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Ex i, Process indicator, multifunctional, in control panel component housing for monitoring and displaying analog measurement data. Universal inputs enable the connection of current, voltage, RTDs, and TCs. 2 relay change-over contact outputs and 1 analog output.. HART



Product description

Multifunctional Ex i process indicator in control panel housing for monitoring, displaying, and transmitting analog measurement data from the Ex area to the safe area. Dual-conductor sensors can be powered with the integrated measuring transducer supply. Universal inputs permit connection of current, voltage, RTDs, and TCs. Limit values can be monitored and relays can be switched. The analog output allows you to transmit process signals. A color change in the event of a fault supports the detection of alarm conditions. 5-digit, 7-segment LC display, with backlight, 1 universal input, 2 relays, min./max. value memory, linearization table, digital status output (open collector)

Commercial data

| | |
|--------------------------------------|---------------|
| Item number | 2907216 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | C430 |
| Product key | DK1241 |
| GTIN | 4055626173627 |
| Weight per piece (including packing) | 602.8 g |
| Weight per piece (excluding packing) | 580 g |
| Customs tariff number | 90328900 |
| Country of origin | DE |

Technical data

Product properties

| | |
|----------------|------------------|
| Product type | Digital displays |
| Product family | Field Analog |
| Configuration | Keyboard |
| | Software |

Insulation characteristics

| | |
|------------------|---|
| Protection class | I |
|------------------|---|

Insulation characteristics

| | |
|----------------------|----|
| Overvoltage category | II |
| Pollution degree | 2 |

System properties

Functionality

| | |
|---------------|----------|
| Configuration | Keyboard |
| | Software |

Electrical properties

| | |
|-----------------------------|--------|
| Test voltage () | 2500 V |
| Test voltage () | 2500 V |
| Test voltage (Input/output) | 1500 V |

Electrical isolation Input/output/power supply

| | |
|----------------------|-------|
| Electrical isolation | 375 V |
|----------------------|-------|

Supply

| | |
|--------------------------|---|
| Supply voltage range | 24 V AC/DC ... 230 V AC/DC (-20 % ... +10 %, 50 Hz ... 60 Hz) |
| Max. current consumption | 30 mA |
| Power consumption | ≤ 6.9 W |

Input data

Signal: Current

| | |
|--------------------------------|----------------------|
| Description of the input | Universal input |
| Number of inputs | 1 |
| Input signal | Current |
| Current input signal | 0 mA ... 20 mA +10 % |
| | 4 mA ... 20 mA +10 % |
| Max. current input signal | < 150 mA |
| Available input sources | Current |
| Input resistance current input | 10 Ω |
| Transmitter supply voltage | > 16 V (22 mA) |

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| | |
|----------------------------------|---|
| Transmitter supply voltage range | 22.8 V ... 27.6 V (No-load) |
| Transmitter supply current | < 30 mA (Short-circuit and overload protection) |
| D/A converter resolution | 16 bit |

Signal: Voltage

| | |
|-----------------------------------|--------------------|
| Description of the input | Universal input |
| Input signal | Voltage |
| Voltage input signal | 0 V ... 10 V |
| | 2 V ... 10 V |
| | 0 V ... 5 V |
| | 0 V ... 1 V |
| | 1 V ... 5 V |
| | -1 V ... 1 V |
| | -10 V ... 10 V |
| | -30 V ... 30 V |
| | -100 mV ... 100 mV |
| Max. voltage input signal | ± 35 V (≥ 1 V) |
| | ± 12 V (< 1 V) |
| Available input sources | Voltage |
| Input resistance of voltage input | > 1 MΩ |

Signal: Resistance

| | |
|--------------------------|-----------------------------|
| Description of the input | Universal input |
| Input signal | Resistor |
| Available input sources | Resistance: 30 Ω ... 3000 Ω |

Measurement

| | |
|-------------------------------------|--|
| Description of the input | Universal input |
| Configurable/programmable | Yes |
| Sensor types (RTD) that can be used | Pt, Ni, Cu sensors |
| Available input sources | Resistance thermometers |
| Temperature measuring range | -200 °C ... 1100 °C (Range depends on sensor type, adjustable) |
| Connection technology | 2-, 3-, 4-conductor |
| Measuring rate | 200 ms |

Measurement

| | |
|------------------------------------|--|
| Description of the input | Universal input |
| Configurable/programmable | Yes |
| Sensor types that can be used (TC) | J, K, T, N, B, S, R, U, L, C, D |
| Available input sources | Thermocouples |
| Temperature measuring range | -200 °C ... 2495 °C (Range depends on sensor type, adjustable) |
| Measuring rate | 200 ms |

Output data

Switching: Relay

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| | |
|---------------------------|-----------------------|
| Contact switching type | 2 changeover contacts |
| Minimum switching voltage | 12 V |
| Maximum switching voltage | 30 V DC (3 A) |
| | 230 V AC (3 A) |
| Min. switching current | 10 mA |
| Max. switching current | 3 A |

Switching: Transistor

| | |
|---------------------------|-----------------------|
| Output description | Open collector output |
| Number of outputs | 1 |
| Contact switching type | Transistor |
| Maximum switching voltage | 28 V |
| Max. switching current | 200 mA |

Signal: Current

| | |
|----------------------------------|---|
| Number of outputs | 1 |
| Configurable/programmable | Yes |
| Current output signal | 0 mA ... 20 mA |
| | 4 mA ... 20 mA |
| Max. current output signal | < 22 mA |
| Load/output load current output | ≤ 500 Ω (22 mA) |
| Ripple | < 10 mV _{PP} (500 Ω) |
| D/A converter resolution | 13 bit |
| Number of positions displayed | 5 |
| Display | 7-segment LC display, with backlight, dot matrix for text/bar graph |
| Temperature coefficient, typical | 0.01 %/K |

Signal: Voltage

| | |
|----------------------------------|--------------------------------|
| Voltage output signal | 0 V ... 10 V |
| | 2 V ... 10 V |
| | 0 V ... 5 V |
| | 1 V ... 5 V |
| Max. voltage output signal | < 11 V |
| Open-circuit voltage | 24 V DC (+15 %/-5 %) |
| Short-circuit current | < 25 mA |
| Ripple | < 10 mV _{PP} (1000 Ω) |
| D/A converter resolution | 13 bit |
| Temperature coefficient, typical | 0.01 %/K |

Connection data

Input, Output, Status

| | |
|-------------------------------|--|
| Connection method | Push-in connection |
| Stripping length | 10 mm |
| Conductor cross-section rigid | 0.14 mm ² ... 1.5 mm ² |

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| | |
|----------------------------------|--|
| Conductor cross-section flexible | 0.14 mm ² ... 1.5 mm ² |
| Conductor cross-section AWG | 26 ... 16 |

Relay, power supply

| | |
|----------------------------------|---|
| Connection method | Screw connection |
| Stripping length | 10 mm |
| Conductor cross-section rigid | 0.2 mm ² ... 2.5 mm ² |
| Conductor cross-section flexible | 0.2 mm ² ... 2.5 mm ² |
| Conductor cross-section AWG | 24 ... 14 |
| Tightening torque | 0.4 Nm ... 0.4 Nm |

Ex data

| | |
|---------------------|----|
| Ex i circuits (EPL) | Ga |
| | Da |

Safety data

| | |
|--|--|
| Note | Two-conductor measuring transducer supply (intrinsically safe) |
| Max. internal inductance L_i | 75 μ H |
| Max. internal capacitance C_i | 8 nF |
| Max. output voltage U_o | ≤ 27.3 V |
| Max. output current I_o | ≤ 96.5 mA |
| Max. output power P_o | ≤ 659 mW |
| Ex ia IIC: Max. external inductivity L_o / Max. external capacitance C_o | 4 mH / 88 nF |
| Ex ia IIB: Max. external inductivity L_o / Max. external capacitance C_o | 17 mH / 683 nF |
| Ex ia IIA: Max. external inductivity L_o / Max. external capacitance C_o | 34 mH / 2280 nF |

Safety data

| | |
|--|---|
| Note | Temperature inputs (intrinsically safe) |
| Max. internal inductance L_i | 75 μ H |
| Max. internal capacitance C_i | 8 nF |
| Max. output voltage U_o | ≤ 27.3 V |
| Max. output current I_o | ≤ 22.1 mA |
| Max. output power P_o | ≤ 151 mW |
| Ex ia IIC: Max. external inductivity L_o / Max. external capacitance C_o | 500 μ H / 85 nF |
| Ex ia IIB: Max. external inductivity L_o / Max. external capacitance C_o | 2 mH / 360 nF |
| Ex ia IIA: Max. external inductivity L_o / Max. external capacitance C_o | 5 mH / 530 nF |

Safety data

| | |
|---------------------------------|------------------------------------|
| Note | Current input (intrinsically safe) |
| Max. internal inductance L_i | 75 μ H |
| Max. internal capacitance C_i | 8 nF |
| Max. output voltage U_o | ≤ 27.3 V |

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| | |
|--|-----------------|
| Max. output current I_o | ≤ 5 mA |
| Max. output power P_o | ≤ 34.2 mW |
| Ex ia IIC: Max. external inductivity L_o / Max. external capacitance C_o | 500 mH / 88 nF |
| Ex ia IIB: Max. external inductivity L_o / Max. external capacitance C_o | 2 mH / 380 nF |
| Ex ia IIA: Max. external inductivity L_o / Max. external capacitance C_o | 100 mH / 540 nF |

Safety data

| | |
|--|------------------------------------|
| Note | Voltage input (intrinsically safe) |
| Max. internal inductance L_i | 75 μ H |
| Max. internal capacitance C_i | 8 nF |
| Max. output voltage U_o | ≤ 27.3 V |
| Max. output current I_o | ≤ 5 mA |
| Max. output power P_o | ≤ 34.2 mW |
| Ex ia IIC: Max. external inductivity L_o / Max. external capacitance C_o | 500 mH / 88 nF |
| Ex ia IIB: Max. external inductivity L_o / Max. external capacitance C_o | 2 mH / 380 nF |
| Ex ia IIA: Max. external inductivity L_o / Max. external capacitance C_o | 100 mH / 540 nF |

Interfaces

Data: T-PORT

| | |
|-------------------|---------------|
| Connection method | 4-pos. socket |
|-------------------|---------------|

Data: USB

| | |
|---------------------------|------------|
| Serial transmission speed | 38400 baud |
|---------------------------|------------|

Data communication (bypass)

| | |
|---------------------|------|
| Protocols supported | HART |
|---------------------|------|

Signaling

| | |
|----------------|-----------|
| Status display | LED (red) |
|----------------|-----------|

Dimensions

| | |
|--------|--------|
| Width | 96 mm |
| Height | 48 mm |
| Depth | 175 mm |

Material specifications

| | |
|------------------|-----------------------|
| Color | light gray (RAL 7035) |
| Housing material | PC-GF10 |

Environmental and real-life conditions

Ambient conditions

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| | |
|---|------------------------------------|
| Degree of protection | IP65 (Front) |
| Ambient temperature (operation) | -20 °C ... 60 °C |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C |
| Altitude | ≤ 2000 m |
| Climatic class | according to IEC 60654-1, class B2 |
| Permissible humidity (operation) | Front: condensation permitted |
| | Device body: no condensation |

Approvals

CE

| | |
|-------------|--------------|
| Certificate | CE-compliant |
|-------------|--------------|

ATEX

| | |
|----------------|----------------------------|
| Identification | ⊕ II (1) G [Ex ia Ga] IIC |
| | ⊕ II (1) D [Ex ia Da] IIIC |
| Certificate | PTB 15 ATEX 2011 |

UKCA Ex (UKEX)

| | |
|-------------|----------------|
| Certificate | CML 21UKEX2995 |
|-------------|----------------|

UL, USA/Canada

| | |
|----------------|---------------------|
| Identification | UL 61010 Recognized |
|----------------|---------------------|

FM

| | |
|----------------|------------------------|
| Identification | AIS, NII/2/ABCDEFGH/T4 |
|----------------|------------------------|

CSA

| | |
|----------------|------------------------|
| Identification | AIS, NII/2/ABCDEFGH/T4 |
|----------------|------------------------|

Shipbuilding approval

| | |
|-------------|-------------------|
| Certificate | DNV GL TAA000029G |
|-------------|-------------------|

Shipbuilding data

| | |
|-------------|----------------------|
| Temperature | B |
| Humidity | B |
| Vibration | A |
| EMC | B |
| Enclosure | B (front) / A (rear) |

EMC data

| | |
|----------------|-------------------------|
| Noise immunity | IEC 61326 / NAMUR NE 21 |
|----------------|-------------------------|

Noise emission

| | |
|-----------------------|--------------------|
| Standards/regulations | IEC 61326, class A |
|-----------------------|--------------------|

Mounting

| | |
|---------------|-------------------|
| Mounting type | DIN rail mounting |
| | Panel mount |

FA MCR-EX-D-TUI-UI-2REL-UP - Digital display



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Mounting position

Max. viewing angle range +/- 45° from the centre line of the display in every direction

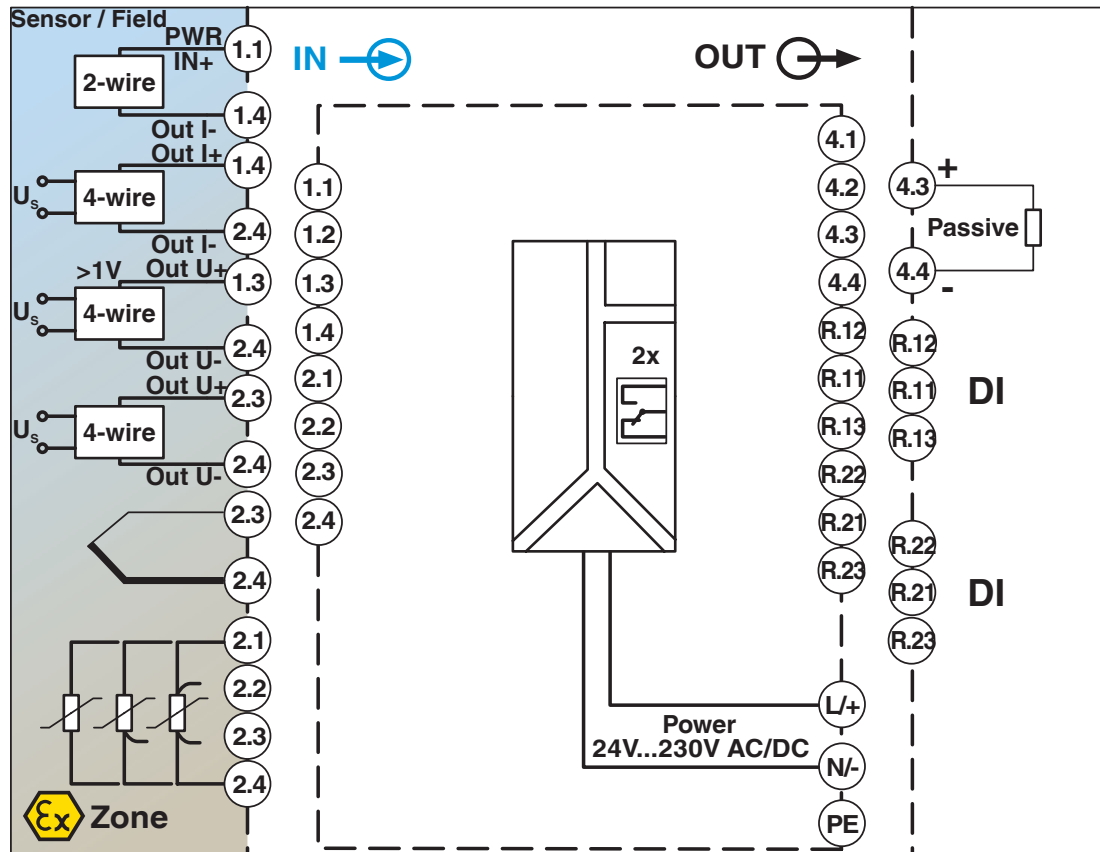
FA MCR-EX-D-TUI-UI-2REL-UP - Digital display

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Drawings

Block diagram



Block diagram FA MCR-EX-D-TUI-UI-2REL-UP

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Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2907216>



CSA

Approval ID: 2879105



cUL Recognized

Approval ID: FILE E 198586



UL Recognized

Approval ID: FILE E 198586

DNV

Approval ID: TAA000029G_2



ATEX

Approval ID: PTB 15 ATEX 2011



CSA

Approval ID: 2879105



FM approved

Approval ID: 3057343

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Classifications

ECLASS

| | |
|-------------|----------|
| ECLASS-13.0 | 27210301 |
| ECLASS-15.0 | 27210301 |

ETIM

| | |
|-----------|----------|
| ETIM 10.0 | EC011349 |
|-----------|----------|

UNSPSC

| | |
|-------------|----------|
| UNSPSC 21.0 | 39121000 |
|-------------|----------|

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Environmental product compliance

EU RoHS

| | |
|---|--------------|
| Fulfills EU RoHS substance requirements | Yes |
| Exemption | 7(a), 7(c)-I |

China RoHS

| | |
|--|---|
| Environment friendly use period (EFUP) | EFUP-50 |
| | An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required. |

EU REACH SVHC

| | |
|-------------------------------------|----------------------|
| REACH candidate substance (CAS No.) | Lead(CAS: 7439-92-1) |
|-------------------------------------|----------------------|

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Phoenix Contact USA
586 Fulling Mill Road
Middletown, PA 17057, United States
(+717) 944-1300
info@phoenixcon.com