EXPLOSION-PROOF SENSORS
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.

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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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 Rüster & 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 Rüster & 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 Rüster & 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

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

**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)

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

---

### Classification of ignition energy:

<table>
<thead>
<tr>
<th>EUROPA/ATEX</th>
<th>TYPICAL GAS</th>
<th>IGNITION ENERGY IN µJ</th>
</tr>
</thead>
<tbody>
<tr>
<td>IIA</td>
<td>propane</td>
<td>180µJ</td>
</tr>
<tr>
<td>IIB</td>
<td>ethylene</td>
<td>60..80µJ</td>
</tr>
<tr>
<td>IIC</td>
<td>hydrogen</td>
<td>20..60µJ</td>
</tr>
</tbody>
</table>

---

### Temperature classification:

<table>
<thead>
<tr>
<th>class:</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
<th>T5</th>
<th>T6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Temp.:</td>
<td>&gt;450</td>
<td>&gt;300</td>
<td>&gt;200</td>
<td>&gt;135</td>
<td>&gt;100</td>
<td>&gt;85</td>
</tr>
</tbody>
</table>

| 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                                                                  |
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 IIC TX Db

Licence numbers: IBExU 09 ATEX 1090 X
                  IECEx IBE 14.0010X
                  EAC RU C-DE.ГБ08.В.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 IIC TX Db

Licence numbers: IBExU 09 ATEX 1090 X
                  IECEx IBE 14.0010X
                  EAC RU C-DE.ГБ08.В.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 IIC 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.В.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 IIC TX Db

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

**System Rüster VF (ATEX / IECEx / EAC Ex / DNV GL)**
Slot resistance thermometers / -thermocouples
Ex protection type: ia / lb
Classification: Ex IIC T6
Licence numbers: IBExU 03 ATEX 1072 X, IECEx IBE 14.0009X
EAC RU C-DE.Г508.В.01985

Ex protection type: eb
Classification: Ex IIC
Licence numbers: IBExU 02 ATEX 1123 U, IECEx IBE 14.0011U
EAC RU C-DE.Г508.В.01985

**System Rüster OK (ATEX - GAS / DUST)**
Screw-in resistance thermometers / -thermocouples
Ex protection type: ib
Classification: Ex IIC T6 Ga/Gb
Ex I1/2D 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: Ex IIC T4 Gc X
Licence numbers: IBExU 12 ATEX B026 X

**System Rüster EXPA/EXPD & EXLPA/EXLPD (ATEX)**
Explosion-proof prussure transmitters and level probes
Ex protection type: ia
Classification: Ex IIB T4 Ga
Ex 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 intrinsinc 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.

Technical 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 2D Ex ia IIC T6-T2
- 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**

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

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard version</strong></td>
<td></td>
</tr>
<tr>
<td>Diameter</td>
<td>Ø6 mm</td>
</tr>
<tr>
<td>Length</td>
<td>50 mm</td>
</tr>
<tr>
<td>Sensor</td>
<td>1 x Pt1000</td>
</tr>
<tr>
<td>Wiring</td>
<td>2-wire circuit</td>
</tr>
<tr>
<td>Accuracy</td>
<td>Class B, DIN IEC 60751</td>
</tr>
<tr>
<td>Process connection</td>
<td>G1/4” male thread</td>
</tr>
<tr>
<td>Measuring range</td>
<td>-55...+200°C</td>
</tr>
<tr>
<td>Cable connection</td>
<td>M12 male thread</td>
</tr>
<tr>
<td>Cable</td>
<td>optional</td>
</tr>
<tr>
<td>Protection class</td>
<td>IP 66</td>
</tr>
<tr>
<td>High-voltage resistance</td>
<td>500V/50Hz 1 minute</td>
</tr>
</tbody>
</table>

**Possible classifications**

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

- IECEx
  - Ex ia IIC T6-T2
  - Ex ia IIC T6-D

- 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 (shrinked)

**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

<table>
<thead>
<tr>
<th>Standard version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter</td>
</tr>
<tr>
<td>Length</td>
</tr>
<tr>
<td>Sensor</td>
</tr>
<tr>
<td>Wiring</td>
</tr>
<tr>
<td>Accuracy</td>
</tr>
<tr>
<td>Measuring range</td>
</tr>
<tr>
<td>Connection cable</td>
</tr>
<tr>
<td>High-voltage resistance</td>
</tr>
</tbody>
</table>

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 IIC TX Db
- IECEx: Ex ia IIC T6-T2, Ex eb IIC T6-T2
- EAC Ex: Ex ia IIC Gb U, Ex ia 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 (shrinked)
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 intrinsically ex-systems of the industry (all kinds of control solutions for motors or gears in railway technology and industry).

Technical data

**Standard version**

- **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 IIC 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

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

Technical data

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

<table>
<thead>
<tr>
<th>Standard version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base body</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Sensor</td>
</tr>
<tr>
<td>Wiring</td>
</tr>
<tr>
<td>Accuracy</td>
</tr>
<tr>
<td>Measuring range</td>
</tr>
<tr>
<td>Connection cable</td>
</tr>
<tr>
<td>High-voltage resistance</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Possible classification

<table>
<thead>
<tr>
<th>ATEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ex II 2G Ex ia IIC T6-T2</td>
</tr>
<tr>
<td>Ex II 2G Ex ib IIC T6-T2</td>
</tr>
<tr>
<td>Ex II 2G Ex eb IIC</td>
</tr>
<tr>
<td>Ex ia IIC T6-T3</td>
</tr>
<tr>
<td>Ex ib IIC T6-T3</td>
</tr>
<tr>
<td>Ex ia IIC Gb</td>
</tr>
<tr>
<td>Ex ib IIC Gb</td>
</tr>
<tr>
<td>EAC Ex</td>
</tr>
<tr>
<td>Ex ia IIC Gb U</td>
</tr>
<tr>
<td>Ex ib IIC Gb U</td>
</tr>
<tr>
<td>Ex ia IIC U</td>
</tr>
<tr>
<td>Ex ib IIC U</td>
</tr>
</tbody>
</table>
System RÜSTER VN 60f...69f

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

Technical data

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>40 up to 1000 mm</td>
</tr>
<tr>
<td>Width</td>
<td>6 up to 20 mm</td>
</tr>
<tr>
<td>Thickness</td>
<td>&gt; 1,5 mm</td>
</tr>
<tr>
<td>Sensor</td>
<td>Chip, Pt100, Pt1000, PTCs, NTCs, Others on request</td>
</tr>
<tr>
<td>Sensor quantity</td>
<td>1x... or 2x...</td>
</tr>
<tr>
<td>Wiring</td>
<td>2-Wire; 3-Wire or 4-Wire</td>
</tr>
<tr>
<td>Accuracy</td>
<td>Class B, 1/2 DIN, 1/3 DIN (DIN IEC 751)</td>
</tr>
<tr>
<td>Connection cable</td>
<td>FEP, Silicone, Others on request</td>
</tr>
<tr>
<td>Optional</td>
<td>Kynar isolated (shrinked), shielded version</td>
</tr>
</tbody>
</table>
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 inconvenient 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**

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

**Possible classification**

- Ex II 2G Ex ia IIC T6-T2
- Ex II 2G Ex ia IIC T6-T3
- Ex II 2G Ex ib IIC T6-T2
- Ex II 2G Ex ib IIC T6-T3
- Ex ia IIC T6-T3
- Ex ib IIC T6-T3
- Ex ia IIC Gb U
- Ex ia IIC Gb U
- Ex ib IIC Gb U
- Ex ib IIC U
- ATEX
- IECEx
- EAC Ex
**System RÜSTER VN 30f...39f**

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

---

**Technical data**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Length:</strong></td>
<td>120 up to 1000 mm</td>
</tr>
<tr>
<td><strong>Width:</strong></td>
<td>6 up to 20 mm</td>
</tr>
<tr>
<td><strong>Thickness:</strong></td>
<td>&gt; 1,5 mm</td>
</tr>
<tr>
<td><strong>Sensor:</strong></td>
<td>bifilar platinum wiring Pt100</td>
</tr>
<tr>
<td><strong>Sensor quantity:</strong></td>
<td>1x... or 2x...</td>
</tr>
<tr>
<td><strong>Wiring:</strong></td>
<td>2-Wire ; 3-Wire or 4-Wire</td>
</tr>
<tr>
<td><strong>Accuracy:</strong></td>
<td>Class B ; 1/2 DIN ; (DIN EN 60751)</td>
</tr>
<tr>
<td><strong>Connection cable:</strong></td>
<td>FEP ; PTFE ; silicone</td>
</tr>
<tr>
<td><strong>Optional:</strong></td>
<td>Kynar isolated (shrunked)</td>
</tr>
<tr>
<td></td>
<td>shielded version</td>
</tr>
</tbody>
</table>

---

![Diagram of the thermometer](image)
**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**

<table>
<thead>
<tr>
<th>Base body</th>
<th>50 x 12 x 3 mm (LxWxT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HGW acc. to DIN 7735</td>
<td>Cu-Shield (Current load capacity I = 50A)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sensor</th>
<th>1x Pt1000, thin film sensor</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Wiring</th>
<th>4-wire circuit</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Accuracy</th>
<th>class B, DIN IEC 60751</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Measuring range</th>
<th>-55...+180°C</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Connection cable</th>
<th>1 m Teflon single wires + 2 earth conductors (for I = 50A)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>High-voltage resistance</th>
<th>2,5 kV/50Hz 1 minute</th>
</tr>
</thead>
</table>

(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 T6-T2

- **IECEx**
  - Ex ia IIC T6-T3
  - Ex ib IIC T6-T3
  - Ex ib IIC Gb

- **EAC Ex**
  - Ex ia IIC Gb U
  - Ex ib IIC Gb U
  - Ex ib IIC U
System RÜSTER VN ..84f
Explosion-proof slot resistance thermometer CU-shielded (Chip)
Type ExNWT-f.CU

Technical data

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

Standard version
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

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

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

**Possible classification**

- Ex II 2G Ex ia IIC T6-T2
- Ex II 2G Ex ib IIC T6-T2
- Ex II 2G Ex eb IIC
- 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 carring 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

<table>
<thead>
<tr>
<th>Protection tube</th>
<th>Ø 11 mm / VA 1.4571</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process connection</td>
<td>special thread G1&quot;</td>
</tr>
<tr>
<td>Insertion length</td>
<td>1.600 mm</td>
</tr>
<tr>
<td>Measuring insert</td>
<td>SS 2.4816</td>
</tr>
<tr>
<td>Electrical connection</td>
<td>Form B mini-protection head</td>
</tr>
<tr>
<td>Thermocouple</td>
<td>2 x Type K</td>
</tr>
<tr>
<td>Accuracy</td>
<td>Class 2 acc. to DIN IEC 584</td>
</tr>
<tr>
<td>Measuring range</td>
<td>-40...+800°C</td>
</tr>
<tr>
<td>Protection class</td>
<td>IP54</td>
</tr>
<tr>
<td>Classification</td>
<td>Ex II 3G Ex nA IIC T4 Gc X</td>
</tr>
<tr>
<td>Measuring / supply current circuit</td>
<td></td>
</tr>
<tr>
<td>Nominal voltage</td>
<td>U0 ≤ 50mV</td>
</tr>
<tr>
<td>Nominal current</td>
<td>I0 ≤ μA</td>
</tr>
</tbody>
</table>

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**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**

<table>
<thead>
<tr>
<th><strong>Diameter:</strong></th>
<th>tapered to 11mm</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Insertion length:</strong></td>
<td>1600 mm</td>
</tr>
<tr>
<td><strong>Material:</strong></td>
<td>1.4571</td>
</tr>
<tr>
<td><strong>Thermocouple:</strong></td>
<td>2 x Type K or 2x Type N</td>
</tr>
<tr>
<td><strong>Process connection:</strong></td>
<td>special thread G1&quot;</td>
</tr>
<tr>
<td><strong>Accuracy:</strong></td>
<td>class 1 (DIN EN 60584)</td>
</tr>
</tbody>
</table>

---

**Type: UQ 0034 Rüster**  
**Order code:** Ex36Gr.29x285.3.3K.2.1,5TDT.G1

---

**Technical data**

<table>
<thead>
<tr>
<th><strong>Diameter:</strong></th>
<th>tapered to 11mm</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Insertion length:</strong></td>
<td>300 mm</td>
</tr>
<tr>
<td><strong>Material:</strong></td>
<td>1.4571</td>
</tr>
<tr>
<td><strong>Thermocouple:</strong></td>
<td>3 x Typ K</td>
</tr>
<tr>
<td><strong>Process connection:</strong></td>
<td>special thread G1&quot;</td>
</tr>
<tr>
<td><strong>Accuracy:</strong></td>
<td>Class 1 (DIN EN 60584)</td>
</tr>
</tbody>
</table>
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**
  - **0...2000 bar (relative or absolute)**
  - **-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**: Uo ≤ 20...27V
  - **output current**: Io ≤ 125mA
  - **resistance**: Ro ≥ 100 Ω
  - **power input**: P = 0,85 W
  - **effective internal capacity**: Cr = 5 nF
  - **effective internal inductance**: Lr = negligibly
- **Possible classification**: Ex II 1G Ex ia IIB T4 Ga
  - ATEX Ex II 2G Ex ia IIC T4 Gb
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:

<table>
<thead>
<tr>
<th>0,25</th>
<th>0,4</th>
<th>0,6</th>
<th>1,6</th>
<th>2,5</th>
<th>4</th>
<th>6</th>
<th>10</th>
<th>16</th>
<th>25</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>60</td>
<td>100</td>
<td>160</td>
<td>250</td>
<td>400</td>
<td>600</td>
<td>1000</td>
<td>1600</td>
<td>2000</td>
</tr>
</tbody>
</table>

Accuracy 0 \leq 0,3\% or 1 \leq 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
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...+65°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: $U_{out} \leq 20...27V$
  - output current: $I_{out} \leq 125mA$
  - resistance (at 24V): $R \geq 100 \Omega$
  - power input: $P \leq 0,85 \text{W}$
  - effective internal capacity: $C \leq 5 \mu \text{F}$
  - effective internal inductance: $L = \text{negligibly}$
- **Possible classification**:
  - Ex II 1G Ex ia IIB T4 Ga
  - ATEX
    - Ex II 1G Ex ia IIB T4 Ga
    - Ex II 2G Ex ia IIC T4 Gb
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:

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<tr>
<th></th>
<th>0,25</th>
<th>0,4</th>
<th>0,6</th>
<th>1,6</th>
<th>2,5</th>
<th>4</th>
<th>6</th>
<th>10</th>
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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
1. Scope

1.1 Supply contracts shall, as far as not expressly agreed to differently, be accepted and carried out on the following terms and conditions. This applies also to all subsequent contracts without further reference. Precious metal sales, repairs and services 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 written permission of the supplier. If an order is not placed with the supplier and it is 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, appropriate, and accessible. This also applies to the choices of suitable materials. The purchaser must ensure that the use of the product is appropriate.

2.5 The supplier is not bound to check the correctness or legal conformity of the requirements and/or assumptions of the purchaser, as this is the sole responsibility of the purchaser.

2.6 The purchaser guarantees, that the execution of the contract does not result in any breach of contract law, taxes, drawings or samples supplied by the purchaser or third parties. The supplier will conduct any possible defense against his own expense and will compensate the supplier for any expenses resulting from such action.

2.7 The purchaser, 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 Rightfully delivered sales 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 The supplier reserves the right to delay the delivery schedule to recommit to the date of the revised confirmation of the order.

4.3 The supplier reserves the right to delay delivery of goods required by the purchaser, for any reason proper to the supplier, including, but not limited to force majeure, events not caused or predicted by the supplier, such as non-issuance of permits by government instruments, strikes, etc. Delivery schedules are expedited by the extent of the difficulty.

4.4 The supplier accepts liability for not maintaining the delivery schedule or for delayed delivery, invoking delivery schedules by the supplier only in the case of wilful intent, gross negligence or a breach of essential contractual duty. However, this implies no change in the requirement of promptness 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 point 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 procedures, unless the purchaser has made a special request.

5.2 In the case of delivery without any installation or erection, the risk in respect of the delivered item, if free delivery is agreed to, is transferred to the purchaser, transport company and insurance company 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 of this damage at the required and at cost of the purchaser.

5.3 In the case of delivery of 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, freightpostage, 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 borne by the purchaser.

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 later receipt, an additional 8 percentage points per month and above the basic 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 and legally determined demands.

7.5 Costs incurred to ascertain credit, letters of credit in dealings with foreign countries or similar 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 3 months after delivery. Defects which do not result in major inconvenience, the supplier reserves the right to waive even after repeated unsatisfactory repairs. The supplier must be given appropriate time and access to affect repairs.

8.3 The supplier 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 supplier 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 unforeseeable operation 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 specifications. Legal liability according to this product liability law as well as liability for intentional or 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 of contract.

8.8 Material defects, which reduce the value or the usability 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 basis, including claims as to illegal action or material defect or damage caused by the defect, culpable neglect of acknowledgment or commercial risk and if no other legal basis is given.

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 must be insures as to the safe and proper usage of the product. The supplier reserves the right, if the procurement or the processing of the products are not in accordance with the supplier’s requirements.

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.

9.6 Advice given to the purchaser by the supplier, particularly as to the usage of the product, is binding only if given or confirmed in writing.

9.7 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 full in all and all due demands, which the supplier derives from the business relationship with the purchaser have been met. During this period of joint ownership no securities, nor transfer nor cancellation is permitted. In the case of a purchase order, the supplier states the unrestricted ownership over the product. The supplier is to be notified without delay in case of a seizure by a third party.

10.2 In the case of a joint product into a new product, the processed product 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, even if 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 as the same 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 order 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 will 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 to respect to any third party, if the joint product is incorporated in real estate property.

10.5 The supplier reserves 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 supplier must name, if requested, the debtors of outstanding claims and show the amounts owing. Making a claim on the reserved ownership 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 accept of 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 (UNCTRALL—Commercial Laws). Contra 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 agree upon the invalid clause with a new agreed clause, to reflect as fully as possible the commercial and legal purpose.

13. Protection of customer information (DGSVO)

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

All information in this catalogue subject to change. Erros excused.
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
www.temperatur-berlin.de