

EXPLOSION-PROOF SENSORS



RÜSTER®
TEMPERATUR - UND
DRUCKMESSTECHNIK



PAUL RÜSTER & CO. GMBH - QUALITÄT SEIT 1949

The service range of Paul Rüster & Co. GmbH offers development, engineering, manufacturing, calibration and distribution of sensors and components for temperature and pressure measurement in industrial and HVAC markets, power plants, electrical machines, railway systems, wind energy plants and refrigeration technologies.

The product range includes resistance thermometers, thermocouples, pressure and differential pressure transmitters in various designs. Most types are available as explosion-proof versions, certified to ATEX, IECEx and EAC Ex - or with DNV GL certification for the maritime industry.

Furthermore Rüster is the official distributor for FEMA by Honeywell and the italian tradition-rich company Controlli.



→ Innovative und zuverlässige Druckschalter, Druckwächter und Thermostate



→ Qualitativ hochwertige Ventile und Stellantriebe

Paul Rüster & Co. GmbH is known for its reliable, individual solutions, for innovation, flexibility as well as high quality. Rüster is certified to DIN EN ISO 9001:2015.



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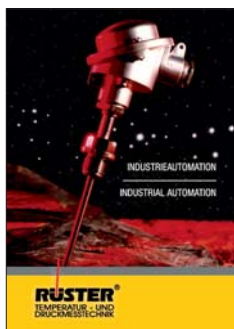
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PRODUCT PORTFOLIO

Industrial automation - Temperature- and Pressure sensors



Resistance thermometers, thermocouples and pressure transmitters for use in power plants, electrical machines, railway systems, wind energy plants, refrigeration technologies as well as in plants of the chemical industry.

Paul Rüter & Co. GmbH offers special solution for individual customer demands.

Building automation - HVAC



Wide range of sensors and technologies for building automation. Energy-efficient and reliable sensors and field devices for applications especially in air conditioning, refrigeration and ventilation technology.

Profit as company from our knowledge and find the appropriate sensor for your needs.

Controlli valves and actuators for HVAC



Paul Rüter & Co. GmbH acts as an **official distributor** of traditional Italian company **CONTROLLI**.

Valves and actuators for building automation applications complement our product portfolio.

FEMA by Honeywell products



Die Paul Rüter & Co. GmbH acts as an **official distributor** for all technical products of **FEMA by Honeywell**.

Safety-related pressure switches and field devices for ATEX, IECEx and SIL2 Applications offer conformity and safety for your plant.

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Standardized sign for explosion protection in the EU according to directive 2014/34/EU

Explosion protection groups:

Group 1
explosion protection areas under ground

Gruppe 2
explosion protection areas above ground

 **II 2G Ex ia IIC T4**

GAS category:

1G	ZONE 0 (GAS)	continuous explosion-prone atmosphere (>1000x/year)
2G	ZONE 1 (GAS)	explosion-prone atmosphere (10 bis 1000x/year)
3G	ZONE 2 (GAS)	occasional explosion-prone atmosphere (<10x/year)

 **II 2G Ex ia IIC T4**

Symbol for explosion protection in the EU according to CENELEC EN 60079-0:2012

protection types:

- eb** = increased safety
(special mechanical design)
- ia/ib** = intrinsic safety
(energy limitation)
- d** = flameproof encapsulation
(enclosure)
- m** = encapsulation
(disconnection)

 **II 2G Ex ia IIC T4**

Ex protection types “ia” and “ib”:

Protection type, which is based on the limitation of electrical energy inside of equipments and connection cables, which are exposed to an explosion-prone atmosphere, to a level beneath whose, whereby an ignition either by arcing or heating is evoked.

At the following cases applied voltages must **not** cause an ignition in intrinsically safe circuits in electrical equipments:

Protection level “ia”

- while undisturbed operating and at presence of that not-countable errors, which cause the worst conditions.
- while undisturbed operating and at presence of **1** countable error in addition of that not-countable errors, which cause the worst conditions.
- while undisturbed operating and at the presence of **2** countable errors in addition of that not-countable errors, which cause the worst conditions.

Protection level “ib”

- while undisturbed operating and at presence of that not-countable errors, which cause the worst conditions.
- while undisturbed operating and at presence of **1** countable error in addition of that not-countable errors, which cause the worst conditions.



II 2G Ex ia IIC T4

Classification of ignition energy:

EUROPA/ATEX	TYPICAL GAS	IGNITION ENERGY IN μJ
IIA	propane	180 μJ
IIB	ethylene	60..80 μJ
IIC	hydrogen	20..60 μJ



II 2G Ex ia IIC T4

Temperature classification:

class:	T1	T2	T3	T4	T5	T6
Max. Temp.:	>450	>300	>200	>135	>100	>85 [°C]

T1 : propane, methanol, methane, acetone, ethane, benzene, carbone monoxide

T2 : ethanol, n-Butane, n-butane alcohol

T3 : petrol, fuel oils, kerosine, n-hexane

T4 : acetyl aldehyde, ethyl ether

T5 : -

T6 : hydrogen



II 2G Ex ia IIC T4

OVERVIEW

System Rüster BR (ATEX / IECEx / EAC Ex / DNV GL)

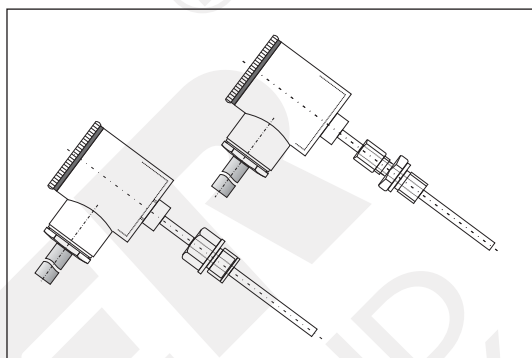
Bearing resistance thermometers / thermocouples

EX protection type: ia / ib

Classification: Ⓢ II 2G Ex ia IIC T6 - T2 Gb

Ⓢ II 2D Ex ia IIIC TX Db

Licence numbers: IBExU 09 ATEX 1090 X
IECEx IBE 14.0010X
EAC RU C-DE.ГБ08.B.01985
GL 13 503 - 14 HH



System Rüster BI (ATEX / IECEx / EAC Ex / DNV GL)

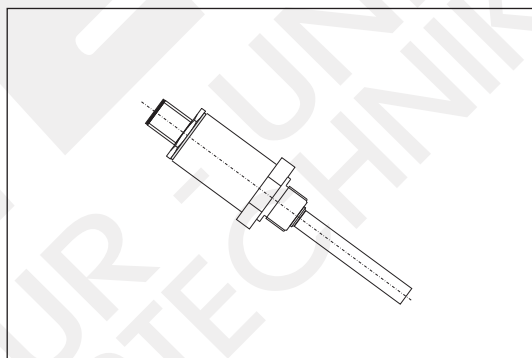
Screw-in resistance thermometers / thermocouples

EX protection type: ia / ib

Classification: Ⓢ II 2G Ex ia IIC T6 - T2

Ⓢ II 2D Ex ia IIIC TX Db

Licence numbers: IBExU 09 ATEX 1090 X
IECEx IBE 14.0010X
EAC RU C-DE.ГБ08.B.01985
GL 13 503 - 14 HH



System Rüster KF (ATEX / IECEx / EAC Ex / DNV GL)

Cable resistance thermometers / thermocouples

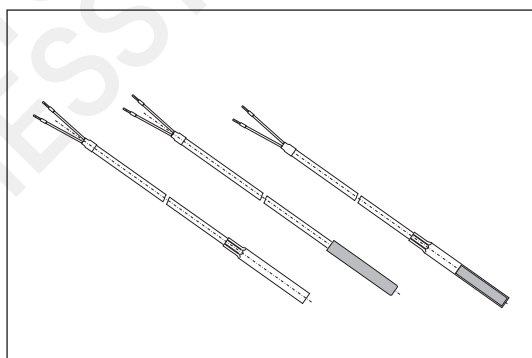
EX protection type: ia / ib / eb

Classification: Ⓢ II 2G Ex ia IIC T6 - T2

Ⓢ II 2D Ex ia IIIC TX Db

Ⓢ II 2G Ex eb IIC

Licence numbers: IBExU 09 ATEX 1090 X, IBExU 02 ATEX 1123 U
IECEx IBE 14.0010X, IECEx IBE 14.0011U
EAC RU C-DE.ГБ08.B.01985
GL 13 503 - 14 HH



System Rüster WI (ATEX / IECEx / EAC Ex / DNV GL)

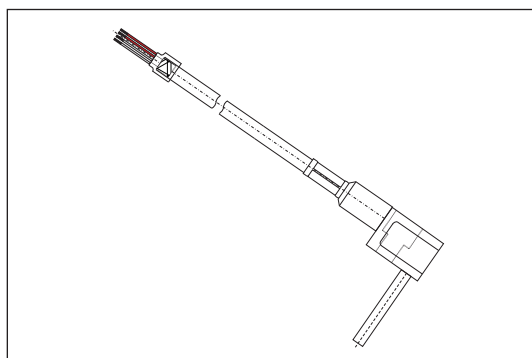
Angle resistance thermometers / thermocouples

EX protection type: ia / ib

Classification: Ⓢ II 2G Ex ia IIC T6 - T2

Ⓢ II 2D Ex ia IIIC TX Db

Licence numbers: IBExU 09 ATEX 1090 X
IECEx IBE 14.0010X
EAC RU C-DE.ГБ08.B.01985
GL 13 503 - 14 HH



OVERVIEW

System Rüster VF (ATEX / IECEx / EAC Ex / DNV GL)

Slot resistance thermometers / -thermocouples

Ex protection type: ia / ib

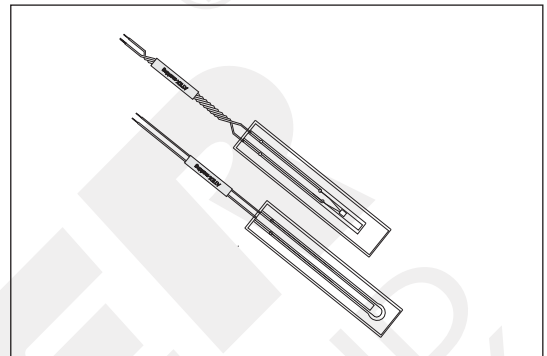
Classification: Ⓢ II 2G Ex ia IIC T6

Licence numbers: IBExU 03 ATEX 1072 X, IECEx IBE 14.0009X
EAC RU C-DE.ГБ08.B.01985

Ex protection type: eb

Classification: Ⓢ II 2G Ex eb IIC

Licence numbers: IBExU 02 ATEX 1123 U, IECEx IBE 14.0011U
EAC RU C-DE.ГБ08.B.01985



System Rüster OK (ATEX - GAS / DUST)

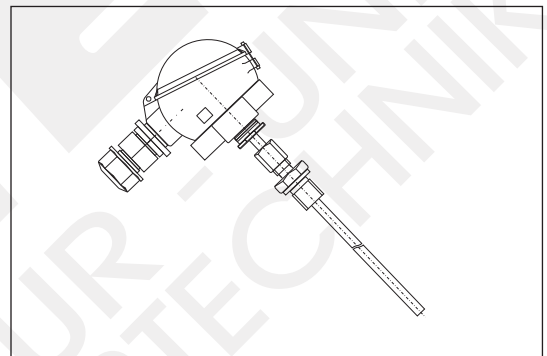
Screw-in resistance thermometers / -thermocouples

Ex protection type: ib

Classification: Ⓢ II 1/2G Ex ib IIC T6 Ga/Gb

Ⓢ II 1/2D Ex ib IIIC Tx IP 6X Da/Db

Licence numbers: IBExU 17 ATEX 1140 X



System Rüster UQ 0034...UQ 0043 (ATEX)

Explosion-proof gas-turbine sensors

Ex protection type: nA

Classification: Ⓢ II 3G Ex nA IIC T4 Gc X

Licence numbers: IBExU 12 ATEX B026 X



System Rüster EXPA/EXPD & EXLPA/EXLPD (ATEX)

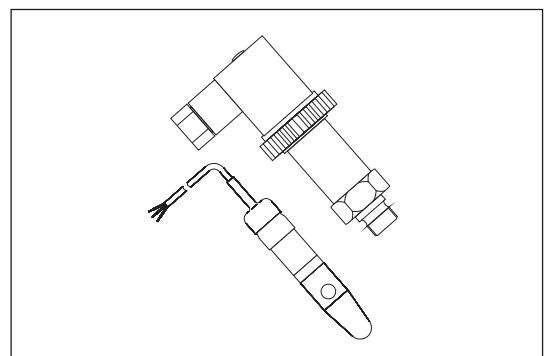
Explosion-proof pressure transmitters and level probes

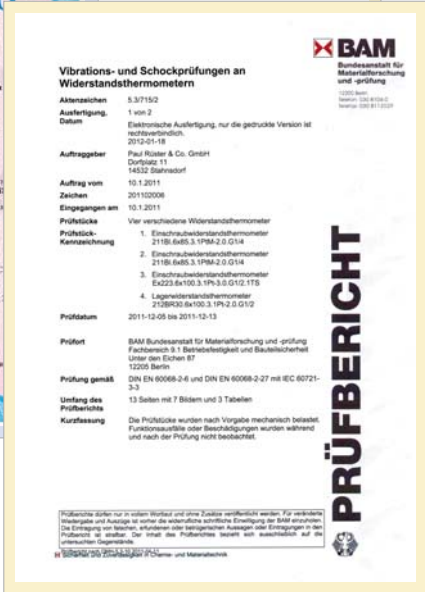
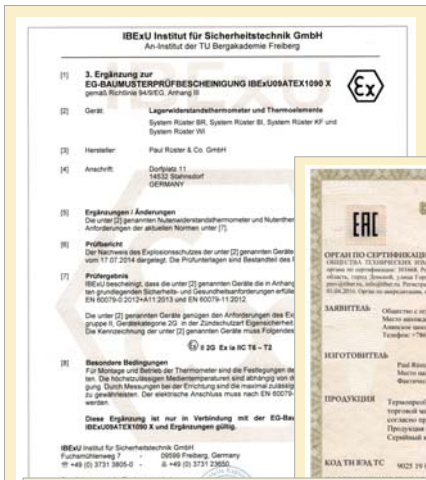
Ex protection type: ia

Classification: Ⓢ II 1G Ex ia IIB T4 Ga

Ⓢ II 2G Ex ia IIC T4 Gb

Licence numbers: IBExU 13 ATEX 1120 X





Design and application:

The temperature sensors are made of stainless steel.

The adjustable compression fitting of type 223 provides the optimal application position of the sensor (see example image).

The sensors can be used in all kinds of intrinsic industrial systems or machines (control of the temperature of motors or generators).

Through the possibility to build up various designs and construction forms, these sensors can be provided for nearly all kinds of customer demands and requirements.



Tecchnical data

Standard version	
Diameter	Ø6 mm
Length	140 mm
Sensor	1 x Pt100
Wiring	3-wire circuit
Accuracy	Class B, DIN IEC 60751
Process connection	Compression fitting G1/4"
Measuring range	-55...+200°C
Connection cable	5m silicone / braided / silicone
Protection class	IP65
High-voltage resistance	500V/50Hz 1 minute

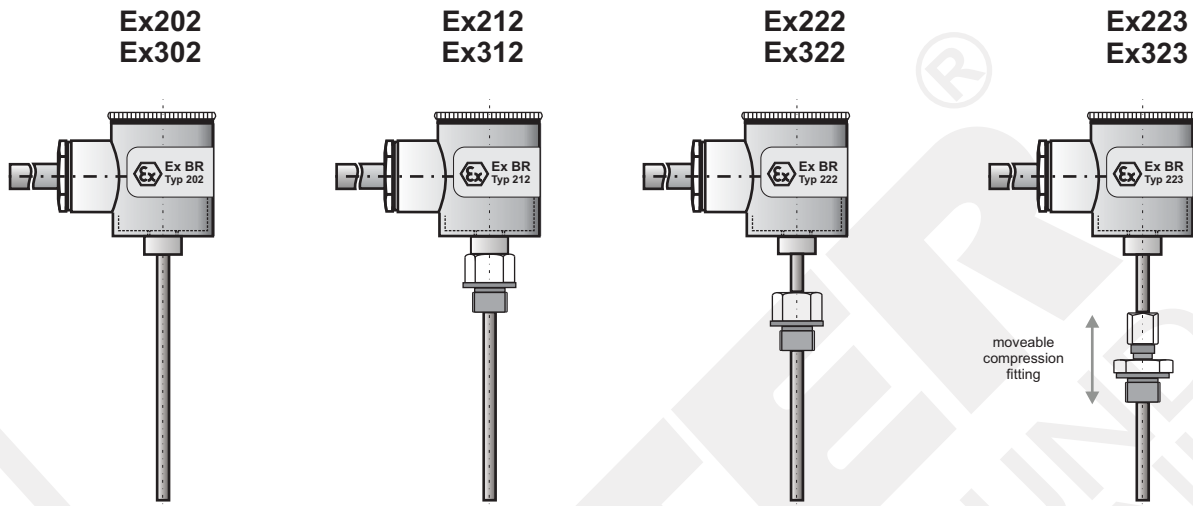
Possible classifications

ATEX		Ex II 2G Ex ia IIC T6-T2 Ex II 2G Ex ib IIC T6-T2 Ex II 2D Ex ia IIC TX Db
IECEx		Ex ia IIC T6-T2 Ex ib IIC T6-T2
EAC Ex		1Ex ia IIC T6-T2 Gb X
DNV GL		Type approval for the maritime industry

System RÜSTER BR

Type 202-223 Bearing resistance thermometer (RTD)

Type 302-323 Bearing thermocouple (TC)



Technical data

diameter:	6 up to 15 mm
Length:	up to 1000 mm
Sensor:	Pt100 ; Pt1000 ; Ni100 ; Ni1000 ; NTCs ; PTCs Others n request
Thermocouple:	J ; K ; L ; N ; S ; E ; R ; B ; T
Wiring RTD:	2-Wire ; 3-Wire or 4-wire
Accuracy RTD:	Class B ; 1/2 DIN ; 1/3 DIN (DIN EN 60751)
Accuracy TC:	class 1 ; class 2 (DIN EN 60584)
Process connection:	G 1/4" ; G 1/2" ; NPT 1/4" ; NPT 1/2" M10x1,5 ; M12x1,5 ; Others on request
Connection cable:	PVC ; Silikone ; FEP/PTFE ; Glass fibre cable Others on request
Optional:	Protection tube isolated with Kynar(shirnked)
Optional shielding:	Cable-VA-braiding put on cable

Design and application:

The temperature sensors are made of stainless steel. The standard process connection is G1/4", but can be extended with an adapter to G1/2".

The sensors are specialized for use in most different, procedural, intrinsic ex-systems of the industry (e.g. bio gas systems).

Special designs for high pressure resistance are available.



Technical data

Standard version

Diameter	Ø6 mm
Length	50 mm
Sensor	1 x Pt1000
Wiring	2-wire circuit
Accuracy	Class B, DIN IEC 60751
Process connection	G1/4" male thread
Measuring range	-55...+200°C
Cable connection	M12 male thread
Cable	optional
Protection class	IP 65
High-voltage resistance	500V/50Hz 1 minute

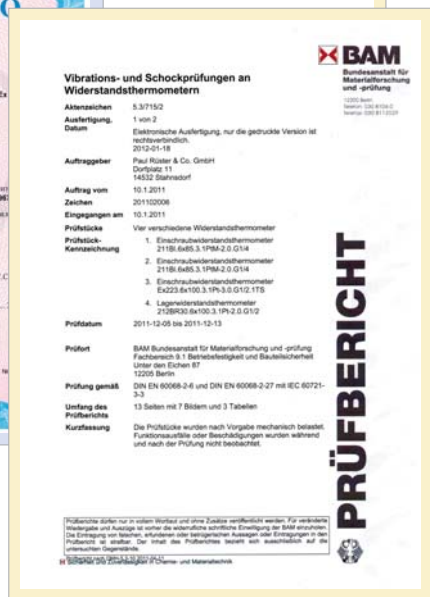
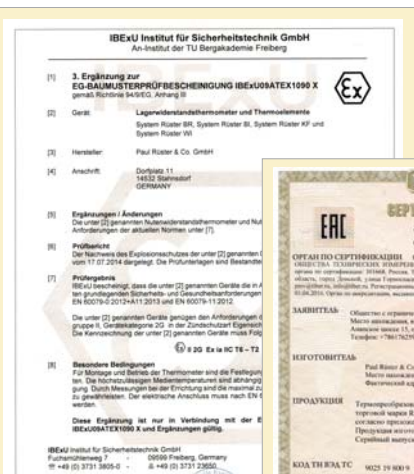
Possible classifications

ATEX Ex II 2G Ex ia IIC T6-T2
Ex II 2G Ex ib IIC T6-T2
Ex II 2D Ex ia IIIC TX Db

IECEX Ex ia IIC T6-T2
Ex ib IIC T6-T2

EAC Ex 1Ex ia IIC T6-T2 Gb X

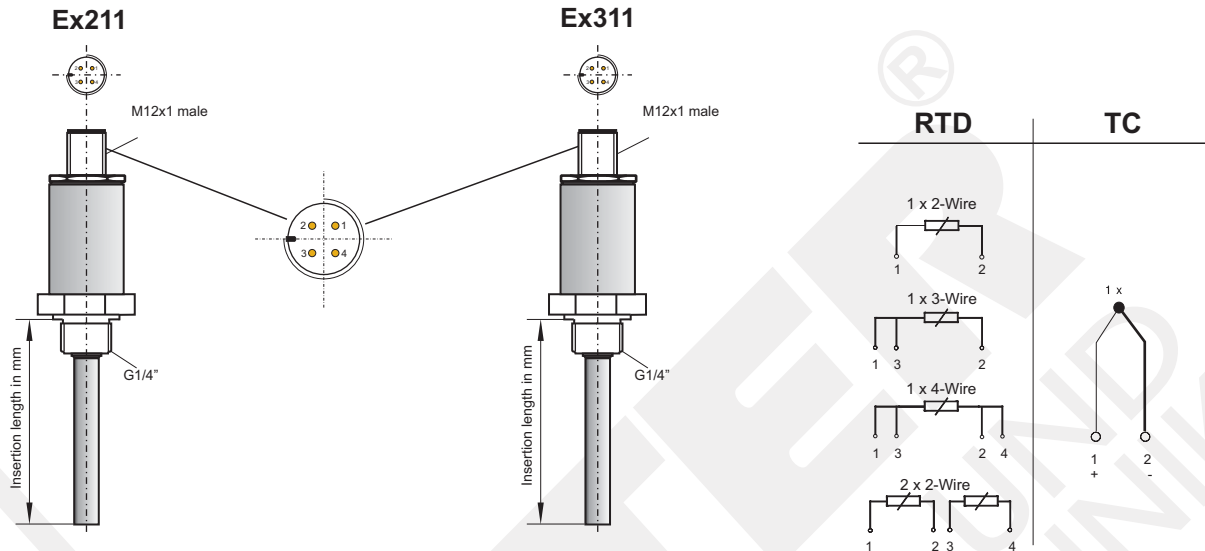
DNV GL Type approval for the maritime industry



System RÜSTER BI

Typ 211 Screw-in resistance thermometer with plug M12 (RTD)

Typ 311 Screw-in thermocouple with plug M12 (TC)



Technical data

Diameter:	6 up to 10 mm
Length:	up to 1000 mm
Sensor:	Pt100 ; Pt1000 ; Ni100 ; Ni1000 ; NTCs ; PTCs Others on request
Thermocouple:	J ; K ; L ; N ; S ; E ; R ; B ; T
Wiring RTD:	2-Wire ; 3-Wire or 4-Wire
Accuracy RTD:	Class B ; 1/2 DIN ; 1/3 DIN (DIN EN 60751)
Accuracy TC:	Class 1 ; Class 2 (DIN EN 60584)
Process connection:	G 1/4" ; G 1/2" (via adapter)
Cable connection:	M12x1
Optional:	Protection tube isolated with Kynar (shrunk)
Optional Cable:	Connection cable with cap nut M12x1



Design and application:

The standard version of the temperature sensors is made of stainless steel or ceramic.

The sensors are specialized for use in most different, procedural, intrinsic ex-systems of the industry.

Especially for use in transformers, generators and motors.



Technical data

Standard version

Diameter	Ø6 mm
Length	50 mm
Sensor	1 x Pt100
Wiring	2-wire circuit
Accuracy	class B, DIN IEC 60751
Measuring range	-55...+250°C
Connection cable	1m Teflon / braided / Teflon
High-voltage resistance	500V/50Hz 1 minute

Possible classifications

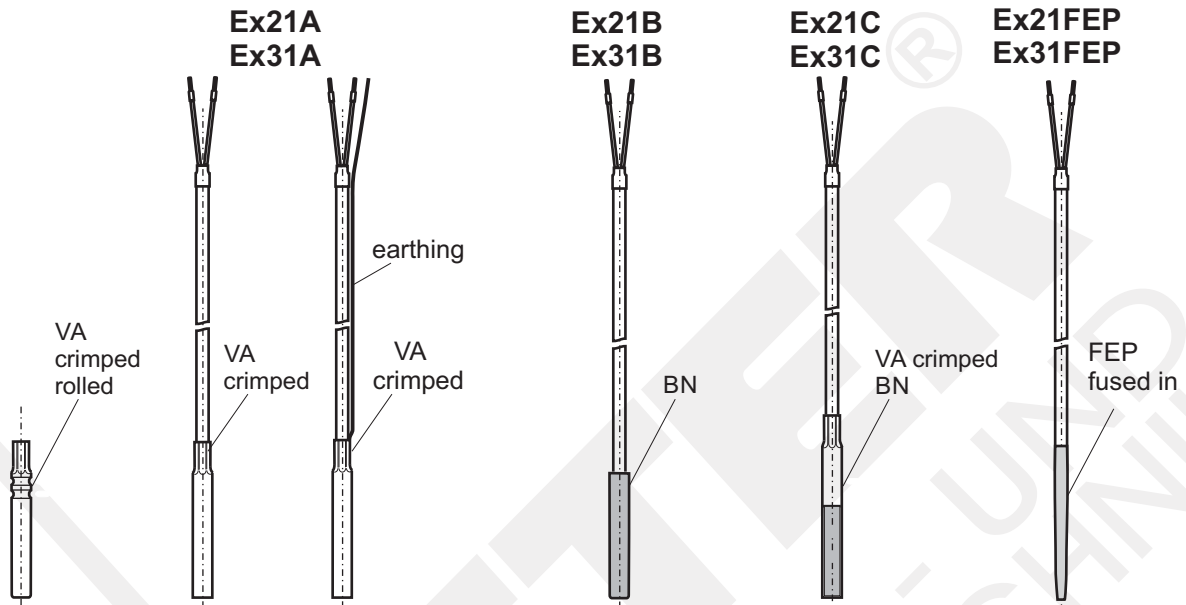
ATEX		Ex II 2G Ex ia IIC T6-T2 Ex II 2G Ex ib IIC T6-T2 Ex II 2G Ex eb IIC Ex II 2D Ex ia IIIC TX Db
IECEX		Ex ia IIC T6-T2 Ex ib IIC T6-T2
EAC Ex		Ex ia IIC Gb U Ex ib IIC Gb U Ex eb IIC U 1Ex ia IIC T6-T2 Gb X
DNV GL		Type approval for the maritime industry



System RÜSTER KF & K...f

Typ 21A-C, 21FEP Cable resistance thermometer (RTD)

Typ 31A-C, 21FEP Cable thermocouple (TC)



Technical data

Diameter:	3,2 up to 15 mm
Length:	up to 1000 mm (21B and 21C = up to 80 mm)
Sensor:	Pt100 ; Pt1000 ; Ni100 ; Ni1000 ; NTCs ; PTCs Others on request
Sensor quantity:	1x... or 2x...
Thermocouple:	J ; K ; L ; N ; S ; E ; R ; B ; T
Wiring RTD:	2-Wire ; 3-Wire or 4-Wire
Accuracy RTD:	Class B ; 1/2 DIN ; 1/3 DIN (DIN EN 60751)
Accuracy TC:	Class 1 ; Class 2 (DIN EN 60584)
Process connection:	compression fitting G 1/4" ; G 1/2" ; Others on request
Connection cable:	PVC ; Silicone ; FEP/PTFE ; Glass fibre Others on request
Optional:	Protection tube isolated with Kynar (shrunk)

Design and application:

The temperature sensors are made of stainless steel.

By their design and construction the sensors meet highest requirements on shock and vibration resistance.

The 90° angle cable routing enables the application in complex and tight systems and machines.

The sensors are used in most different intrinsic ex-systems of the industry (all kinds of control solutions for motors or gears in railway technology and industry).





Technical data

Standardversion

Diameter	Ø5 mm
Length	100 mm
Sensor	1 x Pt100
Wiring	3-wire circuit
Accuracy	class B, DIN IEC 60751
Process connection	Allen-screws M6
Measuring range	-55...+250°C
Connection cable	5m silicone / braided / silicone
Protection class	Ip65
High-voltage resistance	500V/50Hz 1 minute

Possible classifications

ATEX  Ex II 2G Ex ia IIC T6-T2
Ex II 2G Ex ib IIC T6-T2
Ex II 2D Ex ia IIIC TX Db

IECEx  Ex ia IIC T6-T2
Ex ib IIC T6-T2

EAC Ex  Ex ia IIC Gb U
Ex ia IIC T6-T2 Gb X

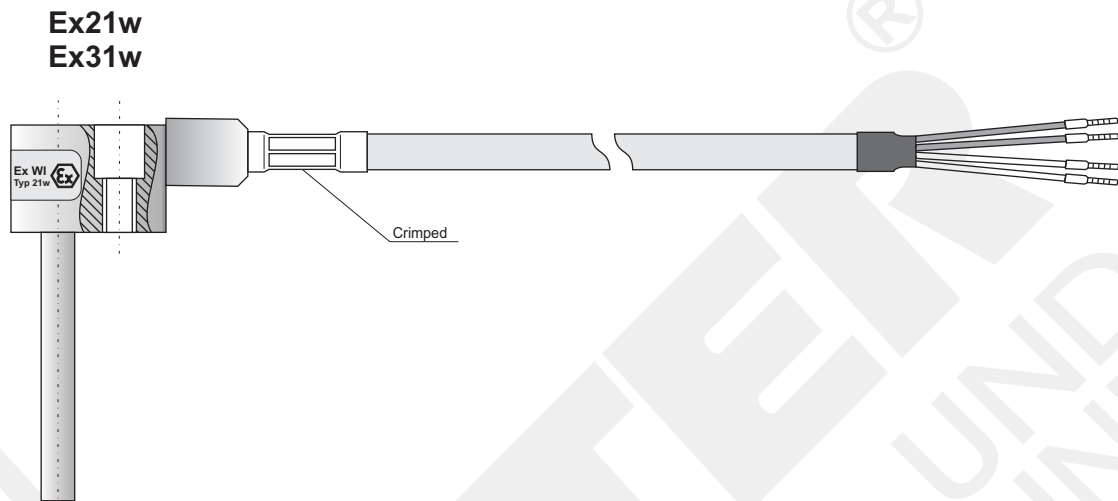
DNV GL industry  Type approval for the maritime



System RÜSTER WI

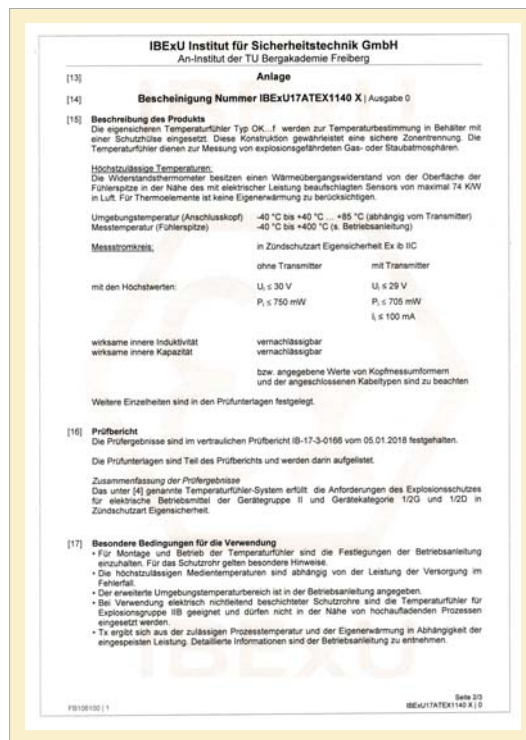
Typ 21w Angle resistance thermometer (RTD)

Typ 31w Angle thermocouple (TC)



Technical data

Diameter:	4 up to 12 mm
Length:	up to 800 mm
Sensor:	Pt100 ; Pt1000 ; Ni100 ; Ni1000 ; NTCs ; PTCs Others on request
Thermocouple:	J ; K ; L ; N ; S ; E ; R ; B ; T
Wiring RTD:	2-Wire ; 3-Wire or 4-Wire
Accuracy RTD:	Class B ; 1/2 DIN ; 1/3 DIN (DIN EN 60751)
Accuracy TC:	Class 1 ; Class 2 (DIN EN 60584)
Connection cable:	PVC ; Silicone ; FEP/PTFE ; Glass fibre Others on request



Design and application:

The thermometers consist of a connection head and a process connection tube made of stainless steel. Due to interchangeable measuring insert it is possible to calibrate the sensor without process intrusion!

By the System EX "OK" Typ 223, the variable sliding compression fitting make it possible to fix the sensor at optimal position on-site.

The sensors can be used in a wide variety of industrial plants or machine applications in the dust and gas explosion sector.

Due to the different construction specifications, these sensors can be individually adapted to your requirements.



Technical data

Standard version

Diameter	Ø6 mm
Length	200 mm (by Extension tube +50mm)
Measuring insert	changeable
Sensor	1 x Pt100
Wiring	3-Wire
Accuracy	Class B, DIN IEC 60751
Process connection	Compression fitting G1/2"
Measuring range	-40°C ... +345°C
Protection class	IP 65
High-voltage resistance	500V/50Hz 1 minute

Possible classificationen

ATEX (gas)		Ex II 1/2G Ex Ib IIC T6 Ga/Gb
ATEX (dust)		Ex II 1/2D Ex Ib IIC Tx IP 6X Da/Db

System RÜSTER OK

Resistance thermometer (RTD)

Type ExOK221Ff... / ExOK221f... / ExOK223f... and ExOK221Uf...

Thermocouple (TC)

Type ExOK321Ff... / ExOK321f... / ExOK323f... and ExOK321Uf...



ExOK221Ff...
with flange
according to DIN
2527 and ANSI
(all dimensions)



ExOK221f...
ExOK223f...
With extension
tube and Male
thread

M12... - M33...
G3/8" - G2"
NPT3/8" - NPT1"

(ExOK223f
with compression
fitting)



ExOK221Uf...
With extension
tube and union nut
(or with pressure
screw)

Plug-in versionen:

Harting



ExOK221Haf

ITT Canon



ExOK221lf

AMP



ExOK221Af

Lumberg



ExOK221Lf

Hirschmann



ExOK221Hf

cable outlet PG



ExOK221Kf

Technical data

Probe tube diameter:	Ø6 up to Ø12 mm
Measuring insert diameter:	Ø3-5,9mm / Ø 6-9mm
Length:	up to 600 mm
Sensor:	Pt100 ; Pt1000 Others on request
Thermocouple:	J ; K Others on request
Wiring RTD:	2-Wire ; 3-Wire or 4-Wire
Accuracy RTD:	Class B ; 1/2 DIN ; 1/3 DIN (DIN EN 60751)
Accuracy TC:	Classe ; Class 2 (DIN EN 60584)
Process connection:	G 1/4" ; G 1/2" ; NPT 1/4" ; NPT 1/2" M10x1,5 ; M12x1,5 Others on request

Design and application:

EX-slot resistance thermometers are made of high voltage resistant materials and are classified in thermal class H.

By their design and construction the sensors meet highest requirements on shock and vibration resistance, tested by the Federal Institute of material testing in Berlin, Germany.

The versions Ex ia NWT-f are designed for a selective capture of the measurement.

The sensors are mainly used to control winding temperatures in electrical motors, generators and transformers. The sensors are usually moulded during the vacuum impregnation of the windings and are a permanent part of the electrical device after that.

The control of the winding temperature gives a protection possibility against electrical breakdowns and/or incorrect warmings of motors etc., to shut down the electrical device safe. This protects the following process chain.



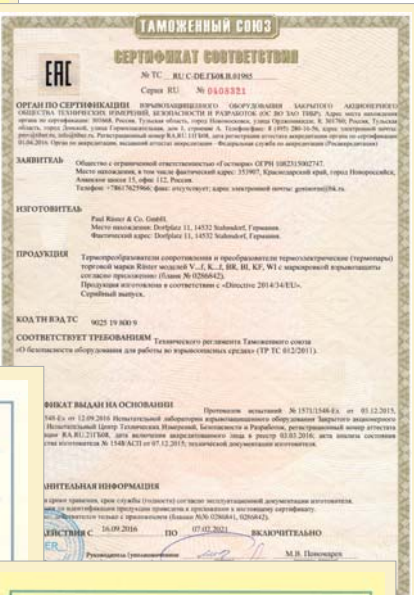
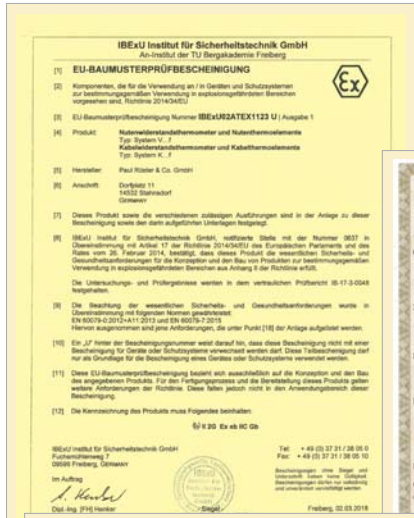
Technical data

Standard version

Base body	100 x 8 x 2 mm (LxWxT) HWG acc. to DIN 7735
Sensor	1x Pt100, thin film sensor
Wiring	2-wire circuit
Accuracy	class B, DIN IEC 60751
Measuring range	-55...+180°C
Connection cable	1m twisted Teflon single wires
High-voltage resistance	2,5 kV/50Hz 1 minute 2U+1000V (U = nominal voltage of the machine)

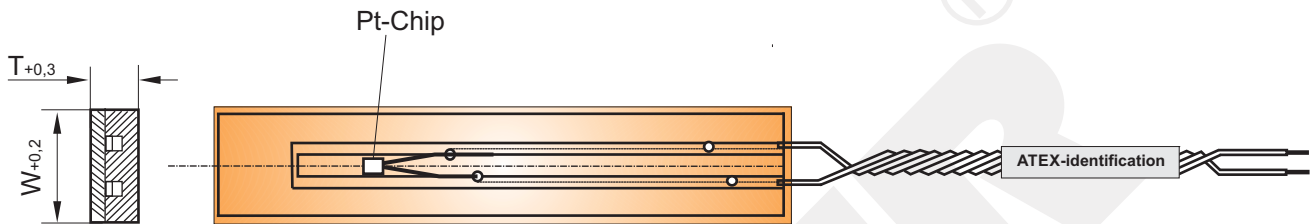
Possible classification

ATEX		Ex II 2G Ex ia IIC T6-T2 Ex II 2G Ex ib IIC T6-T2 Ex II 2G Ex ib IIC
IECEx		Ex ia IIC T6-T3 Ex ib IIC T6-T3 Ex eb IIC Gb
EAC Ex		Ex ia IIC Gb U Ex ib IIC Gb U Ex eb IIC U



System RÜSTER VN 60f...69f

Explosion-proof slot resistance thermometer (Chip)
Type ExNWT-f



Technical data

Length:	40 up to 1000 mm
Width:	6 up to 20 mm
Thickness:	> 1,5 mm
Sensor:	Chip Pt100 ; Pt1000 ; PTCs ; NTCs Others on request
Sensor quantity:	1x... or 2x...
Wiring:	2-Wire ; 3-Wire or 4-Wire
Accuracy:	Class B ; 1/2 DIN ; 1/3 DIN (DIN IEC 751)
Connection cable:	FEP ; Silicone Others on request
Optional:	Kynar isolated (shrinked) shielded version

Design and application:

EX-slot resistance thermometers are made of high voltage resistant materials and are classified in thermal class H.

By their design and construction the sensors meet highest requirements on shock and vibration resistance, tested by the Federal Institute of material testing in Berlin, Germany.

The versions Ex ia NWT-s are designed for capture an average measurement. This avoids measuring faults by an inconvinent position of the sensor.

The sensors are mainly used to control winding temperatures in electrical motors, generators and transformers. The sensors are usually moulded during the vacuum impregnation of the windings and become permanent part of the electrical device.

The control of the winding temperature gives a protection possibility against electrical breakdowns and/or incorrect warmings of motors etc., to shut down the electrical device safe. This protects the following process chain.



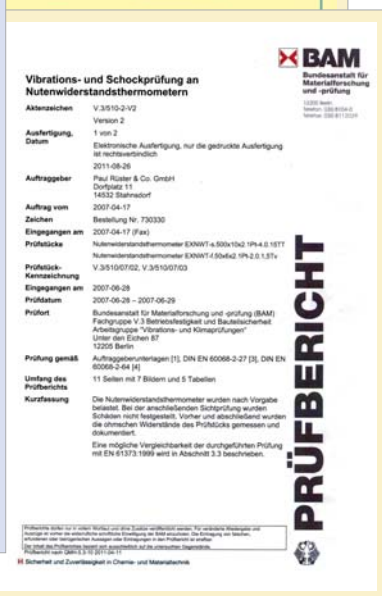
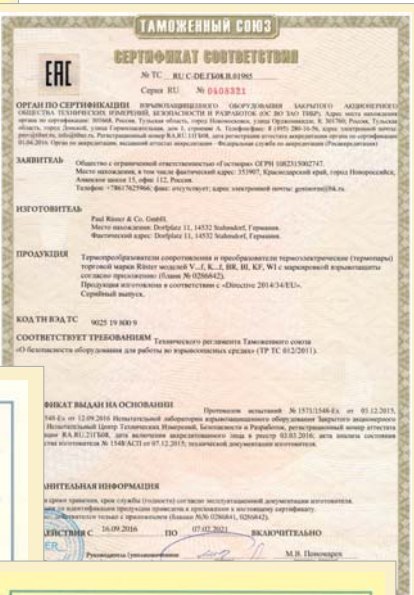
Technical data

Standard version

Base body	200 x 8 x 2 mm (LxWxT) HGW acc. to DIN 7735
Sensor	1x Pt100, bifilar platinum wiring
Wiring	3-wire circuit
Accuracy	class B, DIN IEC 60751
Measuring range	-55...+180°C
Connection cable	1m Teflon single wires
High-voltage resistance	2,5 kV/50Hz 1 minute 2U+1000V (U = nominal voltage of the machine)

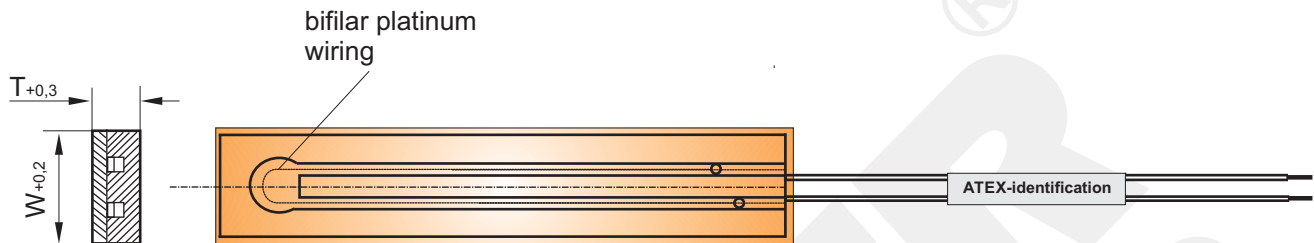
Possible classification

ATEX	Ex II 2G Ex ia IIC T6-T2 Ex II 2G Ex ib IIC T6-T2 Ex II 2G Ex eb IIC
IECEX	Ex ia IIC T6-T3 Ex ib IIC T6-T3 Ex eb IIC Gb
EAC Ex	Ex ia IIC Gb U Ex ib IIC Gb U Ex eb IIC U



System RÜSTER VN 30f...39f

Explosion-proof slot resistance thermometer (bifilar wiring)
Type ExNWT-s



Technical data

Length:	120 up to 1000 mm
Width:	6 up to 20 mm
Thickness:	> 1,5 mm
Sensor:	bifilar platinum wiring Pt100
Sensor quantity:	1x... or 2x...
Wiring:	2-Wire ; 3-Wire or 4-Wire
Accuracy:	Class B ; 1/2 DIN ; (DIN EN 60751)
Connection cable:	FEP ; PTFE ; silicone Others on request
Optional:	Kynar isolated (shranked) shielded version

Design and application:

Ex slot resistance thermometers made of high voltage resistant materials and classified in thermal class H.

Therefore the sensors are shielded with a Cu-shield and provided with an earth conductor, which enables a current load capacity up to I= 50 A.

The versions Ex ia NWT-f.Cu are designed for a selective capture of measurement.

The sensors are mainly used to control winding temperatures in electrical motors, generators and transformers. The sensors are usually moulded during the vacuum impregnation of the windings and are a permanent part of the electrical device after that.

The control of the winding temperature gives a protection possibility against electrical breakdowns and/or incorrect warmings of motors etc., to shut down the electrical device safe. This protects the following process chain.



Technical data

Standardversion

Base body	50 x 12 x 3 mm (LxWxT) HGW acc. to DIN 7735 Cu-Shield (Current load capacity I = 50A)
Sensor	1x Pt1000, thin film sensor
Wiring	4-wire circuit
Accuracy	class B, DIN IEC 60751
Measuring range	-55...+180°C
Connection cable	1 m Teflon single wires + 2 earth conductors (for I = 50A)
High-voltage resistance	2,5 kV/50Hz 1 minute 2U+1000V (U = nominal voltage of the machine)

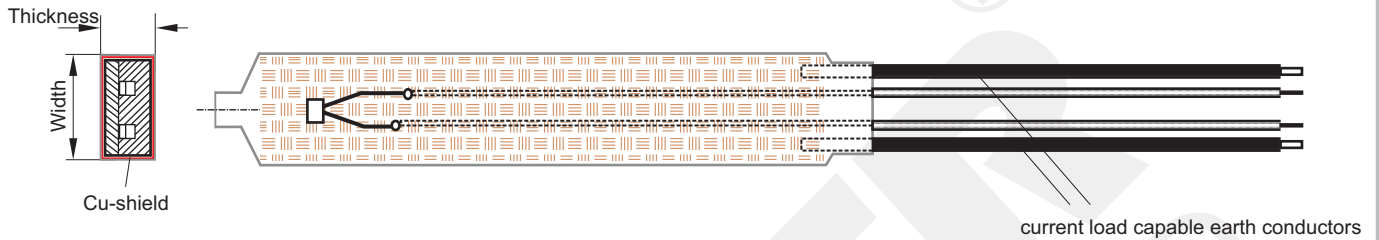
Possible classification

ATEX		Ex II 2G Ex ia IIC T6-T2 Ex II 2G Ex ib IIC T6-T2 Ex II 2G Ex eb IIC
IECEx		Ex ia IIC T6-T3 Ex ib IIC T6-T3 Ex eb IIC Gb
EAC Ex		Ex ia IIC Gb U Ex ib IIC Gb U Ex eb IIC U



System RÜSTER VN .84f

Explosion-proof slot resistance thermometer CU-shielded (Chip) Type ExNWT-f.CU



Technical data

Length:	40 up to 1000 mm
Width:	6 up to 20 mm
Thickness:	≥ 3 mm
Sensor:	Chip Pt100; Pt1000; PTCs; NTCs
Sensor quantity:	1x... or 2x...
Wiring:	2-Wire ; 3-Wire or 4-Wire
Accuracy:	Class B ; 1/2 DIN ; 1/3 DIN (DIN EN 60751)
Connection cable:	FEP ; PTFE ; silicone Others on request
Shield:	VA-Braid ; Cu-shield
Optional:	earth wire for different current carrying capacity

Design and application:

Ex slot resistance thermometers made of high voltage resistant materials and classified in thermal class H.

Therefore the sensors are shielded with a Cu-shield and provided with an earth conductor, which enables a current load capacity up to I= 50 A.

The versions Ex ia NWT-s. CU are designed for capture an average measurement. This avoids measuring faults by an inconvinient position of the sensor.

The sensors are mainly used to control winding temperatures in electrical motors, generators and transformers. The sensors are usually moulded during the vacuum impregnation of the windings and are a permanent part of the electrical device after that.

The control of the winding temperature gives a protection possibility against electrical breakdowns and/or incorrect warmings of motors etc., to shut down the electrical device safe. This protects the following process chain.



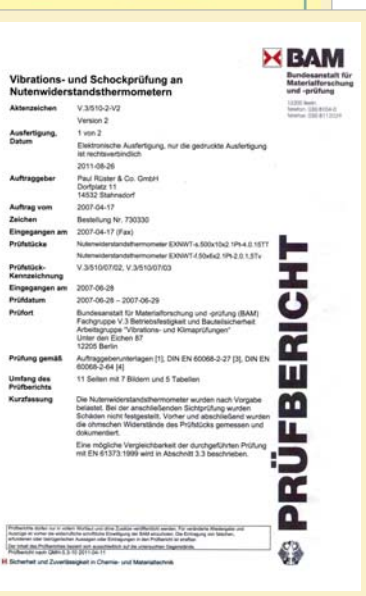
Technical data

Standardversion

Base body	150 x 12 x 3,5 mm (LxWxT) HGW acc. to DIN 7735 Cu-Shield (Current load capacity I = 50A)
Sensor	1x Pt100, bifilar platinum wiring
Wiring	3-wire circuit
Accuracy	class B, DIN IEC 60751
Measuring range	-55...+180°C
Connection cable	1m Teflon single wires + 2 earth conductors (for I = 50A)
High-voltage resistance	2,5 kV/50Hz 1 minute 2U+1000V (U = nominal voltage of the machine)

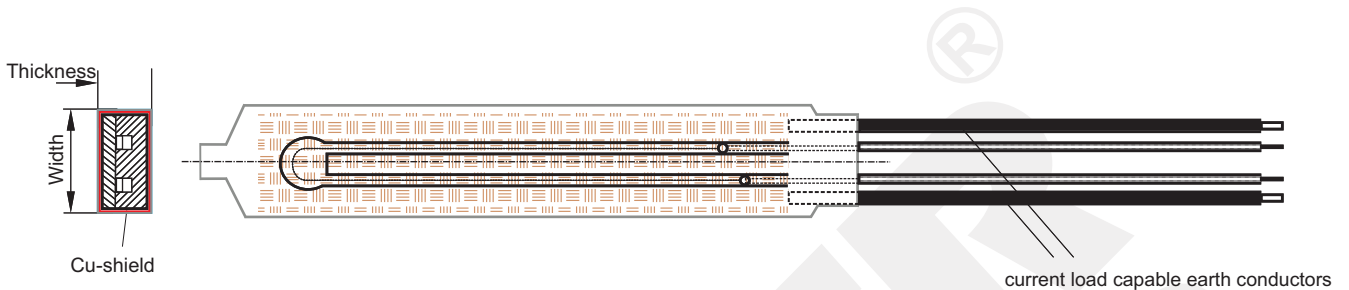
Possible classification

ATEX		Ex II 2G Ex ia IIC T6-T2 Ex II 2G Ex ib IIC T6-T2 Ex II 2G Ex eb IIC
IECEx		Ex ia IIC T6-T3 Ex ib IIC T6-T3 Ex eb IIC Gb
EAC Ex		Ex ia IIC Gb U Ex ib IIC Gb U Ex eb IIC U



System RÜSTER VN ..82f

Explosion-proof slot resistance thermometer
 CU-shielded (bifilar wiring)
 Type ExNWT-s.CU



Technical data

Length:	120 up to 1000 mm
Width:	6 up to 20 mm
Thickness:	≥ 3 mm
Sensor:	bifilar platinum wiring Pt100
Sensor quantity:	1x... or 2x...
Wiring:	2-Wire ; 3-Wire or 4-Wire
Accuracy:	Class B ; 1/2 DIN (DIN EN 60751)
Connection cable:	FEP ; PTFE ; Silicone Others on request
Shield:	VA-Braid ; Cu-shield
Optional:	earth wire for different current carrying capacity

Design and application:

Ex slot thermocouples made of high voltage resistant materials and classified in thermal class H.

They are fast-response sensors and can be used in various applications.

The versions Ex ia NTE are designed for an isolated capture of measurement.

The sensors are mainly used to control winding temperatures in electrical motors, generators and transformers. The sensors are usually moulded during the vacuum impregnation of the windings and are a permanent part of the electrical device after that.

The control of the winding temperature gives a protection possibility against electrical breakdowns and/or incorrect warmings of motors etc., to shut down the electrical device safe. This protects the following process chain.



Technical data

Standardversion

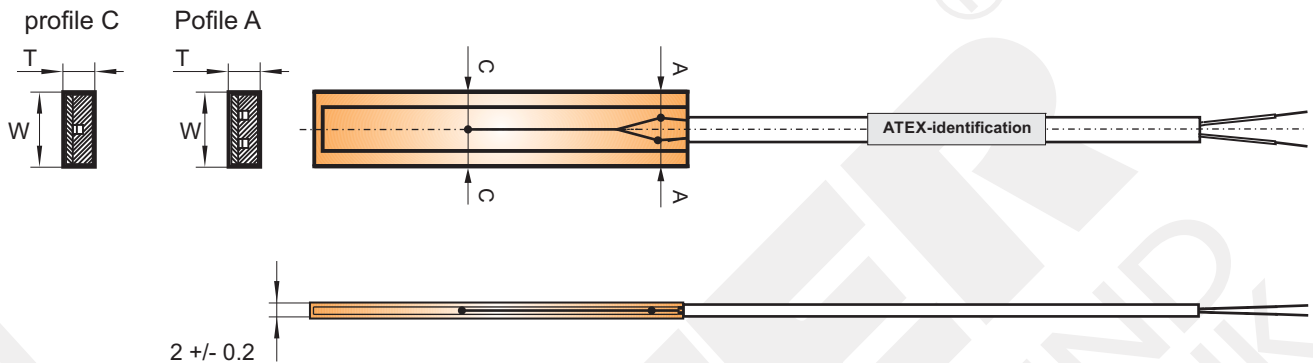
Base body	100 x 9 x 2 mm (LxWxT) HGW acc. to DIN 7735
Thermocouple	1x Type K (NiCr-Ni)
Accuracy	class 1, DIN IEC 584
Measuring range	-55...+180°C
Compensating cable	1m silicone / silicone
High-voltage resistance	2,5 kV/50Hz 1 minute 2U+1000V (U = nominal voltage of the machine)

Possible classification

ATEX		Ex II 2G Ex ia IIC T6-T2
		Ex II 2G Ex ib IIC T6-T2
		Ex II 2G Ex eb IIC
IECEx		Ex ia IIC T6-T3
		Ex ib IIC T6-T3
		Ex eb IIC Gb

System RÜSTER VN ..41f

Explosion-proof slot thermocouple Type ExNTE



Technical data

Length:	40 up to 1000 mm
Width:	6 up to 20 mm
Thickness:	> 1,5 mm
Thermocouple:	J ; K ; L ; N ; S ; R ; B ; T
Sensor quantity:	1x... or 2x... (as special version)
Wiring:	2-Wire ; 3-Wire or 4-Wire
Accuracy:	Class 1 ; Class 2 (DIN EN 60584)
Connection cable:	FEP ; PTFE ; silicone Others on request
Optional:	Kynar isolated (shielded)
Optional shield:	VA-Braid ; Cu-Band earth wires for different current carrying capacity



Design and application:

Gas-turbine sensors of System Rüster UQ0034-UQ0043 are specified for temperature measurement and control of the off-gas stream in gas-turbines.

A long or short version of the gas-turbine sensor is needed, depending on the turbine design.

The new changeable version enables a simple change and calibration of the thermocouple measuring insert.


The control and regulation of the gas stream requires highest requirements for accuracy and mechanical resilience against vibrations and streaming.

Our thermocouples are used in gas turbines successfully since many years.



Technical data

**standard version UQ0038-300
with changeable measuring insert**

Protection tube	Ø 11 mm / VA 1.4571
Process connection	special thread G1"
Insertion length	1.600 mm
Measuring insert	SS 2.4816
Electrical connection	Form B mini-protection head
Thermocouple	2 x Type K
Accuracy	Class 2 acc. to DIN IEC 584
Measuring range	-40...+800°C
Protection class	IP54
Classification	 Ex II 3G Ex nA IIC T4 Gc X

Measuring / supply current circuit

Nominal voltage	U _N < 50mV
Nominal current	I _N < µA

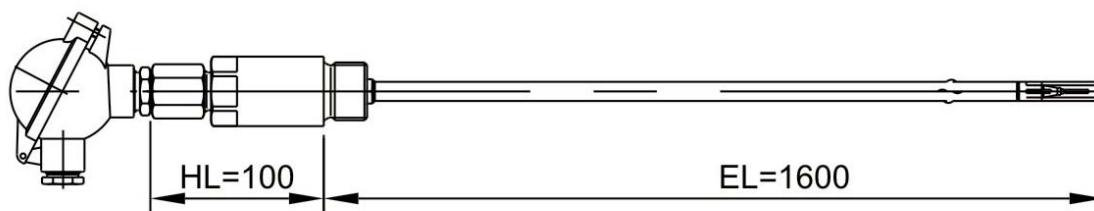
System Rüster UQ 0034...0043

Explosion-proof sensors for gas-turbines (up to 800°C)

RüsterType: UQ 0038-300

with protection head and interchangeable measuring insert

Order code: Ex321CN.11x1600.3.2K.2.G1

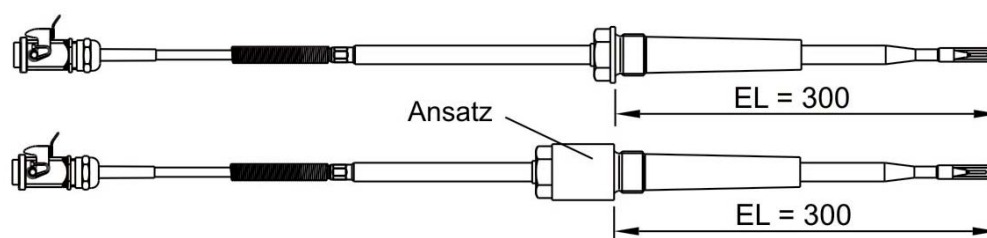


Technical data

Diameter:	tapered to 11mm
Insertion length:	1600 mm
Material:	1.4571
Thermocouple:	2 x Type K or 2x Type N
Process connection:	special thread G1"
Accuracy:	class 1 (DIN EN 60584)

Type: UQ 0034 Rüster

Order code: Ex36Gr.29x285.3.3K.2.1,5TDT.G1



Technical data

Diameter:	tapered to 11mm
Insertion length:	300 mm
Material:	1.4571
Thermocouple:	3 x Typ K
Process connection:	special thread G1"
Accuracy:	Class 1 (DIN EN 60584)

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(1) **EG-BAUMUSTERPRÜFBESCHEINIGUNG**
gemäß Richtlinie 94/9/EG, Anhang III

(2) Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen, Richtlinie 94/9/EG

(3) EG-Baumusterprüfbescheinigungsnummer **IBExU13ATEX1120**

(4) Gerät: **Druckmessumformer**
Typ EXPA, EXPD, EXLPA und EXLPD

(5) Hersteller: **Paul Rüster & Co. GmbH**

(6) Anschrift: **Dorfplatz 11
14532 Stahnsdorf
Deutschland**

(7) Die Bauart des unter (4) genannten Gerätes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser EG-Baumusterprüfbescheinigung festgelegt.

(8) IBExU Institut für Sicherheitstechnik GmbH, BENANNTE STELLE Nr. 0637 nach Artikel 9 der Richtlinie 94/9/EG des Europäischen Parlaments und des Rates vom 23. März 1994, bescheinigt, dass das unter (4) genannte Gerät die in Anhang II der Richtlinie festgelegten grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau des Gerätes zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen erfüllt. Die Prüfergebnisse sind in dem Prüfbericht IB-13-3-124 vom 01.10.2013 festgehalten.

(9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit EN 60079-0:2012, EN 60079-11:2012 und EN 60079-26:2007.

(10) Falls das Zeichen „X“ hinter der Bescheinigungsnummer steht, wird auf besondere Bedingungen für die sichere Anwendung des Gerätes in der Anlage zu dieser EG-Baumusterprüfbescheinigung unter [17] hingewiesen.

(11) Diese EG-Baumusterprüfbescheinigung bezieht sich nur auf die Konzeption und den Bau des festgelegten Gerätes. Weitere Anforderungen dieser Richtlinie gelten für die Herstellung und das Inverkehrbringen dieses Gerätes.

(12) Die Kennzeichnung des unter (4) genannten Gerätes muss folgende Angaben enthalten:

EXPA, EXPD mit Flansch-Stecker **Ex II 1G Ex ia IIC T4 Ga**
EXPA, EXPD (andere Stecker) **Ex II 1G Ex ia IIB T4 Ga oder II 2G Ex ia IIC T4 Gb**
EXLPA, EXLPD **Ex II 1G Ex ia IIB T4 Ga oder II 2G Ex ia IIC T4 Gb**
-40 °C ≤ T_a ≤ +85 °C

IBExU Institut für Sicherheitstechnik GmbH
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Zertifizierungsstelle Explosionsschutz

Freiberg, 01.10.2013

Im Auftrag
(Dr. Wagner)
Anlage

Seite 1 von 2
IBExU13ATEX1120

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(13) **Anlage**

(14) zur EG-BAUMUSTERPRÜFBESCHEINIGUNG IBExU13ATEX1120

(15) **Beschreibung des Gerätes**
Die Druckmessumformer EXPA und EXPD sowie die Pegelsonden EXLPA und EXLPD stellen Drucktransmitter, bestehend aus einer Messzelle und einer auf mehrere Leiterplatten verteilten Auswertelektronik im Edelstahlgehäuse mit Prozessanschluss, dar. Die Geräte können in allen Ex-Zonen eingesetzt werden. Sie werden durch eine eigensichere Stromversorgung gespeist.

Kategorie-1-Betriebsmittel
Die Messzelle des Druckmessumformers darf in Zone 0 bei normalen atmosphärischen Bedingungen eingesetzt werden (Temperatur von -20 °C bis +60 °C, Druck von 0,8 bar bis 1,1 bar, ca. 21 % Sauerstoffgehalt).

Typen:
EXPA, EXPD Druckmessumformer in Zündschutzart Eigensicherheit mit einem Stromausgang 4...20 mA
EXLPA, EXLPD Pegelsonde in Zündschutzart Eigensicherheit mit einem Stromausgang 4...20 mA

Technische Daten
Umgebungstemperaturbereich: -40 °C bis +85 °C (außer Zone 0)
Medientemperaturbereich: -40 °C bis +100 °C

Elektrische Daten
Versorgungsstromkreis: in Zündschutzart Eigensicherheit Ex ia IIC
(Klemmen: +U, -U)
U, 27 V
I, 125 mA
P, 0,85 W
C, 5 nF
L, vernachlässigbar

(16) **Prüfbericht**
Die Prüfergebnisse sind im Prüfbericht IB-13-3-124 festgehalten. Die Prüferunterlagen sind Bestandteil des Prüfberichtes.

Zusammenfassung der Prüfergebnisse:
Die Druckmessumformer Typ EXPA und EXPD sowie die Pegelsonden EXLPA und EXLPD erfüllen die Anforderungen der Zündschutzart Eigensicherheit an ein explosionsgeschütztes Betriebsmittel für die Gruppe II, Explosionsgruppe IIB oder IIC, die Kategorie 1G oder 2G und Temperaturklasse T4.

(17) **Besondere Bedingungen**
keine

(18) **Grundlegende Sicherheits- und Gesundheitsanforderungen**
Erfüllt durch Einhaltung von Normen (siehe [9])

Im Auftrag
(Dr. Wagner)
Anlage

Freiberg, 01.10.2013

Seite 2 von 2
IBExU13ATEX1120

Design and application:

The pressure transmitters are built with a stainless steel diaphragm. The housing is made of stainless steel. The electrical connection is made via a Hirschmann plug.

The transmitter are shock and vibration resistant due to their construction. Therefore the cells are resistant against pressure peaks and temperature shocks.

Possible media are H₂O, air, oil and others. (excepted: sulphur and nitrous acid and hydrogen)

Pressure transmitter are used in most different, procedural systems to control and regulate in fields of hydraulic systems, process control, water technologies and tank farms.



Technical data


Standard version EXPA (analogue version)

Housing	stainless steel
Measuring cell	stainless steel diaphragm
Pressure ranges (relative or absolute)	0...2000 bar -1 bis 1 bar
Overload range	1,5-times / from 500 bar 1,2-times
Burst load	3-times / from 500 bar 1,5-times
Linearity error	± 0,3 max. at room temperature (% full scale)
Power supply	24V/DC(20...27VDC)
Output signal	4-20 mA
Medium temperature	0...+100°C
Environmental temperature	-40...+85°C (max. 60°C at Zone 0)
Electrical connection	Hirschmann plug MVS / form A
Process connection	G1/4" (G1/2" with adapter possible)

Measuring / supply current circuit

output voltage	$U_N \leq 20 \dots 27V$
output current	$I_N \leq 125mA$
resistance	$R \geq 100 \Omega$
power input	$P_i = 0,85 W$
effective internal capacity	$C_i = 5 nF$
effective internal inductance	$L_i = \text{negligibly}$

Possible classification

ATEX		Ex II 1G Ex ia IIB T4 Ga Ex II 2G Ex ia IIC T4 Gb
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System Rüster EXPA (analogue) / EXPD (digital)

Explosion-proof pressure transmitters

Type EXPA (analogue)

Type EXPD (digital)

Beginning of pressure range 0 bar or -1 bar

End of pressure range 0,25 bar ... 2000 bar (0,05 bar at EXPD)

Standard pressure ranges:

0,25	0,4	0,6	1,6	2,5	4	6	10	16	25
40	60	100	160	250	400	600	1000	1600	2000

Accuracy 0 ≤ 0,3% or 1 ≤ 0,15%

Process connection G1/4" standard G1/2" = by adapter
(special process connections on request)

More possibilities with the digital version EXPD

Advantages

- reading of all technical data of the transmitter by software
- reset to zero (by magnet possible ca. 30-100s after Power-up)
- downscale of measuring range up to 4:1 (linear)
- PAN-function (adaptation of scale of the output signal 4-20 mA to downscale)
- invert characteristic (possibly needed in the controlling)
- selection and switching of 4 internal box filters
- selection of median-sort-filter (median filtering of the last 5 measurements)

Requirements

- The digital version has a processor for data correction. For usage the protocol converter "EVAL Box" with USB-connection incl. PCV-software is needed.
- a four-wire cable for programming
- programming needs to be done outside of the EX-area before attachment

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(1) **EG-BAUMUSTERPRÜFBESCHEINIGUNG**
gemäß Richtlinie 94/9/EG, Anhang III

(2) Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen, Richtlinie 94/9/EG

(3) EG-Baumusterprüfbescheinigungsnummer **IBExU13ATEX1120**

(4) Gerät: **Druckmessumformer**
Typ EXPA, EXPD, EXLPA und EXLPD

(5) Hersteller: **Paul Rüster & Co. GmbH**

(6) Anschrift: **Dorfplatz 11
14532 Stahnsdorf
Deutschland**

(7) Die Bauart des unter [4] genannten Gerätes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser EG-Baumusterprüfbescheinigung festgelegt.

(8) IBExU Institut für Sicherheitstechnik GmbH, BENANNTE STELLE Nr. 0637 nach Artikel 9 der Richtlinie 94/9/EG des Europäischen Parlaments und des Rates vom 23. März 1994, bescheinigt, dass das unter [4] genannte Gerät die in Anhang II der Richtlinie festgelegten grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau des Gerätes zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen erfüllt. Die Prüfergebnisse sind in dem Prüfbericht IB-13-3-124 vom 01.10.2013 festgehalten.

(9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit EN 60079-0:2012, EN 60079-11:2012 und EN 60079-26:2007.

(10) Falls das Zeichen „X“ hinter der Bescheinigungsnummer steht, wird auf besondere Bedingungen für die sichere Anwendung des Gerätes in der Anlage zu dieser EG-Baumusterprüfbescheinigung unter [17] hingewiesen.

(11) Diese EG-Baumusterprüfbescheinigung bezieht sich nur auf die Konzeption und den Bau des festgelegten Gerätes. Weitere Anforderungen dieser Richtlinie gelten für die Herstellung und das Inverkehrbringen dieses Gerätes.

(12) Die Kennzeichnung des unter [4] genannten Gerätes muss folgende Angaben enthalten:

EXPA, EXPD mit Flansch-Stecker **II 1G Ex ia IIC T4 Ga**
EXPA, EXPD (andere Stecker) **II 1G Ex ia IIB T4 Ga oder II 2G Ex ia IIC T4 Gb**
EXLPA, EXLPD **II 1G Ex ia IIB T4 Ga oder II 2G Ex ia IIC T4 Gb**
-40 °C ≤ T_a ≤ +85 °C

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Zertifizierungsstelle Explosionsschutz

Freiberg, 01.10.2013

Im Auftrag
(Dr. Wagner)
Anlage

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IBExU13ATEX1120

IBExU Institut für Sicherheitstechnik GmbH
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(13) **Anlage**

(14) **zur EG-BAUMUSTERPRÜFBESCHEINIGUNG IBExU13ATEX1120**

(15) **Beschreibung des Gerätes**
Die Druckmessumformer EXPA und EXPD sowie die Pegelröden EXLPA und EXLPD stellen Drucktransmitter, bestehend aus einer Messzelle und einer auf mehrere Leiterplatten verteilten Auswertelektronik im Edelstahlgehäuse mit Prozessanschluss, dar. Die Geräte können in allen Ex-Zonen eingesetzt werden. Sie werden durch eine eigensichere Stromversorgung gespeist.

Kategorie-1-Betriebsmittel
Die Messzelle des Druckmessumformers darf in Zone 0 bei normalen atmosphärischen Bedingungen eingesetzt werden (Temperatur von -20 °C bis +60 °C, Druck von 0,8 bar bis 1,1 bar, ca. 21 % Sauerstoffgehalt).

Typen:
EXPA; EXPD Druckmessumformer in Zündschutzart Eigensicherheit mit einem Stromausgang 4...20 mA
EXLPA; EXLPD Pegelröden in Zündschutzart Eigensicherheit mit einem Stromausgang 4...20 mA

Technische Daten
Umgebungstemperaturbereich: -40 °C bis +85 °C (außer Zone 0)
Medientemperaturbereich: -40 °C bis +100 °C

Elektrische Daten
Versorgungsstromkreis: in Zündschutzart Eigensicherheit Ex ia IIC
(Klemmen: +U, -U)
U, 27 V
I, 125 mA
P, 0,85 W
C, 5 nF
L, vernachlässigbar

(16) **Prüfbericht**
Die Prüfergebnisse sind im Prüfbericht IB-13-3-124 festgehalten. Die Prüferunterlagen sind Bestandteil des Prüfberichtes.

Zusammenfassung der Prüfergebnisse:
Die Druckmessumformer Typ EXPA und EXPD sowie die Pegelröden EXLPA und EXLPD erfüllen die Anforderungen der Zündschutzart Eigensicherheit an ein explosionsgeschütztes Betriebsmittel für die Gruppe II, Explosionsgruppe IIB oder IIC, die Kategorie 1G oder 2G und Temperaturklasse T4.

(17) **Besondere Bedingungen**
keine

(18) **Grundlegende Sicherheits- und Gesundheitsanforderungen**
Erfüllt durch Einhaltung von Normen (siehe [9])

Im Auftrag
(Dr. Wagner)
Anlage

Freiberg, 01.10.2013

Seite 2 von 2
IBExU13ATEX1120

Design and application:

The level probe is built with a stainless steel diaphragm. The housing is made of stainless steel. The electrical connection is made via a permanently connected cable. A windpipe is integrated in the special cable to enable comparison pressure measuring.

Analogue version EXLPA

The medium characteristic (density=1) is permanently programmed. Other media characteristics need to be adjusted at the control of the system producer.

Digital version EXLPD

The digital version provides more options to adjust different measuring ranges and media characteristics (densities) as well as at the reading and filtering of data.

Level probes are used in most different, procedural systems to measure fill levels in fields of hydraulic systems, process control, water technologies and tank farms.



Technical data


Standard version EXLPA (analogue version)

Housing	stainless steel
Measuring cell	stainless steel diaphragm
Pressure ranges	0...10 bar= 100 m (others on request)
Overload range	1,5-times
Burst load	3-times
Linearity error	± 0,3 max. at room temperature (% full scale)
Power supply	24V/DC (20...27VDC)
Output signal	4-20 mA
Medium temperature	0...+100°C
Environmental temperature	-40...+85°C (max. 60°C at zone 0)
Electrical connection	1m special cable (PVC/FEP/TEP)
Protection type	IP68 acc. to DIN EN 60529

Measuring / supply current circuit

output voltage	$U_n \leq 20...27V$
output current	$I_n \leq 125mA$
resistance (at 24V)	$R \geq 100 \Omega$
power input	$P = 0,85 W$
effective internal capacity	$C = 5 nF$
effective internal inductance	$L = \text{negligibly}$

Possible classification

ATEX		Ex II 1G Ex ia IIB T4 Ga Ex II 2G Ex ia IIC T4 Gb
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System Rüster EXLPA (analogue) / EXLPD (digital)

Explosion-proof level probes

Type EXLPA (analogue)

Type EXLPD (digital)

Beginning of pressure range: up 50 / (25) mbar [50 /25cm] possible

End of pressure range 0,25 bar ... 10 bar (0,05 bar for EXLPD)

Standard pressure ranges:

0,25	0,4	0,6	1,6	2,5	4	6	10
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Accuracy 0 ≤ 0,3% or 1 ≤ 0,15%

Cable length X m

Cable type PVC / FEP / TPE (fuel and oil resistant)

More possibilities with the digital version EXLPD

Advantages

- reading of all technical data of the transmitter by software
- adaption of media characteristics (density)
- adaption to different tank forms (ball or cylinder)
- output signal in volume%
- reset to zero (by magnet possible ca. 30-100s after Power-up)
- downscale of measuring range up to 4:1 (linear)
- PAN-function (adaptation of scale of the output signal 4-20 mA to downscale)
- invert characteristic (possibly needed in the controlling)
- selection and switching of 4 internal box filters
- selection of median-sort-filter (median filtering of the last 5 measurements)

Requirements

- The digital version has a processor for data correction. For usage the protocol converter "EVAL Box" with USB-connection incl. PCV-software is needed.
- a four-wire cable for programming
- programming needs to be done outside of the EX-area before attachment

TERMS AND CONDITIONS OF BUSINESS

1. Scope

- 1.1 Supply contracts shall, as far as not expressly agreed to differently, be accepted and carried out according to the following sales and delivery conditions. This applies also to all subsequent contracts without further reference. Precious metal sales, repairs and assembly are subject to special conditions.
- 1.2 We (from now on called the supplier) contradict expressly all commercial trade conditions of the purchaser.
- 1.3 Arrangements amending these conditions shall be stated in writing. Verbal agreements shall immediately be confirmed in writing.
- 1.4 These conditions regulate the conduct of business.

2. Sales, sales brochures and commercial protection

- 2.1 Sale offers, unless stated differently, are valid for a period of 4 weeks or until stocks last. The supplier is only obliged to supply after an expressly issued confirmation of the order.
- 2.2 In the absence of any particular reference in the sales offer, technical data, material used etc and standard values used in the trade should be assumed. Notification in the case of a variation will only be given when the product integrity warranty is affected.
- 2.3 All documentation provided to the customer by the supplier remains the property of the supplier. It should not be made available to third parties without the prior written permission of the supplier. If an order is not placed with the supplier and if requested by the supplier, all documentation including any copies that may have been made must be returned to the supplier without delay.
- 2.4 It is the responsibility of the purchaser to check all data contained in catalogues, sales brochures and published documentation that the intended application is suitable and appropriate, before acceptance and use. This also applies to the choice of suitable materials. The purchaser must ensure that the use of the product is appropriate.
- 2.5 The supplier is not duty-bound to check the correctness and/or legal conformity of the requirements and/or assumptions of the purchaser, as this is the sole responsibility of the purchaser. This applies in particular in the case of possible litigation for a breach of commercial protection laws.
- 2.6 The purchaser guarantees, that the execution of the contract does not result in any breach of commercial law by the use of components, drawings or samples supplied by the purchaser or third parties. The purchaser will conduct any possible defense procedures at his own expense and will compensate the supplier for any expenses resulting from such action.
- 2.7 Drawings, developments and discussion papers, which are generated in the course of contractual negotiations as an advisory service, are not binding. The purchaser cannot make demands based on such documents or services given by the supplier or his agents, except in the case of culpable intent or gross negligence.
- 2.8 Requested samples shall be billed by the supplier according to expense incurred.

3. Contract order

Orders constitute a valid contract only after written confirmation of the supplier. The extent of the contract, thus generated, is determined by the actual text of the confirmation. The purchaser is obliged to check all relevant detail and draw attention to any discrepancy in writing.

4. Delivery period and extent

- 4.1 The delivery period starts when all technical and commercial questions have been resolved and terminates with the dispatch or the notification of dispatch. Keeping to delivery schedules assumes the keeping of obligations by the purchaser, particularly in respect to payments.
- 4.2 Purchaser initiated amendments to the supply contract cause the delivery schedule to recommence with the date of the revised confirmation of the order.
- 4.3 The supplier does not accept responsibility for any delivery delays in respect to acts of God or events not caused or predicted by the supplier, such as non-issue of permits by government instrumentalities, strikes etc. Delivery schedules are extended by the extent of the difficulty.
- 4.4 The supplier accepts liability for not maintaining the delivery schedule or for delayed delivery, including delivery scheduled by the supplier only in the case of willful intent, gross negligence or a breach of essential contractual duty. However, this implies no change in the requirement of proof at the disadvantage of the purchaser.
- 4.5 The right of the purchaser to cancel an order after the passing of an appropriate delivery deadline agreed to by the supplier is not affected.
- 4.6 Part delivery is deemed acceptable at minor inconvenience to the purchaser.

5. Point of delivery, risk transfer

- 5.1 Delivery is affected from the place of production of the supplier at the expense and risk of the purchaser. The means of delivery is chosen at the discretion of the supplier according to usual practice, unless the purchaser has made a particular request.
- 5.2 In the case of delivery without any installation or erection, the risk in respect of the delivered items, even if free delivery had been agreed to, transfers to the purchaser, transport company or transport driver, or at the latest at the point of leaving the factory or store. If acceptance by the purchaser is delayed, the risk is transferred at the point of readiness to deliver, even if the delay of acceptance occurs after readiness to deliver. The supplier may insure delivery against breakage, transport or fire damage at the request and at cost of the purchaser.
- 5.3 In the case of delivery with installation or erection, the risk in respect of the delivery transfers to the purchaser on the day of acceptance.

6. Prices

- 6.1 All prices are ex store, freight/postage, packing, insurance and the respective applicable VAT are added that may legally apply for commissioning, installation, adjustment and similar services, which are listed separately on the account.
- 6.2 In the case of precious metals, the official stock exchange day trading rate on the day of delivery will be invoiced.

7. Settlement of accounts

- 7.1 The agreed price is to be paid in full in EURO. The terms of payment are set in the acknowledgement. Risk and payment costs are born by the purchase.
- 7.2 The supplier reserves the right to add an extra charge of 35,00 EUR net for orders of less than 100,00 EUR net value of goods.
- 7.3 In the case of late payment, an additional 8 percentage points over and above the base rate of the European Central Bank is added to the account. The purchaser cannot vary this clause.
- 7.4 The purchaser has the right to counter demands only in the case of indisputable or legally determined demands.
- 7.5 Costs incurred to ascertain credit, letters of credit in dealings with foreign countries or similar are at the expense of the purchaser.

8 Warranty for Material Defects

- 8.1 The purchaser should check goods immediately after receipt for possible defects. Obvious defects are to be reported to the supplier within 5 working days in writing, hidden defects within 5 days after detection.
- 8.2 The supplier has the discretion to repair or replace defects, which are reported to the supplier within 12 months after commissioning but not later than 15 months after delivery. This discretion is not waived even after repeated unsatisfactory repairs. The supplier must be given appropriate time and

access to affect repairs.

- 8.3 The purchaser has the right to rescind the purchase order or demand a price reduction (decrease in the order value), if the defect cannot be repaired in an appropriate period of time.
- 8.4 In the case of defects, which could have been determined by the purchaser with little inconvenience before inclusion or use, all under warranty claims for defective materials are voided as soon as the product is included or used. This does not apply in the case of culpable intent, gross negligence or injury to life, body or health by the supplier, leading employee, consultant or contractor, or a liability for the breach of a major contractual duty or of a mandatory product liability.
- 8.5 No warranty claims will be accepted for a predetermined life of products especially under extreme or unknown operating conditions. Claims for the premature failure of the product are excluded.
- 8.6 In the case of products, which were manufactured to customer drawings and specifications, supplier warranty for materials defects only extends to include compliance with the specification. Legal liability according to the product liability laws as well as liability for intentional and gross negligence is not affected.
- 8.7 The warranty for material defects does not cover normal wear and tear or damage caused by faulty or negligent maintenance or inappropriate use outside the specifications or contract.
- 8.8 Material defects, which reduce the value or the useability only minimally or not at all, a liability is excluded.
- 8.9 Rights to referred warranty provisions according to §§ 478, 479 of Federal Common Law (BGB) only allow the consumer to make claims within the scope of the legislation and do not regulate the understanding of good will provisions with the supplier and assume that any party with referred warranty rights will duly observe their duty, in particular the duty to report defects.

9. Liability

- 9.1 All claims for damages and compensation of the purchaser are excluded, whatever the legal base, including claims as to illegal action or material defect or damage caused by the defect, or culpable neglect of associated contractual duties or the loss of income. This does not apply if the supplier, leading employee, consultant or contractor is guilty of culpable intent, gross negligence or injury to life, body or health or a liability for the breach of a major contractual duty or of a mandatory product liability exists.
- 9.2 In the case of a major breach of contractual liability, which does not involve intent or gross negligence and which does not involve an injury to life, body or health or the product integrity warranty, the liability shall be limited to compensation to the extent of assessable damage, which is typical in these contractual contexts.
- 9.3 Materials, which the purchaser is supplying to the supplier for the manufacture of products ordered by the purchaser, are only insured against theft. The supplier is liable for the loss or deterioration of such goods only in the case of intent or gross negligence.
- 9.4 Advice given to the purchaser by the supplier, particularly as to the usage of products, is binding only if given or confirmed in writing.
- 9.5 The legal requirements as to the need of proof are not affected.

10. Joint ownership

- 10.1 The finished product (from now on called the joint product) remains the property of the supplier until paid in full and all due demands, which the supplier derives from the business relationship with the purchaser, have been met. During this period of the joint ownership no seizure, nor transfer nor ceding of the demands from the purchaser without the express permission of the supplier may take place. The supplier is to be notified without delay in case of a seizure by a third party.
- 10.2 If the purchaser processes the joint product into a new product, the processed article remains the property of the supplier. The transfer of ownership is excluded under Federal Law (BGB) § 950. By processing, mixing or reconstructing the joint product with other products, not the property of the supplier, the supplier gains shared ownership of the resultant product in proportion of the monetary value of the joint product and other component products at the time of processing. It is the duty of the purchaser to store and control the resultant product with appropriate care.
- 10.3 Therefore, under these conditions, the resultant product is treated the same as the joint product. In the case of a sale of the resultant joint product, the purchaser reduces his claim on the product value by the amount proportioned according to the purchase value of the joint product of the supplier in respect to all other products contained in the resultant product. In the case of the sale of the resultant product, together with other components not owned by the supplier for a total all-inclusive price the purchaser shall pay the supplier the proportion of the total price that represents the share of the supplier.
- 10.4 The purchaser also accedes to a claim of the supplier in respect to any third party, if the joint product is incorporated in real estate property.
- 10.5 The purchaser is empowered, unless the power is revoked, to satisfy claims resulting from the resale in the course of normal business transactions. Furthermore, the supplier has the right to independently seek an order, if the purchaser has not fulfilled his contractual duty, in particular to settle due accounts on time. The purchaser must name, if requested, the debtors of outstanding claims and show the amounts owing. Making a claim on the reserved ownership goods and in particular a demand to transfer same constitutes a contract cancellation.
- 10.6 The supplier undertakes upon request by the purchaser to free the purchaser from any obligation to accede to claims of the supplier exceeding 10% of the actual value of the goods.

11. Legal Venues

- 11.1 The laws of the Federal Republic of Germany are exclusively valid, excluding UN Commercial Laws (UNCITRAL- Commercial Laws). Contract language is German.
- 11.2 In the case of the purchaser being a purchasing agent, a legal representative of the public instrumentality or utility, also for all disputes involving documents, exchange and cheque transactions, the legal venue for both parties is the local court of the supplier. The supplier has the right to take legal action against the purchaser in any other legal court.

12. General Clause

Invalidation of any one of the clauses in this contract does not affect the validity of other paragraphs. Should a clause be or become ineffective, the contractual parties to this contract shall endeavour to replace the ineffective clause with a new agreed clause, to reflect as fully as possible the commercial and legal purpose.

13. Protection of customer information (DGSGV)

acc. http://www.temperatur-berlin.de/e/e_datenschutz.html

All information in this catalogue subject to change. Errors excepted.

Notes



RUSTER
TEMPERATUR- UND
DRUCKMESSTECHNIK

DIRECTIONS SKETCH

Turn off at exit 5-Kleinmachnow from the A115

Turn right onto Stolper Weg

1,5 km

Turn right onto Stahnsdorfer Damm

550 m

Continue on Wannseestraße

150 m

Turn off the second exit of the roundabout onto Schleusenweg

160 m

Turn left onto Potsdamer Allee

350 m

Turn right onto Wilhelm-Külz-Straße

140 m

Turn right onto Dorfplatz and keep left

550 m

Dorfplatz 11



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