**RATIO MONITOR / TOTALIZER**

WITH HIGH / LOW ALARMS AND ANALOG OUTPUT

**Features**
- Calculates ratio between flow A and B.
- Displays ratio, flow rate A and B and total A and B (resettable).
- 4 alarm values can be entered: low-low, low, high and high-high ratio alarm.
- Large 17mm (0.67”) digits.
- Analog output acc. ratio, flow rate A or flow rate B.
- Very compact design for panel mount, wall mount or field mount applications.
- Operational temperature -30°C up to +80°C (-22°F up to 178°F).
- Rugged aluminum field mount enclosure IP67 / NEMA4X.
- Intrinsically Safe II 1 GD EEx ia IIB/IIC T4 T100°C.
- Explosion/flame proof II 2 GD EEx d IIB T5.
- 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**
- (0)4 - 20mA / 0 - 10V DC according to the calculated ratio, flow rate A or flow rate B.
- Up to 3 free configurable alarm outputs.

**Signal input**
Flow
- Reed-switch.
- NAMUR.
- NPN/PNP pulse.
- Sine wave (coil).
- Active pulse signals.
- (0)4 - 20mA.
- 0 - 10V DC.

**Applications**
- Two component applications like gluing, blending or mixing where continuous ratio monitoring and/or totalising is important.
General information

Introduction
The flowcomputer Model F114 has been developed to calculate the actual ratio between two separate flows. Typical applications are found where locally a two component product is mixed, for example in construction works, roof or wall isolation, glueing and coating. The F114 offers the facility to set two low ratio and two high ratio alarm values. Special precautions are taken to allow start-up problems and incorrect ratio readings for a certain period of time. Based on the location of the flowmeters, a selection can be made out of six different formulas. A wide selection of options further enhance this model's capabilities.

Display
The display has large 17mm (0.67”) and 8mm (0.31”) digits which show the ratio, alarm values, flow rate A, total A and flow rate B, total B. On-screen engineering units are easily configured from a comprehensive selection. The ratio can be displayed as 1:__ or as a percentage.

Configuration
All configuration settings are accessed via a simple operator menu which can be pass-code protected. Each setting is clearly indicated with an alphanumeric description, therefore avoiding confusing abbreviations and baffling codes. Once familiar with one F-series product, you will be able to program all models in the series without a manual. All settings are safely stored in EEPROM memory in the event of sudden power failure.

Analog output signal
The calculated ratio, flow rate A or B can be re-transmitted with the (0)4 - 20mA or 0 - 10V DC output signal. The output signal is updated ten times per second. The output value is user defined in relation to the ratio or flow rate, e.g. 4mA equals to 1 : 50 and 20mA equals to 1 : 1. The output signal can be passive, active or isolated where the passive output type will loop power the F114.

Alarm output
Up to three outputs are available to transmit the ratio alarm condition. All free configurable, in such a way that you can have e.g. one low-low alarm output, one low alarm output and one high alarm output. The output signals can be a passive NPN, active PNP or an isolated electro-mechanical relay. Two outputs are available in Intrinsically Safe applications.

Signal input
The F114 will accept most pulse and analog input signals for flow or mass flow measurement. The input signal types can be selected by the user in the configuration menu without having to adjust any sensitive mechanical dip-switches or jumpers.

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 F114 is supplied in an GRP panel mount enclosure, which can be converted to an GRP field mount enclosure. 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 F114
Dimensions enclosures
Aluminum & GRP panel mount enclosure

Aluminum & GRP field / wall mount enclosures

Terminal connections

Display example - 90 x 40mm (3.5" x 1.6")
**Typical wiring diagram F114-P-(AP)-(CH)-(OT)-PB**

**TERMINAL CONNECTORS**

- **F100 - series**

**BATTERY POWERED**

- Modbus communication type CH: RS485 - 2 wire

**TERMINAL CONNECTORS**

- **Flowmeter input A**
  - type: P
  - pulse

**TERMINAL CONNECTORS**

- **Alarm output type OT**
  - passive transistor

**TERMINAL CONNECTORS**

- **Common ground**

**TERMINAL CONNECTORS**

- **Supply**
  - type: signal

**TERMINAL CONNECTORS**

- **Signal**
  - type: sensor

**TERMINAL CONNECTORS**

- **Analog output type AP**
  - passive transistor

* Supply voltage: 1.2 / 3.2V DC to sensor

**Typical wiring diagram F114-P-AP-CH-OT-PX**

**TERMINAL CONNECTORS**

- **F100 - series**

**OUTPUT LOOP POWERED**

- Modbus communication type CH: RS485 - 2 wire

**TERMINAL CONNECTORS**

- **Flowmeter input B**
  - type: P
  - pulse

**TERMINAL CONNECTORS**

- **Alarm output type OT**
  - passive transistor

**TERMINAL CONNECTORS**

- **Common ground**

**TERMINAL CONNECTORS**

- **Supply**
  - type: signal

**TERMINAL CONNECTORS**

- **Signal**
  - type: sensor

**TERMINAL CONNECTORS**

- **Analog output type AP**
  - passive transistor

* Supply voltage: 1.2 / 3.2V DC to sensor

Please note: AP may be used in combination with the battery!

AP will power the unit (output loop powered); the battery will be disabled automatically until power is disconnected.
Typical wiring diagram F114-A-AA-CB-OA-PD

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

Typical wiring diagram F114-A-Al-CI-OR-PM

*Supply voltage: 3.2 / 8.2 / 12 / 24V DC to sensor
Hazardous area applications
The F114-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 two I.S. power supplies for the alarm outputs, it is allowed to connect up to four I.S. power supplies in IIB applications or one in IIC applications. Full functionality of the F114 remains available, including 4 - 20mA output, alarm outputs and Modbus communication (type CT). Power supply type PD-XI offers a 8.2V sensor supply e.g. for two Namur sensors. A flame proof enclosure with rating II 2 GD EEx d IIB T5 is available as well. Please contact your supplier for further details.

Certificate of conformity KEMA 03ATEX1074 X
Configuration example IIB and IIC - F114-P-AP-(CT)-OT-PX-XI - Output loop powered

- **Analog output type AP:** passive 4 - 20mA (output loop powered)
  - Ci = 17nF
  - Note: Above values are safety values. Consult the technical specification for operational values.
  - Modbus communication type CT: TTL
  - Please note: communication type CT is not allowed in IIC applications.

**TERMINAL CONNECTORS**

**HAZARDOUS AREA**

<table>
<thead>
<tr>
<th>Signal</th>
<th>Supply</th>
<th>Common ground</th>
</tr>
</thead>
<tbody>
<tr>
<td>RXD</td>
<td>+12V</td>
<td></td>
</tr>
<tr>
<td>TXD</td>
<td>+12V</td>
<td></td>
</tr>
</tbody>
</table>

**SAFE AREA**

- **Power supply type OT:** passive transistor
  - e.g. Buzzer
  - Ci is negligibly small

- **Power supply type AP:** passive 4 - 20mA (output loop powered)
  - Ci is negligibly small

- **Alarm outputs CT:** TTL
  - For example: MTL5051

- **Power supply CT:** 30V/100mA/750mW

- **ISOLATOR:** I.S. Certified Isolator
  - TTL to RS232 / RS422 / TTL
  - For example: MTL5501

- **Common ground**

- **Note sensor supply voltage:** 1.2V DC for coil sensors or 3.2V DC for other pulse sensors.
Configuration example IIB and IIC - F114-A-AP-(CT)-OT-PD-XI - Power supply 16 - 30V DC

**TERMINAL CONNECTORS F100 - series**

**HAZARDOUS AREA**

**SAFE AREA**

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

- **ISOLATOR:** I.S. Certified Isolator
  - TTL to RS232 / RS422 / TTL
  - For example: MTL5025
  - Uo=max 30V
  - Io=max 250mA
  - Po=max 850mW

- **POWER SUPPLY**
  - e.g. MTL5025
  - Uo=max 30V
  - Io=max 100mA
  - Po=max 750mW

- **SWITCH INTERFACE**
  - e.g. MTL 5011B
  - Uo=max 30V
  - Io=max 100mA
  - Po=max 750mW

- **ISOLATOR:**
  - e.g. PC
  - For example: MTL5051
  - Uo=max 30V
  - Io=max 250mA
  - Po=max 850mW

- **POWER SUPPLY**
  - e.g. MTL5025
  - Uo=max 30V
  - Io=max 100mA
  - Po=max 750mW

- **SWITCH INTERFACE**
  - e.g. MTL 5011B
  - Uo=max 30V
  - Io=max 100mA
  - Po=max 750mW

- **POWER SUPPLY**
  - e.g. indicator
  - Uo=max 30V
  - Io=max 250mA
  - Po=max 850mW

- **POWER SUPPLY**
  - e.g. Sounder
  - Uo=max 30V
  - Io=max 250mA
  - Po=max 850mW

- **POWER SUPPLY**
  - e.g. Sounder
  - Uo=max 30V
  - Io=max 250mA
  - Po=max 850mW

**TERMINAL CONNECTORS:**

- **Signal**
- **Common ground**

**TOTAL Cc OF ALL CONNECTED ANALOG APPARATUS IN DC APPLICATIONS MAY NOT EXCEED 66nF MINUS 17nF (17nF IS USED BY THE ANALOG OUTPUT SIGNAL TERMINAL 7 + 8).**

- **Supply**: * Note power supply type PD: the supply voltage to pulse sensors is maximum 8.7V (Uo=max 8.7V Io=max 25mA Po=max 150mW) and to analog sensors as connected to terminal 1 (internally linked).

- **Flowmeter input A - type: A**
  - (0)4 - 20mA
  - Ci is negligibly small

- **Flowmeter input B - type: A**
  - (0)4 - 20mA
  - Ci is negligibly small

- **Alarm output type OT:**
  - passive transistor
  - e.g. Buzzer

- **Main supply**
  - (please note two power supplies PD and battery type PC is NOT allowed in IIC applications).

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

* Ci is negligibly small
Configuration example IIB - F114-A-AF-CT-OT-(PC)-(PD)-(PL)-XI - Power supply 16 - 30V DC, battery or loop powered

TERMINAL CONNECTORS
F100 - series

HAZARDOUS AREA

SAFE AREA

Modbus communication type CT: TTL

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

CI = 17nF

3 4 9 0 11
Common ground

Signal

Power supply type PD: 16 - 30V DC

Analog output type AF:
passive floating 4 - 20mA

RXD

Common ground

TXD

5 6
27 8
0 1

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

DTR

+12V

Due to analog output type AF, the unit has to be powered with battery type PC,
with external power supply type PD or input loop powered type PL.

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

12 13 14
Common ground

Signal

Supply *

Circuit depends on type of signal

CI is negligibly small
Flowmeter input B - type A
(0)4 - 20mA

CI is negligibly small
Flowmeter input A - type A
(0)4 - 20mA

CI = 17nF
Analog output type AF:
passive floating 4 - 20mA

CI is negligibly small
Alarm output type OT:
passive transistor

CI is negligibly small
Alarm output type OT:
passive transistor

Due to analog output type AF, the unit has to be powered with battery type PC,
with external power supply type PD or input loop powered type PL.

Power supply type PD: 16 - 30V DC

Umax 30V
Iomax 100mA
Pomax 750mW

For example
MTL5025

Uomax 30V
Iomax 250mA
Pomax 850mW

For example
MTL5042

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

* Note power supply type PD: the supply voltage to pulse sensors is maximum 8.7V
(Uomax 8.7V Iomax 25mA Pomax 150mW) and to analog sensors as connected to terminal 1 (internally linked).
Technical specification

Display

General
Type: High intensity reflective numeric and alphanumeric LCD, UV-resistant.
Dimensions: 90 x 40mm (3.5” x 1.6”).
Digits: Seven 17mm (0.67”) and eleven 8mm (0.31”) digits. Various symbols and measuring units.
Refresh rate: User definable: 8 times/sec. - 30 secs.
Option ZB: Transflective LCD with green LED backlight. Good readings in full sunlight and darkness.

Note ZB: Only available for safe area applications.

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 PD-XI: 1.2 / 3.2 / 8.2 / 12 / 24V DC - max. 50mA @ 24V DC.
Type PD-XII: 1.2 / 3.2 / 8.2 / 12 / 24V DC - max. 7mA @ 8.2V DC and mains power supply voltage (as connected to terminal 1).

Note: In case PD-XI and signal A or U: the sensor supply voltage is according to the power supply voltage connected to terminal 1. Also terminal 2 offers the same voltage.
Type PF / PM: 12 / 24V DC ± 10% or type PD / PF / PM. Power consumption max. 1 Watt.

Note PB/PF/PM: Not available Intrinsically Safe.

Power requirements (continuation)

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

Sensor excitation

Type PB/PC/PX: 3.2V DC for pulse signals and 1.2V DC for coil pick-up.
Note: This is not a real sensor supply. Only suitable for sensors with a very low power consumption like coils (sine wave) and reed-switches.
Type PD: 1.2 / 3.2 / 8.2 / 12 / 24V DC - max. 50mA @ 24V DC.
Type PD-XI: 1.2 / 3.2 / 8.2 / 12 / 24V DC - max. 7mA @ 8.2V DC and mains power supply voltage (as connected to terminal 1).

Note: In case PD-XI and signal A or U: the sensor supply voltage is according to the power supply voltage connected to terminal 1. Also terminal 2 offers the same voltage.
Type PF / PM: 12 / 24V DC ± 10% or type PD / PF / PM. Power consumption max. 1 Watt.

Terminal connections

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

Data protection

Type: EEPROM backup of all settings. Backup of running totals every minute. 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 T50°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

General
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: 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 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.

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**

- **Flowmeter**
  - Type P: Coil/sine wave (minimum 20mVpp or 80mVpp - sensitivity selectable), NPN/PNP, open collector, reed-switch, Namur, active pulse signals 8 - 12 and 24V DC.
  - Frequency: Minimum 0Hz - maximum 7kHz for total and flow rate. Maximum frequency depends on signal type and internal low-pass filter. E.g. reed switch with low-pass filter: max. frequency 120Hz.
  - K-Factor: 0.000001 - 9,999,999 with variable decimal position.
  - Low-pass filter: Available for all pulse signals.
  - Option ZF: coil sensitivity 10mVpp.
  - Type A: (o)4 - 20mA. Analog input signal can be scaled to any desired range within 0 - 20mA.
  - Type U: 0 - 10V DC. Analog input signal can be scaled to any desired range within 0 - 10V DC.
  - Accuracy: Resolution: 14 bit. Error < 0.025mA / ± 0.125% FS. Low level cut-off programmable.
  - Span: 0.000001 - 9,999,999 with variable decimal position.
  - Update time: Four times per second.
  - Voltage drop: Type A: 2.5V @ 20mA.
  - Load impedance: Type U: 3kΩ.
  - Relationship: Linear and square root calculation.
  - Note: For signal type A and U: external power to sensor is required; e.g. type PD.

**Signal outputs**

- **Function**: Transmitting ratio, flow rate A or flow rate B.
- **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 OT or OA (OA in combination with AA only).
- **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.

**Communication option**

- **Function**: Reading display information, reading / writing all configuration settings.
- **Protocol**: Modbus 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.

**Operational**

**Operator functions**

- **Displayed functions**: • Ratio.
- **Operator functions**: • Low-low, Low, High and High-high ratio alarm value.
- **Flow rate and total A + B (can be hidden).**
- **Totals can be reset to zero by pressing the CLEAR-key twice.**
- **Alarm values can be set (or only displayed).**

**Ratio**

- **Digits**: 5.
- **Units**: 1 - xxx or %.
- **Decimals**: 3.

**Total**

- **Digits**: 7 digits.
- **Units**: L, m³, GAL, USGAL, KG, lb, bbl, no unit.
- **Decimals**: 0 - 1 - 2 or 3.
- **Note**: Total can be reset to zero.

**Flow rate**

- **Digits**: 7 digits.
- **Units**: mL, L, m³, Gallons, KG, Ton, lb, bl, cf, scf, Nm³, NL, igaL - no units.
- **Decimals**: 0 - 1 - 2 or 3.
- **Time units**: /sec - /min - /hr - /day.

**Alarm values**

- **Digits**: 7 digits.
- **Units**: According to selection for ratio.
- **Decimals**: According to selection for ratio.
- **Type of alarm**: Low, low-low or high-high ratio 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.

**Ratio**

- **RATIO BETWEEN THE ADDITIVE AND THE TOTAL FLOW**: • Low-low, Low, High and High-high ratio alarm value.
- **Flow rate and total A + B (can be hidden).**
- **Totals can be reset to zero by pressing the CLEAR-key twice.**
- **Alarm values can be set (or only displayed).**
Ordering information

Standard configuration: F114-P-AP-CX-EX-HC-IX-OT-PX-TX-XX-ZX.

Ordering information:

Flowmeter input signal

A  (0) 4 - 20mA input.
P  Pulse input: coil, npn, pnp, namur, reed-switch.
U  0 - 10V DC input.

Analog output signal

AA  Active 4 - 20mA output - requires OA + PD, PF or PM.
AB  Active 0 - 20mA output - requires OA + PD, PF or PM.
AF  Active 4 - 20mA output - requires OA + PD, PF or PM.
AP  Passive 4 - 20mA output, loop powered unit.
AU  Active 0 - 10V DC output - requires OA + PD, PF or PM.

Communication

CB  Communication RS232 - Modbus RTU.
CH  Communication RS485 - 2wire - Modbus RTU.
CI  Communication RS485 - 4wire - Modbus RTU.
CT  Intrinsically Safe TTL - Modbus RTU.
CX  No communication.

Flow equations

EX  No flow equations.

Panel mount enclosures - IP65 / NEMA4

HB  Aluminum enclosure.
HC  GRP enclosure.

GRP field / wall mount enclosures - IP67 / NEMA4X

HD  Cable entry: no holes.
HE  Cable entry: 2 x Ø 16mm & 1 x Ø 20mm.
HF  Cable entry: 1 x Ø 22mm (\(\triangleleft\)/\(\triangleright\)).
HG  Cable entry: 2 x Ø 20mm.
HH  Cable entry: 6 x Ø 12mm.
HJ  Cable entry: 3 x Ø 22mm (\(\triangleleft\)/\(\triangleright\)).
HK  Flat bottom, cable entry: no holes.

Aluminum field / wall mount enclosures - IP67 / NEMA4X

HA  Cable entry: 2 x PG9 + 1 x M20.
HM  Cable entry: 2 x M16 + 1 x M20.
HN  Cable entry: 1 x M20.
HO  Cable entry: 2 x M20.
HP  Cable entry: 6 x M12.
HT  Cable entry: 1 x 1/2"/NPT.
HU  Cable entry: 3 x 1/2"/NPT.
HZ  Cable entry: no holes.

ABS field / wall mount enclosures

HS  Silicone free ABS field enclosure IP65 – Cable entry: no holes (old HD enclosure).

Additional inputs

IX  No additional input.

Outputs

OA  Three active transistor outputs - requires AA, AB or AU and PD, PF or PM.
OR  Two mechanical relay outputs + one OT or OA - requires PF or PM.
OT  Three passive transistor outputs - standard configuration.

Power supply

PB  Lithium battery powered.
PC  Lithium battery powered - Intrinsically Safe.
PD  8 - 24V AC/DC + sensor supply - with XI: 16 - 30V DC.
PF  24V AC/DC + sensor supply.
PL  Input loop powered from sensor signal type "A" - requires AI or AF and OT.
PM  115 - 230V AC + sensor supply.
PX  Basic power supply 8 - 30V DC (no real sensor supply). Unit requires external loop AP.

Temperature input signal

TX  No temperature input signal.

Hazardous area

XI  Intrinsically Safe.
XF  EExd enclosure - 3 keys.
XX  Safe area only.

Other options

ZB  Backlight.
ZF  Coil input 10mVpp.
ZX  No options.

The bold marked text contains the standard configuration.
Available Intrinsically Safe.

Specifications are subject to change without notice.

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