input channels
- 4-20 mA, HART, RS485 output
- Datalogger function
- SD card slot
- Expandable with interface modules
- Highly informative Dot-Matrix display
- Explosion-proof models

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UNIVERSAL INTERFACE MODULES

UNICONT PJK



- MultiCONT expanding module
- RS485 communication
- Output variations:
 - 2x current outputs
 - 2x relay outputs (250 V AC, 8 A)
 - 1x current output and 1x relay
- DIN rail mountable
- Provides galvanic isolation
- Level controlling and limit level indication

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CURRENT CONTROLLED SWITCHES

UNICONT PKK



- 4 - 20 mA input
- DIN rail mountable
- Can power 2-wire transmitters
- Galvanic isolation
- Power relay (SPDT) output
- Switching amplifier for vibrating forks
- Wire state monitoring
- Explosion-proof models

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LOOP INDICATORS

UNICONT PD



- 4 - 20mA loop operated
- Operation without external power supply
- 6-digit plug-in LCD display
- 20 mm digit height
- Universal field indicator for any transmitters
- 4-20 mA / HART converter version
- Stainless steel flameproof housing
- Explosion-proof models

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UNIVERSAL CONTROLLERS

UNICONT PM



- Dual line 4-digit LED display
- Pt 100, Ni100, J, K, S type. sensor, 4-20 mA or 0-10 V input
- Up to 3 power relays
- ON-OFF, PD or PID control
- Auto tuning
- Transmitter power supply
- Heating / cooling control

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EX ISOLATOR POWER SUPPLY

UNICONT PGK



- Isolated power supply for intrinsically safe transmitters
- For transmitters operating in hazardous applications
- 4-20 mA, HART communication
- For high precision transmitters
- Up to 5 ms response time
- Up to 1 μ A transmission accuracy
- DIN rail mountable
- Explosion-proof models

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UNIVERSAL PUMP CONTROL SYSTEM

UNICONT PSW



- Low cost automatic pump control system
- Ultrasonic level measurement
- 0.4 - 3m measurement range
- Programmable pump cycling
- Controlling of one-phase pumps
- Incorporated circuit breaker
- IP68 protected sensor

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POWER SUPPLY

NIPOWER



- Output voltage: 12 / 24 V DC
- Output current: 2500 mA / 1250 mA
- Stabilized DC output
- Switching-mode power supply
- Short-circuit protection
- Overload protection
- Overvoltage protection
- DIN rail mountable

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TIME RELAY

NITIME



- 2 and 10 function types
- Wide time range: from 0.1 sec ... 100 days
- Small size
- Universal power supply voltage
- DIN rail mountable
- Relay output

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HART MODEM

UNICOMM



- HART - USB/RS485 modem
- DIN rail mountable version
- Test clip connector version
- No need for power supply
- Galvanic isolation
- Explosion-proof models

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PROCESS VISUALIZATION SOFTWARE

NIVISION



- Online monitoring of measured values
- Tank configuration
- Transmitter configuration
- Real-time trend analysis
- Data logging
- Database handling
- Archiving
- Tank-farm visualization

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GENERAL DESCRIPTION

The MultiCONT unit is a universal interface between NIVELCO's HART-capable intelligent level transmitters and the other elements of the process control system like the PC-s , PLC-s, displays and the actuators. Besides its role as an interface, the MultiCONT ensures the powering of the 2-wire transmitters while being capable of complex control tasks. The MultiCONT unit supports communication with a maximum of 15 standard or 4 Ex ia certified NIVELCO's HART-capable 2- and / or 4-wire transmitters. If MultiCONT is used with NIVELCO's MicroTREK microwave level transmitters the maximum number of transmitters in a loop should not exceed 6 pcs. for normal transmitters and 2 pcs. for Ex version transmitters. If a system contains more transmitters than one MultiCONT can handle, further MultiCONT units can be wired in series via an RS485 line. Remote programming of the transmitters and downloading of the parameters and measured data is possible using the MultiCONT. The various outputs such as 4 ... 20 mA, relays and digital outputs can be controlled using measured values and new values calculated from the measured values. The internal current outputs (max. 2 pcs.) of the MultiCONT can transfer and even modify information supplied by the transmitters. The built-in relays (max. 5 pcs.) can be freely programmed and assigned to the transmitters. If a system contains more transmitters than one MultiCONT can handle, further MultiCONT units can be organised in chain via RS485 interface. The large dot-matrix display allows visualisation of a wide range of informative display functions. One special feature is the "Echo-Map" visualisation when communicating with NIVELCO's EchoTREK and EasyTREK transmitters.

MAIN FEATURES

- As a Universal Process Controller provides for a flexible solution for commissioning a process control system consisting of any HART-based intelligent (level, temperature or pressure) transmitters
- Galvanically isolated 4...20 mA outputs for transmitters
- 1 to 15 (standard) or 1 to 4 (Ex ia) channels
- Highly informative large display
- Ex ia model is available
- Simple 6-button programming
- Trend logging into internal memory or SD memory card
- USB connector for downloading data from internal FLASH memory
- Expanding with Universal Interface Modules via RS 485 line
- Echo Map for EchoTREK and EasyTREK ultrasonic transmitters



MultiCONT PRD-200

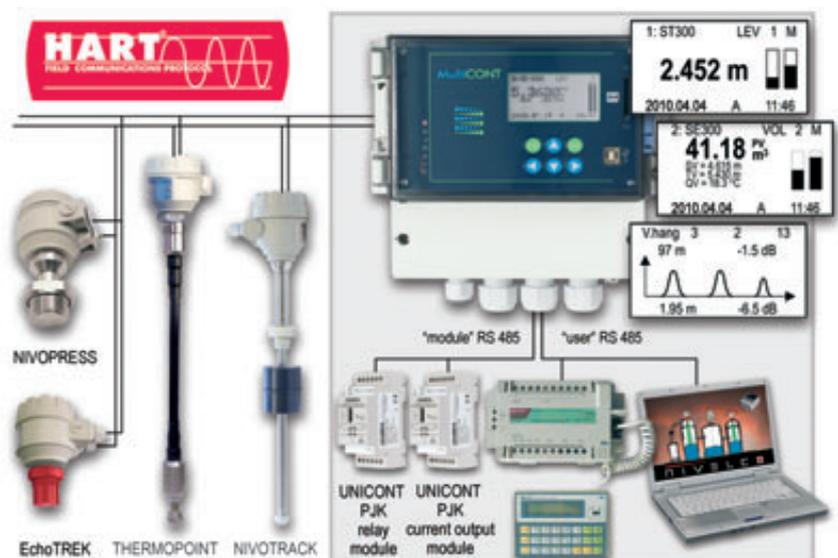
APPLICATIONS

- Remote programming, displaying of transmitters
- Power supply for 2-wire transmitters
- Process controller for HART capable transmitters
- Displaying measurement data Numerical and in bargraph mode
- Data transmission on RS 485 line (with HART or MODBUS protocol)
- Simple datalogging
- Trend logging or logging of flow measurement

CERTIFICATIONS

- ATEX II (1) G [Ex ia Ga] IIB
- IEC Ex [Ex ia Ga] IIB

TYPICAL NETWORK CONTROLLED BY MultiCONT



COMPONENTS

TECHNICAL DATA

Típus		MultiCONT P□□ – 2□□ – □
Power supply / power consumption / maximal supply voltage		85...255 V AC 50...60 Hz / 12 VA / 255 V _{eff} ; 11,4...28 V AC 50...60 Hz / 12 VA / 28 V _{eff} ; 11,4...40 V DC / 11 W / 40 V DC
Power supply voltage for transmitters		30 V DC / 60 mA (Ex version: 25 V DC / 22 mA)
Graphic display		128 x 64 dot-matrix
Relay		Max. 5 pcs, SPDT 250 V AC, AC1, 5 A
Analogue output		Max. 2 pcs, galvanically isolated 4 ... 20 mA, Max. load: 500 ohm, with overvoltage protection
Number of powered transmitters		Max. 15 pcs standard, or max. 4 pcs Ex
RS 485 interface	"user"	Galvanically isolated, HART and MODBUS protocol
	"module"	Galvanically isolated, HART protocol
Logger unit		Capacity: FLASH = 65000 entries; SD card = depends on the card! (max. 2 GB)
Housing material		Polycarbonate (PC)
Mounting		Wall mountable
Ambient temperature		-20 °C ... +50 °C
Ingress protection		IP 65
Electrical protection		Class I. / III.
Mass		0.9 kg

Special data for Ex certified models

Ex marking, IEC	ATEX II (1) G [Ex ia Ga] IIB ; IEC Ex [Ex ia Ga] IIB
Intrinsically safe data	U ₀ = 30 V, I ₀ = 140 mA, P ₀ = 1 W, L ₀ = 4 mH, C ₀ = 200 nF
Power supply voltage for transmitters	25 V DC / 22 mA
Ambient temperature	-20 °C ... +50 °C

SPECIAL FEATURES

Trend logging (optional)

Onboard logging capable versions of MultiCONT are able to store measurement values and three additional parameters of the connected transmitters in a measurement system into the internal FLASH memory or an SD memory card. The two modes, time-controlled and event-controlled logging modes can be used. Monitoring the average, minimum and maximum value or highest values of the flow can be used only for NIVELCO manufactured transmitters used in flow-metering mode. Content of the internal memory is retrievable through USB port, within the capacity of 65000 entries. Maximal capacity of the applicable SD card is 2 GB.

NIVISION (optional) Process Visualisation Software

RS 485 capable versions of MultiCONT are able to communicate with NIVELCO's NIVISION process visualization software to indicate parameters of a process control system graphically on a process controller PC. The process, the measured values or any further processed values can be visualized also in tabular form with NIVISION. The NIVISION performs data logging, trend monitoring, database handling and various other tasks in addition to a basic visualization. The software is sold as a custom-tailored product.

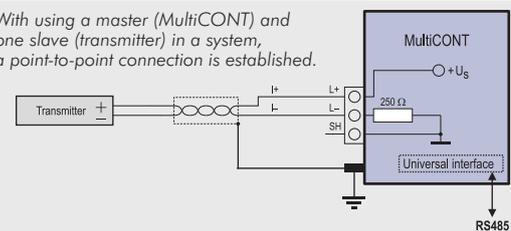
OUTPUT TYPE SELECTION

Outputs	Only display (without relay)	No. of relays				
		1 pc.	2 pcs.	3 pcs.	4 pcs.	5 pcs.
Only display (w.o. RS 485 or current output)	■	■	■	■	■	■
RS 485 Interface	■	■	■	■	■	■
1x 4-20 mA output	■	■	■	■	■	■
2x 4-20 mA output	■	■	■	■	■	■
RS 485 + 1x 4-20 mA analogue output	■	■	■	■	■	■
RS 485 + 2x 4-20 mA analogue outputs	■	■	■	■	■	■

COMMUNICATION BETWEEN MULTICONT AND TRANSMITTERS

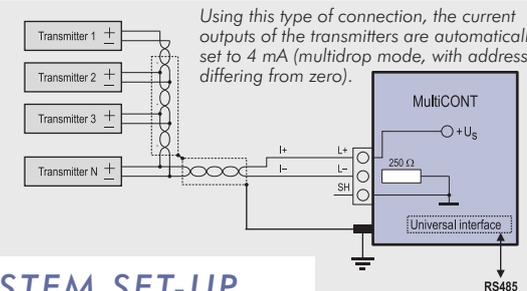
Point-To-Point connection

With using a master (MultiCONT) and one slave (transmitter) in a system, a point-to-point connection is established.



Multipoint connection (Multidrop). Multiple slaves connected in parallel

Using this type of connection, the current outputs of the transmitters are automatically set to 4 mA (multidrop mode, with address differing from zero).



SYSTEM SET-UP

There is a Master-Slave relation between MultiCONT and the connected transmitters. Through the MultiCONT the transmitters can be programmed or their parameters checked and modified. Reading the process values of the transmitters is easy to do by the MultiCONT. In case of using MultiCONT with multiple transmitters, the units should be addressed with numbers (Short address) differing from zero. Using two transmitters with the same Short address is not possible. MultiCONT can handle a number of max. 15 transmitters with HART communication. When using 2-wire transmitters, the current output of the transmitters will be limited to 4 mA, because of the capacity of the MultiCONT's power supply, which is rated at 60 mA with standard transmitters.

COMPONENTS

MULTICHANNEL PROCESS CONTROLLER

MultiCONT

MultiCONT P-200, Wall mounting

Universal remote control unit to program and read all Nivelco transmitters featuring HART communication

Ex marking: ATEX Ex II (1) G [Ex ia Ga] IIB
IEC Ex [Ex ia Ga] IIB*

Expandable version: featuring an RS485 port communication for relay and current output modules

Type

P - 2 -
E Standard, non expandable
R Expandable

Version

P - 2 -
W IP65 Enclosure
C IP65 Enclosure, transparent cover
D IP65 Enclosure, transparent cover, logger

Input

P - 2 -
1 Single channel for one unit
2 2 channels for up to 2 units
4 4 channels for up to 4 units
8 8 channels for up to 8 units
M 15 channels for up to 15 units

Output**

P - 2 -
0 Display
1 Display and 1 relay
2 Display and 2 relays
3 Display and 3 relays
4 Display and 4 relays
5 Display and 1 relay and 1 current output
6 Display and 2 relays and 1 current output
7 Display and 3 relays and 1 current output
8 Display and 4 relays and 1 current output
9 Display and 4 relays and 2 current outputs
A Display and RS485
B Display, RS485 and 1 current output
C Display, RS485, 1 current output and 2 relays
D Display and 5 relays
E Display, RS485 and 5 relays

Power supply / Approval

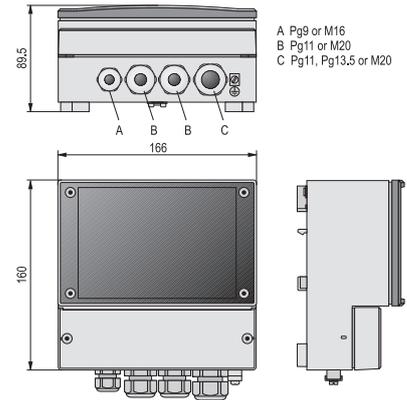
P - 2 -
1 85-255 V AC / none
2 11.4-28 V AC and 11.4-40 V DC / none
5 85-255 V AC / Ex (max. 4 channels)
6 11.4-28 V AC and 11.4-40 V DC / Ex (max.4 channels)

P - 2 -

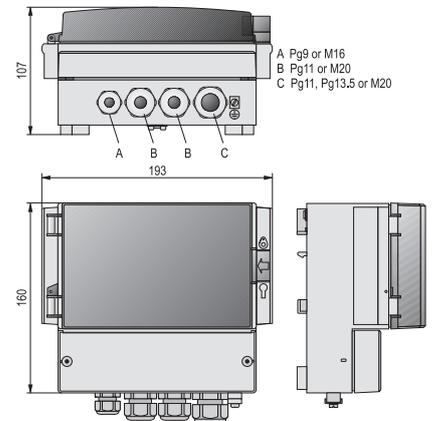
* Need of IEC is to be specified with order

** Other output configurations on request

Note: Please check relevant page for the prices of UNICONT PJK



MultiCONT PEW-211



MultiCONT PEC-211

GENERAL DESCRIPTION

The UNICONT PJK series is a universal interface module that can be controlled via RS485 line, and (depending on type) provides relay(s) and/or 4...20 mA current output(s). The DIP switch in the front panel of the module is for setting the address.

The Universal Interface Modules can be a widely used as a part of the following applications:

- Peripheral unit of PLC process control systems
- Peripheral unit of PC automated process control systems
- Expanding MultiCONT multichannel process controller with relays or current outputs

The UNICONT PJK-100 universal interface modules provide essential solution if the number of relays or current outputs of MultiCONT process controller is not enough in a system. The device can be used also as a peripheral unit for PLC or PC controlled process control systems. The sum of relays in UNICONT PJK-100 extension modules and MultiCONT must not exceed 64, the sum of analogue outputs (4...20mA) must not exceed 16.

There is a universal module with both relay and current output in the variety of the UNICONT PJK series. Max. number of these modules may be 32. Programming of the modules is done by MultiCONT.



PJK-110

MAIN FEATURES

- RS 485 input
- Output:
2 current or 2 relay output
For mixed systems
(with current and relay output)
- DIN rail mountable

APPLICATIONS

- Universal Expanding Module
- For PLC process control systems
- For automated process control systems operating on RS485
- For MultiCONT

TECHNICAL DATA

TYPE	PJK-1□□-4
Power supply	24 V DC ±10%
Power consumption	10 mA + N _{relay} × 11 mA + N _{current generator} × 25 mA) ±10%
Ambient temperature	-20 °C ... +50 °C
Electrical connection	max. 2,5 mm ² twisted, or max. 4 mm ² solid wire
Electrical protection	Class III.
Mechanical connection	DIN EN 50022-35 rail
Ingress protection	IP 20
Mass	0,11 kg

TYPE	PJK-102-4	PJK-111-4	PJK-110-4	PJK-120-4
OUTPUT UNITS	2 relays	1 relay + 1 current output	1 current output	2 current outputs
Relay	Relay	SPDT	-	-
	Rating	250 V AC, 8 A, AC1	-	-
	Insulation voltage	2500 V 50 Hz	-	-
	Electrical / mechanical lifespan	105 / 2 × 10 ⁶ switchings	-	-
	Impulse width in pulse mode	0,1 ... 25,5 s	-	-
	Electrical protection	Class II.	-	-
Current generator	Linear range	-	3,601 mA ... 21,999 mA	-
	Error indication	-	≤ 3,6 mA, or ≥ 22 mA	-
	Resolution	-	14 bit	-
	Accuracy	-	40 μA	-
	Temperature dependence	-	max. 15 μA / 10 °C	-

GENERAL DESCRIPTION

UNICONT PKK-312 series is a 4 ... 20 mA current controlled limit switch featuring galvanic isolation also available as an intrinsically safe unit. The input 4 ... 20 mA signals can be transferred from passive or active outputs of 2- or 4-wire transmitters. The value of the input signal will be compared in the unit with the set (taught) value and the state of the galvanically isolated relay changes in accordance with the comparison mode programmed.

The double throw output relay can be programmed for the following functions:

- Limit switch (high or low fail safe)
- ON-OFF control with selectable switching difference
- Monitoring of discontinuity or short-circuit of the cable
- Window comparison operation mode with energised or de-energised relay state

Monitoring of discontinuity or short-circuit of the cable instead of the 4 ... 20 mA current a dry contact can also be connected to the input. The state of this contact will be copied and the output signal will be galvanically isolated. The circuitry incorporated in the UNICONT PKK-312 enables delayed switching, a switching delay of 0.1, 1, 2, and 5 seconds can be selected. The UNICONT PKK-312-8 Ex is a special version, designed to cooperate with Ex rated NIVOSWITCH vibrating fork level switch, as an intrinsically safe power supply and amplifier unit.



PKK-312

MAIN FEATURES

- 4...20mA input
- Relay output
- DIN rail mountable
- Intrinsically safe versions

APPLICATIONS

- Galvanic isolated limit switch
- Power supply for transmitters
- Cable state monitoring

TECHNICAL DATA

TYPE		PKK - 312 - □
Nominal input current range		1 ... 22 mA
Accuracy of switching level / Threshold level		± 0.1 mA
Discontinuity threshold / Lower value fault current		3,7 mA
Short circuit threshold / Upper value fault current		22 mA
Input impedance		10 Ω
Input overload capability		max 100 mA (permanent)
Switching delay		0,1 s; 1 s; 2 s; 5 s selectable
Output	Relay	1 x SPDT
	Rating	250 V AC, 8 A, AC1
Electrical connection		max. 2.5 mm ² twisted, or max 4 mm ² solid wire
Mechanical connection		DIN EN 50022-35 rail
Ingress protection		IP 20
Mass		≈ 0,21 kg

CERTIFICATIONS

- ATEX Ⓢ II (1) G [EEx ia] IIB
- ATEX Ⓢ II (1) G [EEx ia] IIC

TYPE	STANDARD VERSION				EX VERSION			
	PKK-312-1	PKK-312-2	PKK-312-3	PKK-312-4	PKK-312-5 Ex	PKK-312-6 Ex	PKK-312-7 Ex	PKK-312-8 Ex
Power supply (U)	230 V AC ±10% 50...60 Hz	110 V AC ±10% 50...60 Hz	24 V AC ±10% 50...60 Hz	24 V AC ±10%, 50...60 Hz, 24 V DC ±15%	230 V AC ±10% 50...60 Hz	110 V AC ±10% 50...60 Hz	24 V AC ± 10%, 50...60 Hz, 24 V DC ±15%	
Power consumption	< 2.7 VA			<2.5 W	< 2.5 VA		< 2.5 VA / < 2.5 W	
Switching levels	2 values in the range of 1 ... 22 mA				2 values in the range of 1 ... 22 mA			10,5 mA; 12,5 mA
Ex marking	-				Ⓢ II (1) G [EEx ia] IIB		Ⓢ II (1) G [EEx ia] IIC	
Intrinsically safe data	-				U ₀ <28,4 V; I ₀ <140 mA; P ₀ <1,1 W L ₀ <6 mH; C ₀ <50 nF		U ₀ <28,4 V; I ₀ <80 mA; P ₀ <0,6 W L ₀ <4 mH; C ₀ <50 nF	
Output load capability	U ₀ = 30 V I _{MAX} = 70 mA U _{OUT} min = 16 V			U ₀ =24 V I _{MAX} = 80 mA U _{OUT} min = 23 V	I _T = 22 mA U _{OUT} ≈12 V		I _T = 22 mA U _{OUT} ≈15 V	-
Electrical protection	Class II.			Class III.	Class II.		Class III.	
Ambient temperature	-10 °C ... +55 °C							

UNICONT PJK-100

Universal Interface Modules:

- P J K – 1 0 2 – 4 with 2 x SPDT relay output
- P J K – 1 1 0 – 4 with 1 x 4-20mA current output
- P J K – 1 1 1 – 4 with 1 x 4-20mA current output and 1XSPDT relay output
- P J K – 1 2 0 – 4 with 2 x 4-20mA current output

UNICONT PKK-300

Programmable current-controlled remote switching unit featuring 1-22 mA input current and powering capability for transmitters

Output: SPDT, potential free relay, 250 V AC, 8 A , AC1

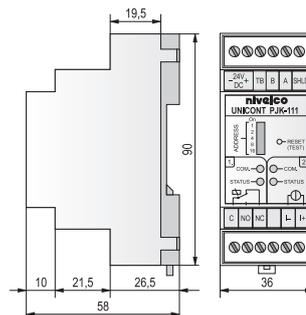
Power supply: 230 V AC, 110 V AC, 24 V AC or 24 V AC/DC (according to order code below)

Operating modes: Limit switch
 Differential switch
 Window switch

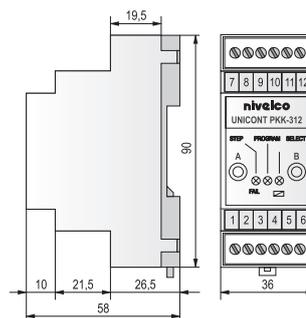
Ex marking: ATEX  II (1) G [EEx ia] IIB (in case of 230 V AC and 110 V AC)
 ATEX  II (1) G [EEx ia] IIC (in case of 24 V AC / DC)

Type

- P K K – 3 1 2 – 1 230 V AC
- P K K – 3 1 2 – 2 110 V AC
- P K K – 3 1 2 – 3 24 V AC
- P K K – 3 1 2 – 4 24 V AC/DC
- P K K – 3 1 2 – 5 230 V AC / Ex
- P K K – 3 1 2 – 6 110 V AC / Ex
- P K K – 3 1 2 – 7 24 V AC/DC / Ex
- P K K – 3 1 2 – 8 24 V DC / Ex vibrating fork



UNICONT PJK-111



UNICONT PKK-312

NIV24
 UNICONT PKK-312-1

GENERAL DESCRIPTION

The UNICONT series loop indicators are universally scalable process value indicators of NIVELCO, most of them without the need for power supply. The process indicators find their use where the process value has no control function (such as switching ON/OFF, pressure control, etc.), or local displaying is needed besides the remote data processing. The devices are applicable not only for NIVELCO transmitters, but for all transmitters which use standard 4-20 mA output. The UNICONT PDF devices are digital, field process 2-wire indicators suitable for indication of temperature, pressure, level, etc. values with 6 digit SAP-200 LCD display. The information is carried by the loop current without the need for additional power supply. Robust enclosure makes applications under harsh conditions also possible. Explosion proof versions are available for hazardous environments. The HART capable UNICONT PDF 3-wire process indicators require additional power supply. Besides displaying the loop current or the process values, these units convert input current to HART signals and so enable devices that have analogue outputs only to be integrated into HART multidrop systems. The UNICONT PDF-600 series with flameproof (Ex d approved) stainless steel housing meets the special requirements of certain industry segments, such as Food and Beverage, Marine, Oil and Gas.

MAIN FEATURES

- 4 - 20 mA input
- 2-wire loop indicator
- 3-wire 4-20mA + HART transmitter
- Wall mountable
- Scalable display
- IP 67 protection
- Ex version

APPLICATIONS

- General indicator
- Suitable for 4-20 mA transmitters
- 4-20 mA - HART converter
- Displaying level, volume, temperature, pressure, etc.

CERTIFICATIONS

- ATEX  II 1 G EEx ia IIC T6
- ATEX  II 1 G EEx ia IIB T6
- ATEX  II 2 G EEx d IIB T6
- ATEX  II 1/2 G EEx d ia IIB T6
- ATEX  II 2 G Ex d IIB T6



Symbols on the display module:

- **M** – metric (Eu) engineering system
- **US** – imperial engineering system
- **°F, °C, m, cm, in, ft, l, m³, gal, ft³**
- **PROG** – programming mode

Displayed values:

- **DIST** – distance
- **LEV** – level
- **VOL** – volume
- **%** – percentage
- **mA** and **°C** – current and temperature
- **▼** – arrow (shows the selected dimension)

PLUG-IN LOOP INDICATORS

GENERAL DESCRIPTION

The UNICONT PLK-501 type plug-in displays with 4 digit LED indicator can be connected to the 2-wire transmitters with its DIN 43650 connector (such as NIPRESS pressure gauge / transmitter, AnaCONT LCK conductivity transmitter). The displayed numerical values can be freely scaled to the current input by the user, setting the maximum and the minimum value.

MAIN FEATURES

- 4 - 20 mA input
- 4-digit LED indicator
- Rotatable display
- Operation without external power
- PNP switch output
- IP 65 protection

APPLICATIONS

- Mountable between standard DIN 43650 connectors
- For 2-wire transmitters with 4-20 mA output



PLK-501

TECHNICAL DATA

TYPE	Standard PDF-401-2 PDF-501-2	Ex version PDF-401-6 Ex PDF-401-A Ex PDF-401-C Ex PDF-601-A Ex	Standard with HART output P□F-401-4 P□F-501-4	Ex version with HART output P□F-401-8 Ex P□F-401-B Ex P□F-401-D Ex P□F-601-B Ex
Powering	2-wire		3-wire	
Measured value (input signal)	4-20 mA current loop			
Measurement range	3.6 - 22 mA		0 - 22 mA	
Output	4-20 mA		4-20 mA and/or HART for 4-20mA current limit values: 3.9-20.5 mA terminal resistor for HART: R _{min} = 250 Ohm	
Power supply	-		10V – 36V	
Display	SAP-202 display, Range of displayed value: -9999 ... +29999			
Accuracy	± 0.1 % if displayed value is > 10000; ± 0.2% if displayed value is < 10000			
Temperature error	± 0.05 % / 10°K			
Voltage drop	< 1.6 V		< 1 V	
Overvoltage capability	50 mA			
Damping time	Selectable: 3 s, 5 s, 10 s or 20 s			
Ambient temperature	Standard: -40°C ... +70°C, with display: -25°C ... +70°C; Ex type: -40°C ... +70°C			
Electrical connection	Standard: M20x1.5 cable gland, cable diameter: Ø 6...12 mm; Ex type: M20x1.5 cable gland, cable diameter: Ø 8...12 mm			
Electrical protection	Class III			
Ingress protection	IP67			
Housing	Paint coated aluminium or plastic PBT	Paint coated aluminium or stainless steel	Paint coated aluminium or plastic PBT	Paint coated aluminium or stainless steel
Mass	With aluminium housing: ≈0.9 kg			
	With plastic housing: ≈0.55 kg	With st. steel housing: ≈2.5 kg	With plastic housing: ≈0.55 kg	With st. steel housing: ≈2.5 kg

SPECIAL DATA FOR EX CERTIFIED MODELS

TYPE	PDF-401-6 Ex	P□F-401-8 Ex	PDF-401-A Ex / P□F-401-B Ex PDF-601-A Ex / P□F-601-B Ex	PDF-401-C Ex	P□F-401-D Ex
Protection type	Intrinsically safe		Flameproof enclosure	Flameproof enclosure and intrinsically safe	
Ex marking	⊕ II 1 G EEx ia IIC T6	⊕ II 1 G EEx ia IIB T6	P□F-400: ⊕ II 2 G EEx d IIB T6 P□F-600: ⊕ II 2 G Ex d IIB T6	⊕ II 1/2 G EEx d ia IIB T6	
Intrinsically safe limit data	U _i = 30 V, I _i = 140 mA, P _i = 1 W; L _i < 200 μH C _i ≈ 0 nF		—	U _i = 30 V I _i = 140 mA, P _i = 1 W; L _i < 200 μH C _i ≈ 0 nF	
Electrical connection	Metal M 20 x1.5 cable glands, cable: Ø 7...13 mm		Metal M 20 x1.5 cable glands, cable: Ø 8...12 mm		
Ambient temperature	-40 °C ... +70 °C, with display: -25 °C ... +70 °C		-40 °C ... +70 °C, with display: -20 °C ... +70 °C		

PLUG-IN LOOP INDICATORS

UNICONT PLK

TECHNICAL DATA

TÍPUS	PLK-501-2, PLK-501-3
Input	4 – 20 mA
Input resistance	150 Ohm
Display	4-digit LED with 7.6 mm height
Ambient temperature	0 °C ... +70 °C
Setting range	-1999 ... +9999
Delay	0.3 ... 30 s
Electrical protection	Class III.
Ingress protection	IP 65
Electrical connection	DIN 43650 connector
Housing	Plastic
Mass	≈ 0.1 kg



LOOP INDICATORS

UNICONT PD

UNICONT P

2- or 3-wire, universal field mounting process current display and converter
 Input: 4-20 mA
 Housing: Aluminium, stainless steel or plastic with IP67 / NEMA 6
 Ex marking: ATEX II 1 G EEx ia IIC T6 or
 ATEX II 1 G EEx ia IIB T6 or
 ATEX II 2 G EEx d IIB T6 or
 ATEX II 1/2 G EEx d ia IIB T6

Type
 P F - 0 1 -

Version
 P F - 0 1 -
 T Without local LCD display
 D With local LCD display

Housing
 P F - 0 1 -
 4 Aluminium (paint coated)
 5 Plastic, PBT glass fibre reinforced (Ex version not available)
 6 Stainless steel (only EExd version)

Output / Approval
 P F - 0 1 -
 2 4-20 mA / none
 4 4-20 mA + HART / none
 6 4-20 mA / EEx ia
 8 4-20 mA + HART / EEx ia
 A 4-20 mA / EEx d
 B 4-20 mA + HART / EEx d
 C 4-20 mA / EEx d ia
 D 4-20 mA + HART / EEx d ia

P F - 0 1 -

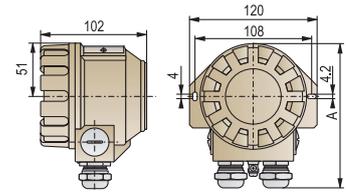
Accessories to order

Type
 S A P - 2 0 2 Plug-in display module
 S A T - 3 0 4 HART-USB modem
 S A K - 3 0 5 - 2 HART-USB/RS485 modem
 S A K - 3 0 5 - 6 HART-USB/RS485 modem / Exia

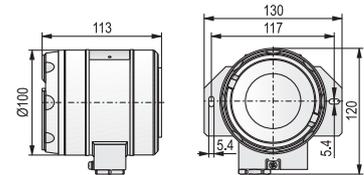
UNICONT P

2-wire, universal plug-in indicator
 Connector: DIN 43650
 Input: 4-20 mA
 Output: 4-20 mA
 Display: 7.6 mm high 4-digit LED characters
 Plastic housing with IP65

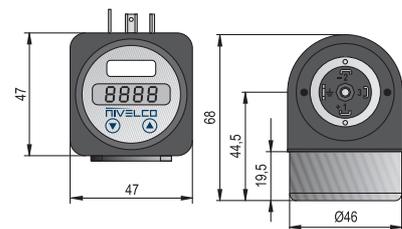
Type
 P L K - 5 0 1 - 2 Plug-in indicator
 P L K - 5 0 1 - 3 Plug-in indicator with PNP output



UNICONT PDF-401/501



UNICONT PDF-601



UNICONT PLK-501

GENERAL DESCRIPTION

The UNICONT PM-300 is a universal, one or two-channel process controller with relay and analogue outputs and PID algorithm supporting versatile functions. It can be used from standard to extraordinary temperature control (cooling, heating) tasks. Beside the usual inputs, practically all generally used temperature sensors can be connected. Due to its auto tuning feature the controller can be successfully handled by technicians unaccustomed to the process control. The dual 4-digit lighting displays allow viewing even from greater distances. The UNICONT PM-300 is highly accurate and easy to handle, thus suitable for applications as panel instrument both in laboratory and industrial process control applications.

MAIN FEATURES

- Programmable inputs
- 4 digit LED display
- High ratings relay contacts or analogue output
- 4-20 mA output
- ON/OFF, PD or PID control algorithm
- Auto tuning feature
- Relay outputs up to 4 pcs
- 32 point linearization
- Window comparator differential metering

APPLICATIONS

- Temperature display
- Switching, control or transmitting tasks
- Power valve control
- Sequence control
- Dual channel display

TECHNICAL DATA

Type	UNICONT PMM-300			
Universal Inputs	Thermocouples: K, J, T, E, L, U, N, R, S, B, M, A, C, Resistive thermal devices (RTD): Pt 100, JPt 100, Pt 1000, JPt 1000, Cu 100, Ni 100 Current: 4-20 mA, 0-20 mA Voltage: -5+20 mV, 0-100 mV, 0-500 mV Resistance: 0-500 Ω, 0-2000 Ω			
	Current input: 10 Ω. Voltage input >10 MΩ			
Output	Control relays (2 pcs)	SPDT 250 V AC 5A AC11		
	Alarm relays (2 pcs)	SPST (NO or NC programmable) 30V DC/250V AC 3A AC11		
	Solid state relay (SSR) drivers (2 pcs)	12V DC, 15mA		
	Current outputs (2 pcs)	0/4-20mA DC (max. load: 600Ω), galvanically isolated shot circuit protected, programmable		
	Supply for transmitters	24V DC, 100 mA, shot circuit protected		
	RS485 MODBUS	Bit rate: 600-38400 bps selectable, Device address: 0 ... 254 programmable		
Control	Features	Setting time	Setting unit	
	Proportional band (P)	0 - 409,5%	0,1%	
	Integral time (I)	0 - 4095 sec	1 sec	
	Derivate time (D)	0 - 4095 sec	1 sec	
	Cycle time(T)	0 - 255 sec	1 sec	
	Dead band	0 - 255	in PV resolution	
	Hysteresis	0 - 255	in PV resolution	
Display	PV (Upper display), red, 4 digits, 7 segments, digit height: 10 mm SV (Lower display), green, 4 digits, 7 segments, digit height: 10 mm			
Programming PV	Digital, by front panel keys			
Accuracy of setting and displaying	± 0.2%FS ± 1 digit			
Sensor wire-break alarm	"Er 11." on SV display (only if the controller is on)			
Cold junction compensation	Ext. temperature sensor to be connected to terminal block. The function can be disabled			
Wire resistance compensation	3-wire, automatic			
Ambient humidity	Max .85% (relative) non condensing			
Ambient temperature	Operational: 0°C ... +55°C, Storage: -20°C ... +60°C			
Power supply	85 ... 265V AC, 50/60 Hz, 8VA, 120 V 375 V DC 8 VA 16-32 V DC, 8W, 13-30V AC, 8VA			
Electrical connection	Plug-in terminal blocks (recommended wire cross section: 0.5 - 2.5 mm ²)			
Electrical protection	Class II.			
Ingress protection	Front: IP65, Back: IP20			
Memory protection	Data stored in EEPROM			
Dimensions	101.5 x 48 x 156 mm			
Mass	0.3 kg			



PMM-300

COMPONENTS

UNICONT PM-300

Universal panel indicator and controller with 4-20 mA analogue and relay output
 PID and ON/OFF control as well as auto tuning software
 Size: 96x48 (horizontal position)
 Display: 2 lines, 9 mm high 4 digit LED character each
 Power supply: 85-265 V AC, 120-375 V DC or 24 V AC/DC

Type

P M - 3 -

Version

P M - 3 -
 M Standard, front: IP65, back: IP20

Inputs

P M - 3 -
 1 Universal input (IN1)
 2 Two universal inputs (IN1, IN2)
 3 Universal input (IN1), 32-point Linearisation
 4 Two universal inputs (IN1, IN2), 32-point Linearisation

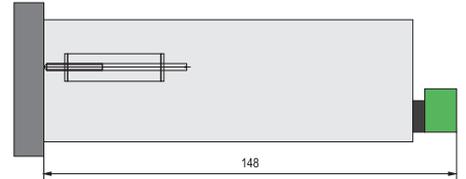
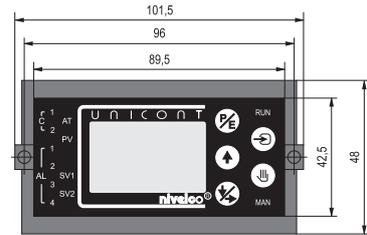
Output

P M - 3 -
 1 Current output, 2 relays
 2 2 current outputs, 2 relays, power supply for transmitters
 3 Current output, 4 relays
 4 2 current outputs, 4 relays, RS485, power supply for transmitters

Power supply

P M - 3 -
 1 85-265 V AC, 120-375 V DC
 2 24 V AC/DC

P M - 3 -



UNICONT PMM-300

NIV24
UNICONT PMM-311-1
UNICONT PMM-312-1
UNICONT PMM-313-1

GENERAL DESCRIPTION

The UNICONT PM-400 and -500 series universal controllers are 1/16 DIN (48x48 mm) process controllers with relay and analogue outputs or PID algorithm supporting versatile functions. The universal analogue PID-controllers can be used with a Pt-100 resistance thermometer and with different thermocouples for temperature measurement, control as well as processing the signals of transmitters with 4 ... 20 mA and 0...5 V DC or 0...10 V DC output. The output signal of the controller can be a relay, continuous 4 ... 20 mA process current signal or SSR-driver. Additional alarm relay provides for limit monitoring. The unit is microprocessor based, has an auto-tuning software, automatic and its PID controller is able to find the optimum of the P-I-D constants. PMM-500 series are able to communicate on RS485 line and also able to provide power supply for transmitters. The large bi-coloured display provides easy reading even from far distance.

MAIN FEATURES

- Universal input
- 4...20 mA output, relay outputs
- SSR driver output
- RS485 communication
- ON-OFF and PID control
- Power supply for transmitters
- Auto tuning (AT) feature
- DIN 48x48 mm front panel

APPLICATIONS

- Temperature display
- Switching, control tasks
- Cooling / heating control
- Alarm indication

TECHNICAL DATA

Type		PMG-41□	
Input	RTDs (3-wire., automatic wire-resistance comp.)	DIN Pt 100 (-199.9 °C ... +199.9 °C or 0 °C ... +500 °C) R wire: max. 5 ohm	
	Thermocouples (automatic junction compensation)	K(-100 °C ... +1100°C); J(0°C ... +800°C)	
		R(0°C ... +1700°C); E (0°C ... +800°C)	
		T(-200°C ... +400°C); S (0°C ... +1700°C)	
Voltage	1 ... 5 V DC; 0 ... 10 V DC		
Current	4 ... 20 mA DC / 250 ohm		
Control, Output	PID	Proportional band (P)	0 ... 100%
		Integral time (I)	0 ... 3600 sec
		Derivate time (D)	0 ... 3600 sec
		Cycle time(T)	1 ... 120 sec
	Type of output	Relay	SPDT 250 V AC, 3 A, AC11
SSR driver		12 V DC ±3 V, max 30 mA	
Current		4 ... 20 mA DC (max. load: 600 ohm)	
Alarm output	SPST (NO or NC programmable) 250 V AC, 1 A, AC11		
Accuracy of setting and displaying	±0.3% ±1 digit of full range or ±3 °C		
Display	PV (primary value)	red, 4 digits, 7 segments, digit height: 11 mm	
	SV (secondary value)	green, 4 digits, 7 segments, digit height: 7 mm	
Power supply	100 ... 240 V AC 50/60 Hz, max. 5 VA, Operational voltage: 90% ... 110%		
Ingress protection	Front: IP 65, Back: IP 20		
Electrical protection	Class II.		
Ambient temperature	Operational: -10 °C ... +50 °C, Storage: -20 °C ... +60 °C		
Ambient humidity	35% ... 85% (relative) non condensing		
Dimensions	48 x 48 x 107 mm (front panel cut-out: 45.5 ^{+0.5} x 45.5 ^{+0.5} mm)		
Mass	0.15 kg		

Type		PMM-51□
Input	RTDs (3-wire., automatic wire-resistance compensation)	DIN Pt100 (-199 °C ... +800 °C)
	Thermocouples (automatic junction compensation)	J, T, K, L, N, B, R, S, C, PtRh thermocouples (-240 °C ... +2320 °C)
	Voltage	0 - 5 V DC; 0 - 10 V DC, 2 - 10 V DC /min. 500Ω
	Current	4 ... 20 mA DC, 0 ... 20 mA DC / max. 500Ω
Control	Proportional band (P)	0.5 - 100%
	Integral time (I)	1 - 6000 sec
	Derivate time (D)	0 - 6000 sec
	Cycle time (T)	0.5 - 512 sec
Output	Relay	240 V AC, 2 A, AC11, SPDT
	SSR driver	0 - 10 V DC, max 20 mA
	RS485	Modbus RTU, 1200 - 19200 bps
	Analogue	4 ... 20 mA DC (max. load: 500 ohm)
	Supply for transmitters	24 V DC, 22 mA (19 V DC - 28 V DC)
Dis-play	PV (primary value)	red, 4 digits, 7 segments, digit height: 10 mm
	SV (secondary value)	green, 4 digits, 7 segments, digit height: 8 mm
Power supply	20 - 48 V AC / 22 - 65 V DC, 100 - 240 V AC, max. 5 W / 7 VA	
Ingress protection	Front: IP 66, Back: IP 20	
Electrical protection	Class II.	
Ambient temperature	Operational: 0 °C ... +55 °C, Storage: -20 °C ... +80 °C	
Ambient humidity	20% ... 85% (relative) non condensing	
Dimensions	48 x 48 x 110 mm (front panel cut-out: 45.5 ^{+0.5} x 45.5 ^{+0.5} mm)	
Mass	0.25 kg	



PMG-400



PMM-500

COMPONENTS

UNICONT PMG-400

Universal panel indicator and controller
 PID and ON/OFF control
 Size: 48x48 mm
 Display: 2 lines, 4 digit LED character each
 Power supply: 90-264 V AC

Type

P M G - 4 - 1

Inputs

P M G - 4 - 1
 1 Universal input (IN1)

Output

P M G - 4 - 1
 1 2 relays
 2 1 relay, 1 solid state driver
 3 1 relay and 4-20 mA

P M G - 4 - 1



UNICONT PMG-400

UNICONT PM-500

Universal controller, display unit
 1 universal input
 Relay or analogue output, 48x48 mm panel unit
 Power supply for transmitters (Ut)
 PID control algorithm, auto tuning (AT) function
 Display: 2 lines, 4 digit LED display, 10 mm and 8 mm characters
 Power supply: 100-240 V AC or 20-48 V AC / 22-65 V DC

Type

P M M - 5 1

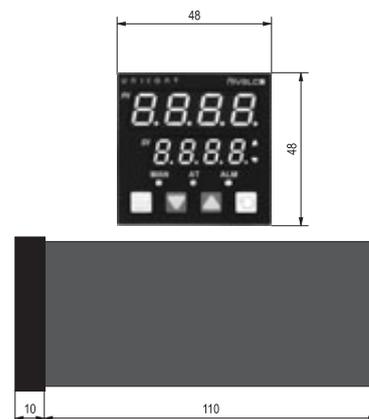
Output

P M M - 5 1
 1 R1, R2 relays, analogue output
 2 R1, R2 relays, Ut
 3 R1 relay, analogue output, Ut
 4 R1, R2, R3 relays
 5 SSR1, SSR2 solid state driver, analogue output
 6 SSR1, SSR2 solid state driver, Ut
 7 SSR1 solid state driver, analogue output, Ut
 8 SSR1 solid state driver, R1 relay, analogue output
 A R1, R2 relays, analogue output, RS485
 B R1, R2 relays, Ut, RS485
 C R1 relay, analogue output, Ut, RS485
 D R1, R2, R3 relays, RS485
 E SSR1, SSR2 solid state driver, analogue output, RS485
 F SSR1, SSR2 solid state driver, Ut, RS485
 G SSR1 solid state driver, analogue output, Ut, RS485
 H SSR1 solid state driver, R1 relay, analogue output, RS485

Power supply

P M M - 5 1
 1 100-240 V AC
 2 20-48 V AC / 22-65 V DC

P M M - 5 1



UNICONT PMM-500

Accessories to order

Type

PAM-500-0 Front panel adapter from 96x48 mm to 48x48 mm anodized aluminium

GENERAL DESCRIPTION

The UNICONT PGK-301 intrinsically safe isolator and power supply modules are suitable for providing power supply for transmitters operating in hazardous applications, isolating the input, output and supply voltage galvanically. Moreover the device perform high accuracy signal transmission with 4-20 mA or HART communication between Ex and non-Ex areas. The UNICONT PGK-301 intrinsically safe isolators perform signal transmission to the non-Ex Zone with microprocessor controlled digital signal processing, which provides transmission accuracy up to 1 μA. This is a special demand in case of certified, high precision (for example magnetostrictive) transmitters. If fast conversion speed is necessary, the high speed types are the ideal choices. The number of connectable transmitters is determined by the intrinsically safe limit data.

MAIN FEATURES

- Intrinsically safe isolation
- Power supply for transmitters
- 20 - 35 V DC supply voltage
- 4-20 mA, HART communication
- Up to 1 μA transmission accuracy
- DIN rail mountable

APPLICATIONS

- For high precision transmitters
- For transmitters operating in hazardous applications
- For certified measurement instruments
- Also for temperature and pressure transmitters
- For 2-3 wire 4-20mA transmitters

CERTIFICATIONS

- ATEX Ex II (1) G [Ex ia Ga] IIB
- ATEX Ex II (1) G [Ex ia Ga] IIC
- IEC Ex [Ex ia Ga] IIB
- IEC Ex [Ex ia Ga] IIC

TECHNICAL DATA

TYPE	High precision		High speed	
	PGK-301-A Ex	PGK-301-B Ex	PGK-301-C Ex	PGK-301-D Ex
Input	4-20 mA			
Output	Normal operation 4-20 mA			
	Current error 3.6 mA: I _{IN} =3.6 mA or I _{IN} >24 mA			
Protection	Input, output, power supply: 125 mA fuse			
Loop resistance	300-1000 Ohm/24 V DC			
Communication	-	HART	-	HART
Power supply	20-35 V DC			
Power supply indication	green LED			
Power supply for transmitters	23 V DC galvanically isolated			
Galvanic isolation	> 2 kV			
Power consumption	Max. 2.2 W			
Transmission accuracy	1 μA (at 20 °C)		8 μA (at 20 °C)	
Response time	100 msec		5 msec	
Temperature dependence	< 1 μA/ °C			
Ambient temperature	- 20 °C...+ 60 °C			
Electrical connection	Terminal, wire cross section: 0.5 – 2.5 mm ²			
Electrical protection	Class III.			
Mechanical connection	DIN EN 50022-35 rail mountable, module width: 22.5 mm			
Mass	0.25 kg			

PROTECTION TYPE		Ex ia	
Ex marking	ATEX	Ex II (1) G [Ex ia Ga] IIC	Ex II (1) G [Ex ia Ga] IIB
	IEC Ex	[Ex ia Ga] IIC	[Ex ia Ga] IIB
Intrinsically safe data		L ₀ = 2 mH C ₀ = 60 nF	L ₀ = 9 mH C ₀ = 450 nF
		U ₀ =26 V I ₀ =94 mA P ₀ =0,65 W	
		Um= 253 V AC	



UNICONT PGK

Type
P G K - 3 0 1 - X

Output / Communication
P G K - 3 0 1 - □
 A 4-20 mA, high precision
 B 4-20 mA, high precision / HART
 C 4-20 mA, high speed
 D 4-20 mA, high speed / HART

P G K - 3 0 1 - □

Need of IEC is to be specified with order

COMPONENTS

GENERAL DESCRIPTION

The low-cost **UNICONT PSW** pump control unit is designed for fully automatic level control of small domestic or communal sewage shafts, sumps or wetwells. An IP68 protected ultrasonic level transmitter performs continuous level measurement and delivers 4–20 mA level data to the UNICONT PSW unit featuring a user programmable controller. This controller featuring relay output incorporated in the **UNICONT PSW** directly controls the single phase pump acting in the sump, well, etc. The current controlled switch operates in differential level switch mode as default, the low and high levels are programmable. By the help of an optional programmable timer automatic pump cycling can be performed to prevent jamming of the pump in case of long idle periods. This function is useful in case of infrequent usage or low water consumption. The optional **NIVOFLOAT NLP** type float level switches may be used for additional dry-run or overflow protection if safety is a priority. The system can be turned on or off by a single-pole Miniature Circuit Breaker or a Motor Protection Switch.

MAIN FEATURES

- Cost-saving
- Maintenance-free
- Fully automatic pump control
- Ultrasonic level measurement
- 0.3-3 m measurement range
- Programmable pump cycling
- IP68 / IP65 protection
- Optional dry-run or overflow protection

APPLICATIONS

- Domestic sewage shafts, wetwells
- Sumps
- Tanks, flood storage
- Drainage sumps, pools

TECHNICAL DATA

TYPE		UNICONT PSW-1□□-1
Power supply		230 V AC ±10%
Protection	Miniature Circuit Breaker	CLS 4-C10/2 10 A bipolar
	Motor Protection Switch	Z-MS2P-10 6.2-10A
Output		1-1 piece of NO relay, 250 V AC, 8A, AC1
Functions	Automatic pump out control ¹	Field programmable high level (Pump ON and low level (Pump OFF))
	Timed pump cycling	10 s – 100 days
	Overflow protection, fail-safe indication	Float switch ²
Control unit	Electrical connection	4 pcs. plastic cable glands, terminal: max. 4 mm ² wire cross section
	Electrical protection	Class I.
	Mechanical connection	wall mountable
	Ingress protection	IP65
	Ambient temperature	-25 °C ... +45 °C
	Mass	~2 kg
Level transmitter	Range	0.3 – 3 m
	Operation principle	ultrasonic
	Housing material	PP
Type: UTP-241-4-X14	Medium temperature	-25 °C ... +60 °C
	Process connection	1" BSP
	Cable	3 m shielded, PVC insulation
	Power supply	24 V DC
	Ingress protection	IP68

1 Programmed at the manufacturer; can be modified freely in 0.4-3 m range
 2 Accessory, to be ordered separately

UNICONT PSW-100

Ultrasonic pump control
 Measuring range: 0,3-3 m
 Power supply: 230 V AC
 Output: SPDT relay, 250 V AC, 8 A, AC1
 Functions: automatic pump out control, timed pump cycling, optional motor protection
 Process connection of ultrasonic device: 1" BSP
 3 m integrated cable
 Ingress protection: ultrasonic device: IP68
 controller: IP65

Type
P S W – 1 – 1

Timer function
P S W – 1 1 – 1
 0 Without
 1 With

Short circuit protection
P S W – 1 – 1
 1 Circuit breaker
 2 Motor protection switch

P S W – 1 – 1

Cabel
 Maximum length 30 m; each started 1 m over the standard 3 m

Optional: NIVOFLOAT for overflow protection as an expansion of the pump control system
 See NIVOFLOAT float level switches for further information



Ultrasonic transmitter



Control unit

COMPONENTS

GENERAL DESCRIPTION

The rail mounted NIPOWER switching-mode power supply modules provide 12 V or 24 V stabilized DC output for low power consumption devices.

MAIN FEATURES

- Stabilized DC output
- Switching-mode power supply
- DIN rail mounted
- Short-circuit protection
- Overload protection
- Overvoltage protection

APPLICATIONS

- For any transmitters
- Power supply for sensors
- For inductive, capacitive proximity switches
- For infrared sensors
- Ultrasonic Proximity sensors



PPK-3□1

TECHNICAL DATA

TYPE	PPK-321	PPK-331
Power supply voltage (U _{IN})	230 V AC / 50-60 Hz -15%; +10%	
Output voltage (U _{OUT})	12.2 V DC ±2%	24.2 V DC ±2%
Output current *	2500 mA	1250 mA
Consumption without load	max. 5 V A	
Consumption with maximum load	max. 78 V A	
Overload capability	max. 120%	
Efficiency	>75%	
Fuse	T2A / 250 V	
Protection against	short-circuit, overload, overvoltage	
Output voltage indicator	green LED	
Ripple on the output without load	80 mV	
Ripple on the output with maximum load	20 mV	
Delay on switching ON	max. 0.5 sec	
Delay on switching ON after overload	max. 0.5 sec	
Operating temperature	-20°C ... +40°C	
Electrical strength between input and output	4 kV	
Electrical connection	terminal, wire cross section: max. 2.5 mm ²	
Electrical protection	Class II.	
Mechanical connection	DIN EN 50022-35 rail	
Ingress protection	IP 20	
Mass	136 g	

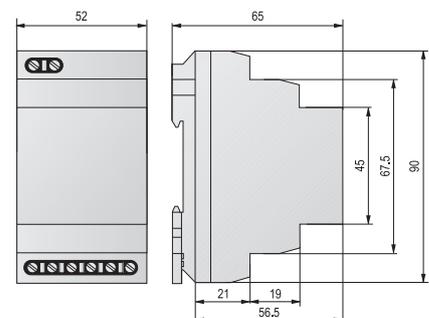
* Correct air-flow is needed to prevent overheating

NIPOWER PPK-3

Power supply unit
 Mechanical connection: DIN EN 60715 rail
 Power supply: 230 V AC
 Secunder voltage: 12V DC 24 VDC
 Ingress protection: IP20
 Dimensions: 50 x 90 x 62 mm

Type

- PPK-321 12 V DC / max. 2.5 A
- PPK-331 24 V DC / max. 1.25 A



GENERAL DESCRIPTION

NITIME time relays are suitable for all kinds of timing tasks of technological equipments. Microprocessor controlled operation, many functions, universal power supply voltage, and slim module width are the main characteristics making NITIME time relays applicable also for automation tasks of lights, pumps, heating, coolers, fans or motors.

MAIN FEATURES

- 2- and 10-function types
- Wide time range
- Small size
- Universal power supply voltage
- DIN rail mountable
- Relay output
- IP 20 protection

APPLICATIONS

- Process controlling of repeated tasks
- Timed cycling of pumps or compressors
- Timing of technologic equipments
- Sequential control



JEL-121 JEL-111

TECHNICAL DATA

TYPE		JEL-111	JEL-121
Number of functions		10	2
Time ranges		0.1 sec...10 day	0.1 sec.....100 day
Time setting		rotary switch and potentiometer	
Reset time		max. 150 msec	
Time deviation		5%	
Repeat accuracy		0.2%	
Temperature coefficient		0.01% / °C	
Supply voltage		12-240V AC/DC	
Power consumption		0.7-3 VA AC	0.5-1.7 W DC
Output	Relay	1 x SPDT	
	Rated current	16 A AC1	
	Inrush current	30 A (< 3 sec)	
	Output indication	multifunction LED	
	Switching voltage	250V AC (AC1) / 24V DC	
	Breaking capacity	4000 VA AC	384 W DC
	Min. breaking capacity	DC 500 mW	
	Electrical lifespan (AC1)	0,7x10 ⁵	
	Mechanical lifespan	3x10 ⁷	
Electrical connection		terminal for cables with max 2.5 mm ² wire cross section	
Electrical protection		Class II.	
Mechanical connection		DIN EN60715 rail	
Ingress protection		IP 20	
Ambient temperature		-20°C ... +55°C	
Mass		90 g	70 g

NITIME

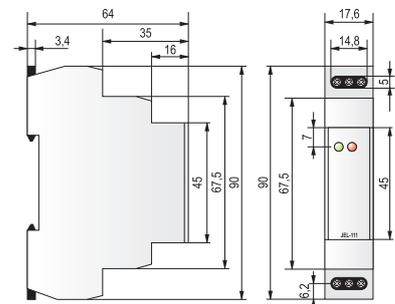
Multifunctional timer, DIN rail mountable
 Power supply: 12-240 V AC/DC
 Output: 1x SPDT relay: 250 V AC/16A, AC1
 10 functions, 8 timing range: 0.1 sec-10days

Típus
J E L - 1 1 1

NITIME

Cyclic timer, DIN rail mountable
 Power supply: 12-240 V AC/DC
 Output: 1x SPDT relay: 250 V AC/16A, AC1
 ON / OFF delay can be set independently: 0.1 sec-100 days

Típus
J E L - 1 2 1



NIV24
NITIME JEL-111
NITIME JEL-121

GENERAL DESCRIPTION

The UNICOMM interface modules are able to establish communication line between HART-capable field devices and process controller computer. The UNICOMM HART modems are applicable not only for NIVELCO transmitters, but for all HART-capable transmitters which use standard HART communication. The device is galvanically isolated from both (USB and HART) sides, when it is used as a HART-USB modem, connected into the USB input of a PC, the modem does not need external power supply. The UNICOMM SAK-305 modules can be connected into a suitable device with RS485 interface input, used as a HART-RS485 modem. The communication protocol is HART on the RS485 line. In this case the device needs external power supply. The Ex versions can be connected to transmitters placed in hazardous areas.

MAIN FEATURES

- Transferring measurement data to PC
- Connecting field transmitters to the, USB or RS485 input of a PC
- DIN rail mountable version
- No need for power supply
- Galvanic isolation
- IP 20 protection

APPLICATIONS

- Communication interface (modem) between HART-capable transmitters and PC
- Minimal system configuration: Windows XP, USB port

CERTIFICATIONS

- ATEX II (1) G [Ex ia Ga] IIC



TYPE		SAT – 304	SAK – 305
Input			HART
Output		USB	USB / RS485 (HART over RS485)
Power supply		Supplied from USB	Supplied from USB / 24V DC (10-30 V) nominal voltage
Current consumption		< 100 mA	USB: current consumption < 60 mA RS485: power consumption < 1.5 W
Ambient temperature		-25 °C... + 55 °C	-20 °C ... + 70 °C
Housing material		Polystyrene	PPO
Electrical connection	PC	Connection: USB 1.1 „B” socket	USB 1.1 „B” socket / RS485 Terminal
		Cable: USB „A-B” 1,8 m	USB „A-B” 1.8 m / RS485 Twisted shielded pair max. 1000 m
	HART line	Connection: Test clip	Screw terminal
		Cable: spiral 0.6 m (1.1 m)	Twisted shielded pair with 0.5...2.5 mm ² wire cross section Resistance max. 75 Ohm, Capacitance max. 200 nF
Mechanical connection	–	DIN EN 50022-35 rail mountable	
Ingress protection			IP 20
Electrical protection			Class III.
Ex marking		–	ATEX II (1) G [Ex ia Ga] IIC
Mass			0.1 kg

TYPE	UNICOMM SAK-305-6 Ex
Ex marking	II (1) G [Ex ia Ga] IIC
Intrinsically safe data	U _i =30V, I _i =100mA, P _i =1W L _i =200μH, C _i =2nF
Um	253V AC

UNICOMM SAT-304

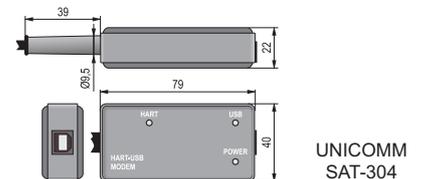
USB/HART converter for HART capable devices
Connection: USB 1.1 “B” connector and KLEPS 2
Enclosure: polystyrol with IP20

Type
S A T – 3 0 4

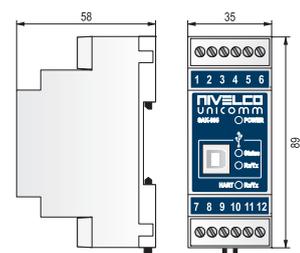
UNICOMM SAK-305

HART communication modem for transmitters with HART output
Connection to PC: USB/RS485 interface
DIN rail mountable
Ex marking: ATEX II (1) G [Ex ia Ga] IIC

Type
S A K – 3 0 5 – 2
S A K – 3 0 5 – 6 Exia



UNICOMM SAT-304



UNICOMM SAK-305



GENERAL DESCRIPTION

NIVISION is a **VISION X9** based process visualization software which uses the XSDL (Extensible Structure Declaration Language) programming and configuring language. NIVISION can visualize a process control system built with NIVELCO instruments on a PC. The instruments can either be intelligent transmitters with analogue output or digital communication, or different switches based on different measuring principles. The tankpark layout with tanks, instrumentation and other process devices can easily be visualized. NIVISION offers a wide range of visualization elements of the measured and limit values, time based trends, databases and logs. Exporting and importing different database types is also a basic feature of the software. A clear and transparent overview of all processes involved in an application makes stock and material management a simple task with a well constructed **NIVISION** project. Another great feature of the software is that a NIVISION project can be visualized on a remote computer (with no NIVISION installed) through a local area network (LAN) or the Internet using an ordinary internet browser. It is a perfect solution for small and medium sized process control systems where setting up a SCADA system is too expensive.

MAIN FEATURES

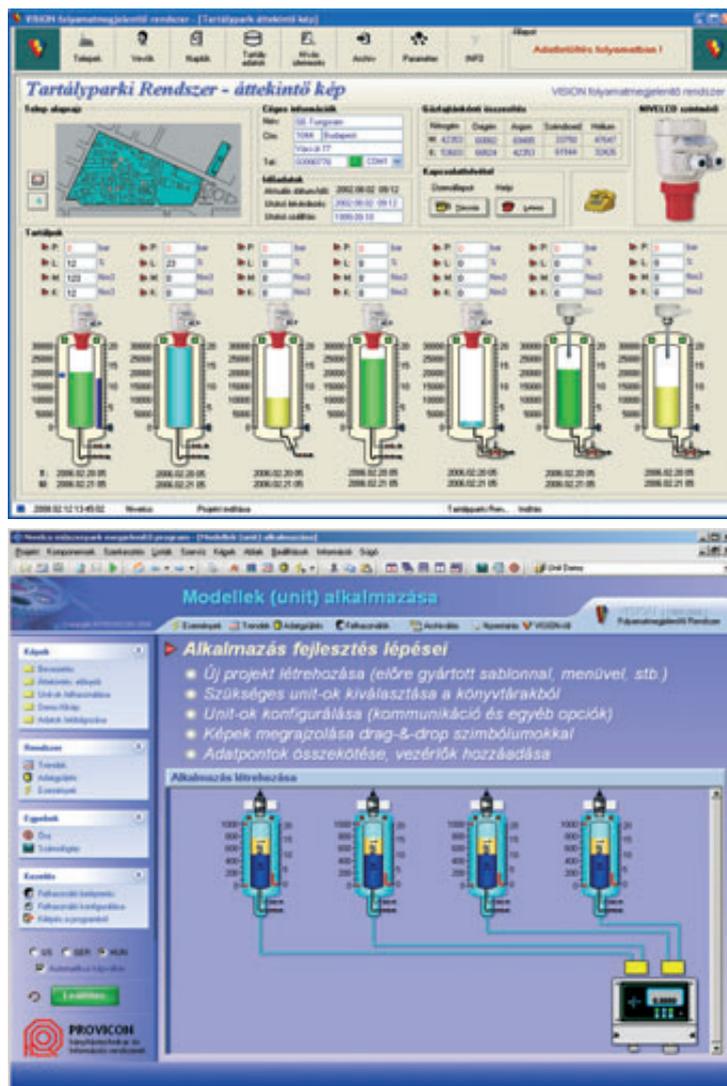
- Tank configuration
- Transmitter configuration
- Tankpark visualization
- Displaying of measured values
- Displaying of limit values
- Trend monitoring
- Data logging
- Database handling
- Archiving
- Other log functions (alarms)
- Remote connection (LAN or Internet)

APPLICATIONS

The steps of customizing **NIVISION** to a specific application:

- The end-user draws the technological, operational and functional requirements of the application.
- Based on the customer's requirements the developer configures the visualization project in the **NIVISION developer system** graphically and makes the required programming. The developer system can only be accessed by the project developer.
- The finalized project can be executed by the end-user using the **NIVISION runtime system**.

The basic element of the software is the so called "UNIT" which contains the applied instrument (with graphical representation), the instrument's variables, event handling, communication and data display. With the help of these units a complete process instrumentation system can be set up for visualization.



NIVIS01

NIVISION process visualisation, measurement logging and database management
 For MultiCONT and all NIVELCO transmitters with installation on-the-spot
 Hardware requirements: PC with RS 232, RS 485 or USB port
 5 GB free space on hard disc
 Supported operating system: Windows XP

Type

NIVISION licence fee

APPLICATION DEVELOPMENT

For any process controlling task in accordance to order demands, in engineering work day

MAIN INFORMATION

This Product Catalogue is valid from the **1st of March 2013** and on that date all prior Product Catalogues loose validity.

NIVELCO reserves the right to make any changes.

The illustrations of the products in this Product Catalogue are only informative. A final check of specifications in the data sheets, user's and programming manuals is recommended.

DELIVERY

Concerning delivery time models are assigned to four different groups:

Normal delivery:

- Standard products are usually manufactured within three weeks and shipped on the fourth week.*
- For non-standard products marked with " ← " or " → ", a shipping delay of up to 6 weeks is to be counted with.

Fast delivery:

- Units ordered under the **NIVEX** service are shipped within 5 working days from receiving the order if the order is accepted. Before ordering products with the NIVEX marking (in capital letters), availability of the relevant products in the required quantity has to be checked and confirmed by the Order Desk of NIVELCO. The NIVEX service is surcharged by **5%** of purchase price.
- **NIV24** service is available for models indicated in tables at the bottom right of the relevant price sheets. Products ordered with the remark NIV24 will be delivered latest 1 day after the order for a maximum of 5 pieces. The NIV24 service is surcharged by **5%** of purchase price.

WARRANTY

3 years warranty for all NIVELCO products. **

ORDER CODES AND ARTICLE NUMBERS

All **order codes** for complete instruments have 7 characters (with some exceptions for special constructions that have 7 characters + "X..."). Order codes can be found in this Product Catalogue, coloured brochures, User's and Programming Manuals and in other marketing documents on our website. **Article numbers** can be found in our Order Confirmations, Offers and Invoices. Article numbers have 8 characters and they are constructed as the order code + "M" (in some cases this last character may be different). This distinction between order code and article number has relevance only to NIVELCO's internal administration but not to the technical content.

e.g.

order code: SGP-380-4

article number: SGP3804M

APPROVALS

http://www.nivelco.com/site.php?upar=SHOW_QUALITY&lang=en

* The indicated delivery time varies depending on the quantity ordered.

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*NIVELCO – official sponsor
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