**Features**

- Displays actual temperature and alarm values.
- 4 alarm values can be entered: low-low, low, high and high-high temperature alarm.
- Large 17mm (0.67”) digits.
- Selectable on-screen engineering units °C - °F - K
- Operational temperature -30°C up to +80°C (-22°F up to 178°F).
- Very compact design for panel mount, wall mount or field mount applications.
- Rugged aluminum field mount enclosure IP67 / NEMA4X.
- Intrinsically Safe II 1 GD Ex ia IIB/IIC T4 T100°C.
- Explosion/flame proof II 2 GD Ex d IIB T5.
- Alarm and analog signal outputs.
- Full Modbus communication RS232/485/TTL.
- Loop or battery powered, 8 - 24V AC/DC or 115 - 230V AC power supply.
- Sensor supply 3.2 / 8.2 / 12 / 24V DC.

**Signal output**

- Up to 4 free configurable alarm outputs.
- (0)4 - 20mA / 0 - 10V DC according to the temperature.

**Signal input**

**Temperature**

- PT100 - 2 or 3 wire.
- (0)4 - 20mA.
- 0 - 10V DC.

**Applications**

- For applications where continuous temperature measurement and monitoring is important. Also re-transmission of the actual temperature or serial communication is required.
- Alternative basic model: F040 - F043.
**General information**

**Introduction**
The F143 is a versatile temperature indicator with continuous temperature monitoring feature. It offers the facility to set two low temperature and two high temperature alarm values. If desired, an ignore function can be set up to allow for an incorrect temperature for a certain period of time. Up to four outputs are available to transmit the alarm condition. A wide selection of options further enhance this model's capabilities, including Intrinsic Safety and full Modbus communication.

**Display**
The display has large 17mm (0.67") and 8mm (0.31") digits which display the temperature, measuring unit and alarm values. The alarm values can be password protected. On-screen engineering units are easily configured from a comprehensive selection.

**Configuration**
All configuration settings are accessed via a simple operator menu which can be pass-code protected. Each setting is clearly indicated with an alphanumerical description, therefore avoiding confusing abbreviations. All settings are safely stored in EEPROM memory in the event of sudden power failure.

**Analog output signal**
The actual temperature is re-transmitted with the (0)4 - 20mA or 0 - 10V DC output signal. The output signal is updated ten times per second with a filter function being available to smoothen out the signal if desired. The output value is user defined in relation to the temperature, e.g. 4mA equals to -20°C and 20mA equals to 250 °C. The output signal can be passive, active or isolated where the passive output type will loop power the F143 as well.

**Alarm output**
Up to four configurable outputs are available to transmit the alarm condition. You can have e.g. two the same low alarm outputs, one high alarm output and one “all alarms” output. Type OS offers four mechanical relay outputs. However, only two outputs are available in Intrinsically Safe applications. Three outputs are available in all other configurations. The output signals can be a passive NPN, active PNP or an isolated electro-mechanical relay.

**Signal input**
The F143 does accept (0)4 - 20mA and 0 - 10V input signals from any type of temperature measurement device. Also a two or three wire PT100 sensor can be used.

**Communication**
All process data and settings can be read and modified manually or through the Modbus communication link (RS232 / RS485). Full Modbus functionality remains available for the Intrinsically Safe version (TTL).

**Hazardous areas**
For hazardous area applications, this model has been ATEX certified Intrinsically Safe II 1 GD EEx ia IIB / IIC T4 T100°C with an allowed operational temperature of -30°C to +70°C (-22°F to +158°F). A flame proof enclosure is also available with the rating II 2 GD EEx d IIB T5.

**Enclosures**
Various types of enclosures can be selected, all ATEX approved. As standard the F143 is supplied in an GRP panel mount enclosure, which can be converted to an IP67 / NEMA 4X GRP field mount enclosure by the addition of a back case. Most popular is our rugged aluminum field mount enclosure with IP67 / NEMA 4X rating. Both European or U.S. cable gland entry threads are available.

**Overview application F143**

![Diagram of F143 application overview](image)
**Dimensions enclosures**

*Aluminum & GRP panel mount enclosure*

- HB & HC enclosures
- Panel cut-out

**Aluminum & GRP field / wall mount enclosures**

- Dimensions for enclosures and panel cut-out are provided.

**Terminal connections**

- **Display example** - 90 x 40mm (3.5” x 1.6”)
- **CB**: RS232
- **CH**: RS485 - 2 wire
- **CT**: TTL Intrinsically Safe
- **A**: (0-4 - 20mA
- **U**: 0 - 10V
- **ALARM OUTPUT**: 1 2
- **POWER SUPPLY**: PD: 8 - 24V AC/PD: 8 - 24V DC
- **PF**: 24V AC
- **PM**: 115 - 230V AC
- **PF**: 24V DC
- **PD - XI**: 16 - 30V DC
- **OT**: passive trans.
- **OA**: active 24V DC
- **OR**: mech. relay
- **TEMPERATURE INPUT**: AP: 4 - 20mA
- **ANALOG OUTPUT**: + , - I
- **COMMUNICATION / BACKLIGHT**: DTR +12V
- **CI**: RS485 - 4 wire
- **CI**: RS232

Please note:

Terminal connection for the F143 with four alarm outputs (type OS) is shown on one of the next pages.
Typical wiring diagram F143-T-AP-CH-OT-PX

**OUTPUT LOOP POWERED**

- Modbus communication type CH: RS485 - 2 wire
- Temperature input type T: PT100 3 - wire
- Alarm output 3
- Switch output type OT: passive transistor
- Alarm output 1
- Switch output type OT: passive transistor
- Alarm output 2
- Switch output type OT: passive transistor

**TERMINAL CONNECTORS**

F100 - series

**COMMON GROUND**

8 - 30V DC

**SUPPLY**

- 8 - 24V DC

**ANALOG OUTPUT TYPE AP:**

- Passive 4 - 20mA (loop powered)
- E.g. indicator

**EARTH**

- 8 - 24V AC

**COMMON GROUND**

**F1434**

Typical wiring diagram F143-A-AA-CB-OA-PD

**24V AC / DC POWER SUPPLY**

- Modbus communication type CB: RS232
- Power supply type PD: 8 - 24V AC / DC

**TERMINAL CONNECTORS**

F100 - series

- Alarm output 3
- Switch output type OA: active 24V DC signal
- Switch output type OA: active 24V DC signal
- Alarm output 1
- Switch output type OA: active 24V DC signal
- Alarm output 2
- Switch output type OA: active 24V DC signal

**COMMON GROUND**

**SUPPLY**

- 8 - 24V AC

**ANALOG OUTPUT TYPE AP:**

- Passive 4 - 20mA (loop powered)
- E.g. indicator

**EARTH**

- 8 - 24V DC

**COMMON GROUND**

**F1434**

*Supply voltage: 3.2 / 8.2 / 12 / 24V DC to sensor*
**Typical wiring diagram F143-A-AI-CI-OR-PM**

**115 - 230V AC POWER SUPPLY**

- **TERMINAL CONNECTORS**
  - F100 - series

- **Power supply type PM:**
  - 115 - 230V AC

- **Analog output type AP:**
  - passive 4 - 20mA (loop powered)

- **Switch output type OS:**
  - mechanic relay

- **Signal**
  - temperature sensor input type T:
    - PT100 3 - wire
  - temperature input type T:
    - PT100 3 - wire

- **Common ground**

- **Main supply**
  - alarm output 1

- **Alarm output 2**

- **Alarm output 3**

- **Switch output type OT:**
  - passive transistor

- **Common ground**

- **Supply**

- **Earth**

- **Modbus communication type CI:**
  - RS485 - 4 wire

- **Modbus communication type CB:**
  - RS232

- **Switch output type OR:**
  - mechanic relay

- **Supply voltage:** 3.2 / 8.2 / 12 / 24V DC to sensor

---

**Typical wiring diagram F143-T-AP-CB-OS-PD**

**24V AC / DC POWER SUPPLY**

- **TERMINAL CONNECTORS**
  - F100 - series

- **Power supply type PD:**
  - 24V AC / DC

- **Analog output type AP:**
  - passive 4 - 20mA (loop powered)

- **Switch output type OS:**
  - mechanic relay

- **Alarm output 1**

- **Alarm output 2**

- **Alarm output 3**

- **Alarm output 4**

- **Common ground**

- **Supply**

- **Earth**

- **Modbus communication type CI:**
  - RS485 - 4 wire

- **Modbus communication type CB:**
  - RS232

- **Switch output type OR:**
  - mechanic relay

- **Supply voltage:** 3.2 / 8.2 / 12 / 24V DC to sensor
Hazardous area applications

The F143-XI has been ATEX approved by KEMA for use in Intrinsically Safe applications. It is approved according to II 1 GD EEx ia IIB/IIC T4 T100°C for gas and dust applications with an operational temperature range of -30°C to +70°C (-22°F to +158°F). Besides the I.S. power supplies for the two alarm outputs, it is allowed to connect up to three I.S. power supplies in IIB applications or one in IIC applications.

Full functionality of the F143 remains available, including two alarm outputs and 4 - 20mA output and Modbus communication (type CT). Power supply type PD-XI offers a sensor supply according to the connected power supply voltage at terminal 1. A flame proof enclosure with rating II 2 GD EEx d II B T5 is available as well. Please contact your supplier for further details.

Certificate of conformity KEMA a3ATEX1074 X
**Configuration example IIB - F143-A-AP-CT-OT-PX-XI - Output loop powered**

**TERMINAL CONNECTORS**

- **F100 - series**
  - **HAZARDOUS AREA**
  - **SAFE AREA**
  - **Modbus communication type CT: TTL**
  - **Input/output (I/O) signals**:
    - RXD
    - TXD
    - DTR
    - Supply
  - **ISOLATOR**: I.S. Certified Isolator TTL to RS232 / RS422 / TTL
    - For example: MTL5051
  - **Power supply**
    - e.g. MTL5025
    - Uo = max 30V
    - Io = max 100mA
    - Po = max 750mW
  - **Switch output type OT**: passive transistor
    - For example: MTL5011B
    - Uo = max 30V
    - Io = max 100mA
    - Po = max 750mW
  - **Alarm output 1**
    - e.g. sounder
  - **Alarm output 2**
    - e.g. sounder
  - **Note**: above values are safety values. Consult the technical specification for operational values.

*Note: sensor supply voltage: 3.2V DC - not suitable to power analog sensors.*
Configuration example IIB - F143-A-AF-CT-OT-PL-XI - Input loop powered

Terminal Connectors F100- series

Input loop powered

Modbus communication type CT: TTL

Isolator: I.S. Certified Isolator
TTL to
RS232 / RS422 / TTL
For example: MTL5051

Uo=max 30V
Io=max 250mA
Po=max 850mW

Power Supply
For example MTL5025

Uo=max 30V
Io=max 100mA
Po=max 750mW

Power Supply
e.g. MTL 5011B

Uo=max 30V
Io=max 100mA
Po=max 750mW

Power Supply
e.g. MTL 5042

CI is negligibly small

Switch output type OT: passive transistor
Alarm output 2

Signal

Common ground

Temperature sensor input type A - PL input loop powered 4 - 20mA

Analog output type AF: passive floating 4 - 20mA

Switch output type CT: passive transistor
Alarm output 1

Note: above values are safety values. Consult the technical specification for operational values.
Configuration example IIB and IIC - F143-A-AP-(CT)-OT-PD-XI - Power supply 16 - 30V DC

TERMINAL CONNECTORS

F100 - series

HAZARDOUS AREA

Modbus communication type CT: TTL
Please note: communication type CT is not allowed in IIC applications.

TOTAL Ci of ALL CONNECTED ANALOG APPARATUS IN IIC APPLICATIONS MAY NOT EXCEED 66nF MINUS 17nF
(17nF IS USED BY THE ANALOG OUTPUT SIGNAL TERMINAL 7 + 8).

Supply *
Main supply Circuit depends on type of signal
Power supply type PD: 16 - 30V DC (please note: PD and battery supply (type PC) is NOT allowed in IIC applications).

Analog output type AP:
passive 4 - 20mA

Temperature input type: A
(0)4 - 20mA

Ci is negligibly small

Switch output type OT:
passive transistor
Alarm output 1
Alarm output 2

Note: above values are safety values. Consult the technical specification for operational values.

* Note power supply type PD: the supply voltage to sensors is as connected to terminal 1 (internally linked).

SAFE AREA

ISOLATOR: I.S. Certified Isolator
TTL to RS232 / RS422 / TTL
For example: MTL5051

ISOLATOR: I.S. Certified Isolator
TTL to RS232 / RS422 / TTL
For example: MTL5051

POWER SUPPLY
For example MTL5025 or SWITCH INTERFACE e.g. MTL 5011B

Uo=max 30V
Io=max 100mA
Po=max 750mW

e.g. sounder

Note: above values are safety values. Consult the technical specification for operational values.
**Technical specification**

**Display**

<table>
<thead>
<tr>
<th>Type</th>
<th>High intensity reflective numeric and alphanumeric LCD, UV-resistant.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>90 x 40mm (3.5&quot; x 1.6&quot;).</td>
</tr>
<tr>
<td>Digits</td>
<td>Seven 17mm (0.67&quot;) and eleven 8mm (0.31&quot;) digits.</td>
</tr>
<tr>
<td>Various symbols and measuring units.</td>
<td></td>
</tr>
<tr>
<td>Refresh rate</td>
<td>User definable: 8 times/sec. - 30 secs.</td>
</tr>
<tr>
<td>Option ZB</td>
<td>Transflective LCD with green LED backlight.</td>
</tr>
<tr>
<td>Good readings in full sunlight and darkness.</td>
<td></td>
</tr>
<tr>
<td>Note ZB</td>
<td>Only available for safe area applications.</td>
</tr>
</tbody>
</table>

**Operating temperature**

| Operational | -30°C to +80°C (-22°F to +178°F). |
| Intrinsically Safe | -30°C to +70°C (-22°F to +158°F). |

**Power requirements**

| Type PB | Long life Lithium battery - life-time depends upon settings and configuration - up to 5 years. |
| Type PC | Intrinsically Safe long life lithium battery - life-time depends upon settings and configuration - up to 5 years. |
| Type PD | 8 - 24V AC / DC ± 10%. Power consumption max. 10 Watt. Intrinsically Safe: 16 - 30V DC; power consumption max. 0.75 Watt. |
| Type PF | 24V AC / DC ± 10%. Power consumption max. 15 Watt. |
| Type PL | Input loop powered from sensor signal 4 - 20mA (type “A”) - requires types AI or AF and OT. |
| Type PM | 115 - 230V AC ± 10%. Power consumption max. 15 Watt. |
| Type PX | 8 - 30V DC. Power consumption max. 0.5 Watt. |
| Type ZB | 12 - 24V DC ± 10% or type PD / PF / PM. Power consumption max. 1 Watt. |

| Note PB/PF/PM | Not available Intrinsically Safe. |
| Note PF/PM | The total consumption of the sensors and outputs may not exceed 400mA @ 24V. |

**Sensor excitation**

| Type PB/PC/PX | 3.2V DC. |
| Note | This is not a real sensor supply. Only suitable for sensors with a very low power consumption. |
| Type PD | 3.2 / 8.2 / 12 / 24V DC - max. 50mA @ 24V DC. |
| Type PD-XI | The sensor supply voltage will be according to power supply as connected to terminal 1. |
| Type PF / PM | 3.2 / 8.2 / 12 / 24V DC - max. 400mA @ 24V DC. |

**Terminal connections**

| Type | Removable plug-in terminal strip. |
| Wire max. | 1.5mm² and 2.5mm². |

**Data protection**

| Type | EEPROM backup of all settings. Data retention at least 10 years. |
| Pass-code | Configuration settings can be pass-code protected. |

**Environment**


**Hazardous area**

| Intrinsically Safe | ATEX approval ref.: II 1 GD EEx ia IIB/IIC T4 Tsoo°C. |
| Type XI | Maximum ambient +70°C (158°F). |
| Explosion proof | ATEX approval ref.: II 2 GD EEx d IIB T5. |
| Type XF | Dimensions of enclosure: 300 x 250 x 200mm (11.8" x 9.9" x 7.9") L x H x D. |
| Weight | appr. 15 Kg. |

**Casing**

| Window | Polycarbonate window. |
| Sealing | Silicone. |
| Control keys | Three industrial micro-switch keys. UV-resistant silicone keypad. |

**Aluminum wall / field mount enclosures**

| General | Die-cast aluminum wall/field mount enclosure IP67 / NEMA 4X with 2-component UV-resistant coating. |
| Dimensions | 130 x 120 x 75mm (5.12" x 4.72" x 2.95") - W x H x D. |
| Weight | 1100 gr. |
| Type HA | Cable entry: 2 x PG9 and 1 x M20. |
| Type HM | Cable entry: 2 x M16 and 1 x M20. |
| Type HN | Cable entry: 1 x M20. |
| Type HO | Cable entry: 2 x M20. |
| Type HP | Cable entry: 6 x M12. |
| Type HT | Cable entry: 1 x 1/2" NPT. |
| Type HU | Cable entry: 3 x 1/2" NPT. |
| Type HZ | Cable entry: no holes. |

**GRP wall / field mount enclosures**

| General | GRP wall/field mount enclosure IP67 / NEMA 4X, UV-resistant and flame retardant. |
| Dimensions | 130 x 120 x 75mm (5.12" x 4.72" x 2.95") - W x H x D. |
| Weight | 600 gr. |
| Type HD | Cable entry: no holes. |
| Type HE | Cable entry: 2 x Ø 16mm and 1 x Ø 20mm. |
| Type HF | Cable entry: 1 x Ø 22mm (7/8"). |
| Type HG | Cable entry: 2 x Ø 20mm. |
| Type HH | Cable entry: 6 x Ø 12mm. |
| Type HJ | Cable entry: 3 x Ø 22mm (7/8"). |
| Type HK | Flat bottom, cable entry: no holes. |

**Panel mount enclosures**

| Dimensions | 130 x 120 x 60mm (5.12" x 4.72" x 2.36") - W x H x D. |
| Panel cut-out | 115 x 98mm (4.53" x 3.86") L x H. |
| Type HB | Die-cast aluminum panel mount enclosure IP65 / NEMA 4. |
| Weight | 600 gr. |
| Type HC | GRP panel mount enclosure IP65 / NEMA 4, UV-resistant and flame retardant. |
| Weight | 450 gr. |

**ABS wall / field mount enclosures**

| General | Silicone free ABS wall/field mount enclosure IP65 with EPDM and PE sealings. UV-resistant polyester keypad (old HD enclosure). |
| Dimensions | 130 x 114 x 71mm (5.1" x 4.5" x 2.8") - W x H x D. |
| Weight | 450 gr. |
| Type HS | Cable entry: no holes. |
**Signal inputs**

**Temperature**
- **Accuracy**: Resolution: 14 bit. Error < 0.025mA / ± 0.125% FS.
- **Update time**: Four times per second.
- **Type A**: (0)4 - 20mA. Analog input signal can be scaled to any desired range within 0 - 20mA.
- **Span**: 0.000001 - 9,999,999 with variable decimal position.
- **Offset**: 0.00 - 99,999.99 K.
- **Voltage drop**: 2.5V @ 20mA.
- **Type T**: 2 or 3 wire PT100.
  - Range: -100°C to +200°C (-148°F to 392°F).
  - **Accuracy**: 0.1°C (0.18°F).
- **Option ZV**: Range: -200°C to +800°C (-328°F to 1472°F).
  - **Accuracy**: 0.5°C (0.9°F).
- **Type U**: 0 - 10V DC. Analog input signal can be scaled to any desired range within 0 - 10V DC.
  - **Span**: 0.000001 - 9,999,999 with variable decimal position.
  - **Offset**: 0.00 - 99,999.99 K.
  - **Load impedance**: 3kΩ.
- **Note**: For signal A and U: power supply to temperature sensor is required; e.g. PD.

**Communication option**
- **Function**: Reading display information, reading / writing all configuration settings.
- **Protocol**: Modbus ASCII / RTU.
- **Speed**: 1200 - 2400 - 4800 - 9600 baud.
- **Addressing**: Maximum 255 addresses.
- **Type CB**: RS232
- **Type CH**: Rs485 2-wire
- **Type CI**: Rs485 4-wire
- **Type CT**: TTL Intrinsically Safe.

**Signal outputs**
- **Analog output**
  - **Function**: Transmitting actual temperature.
  - **Accuracy**: 10 bit. Error < 0.05%. Analog output signal can be scaled to any desired range.
  - **Update time**: Ten times per second.
  - **Type AA**: Active 4 - 20mA output (requires OA + PD, PF or PM).
  - **Type AB**: Active 0 - 20mA output (requires OA + PD, PF or PM).
  - **Type AF**: Passive floating 4 - 20mA output for Intrinsically Safe applications (requires PC, PD or PL).
  - **Type AL**: Passive galvanically isolated 4 - 20mA output - also available for battery powered models (requires PB, PD, PL or PM).
  - **Type AP**: Passive 4 - 20mA output - not isolated. Unit will be loop powered.
  - **Type AU**: Active 0 - 10V DC output (requires OA + PD, PF or PM).

**Alarm output**
- **Function**: User defined: low, low-low, high, high-high or all alarms output.
  - **Type OA**: Three active 24V DC transistor outputs (PNP); max. 50mA per output (requires AA + PD, PF or PM).
  - **Type OR**: Two electro-mechanical relay outputs isolated (N.O.) - max. switch power 230V AC - 0.5A (requires PF or PM) and one transistor output OR or OA (OA in combination with AA only).
  - **Type OS**: Four electro-mechanical relay outputs - isolated; max. switch power 230V AC - 0.5A per relay (requires AP and PD with 24V AC / DC).
  - **Type OT**: Three passive transistor outputs (NPN) - not isolated. Max. 50V DC - 300mA per output.
- **Note**: Intrinsically Safe applications: only two transistor outputs type OT available.

**Operator functions**
- **Displayed functions**: • Actual temperature.
  - • Low - low alarm value.
  - • Low alarm value.
  - • High alarm value.
  - • High - high alarm value.
  - • Alarm values can be set (or only displayed).

**Operational**
- **Displayed functions**: • Actual temperature.
  - • Low - low alarm value.
  - • Low alarm value.
  - • High alarm value.
  - • High - high alarm value.
  - • Alarm values can be set (or only displayed).

**Temperature**
- **Digits**: 6 digits.
- **Units**: °C, °F or K.
- **Decimals**: Type T: 1.
  - Type A / U: 3.

**Alarm values**
- **Digits**: 7 digits.
- **Units**: According to the settings for temperature.
- **Decimals**: According to the settings for temperature.
- **Time units**: According to the settings for temperature.
- **Type of alarm**: Low, high, low-low or high-high temperature alarm. Includes alarm delay time and configurable alarm outputs.

**Accessories**
- **Mounting accessories**
  - **ACF02**: Stainless steel wall mounting kit.
  - **ACF05**: Stainless steel pipe mounting kit (worm gear clamps not included).
  - **ACF06**: Two stainless steel worm gear clamps Ø 44 - 56mm.
  - **ACF07**: Two stainless steel worm gear clamps Ø 58 - 75mm.
  - **ACF08**: Two stainless steel worm gear clamps Ø 77 - 95mm.
  - **ACF09**: Two stainless steel worm gear clamps Ø 106 - 138mm.
  - **ACF10**: Customized Grevopal tagplates for ACF02 and ACF05, including stainless steel screws.
  - **Dimension**: 95mm x 12.5mm (3.75” x 0.50”).

- **Cable gland accessories**
  - **ACF20**: For HA enclosure, includes O-rings.
  - **ACF25**: For HE enclosure, includes locknuts and O-rings.
  - **ACF26**: For HF enclosure, includes locknuts and O-rings.
  - **ACF27**: For HG enclosure, includes locknuts and O-rings.
  - **ACF28**: For HH enclosure, includes locknuts and O-rings.
  - **ACF29**: For HJ enclosure, includes locknuts and O-rings.
  - **ACF30**: For HM enclosure, includes O-rings.
  - **ACF33**: For HN enclosure, includes O-rings.
  - **ACF34**: For HO enclosure, includes O-rings.
  - **ACF35**: For HP enclosure, includes O-rings.
  - **ACF39**: For HT enclosure, includes O-rings.
  - **ACF40**: For HU enclosure, includes O-rings.
### Ordering information

**Standard configuration:** F143-A-AP-CX-EX-OT-PX-XX-ZX.

<table>
<thead>
<tr>
<th>Ordering information:</th>
<th>F143</th>
<th>-</th>
<th>A</th>
<th>-</th>
<th>C</th>
<th>-EX</th>
<th>H</th>
<th>-</th>
<th>IX</th>
<th>-O</th>
<th>-P</th>
<th>-TX</th>
<th>-X</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temperature signal</strong></td>
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<tr>
<td>A</td>
<td>(0)4</td>
<td>-</td>
<td>20mA input.</td>
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<tr>
<td>T</td>
<td>PT100 input.</td>
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<td>U</td>
<td>0 - 10V DC input.</td>
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<td><strong>Analog output signal</strong></td>
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<tr>
<td>AA</td>
<td>Active 4 - 20mA output - requires OA + PD, PF or PM.</td>
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<td>AB</td>
<td>Active 0 - 20mA output - requires OA + PD, PF or PM.</td>
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<td>AF</td>
<td>I.S. floating 4 - 20mA output - requires PC, PD or PL.</td>
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<td>AI</td>
<td>Isolated 4 - 20mA output - requires PB, PD, PL or PM.</td>
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<td>AP</td>
<td>Passive 4 - 20mA output, loop powered unit.</td>
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<td>AU</td>
<td>Active 0 - 10V DC output - requires OA + PD, PF or PM.</td>
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<tr>
<td>HB</td>
<td>Aluminum enclosure.</td>
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<td>GRP enclosure.</td>
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<td>HD</td>
<td>Cable entry: no holes.</td>
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<td>HE</td>
<td>Cable entry: 2 x Ø 16mm &amp; 1 x Ø 20mm.</td>
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<td>HF</td>
<td>Cable entry: 1 x Ø 22mm (7/8”).</td>
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<td>HG</td>
<td>Cable entry: 2 x Ø 20mm.</td>
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<td>HH</td>
<td>Cable entry: 6 x Ø 12mm.</td>
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<td>HJ</td>
<td>Cable entry: 3 x Ø 22mm (7/8”).</td>
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<tr>
<td>HK</td>
<td>Flat bottom, cable entry: no holes.</td>
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<td><strong>Aluminum field / wall mount enclosures - IP67 / NEMA4X</strong></td>
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<td>HA</td>
<td>Cable entry: 2 x PG9 + 1 x M20.</td>
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<td>HM</td>
<td>Cable entry: 2 x M16 + 1 x M20.</td>
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<td>HN</td>
<td>Cable entry: 1 x M20.</td>
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<td>HO</td>
<td>Cable entry: 2 x M20.</td>
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<td>HP</td>
<td>Cable entry: 1 x M20.</td>
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<td>HT</td>
<td>Cable entry: 1 x 1/2”NPT.</td>
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<td>HU</td>
<td>Cable entry: 3 x 1/2”NPT.</td>
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<td>HZ</td>
<td>Cable entry: no holes.</td>
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<td><strong>ABS field / wall mount enclosures</strong></td>
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<td>HS</td>
<td>Silicone free ABS field enclosure IP65 – Cable entry: no holes (old HD enclosure).</td>
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<td><strong>Additional inputs</strong></td>
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<td>OA</td>
<td>Three active transistor outputs - requires AA, AB or AU and PD, PF or PM.</td>
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<td>OR</td>
<td>Two mechanical relay outputs + one OT or OA - requires PF or PM.</td>
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<td>OS</td>
<td>Four mechanical relay outputs - requires AP and PD.</td>
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<td>OT</td>
<td>Three passive transistor outputs - standard configuration.</td>
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<td>PB</td>
<td>Lithium battery powered.</td>
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<td>Lithium battery powered - Intrinsically Safe.</td>
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<td>PD</td>
<td>8 - 24V AC / DC + sensor supply - with XI: 16 - 30V DC.</td>
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<td>PF</td>
<td>24V AC / DC + sensor supply.</td>
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<td>PL</td>
<td>Input loop powered from sensor signal type “A” - requires AI or AF and OT.</td>
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<td>PM</td>
<td>115 - 230V AC + sensor supply.</td>
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<td>PX</td>
<td>Basic power supply 8 - 30V DC (no real sensor supply). Unit requires external loop AP.</td>
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<td>EExd enclosure - 3 keys.</td>
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<td>PRTD-range -200°C / +800°C.</td>
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The bold marked text contains the standard configuration.

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