BR3000 Series

Field Mount Rate and Total Display

Description

Battery or DC power and a compact size make the BR3000 Series Rate/Totalizer a versatile local indicator. It accepts magnetic pickup and DC pulse inputs. Rate and total are shown simultaneously on the easy-to-read, two-line, LCD display. Twenty-point linearization is a standard feature, allowing correction for K-factor variation, thus increasing the accuracy. Scaled pulse and 4–20 mA output options allow the unit to send data to other devices. Batteries can provide all of the unit's power or serve as a back-up when DC or 4–20 mA loop power is used. The BR3000 is available in an explosion-proof or NEMA 4X enclosure and can be directly mounted on Flow Technology flowmeters or remotely mounted.

Operation

Once the BR3000 is properly wired and programmed, operation is automatic. Prompts at each step simplify the process of programming. In addition to K-factors, the BR3000 allows users to program the units of measurement displayed on the ratemeter and totalizer. A lockout code option keeps the total from being reset and prevents the settings from being changed. When purchased with a Flow Technology flowmeter, the BR3000 will be programmed and scaled prior to shipment. In Run Mode the BR3000 will continuously display flow rate and total. The total can be reset from the front panel or from a remote location using the reset terminal.

BR3000 Series
Battery Powered Rate/Totalizer

Features

- Magnetic pickup and DC pulse (optically isolated) input
- Displays rate and total simultaneously
- Internal battery, external DC, or 4–20 mA loop-power supply
- Isolated scaled pulse or 4–20 mA analog output
- 8-digit totalizer display
- 5-digit rate display
- 20-point linearization
- Low battery indicator
- Lockout code
- Explosion-proof, waterproof, and panel mounting options

Dimensions

BR30-0-X (no enclosure or mounting)

.992"
(25.2mm)
(2 PL)

3.012"
(76.5mm)

.10"
(2.54mm)

1.7"
(43mm)

2.875"
(73mm)

.900"
(22.9mm)
(2 PL)

Mounting Holes .125" (3.2mm) DIA., (2 PL)
.375" (9.5mm) Nylon Spacer Supplied
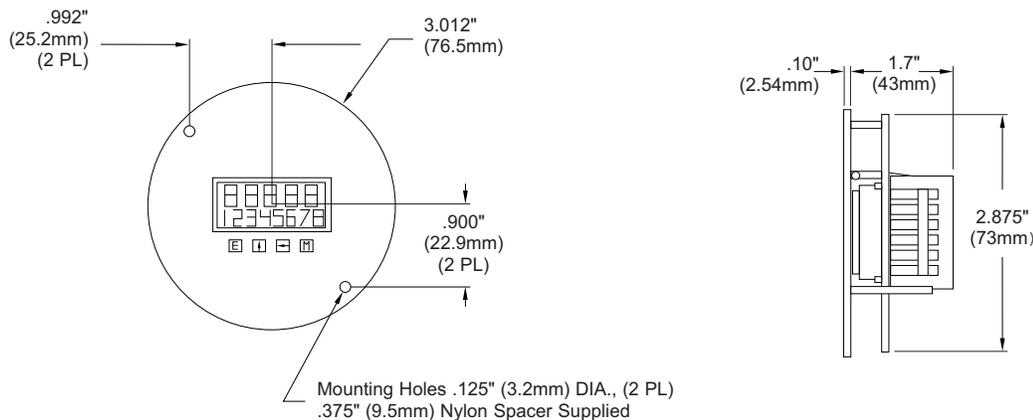
BR30-1-X (Panel Mount NEMA 4 Front)

3.062" (77.77mm)
DIA. Cutout

4.0" (101.6mm)
DIA. Outside Panel
Dimension

.125" (3.2mm)
DIA. Holes (3 PL) on
3.582" (91mm) DIA
Bolt Circle

120°

.10"
(2.54mm)

1.7"
(43mm)

3.012"
(76.5mm)
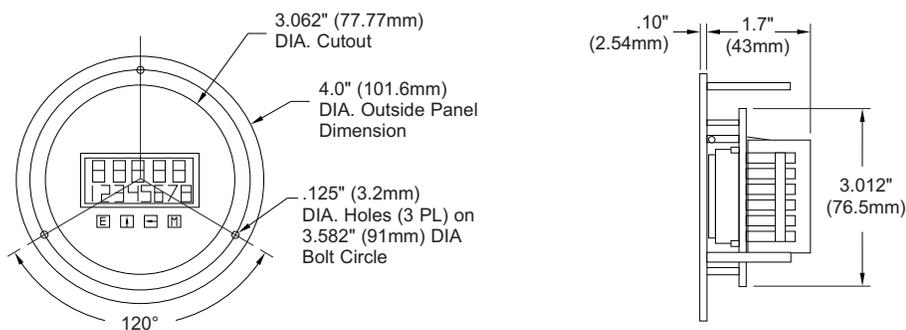
BR30-5-X (Waterproof Enclosure NEMA 4X)

5.10" MAX. (130mm)

4.476" (113.7mm)
Mounting Holes

5.10" MAX. (130mm)

4.476" (113.7mm)
Mounting Holes

2.54"
(64.5mm)

3.046"
(77mm)

2.55"
(64.8mm)

2x 1 11 1/2 NPT

.963"
(24.5mm)
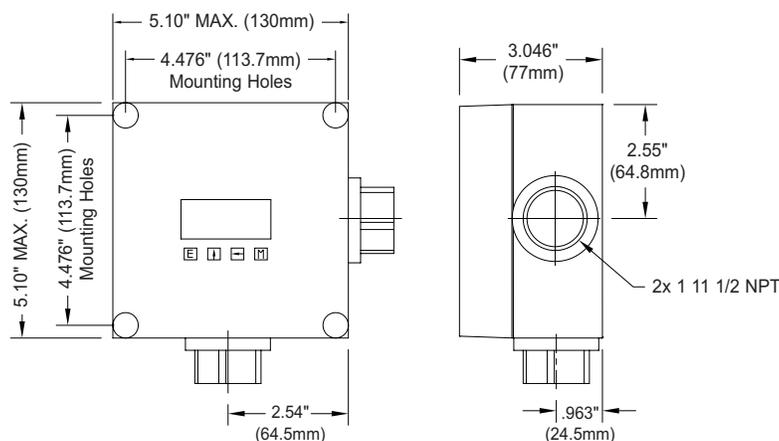
BR30-3NE-X

CSA Explosion-Proof Approved
Certificate #1120094 (LR 91109-12)
CSA Standard C22.2-25/30
Class I, Div 1, Groups B, C & D
Class II, Div 1, Groups E, F & G
NEMA 4X and IP66 rated

4.25" (108mm)

4"
(102mm)

3/4" NPT
(3 PL)

4.5"
(114mm)

4.25" (108mm)

5" (127mm)
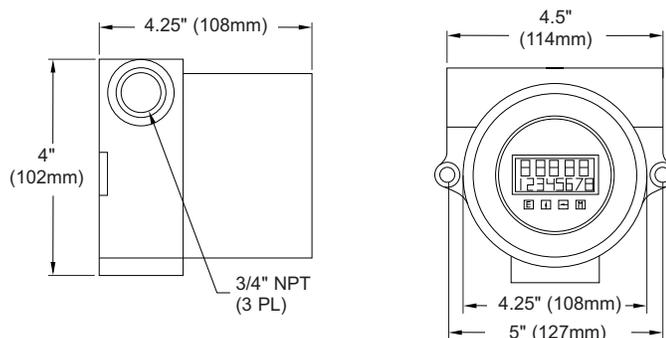
Specifications

Operating Temperature -4°F (-20°C) to +158°F (70°C)

Humidity 0 – 90% Noncondensing

Accuracy (Other than Analog Output)

	0.01% Reading, ±1 count
Temperature Drift	50 ppm/°C Worst Case

K-factor

Range	0.001 to 99999999
Decimal Point Locations	XXXX.XXXX to XXXXXXXX

20-Point Linearization Option

This feature allows the user to enter 20 different frequencies with 20 different corresponding K-factors to linearize non-linear signals.

Displays

Rate Display (selectable decimal)	5 Digits (99999), 0.35" high
	Display updates once per second with battery power, 8X per second with DC or loop power
Rate Descriptors	/SEC, /MIN, /HR
	/MIN, /HR, /DAY with "D" option
Min. Input Frequency	0.01 Hz to 10 Hz (selectable delay of 0.1 to 99.9 seconds)*
Selectable Rate Display Damping	
Totalizer Display (selectable decimal)	8 digits (99999999), 0.2" high
Totalizer Descriptors	GAL, LIT, FT3, M3, "blank"
	GAL, BBL, MCF, M3, "blank" with "D" option
Warning Display	Low battery warning

Power Input

External Power	
Voltage:	8.5 to 30 VDC
Current:	Less than 5 mA
Battery:	Supplied with 1 C-size lithium battery
Protection:	Reverse Polarity Protection on DC Power Input
Battery-Powered	Supplied with 2 C-size lithium battery pack
Loop-Powered (Analog Output Option)	
Voltage:	8.5 to 30 VDC
Battery:	Supplied with 1 C-size lithium battery
Protection:	Reverse Polarity Protection on Current Loop
Loop Burden:	8.5 V maximum

Magnetic Pickup Input

Frequency Range	0.01 Hz to 3.5 KHz
Trigger Sensitivity	15 mV p-p
Over Voltage Protected	±30 VDC

DC Pulse Input

High (logic 1)	4–30 VDC
Low (logic 0)	Less than 1 VDC
Minimum Current	0.5 mA
Hysteresis	0.4 VDC
Frequency Range	0.01 Hz to 5 KHz
Min. Pulse Width	0.1 msec

Contact Closure Input (Contact Closure to Common)

Internal Pullup Resistor	100 KW to +3.6 VDC
High (logic 1)	Open or 4–30 VDC
Low (logic 0)	Less than .5 VDC
Internal Debounce Filter	0 to 40 Hz

Note: Sustained contact closure will shorten battery life.

Reset Input (Contact Closure to Common)

Internal Pullup Resistor	100 KW to +3.6 VDC
High (logic 1)	Open or 4–30 VDC
Low (logic 0)	Less than .5 VDC
Minimum On	25 msec

Note: Sustained contact closure will shorten battery life. "R" version is not CSA approved.

Input Signal Transient to Output

Response Time	2 sec minimum

Pulse Output

The pulse output advances with the least significant digit of the totalizer or decimal multiples thereof (see Pulse Scale Divider).

Type	Isolated photomos relay
Max. Voltage (off state)	30 VDC
Current (on state)	100 mA
Pulse Duration	Selectable: 0.5, 0.25, 0.125 or 0.0625 seconds
Pulse Scale Divider	User-selectable: 1, 10, 100 or OFF

Note: Select OFF for maximum battery life.

Analog Output Option

Type	4–20 mA follows rate display, two-wire hookup
Accuracy	±0.025% Full Scale at 20° C
Temperature Drift	50 ppm/°C Typical
Reverse Polarity Protected	
Update Rate	8 times/second

Note: The BR30 uses the 4–20 mA loop power as its primary power source when this option is used. The battery is still required for standby battery operation.

Setup Software Option

Setup software is available as an option, for easy programming using a PC. The software will also allow monitoring of rate and total from a PC. A special cable is required and supplied with the setup software.

Data Storage

Setup Information	Stored in flash memory
Totalizer	Stored in battery-backed RAM but can be saved to flash memory by operator for recall after battery change-out.

Approvals

CSA	CSA approved for X-Proof environments, Class I, Div 1, Groups B, C & D
CE	Marked compliant with EMC Directive 89/336/EEC (1989) Light Industrial Class I

Model Numbering System

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B  R  3  0  –  [ ]  –  [ ]  –  4  [ ]     [ ]
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Basic Model No.

Mounting

    0 = None
    1 = Panel Mount
    3NE = Explosion-Proof Enclosure
    5 = NEMA 4X Enclosure

Power Supply

    A = Battery
      Notes: 1) Supplied with 2 C-size lithium batteries
            2) Life expectancy 10+ years
            3) Pulse output will decrease life by up to
               30%

    B = External Power Supply (8.5–30 VDC)
      Notes: 1) Supplied with 1 C-size lithium battery
            2) Battery used for back-up if primary power
               is interrupted

    C = Loop-Powered w/4–20 mA output
      Notes: 1) Supplied with 1 C-size lithium battery
            2) Battery used for back-up if primary power
               is interrupted

Linearization

    4 = 20-Point Linearization

Three-Digit Special Code

    Notes: 1) This code is factory-assigned to
            document a non-standard configuration.
          2) The three-digit code to be located in
            positions 16, 17 & 18 of model number.
            Empty locations prior to code will be
            assigned a zero ("0") code.

Options

    Blank = No options
    D = Rate per day
    CE = CE EMC compliant
    R = X-Proof reset switch
        (Note: Only available on "-3" mounting
        option, with "-B" or "-C" power option)
        "R" version is not CSA approved.
    RN = Magnetic reset switch
        (Note: Only available on "-3" mounting
        option, with "-B" or "-C" power option)

Programming software and cable part number: 24-94493-101

Specifications are for reference only and are subject to change without notice.