


BATCH CONTROLLER

WITH ONE STAGE CONTROL



Features

- Large display shows preset value and running batch value simultaneously.
- Self-learning overrun correction.
- Easy operation to enter a batch value and to control the process.
- Count-up and count-down function available.
- Selectable on-screen engineering units; volumetric or mass.
- Ability to process all types of flowmeter signals.
- Operational temperature -40°C up to +80°C (-40°F up to 178°F).
- Rugged aluminum field mount enclosure IP67/NEMA4X.
- Intrinsically Safe
 II 1 GD EEx ia IIC T4 T100°C.
- LED backlight option.
- 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

- One control output for one-stage batching.

Signal input

Flow

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

Applications

- For batching small up to very large quantities. Single or repeating batches. Alternative more sophisticated models: 130 - 131, 136 and 300 series.

General information

Introduction

The 030 is a straight forward but basic Batch Controller. The operator can enter a batch quantity easily or execute repeating batches. During the batch, the preset value is displayed as well as the batched (or remaining) quantity and the units of measurement. The automatic self-learning overrun correction will ensure an accurate result each batch again. A wide selection of options further enhance this models capabilities, including Intrinsic Safety.

Display

The display has large 17mm (0.67") and 8mm (0.31") digits which are used to display the batched quantity and the preset value simultaneously. On-screen engineering units are easily configured from a comprehensive selection. A seven digit resettable "day total" is available as well as an eleven digit non-resettable accumulated total. All are backed-up in EEPROM memory every minute. A smart display update function achieves a readable display even at -40°C / -40°F.

Backlight

For those applications where readability during day and night is an issue, a bi-color backlight is available. The background color green or amber and the intensity can be adjusted from the keyboard. The display is a transfective type, which means that a high contrast reading is guaranteed in full sunlight as well as during the night. This backlight option is available Intrinsically Safe.

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. 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.

Control output

One output is available for one stage control of smaller batchvolumes. The output signal can be a passive NPN or an active PNP transistor, or an isolated electro-mechanical relay.

Signal input

The 030 will accept most pulse and analog input signals for flow or mass flow measurement. The input signal type can be selected by the user in the configuration menu without having to adjust any sensitive mechanical dip-switches, jumpers or trimmers. The analog input version is even available as 4 - 20mA input loop powered display.

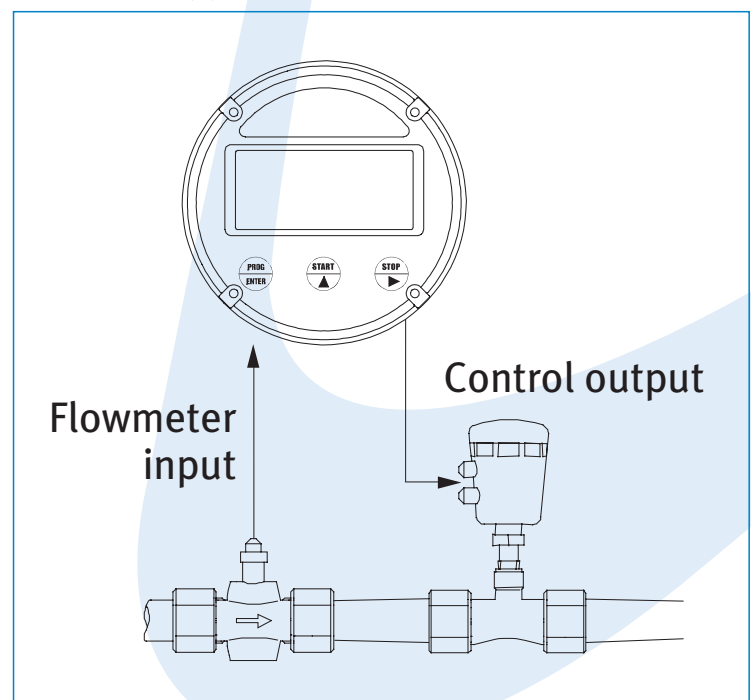
Power supply

Several power supply options are available to power the 030 and sensor. A battery powered version with a long life lithium battery which will last up to five years. For analog sensors, a 4 - 20mA loop powered version is available as well. A real sensor supply is offered with the 24V AC / DC or 115 - 230V AC power supply option.

Enclosures

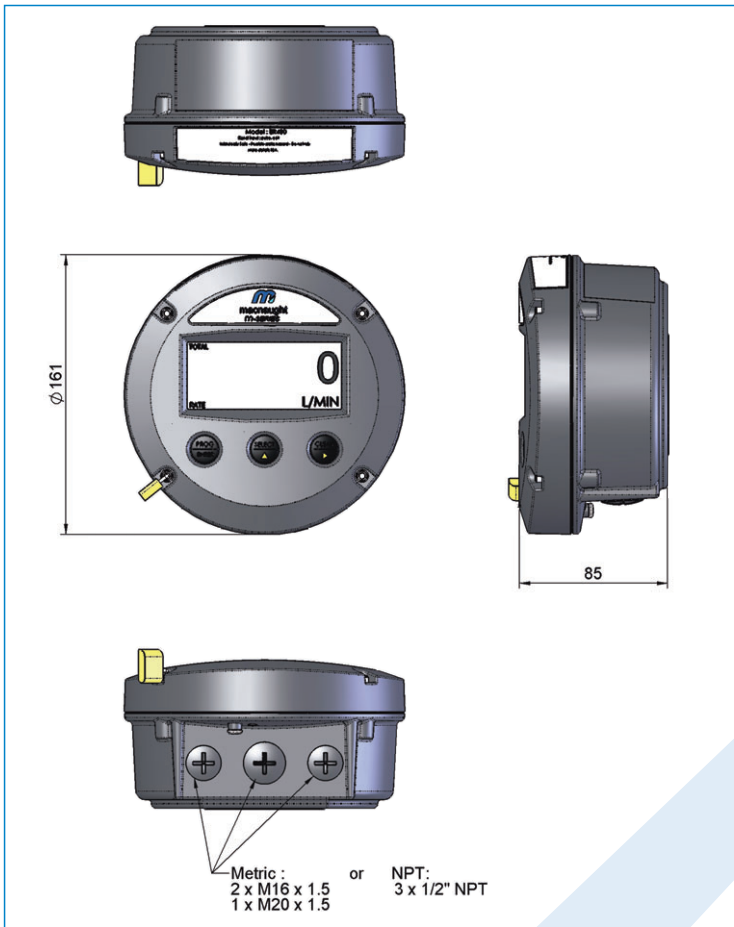
There are three types of enclosures available: The GA Round Charcoal (Macnaught) version and the GC Round Red (MEC) version are available with 3 x 1/2"NPT cable gland entry thread or 2xM16 & 1xM20 cable gland entry thread. The third enclosure is the GB (Remote) enclosure which is available in GRP (Glassfiber Reinforced Polyamide) or Aluminum. For the cable gland entry available see page 6.

Overview application 030

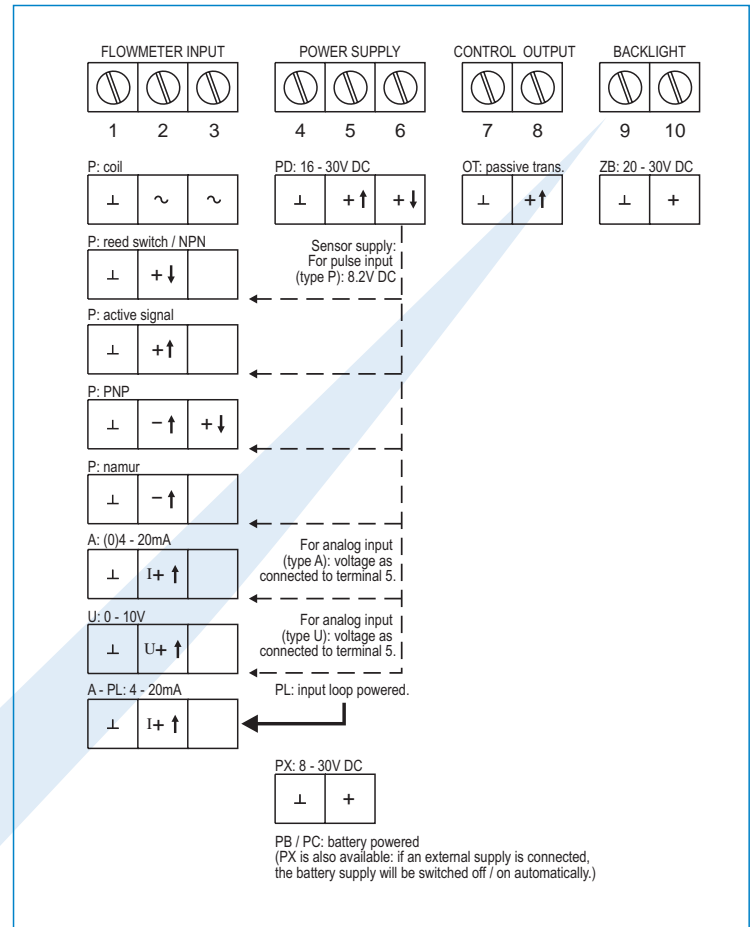


Dimensions enclosures

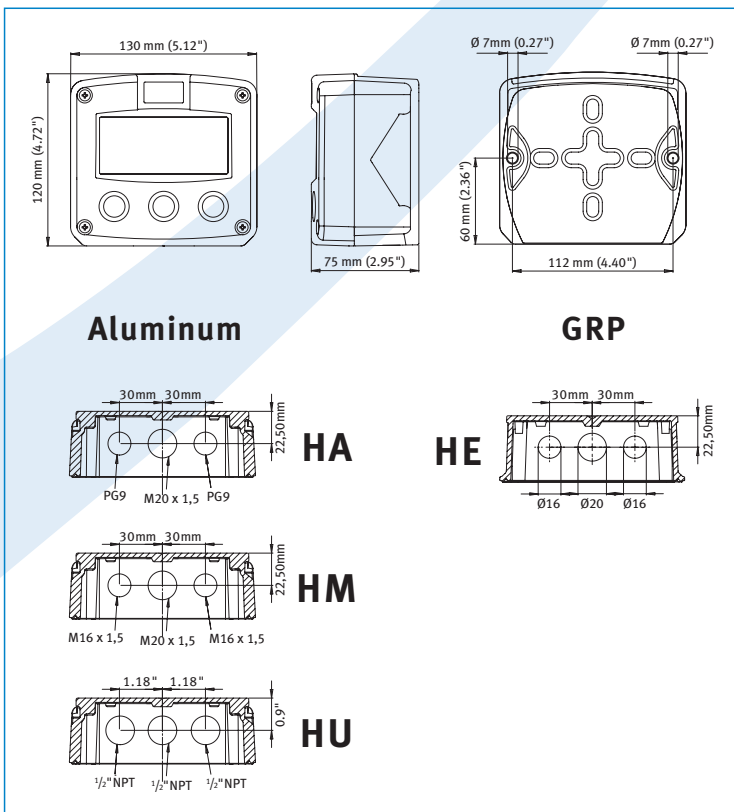
Aluminum round field / wall mount enclosure GA & GC



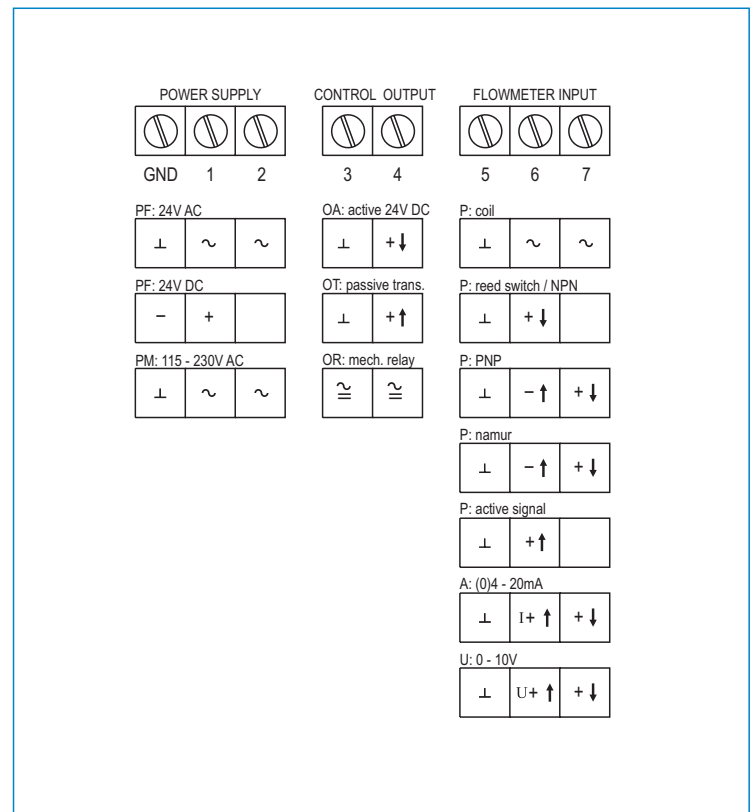
Terminal connections power supply PB/PC - PD - PL - PX



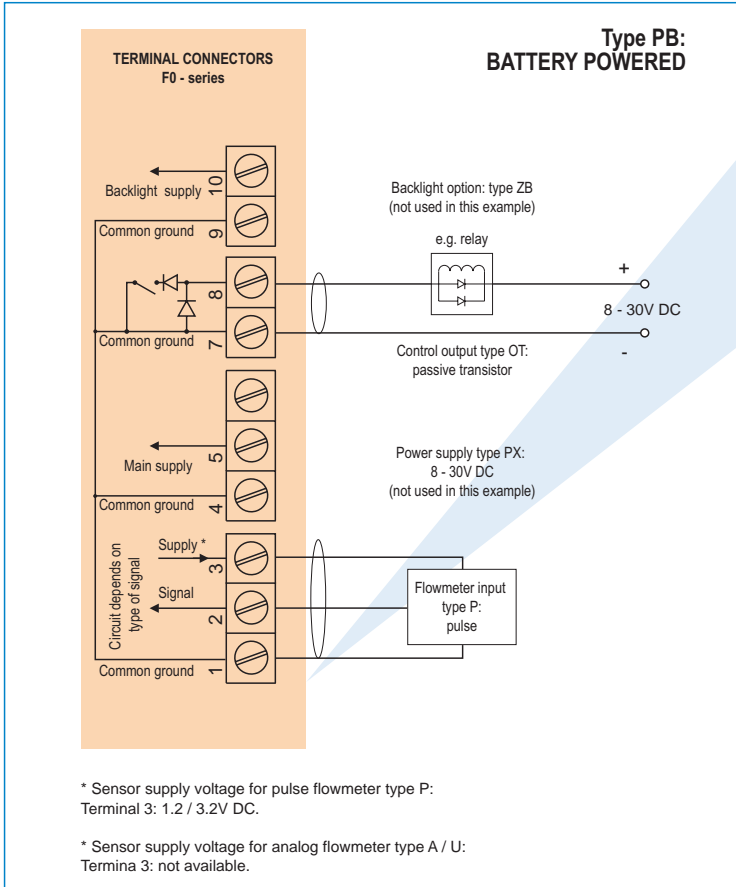
Aluminum & GRP field / wall mount enclosures GB



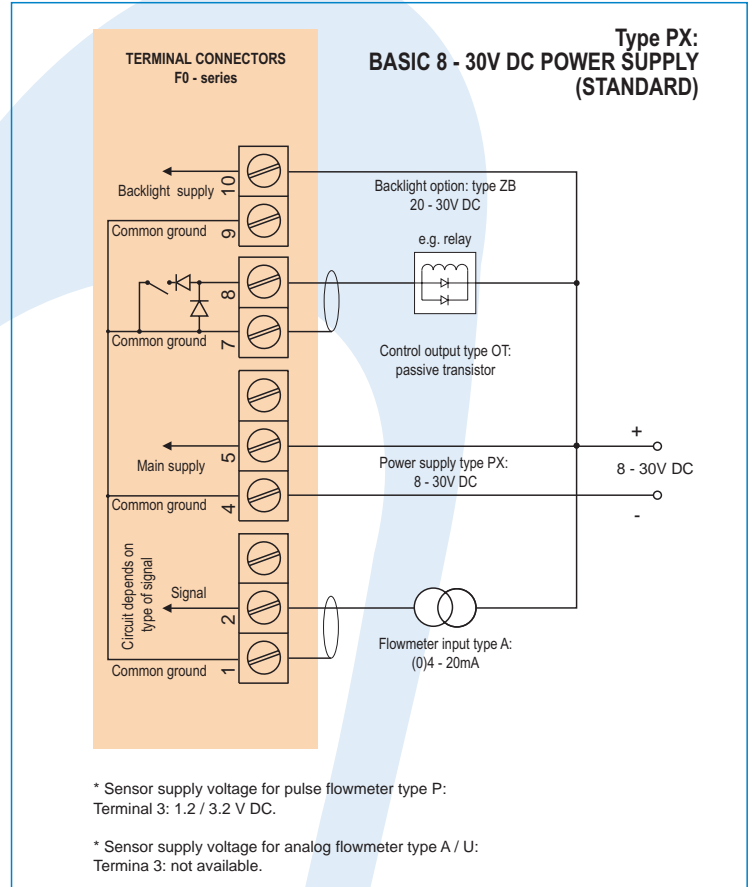
Terminal connections power supply PF - PM



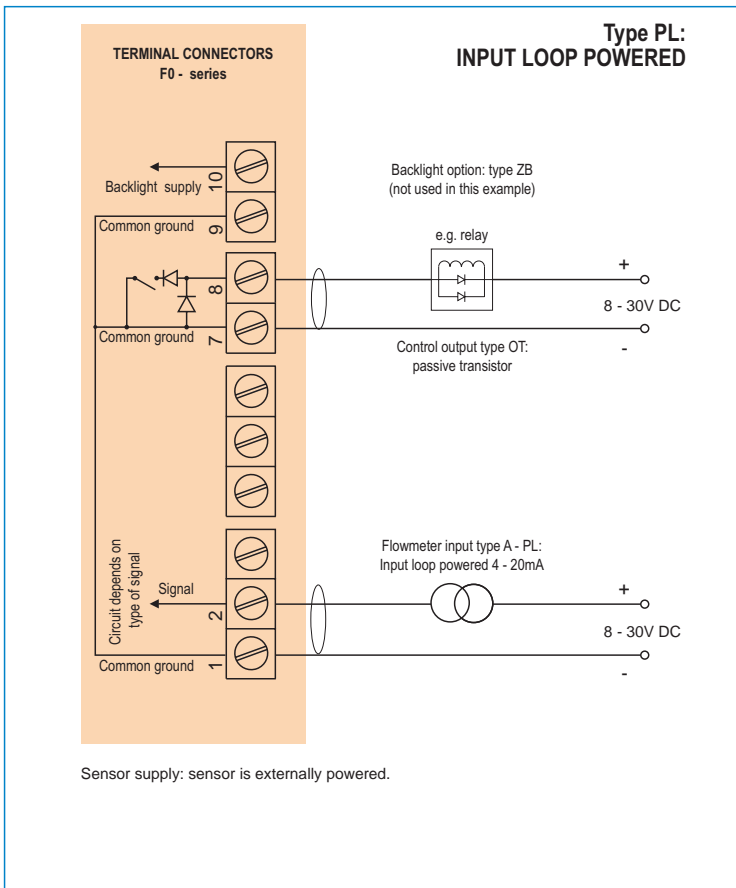
Typical wiring diagram 030-P-OT-PB-(PX)-(ZB)



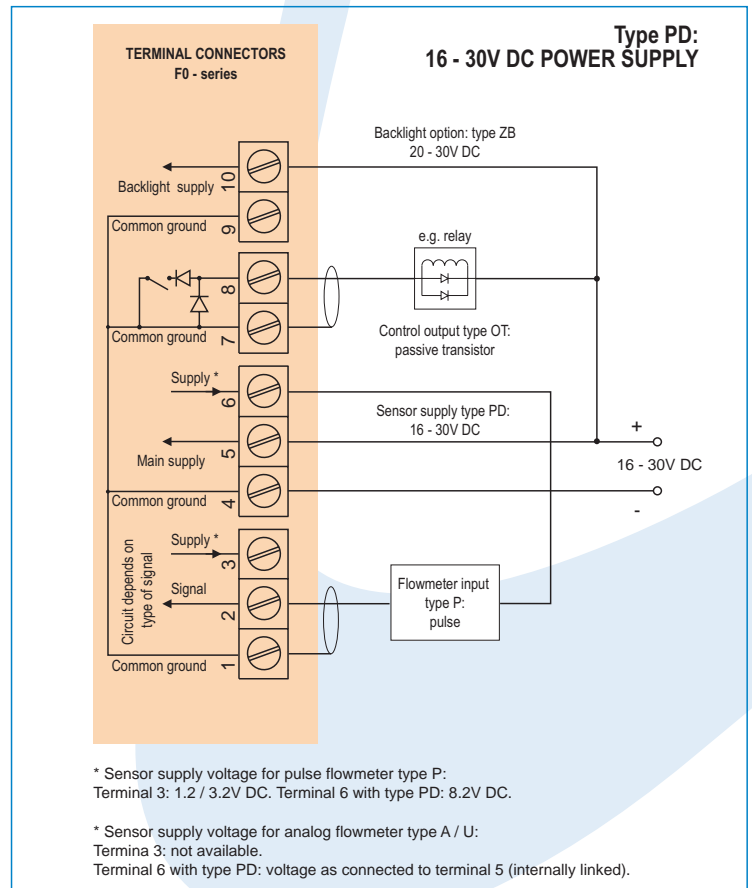
Typical wiring diagram 030-A-OT-PX-ZB



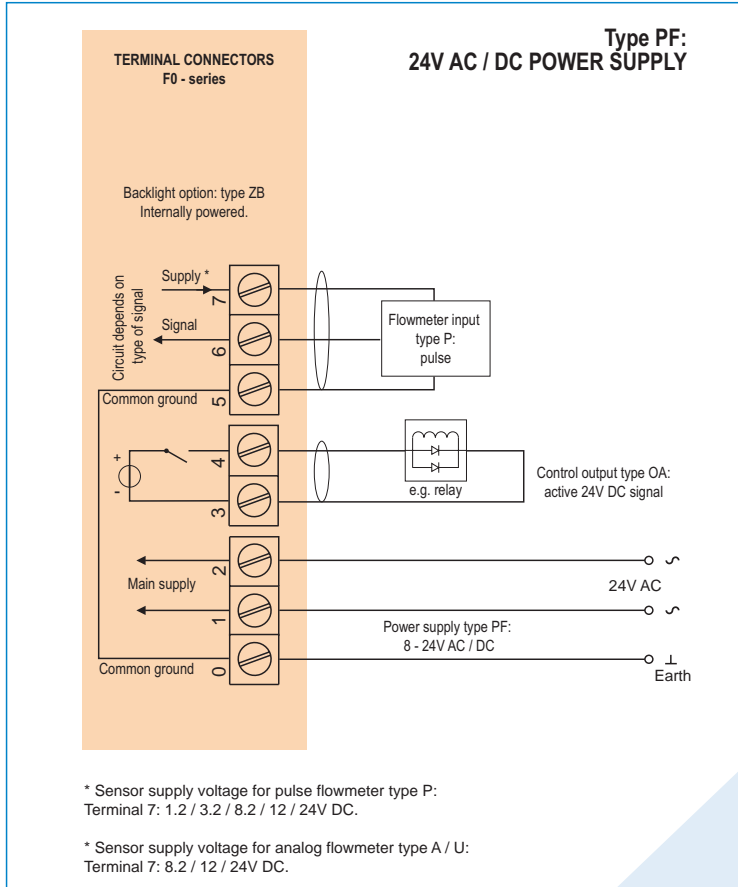
Typical wiring diagram 030-A-OT-PL-(ZB)



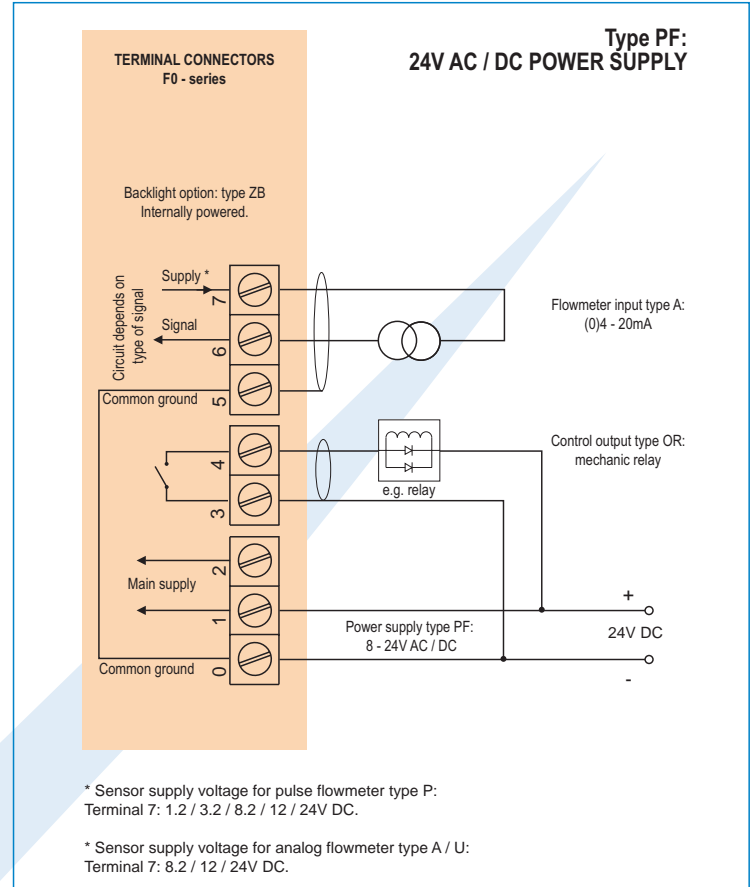
Typical wiring diagram 030-P-OT-PD-ZB



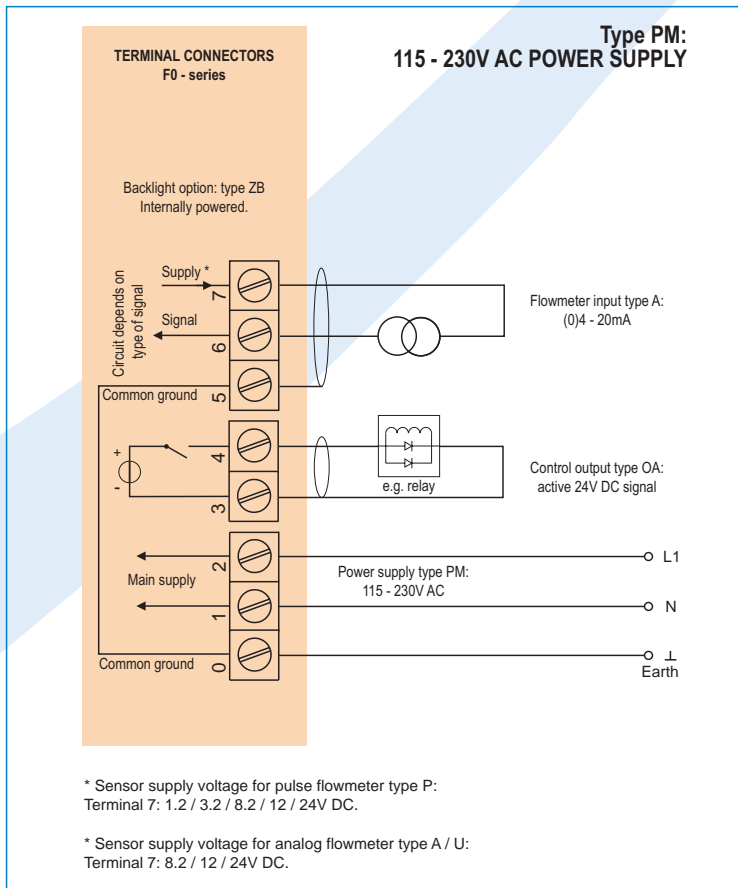
Typical wiring diagram 030-P-OA-PF-ZB



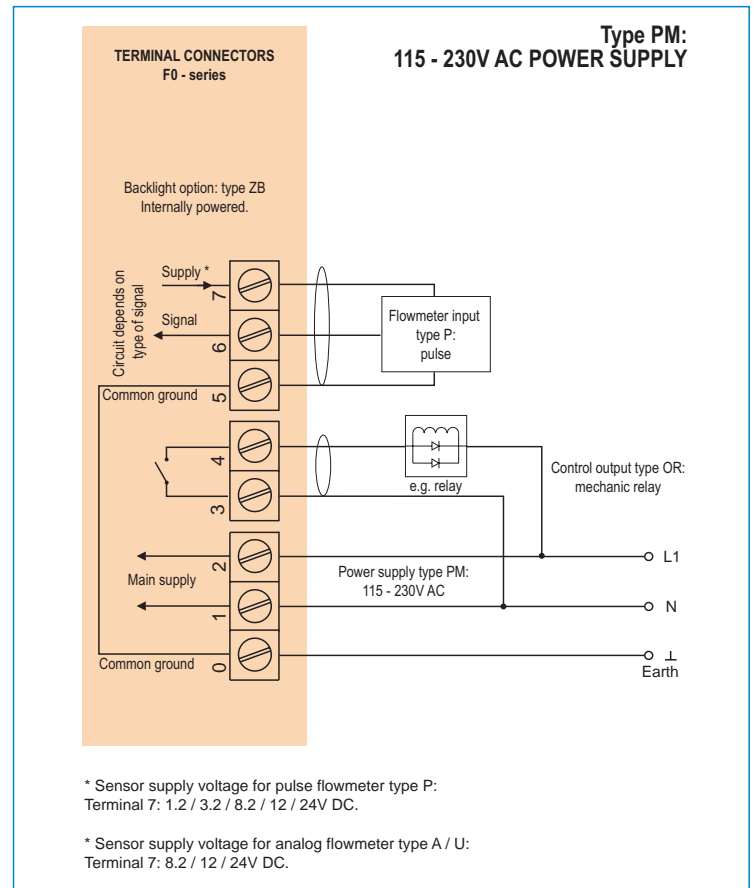
Typical wiring diagram 030-A-OR-PF-ZB



Typical wiring diagram 030-A-OA-PM-ZB



Typical wiring diagram 030-P-OR-PM-ZB



Technical specification

General

| Display | |
|--------------|--|
| 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 - off. |
| Option ZB | Transflective LCD with bi-color LED-backlight; green / amber. Intensity and color selected through the keyboard. Good readings in full sunlight and darkness. Also available Intrinsically Safe. |

Operating temperature

| | |
|--------------------|-----------------------------------|
| Standard unit | -40°C to +80°C (-40°F to +178°F). |
| Intrinsically Safe | -40°C to +70°C (-40°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 | 16 - 30V DC. Power consumption max. 1 Watt. |
| Type PF | 24V AC / DC ± 10%. Power consumption max. 15 Watt. |
| Type PL | Input loop powered from sensor signal 4 - 20mA (type A). |
| Type PM | 115 - 230V AC ± 10%. Power consumption max. 15 Watt. |
| Type PX | 8 - 30V DC. Power consumption max. 0.3 Watt. |
| Type ZB | 20 - 30V DC. Power consumption max. 1 Watt. With type PF / PM: internally powered. |
| Note PB/PF/PM | Not available Intrinsically Safe. |
| Note PF/PM | The total consumption of the sensor, active output type OA and backlight type ZB may not exceed 400mA @ 24V DC. |
| Note | For Intrinsically Safe applications, consult the safety values in the certificate. |

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 | for pulse signals: 1.2 / 3.2 / 8.2V DC - max. 5mA@8.2V DC. For analog signals, the sensor supply voltage is according to the power supply voltage connected. |
| Type PF / PM | With pulse input: 1.2 / 3.2 / 8.2 / 12 / 24V DC - max. 400mA @ 24V DC. With analog input: 8.2 / 12 / 24V DC - max. 400mA @ 24V DC. |

Terminal connections

| | |
|------|--|
| Type | Removable plug-in terminal strip. Wire max. 1.5mm ² and 2.5mm ² . |
|------|--|

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. |

Casing & cable gland entry

General

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

GB - 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 HU | Cable entry: 3 x 1/2" NPT. |

GB - 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 HE | Cable entry: 2 x Ø 16mm and 1 x Ø 20mm. |

GA & GC - Aluminum round wall / field mount enclosures

| | |
|------------|--|
| General | Die-cast aluminum wall/field mount enclosure IP67 / NEMA 4X with 2-component UV-resistant coating. |
| Dimensions | Ø 161 x 85mm (6.34" x 3.35") - Diam. x Depth. |
| Weight | 1200 gr. |
| Colors | GA: Charcoal or GC: Red. |
| Type HM | Cable entry: 2 x M16 and 1 x M20. |
| Type HU | Cable entry: 3 x 1/2" NPT. |

Hazardous area

Intrinsically Safe

| | |
|------------------------------|--|
| ATEX certification | ⊕ II 1 GD EEx ia IIC T4 T100°C |
| CSA C-US/IECEx certification | IECEx, CSA and FM approvals are expected to become available in autumn 2008. |
| Ambient | -40°C to +70°C / -40° to +158°F. |

Explosion proof

| | |
|--------------------|---|
| ATEX certification | ⊕ 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. 15kg. |

Environment

| | |
|-------------------------------|--|
| Electromagnetic compatibility | Compliant ref: EN 61326 (1997), EN 61010-1 (1993). |
|-------------------------------|--|

Signal input

Flowmeter sensor

| | |
|-----------------|---|
| 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 | 0.000010 - 9,999,999 with variable decimal position. |
| Low-pass filter | Available for all pulse signals. |
| Option ZF | coil sensitivity 10mVpp. |
| Option ZG | coil sensitivity 5mVpp. |
| Type A | (0)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: 16 bit. Error < 0.01mA / ± 0.05% FS. Low level cut-off programmable. |
| Span | 0.001 / 999,999 with variable decimal position. |
| Update time | Four times per second. |
| Voltage drop | Type A: max. 2V DC @ 20mA. |
| Voltage drop | Type A - PL (loop powered): max. 2.6V DC @ 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 output

Control output

| | |
|----------|--|
| Function | Control output according the batch process. |
| Type OA | One active 24V DC transistor output (PNP); load max. 400mA (requires PF or PM). |
| Type OR | One electro-mechanical relay output - isolated; max. switch power 230V AC (N.O.) - 0.5A (requires PF or PM). |
| Type OT | One passive transistor output (NPN) - not isolated. Max. 50V DC - 300mA per output. |

Operational

Operator functions

| | |
|---------------------|---|
| Displayed functions | <ul style="list-style-type: none"> • Preset value - can be entered by the operator. • Batched quantity or remaining quantity. • Total and accumulated total. • Total can be reset to zero by pressing the STOP-key twice. |
|---------------------|---|

Preset and total

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

Accumulated total

| | |
|------------------|-----------------------------------|
| Digits | 11 digits. |
| Units / decimals | According to selection for total. |
| Note | Can not be reset to zero. |

Accessories

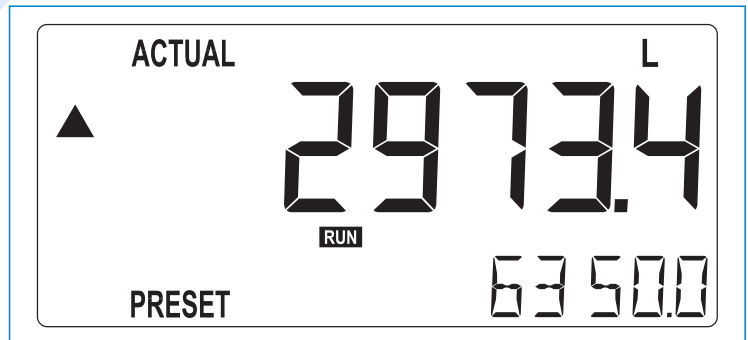
Mounting accessories

| | |
|-------|--|
| ACFo2 | Stainless steel wall mounting kit. |
| ACFo5 | Stainless steel pipe mounting kit (worm gear clamps not included). |
| ACFo6 | Two stainless steel worm gear clamps Ø 44 - 56mm. |
| ACFo7 | Two stainless steel worm gear clamps Ø 58 - 75mm. |
| ACFo8 | Two stainless steel worm gear clamps Ø 77 - 95mm. |
| ACFo9 | Two stainless steel worm gear clamps Ø 106 - 138mm. |
| ACF10 | Customized Grevopal tagplates for ACFo2 and ACFo5, 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. |
| ACF32 | 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. |

Display example - 90 x 40mm (3.5" x 1.6")



Ordering information

Standard configuration: GA-030-P-HC-OT-PX-XX-ZX.

| ordering information: | G | 030 | - | H | - | O | - | P | - | X | - | Z |
|---|---|--|---|---|---|---|---|---|---|---|---|---|
| Enclosures - IP67 / NEMA4X | | | | | | | | | | | | |
| GA | ☒ | Aluminum round enclosure, color Charcoal. | | | | | | | | | | |
| GB | ☒ | Aluminum or GRP remote enclosure. | | | | | | | | | | |
| GC | ☒ | Aluminum round enclosure, color Red. | | | | | | | | | | |
| Flowmeter Sensor input signal | | | | | | | | | | | | |
| A | ☒ | (0)4 - 20mA input. | | | | | | | | | | |
| P | ☒ | Pulse input: coil, npn, pnp, namur, reed-switch. | | | | | | | | | | |
| U | ☒ | 0 - 10V DC input. | | | | | | | | | | |
| Cable entry for GB - GRP field / wall mount enclosures | | | | | | | | | | | | |
| HE | ☒ | Cable entry: 2 x Ø 16mm & 1 x Ø 20mm. | | | | | | | | | | |
| Cable entry for GB - Aluminum field / wall mount enclosures | | | | | | | | | | | | |
| HA | ☒ | Cable entry: 2 x PG9 + 1 x M20. | | | | | | | | | | |
| HM | ☒ | Cable entry: 2 x M16 + 1 x M20. | | | | | | | | | | |
| HU | ☒ | Cable entry: 3 x 1/2"NPT. | | | | | | | | | | |
| Cable entry for GA & GC - Aluminum round field / wall mount enclosures | | | | | | | | | | | | |
| HM | ☒ | Cable entry: 2 x M16 + 1 x M20. | | | | | | | | | | |
| HU | ☒ | Cable entry: 3 x 1/2"NPT. | | | | | | | | | | |
| Output | | | | | | | | | | | | |
| OA | | One active transistor output - requires PF or PM. | | | | | | | | | | |
| OR | | One mechanical relay output - requires PF or PM. | | | | | | | | | | |
| OT | ☒ | One passive transistor output - standard configuration. | | | | | | | | | | |
| Power supply | | | | | | | | | | | | |
| PB | | Lithium battery powered. | | | | | | | | | | |
| PC | ☒ | Lithium battery powered - Intrinsically Safe. | | | | | | | | | | |
| PD | ☒ | 16 - 30V DC + sensor supply. | | | | | | | | | | |
| PF | | 24V AC / DC + sensor supply. | | | | | | | | | | |
| PL | ☒ | Input loop powered from sensor signal type "A". | | | | | | | | | | |
| PM | | 115 - 230V AC + sensor supply. | | | | | | | | | | |
| PX | ☒ | Basic power supply 8 - 30V DC (no real sensor supply). | | | | | | | | | | |
| Hazardous area | | | | | | | | | | | | |
| XI | ☒ | Intrinsically Safe. | | | | | | | | | | |
| XF | | EExd enclosure - 3 keys. | | | | | | | | | | |
| XX | | Safe area only. | | | | | | | | | | |
| Other options | | | | | | | | | | | | |
| ZB | ☒ | Backlight. | | | | | | | | | | |
| ZF | ☒ | Coil input 10mVpp. | | | | | | | | | | |
| ZG | ☒ | Coil input 5mVpp. | | | | | | | | | | |
| ZX | ☒ | No options. | | | | | | | | | | |

The bold marked text contains the standard configuration.

☒ Available Intrinsically Safe.

Specifications are subject to change without notice.