



NEWPORT®  
BRAND



SPEC SHEET — 508B

# Two-Wire, Process-Loop Indicator in NEMA-4X Housing

## STANDARD FEATURES

- ✓ FM, CSA, BASEEFA Intrinsic Safety Certification
- ✓ Powered by 1-5, 4-20 or 10-50 mA Signal
- ✓ 2.5 V Max Voltage Drop
- ✓ 0.35 in (8.9 mm) Liquid Crystal Display
- ✓ 2,000-Count Zero Suppression or Elevation
- ✓ 100 to 2,000 Count Span Adjust
- ✓ Selectable Dummy Right-Hand Zero
- ✓ -40°C to +85°C Operation
- ✓ Compact, 2.9 in Diameter Die-Cast Housing
- ✓ Waterproof to 35 kPa (5 psi)
- ✓ Shock Resistant to 55 g

## OPTIONS

- ✓ CENELEC Intrinsic Safety Certification, FM, CSA
- ✓ ½ EMT Conduit Fitting
- ✓ ½ NPT Pipe Fitting
- ✓ Relay-Track Mounting Adapters
- ✓ External Explosion-Proof Housing
- ✓ Companion Current Transmitters

For Sales and Service  
In U.S.A. and Canada

**1-800-872-3963<sup>SM</sup>**  
**1-800-USA-DYNE**

International Customers Dial  
**(614) 965-9340**  
24-Hour FAX (614) 965-9438

**OMEGADYNE<sup>SM</sup> FAX**

OMEGADYNE's 24-Hour  
On-Line Publishing Service

**1-800-344-3963<sup>SM</sup>**  
**1-800-DIG-DYNE**

Document # 721

**OMEGADYNE, Inc.**  
149 Stelzer Court, Sunbury, OH 43074  
<http://www.omegadyne.com>  
e-mail: [info@omegadyne.com](mailto:info@omegadyne.com)



© COPYRIGHT 1996 OMEGADYNE, INC. ALL RIGHTS RESERVED.

**\$325**  
BASIC UNIT



**BASEEFA**  
**CENELEC**

## DESCRIPTION

Model 508B is a two-wire current-loop indicator that is powered directly by a 1-5 mA, 4-20 mA or 10-50 mA process loop signal, with a maximum voltage drop of 2.5 V. No separate power supply connections are required. This reduces overall hardware and field wiring costs and provides immunity from most electrical noise encountered in process control environments. The electronics are isolated from the case.

## READOUT OF PROCESS VARIABLES

The 508B provides extensive zero and span adjustment capability, so that it can read out directly in percent or in engineering units for process variables such as pressure, flow, temperature, or level. Its liquid crystal display provides 3½ active digits, a selectable dummy right-hand zero, and four programmable decimal points. By changing two internal jumpers, the normal positive slope response of the 508A can be reversed, so that increasing the input decreases the reading.

## EASY TO CONFIGURE AND CALIBRATE

Both span and zero are fine-tuned with precision multiturn potentiometers. These are accessible through holes in the die-cast cover, which are normally sealed with fluorosilicone plugs. Coarse zero and span steps are selected by removing the cover with attached electronics and changing plug-in jumpers.

## DESIGNED FOR HARSH ENVIRONMENTS

All versions of the 508B are rated for operation from -40 to +85°C (-40 to +185°F) with specified accuracy. The case is made of die-cast metal and is waterproof to 35 kPa (5 psi). The electronics are firmly connected to the case top, so that the meter can withstand high vibration and shock. Mounting options include a male ½ EMT conduit fitting and a male ½ NPT pipe fitting in lieu of the normal rail or surface mount. These fittings eliminate the external screw terminals and provide a NEMA-4X rating.

## INTRINSIC-SAFETY CERTIFICATION

FM and CSA intrinsic safety certification is standard. Additional CENELEC intrinsic safety certification is optional. Intrinsic safety certification allows the 508B to be used in worst-case hazardous environments with no need for an explosion-proof housing, provided that an intrinsic safety barrier is used to limit the voltage and current that may be introduced in the hazardous environment.

FM certification (USA) is for Class I, II, III, Division 1, Groups A, B, C, D, E, F, G. The FM certification number is 2P1A7.AX (3610).

CENELEC certification (Europe) is to level EEx ia IIC T4 in accordance with CENELEC standards EN 50 014 (1977) + A1 to 4 and EN 50 020 (1977) for use in Zone 0 (worst case) hazardous environments. The BASEEFA certification number is EX 85B2167.

## EXPLOSION-PROOF HOUSING OPTIONS

Three external NEMA-7 explosion-proof and NEMA-4 waterproof enclosures are available as options for use in hazardous locations in Class I, Groups B, C, D; and Class II, Groups E, F, G. All offer a glass viewing window, two female ½ NPT pipe fittings, all required internal mounting hardware, and mounting flanges for a wall or bulkhead.

Option EPW3 is a single-height enclosure for one 508A loop-powered indicator. FM and CENELEC EEx d II C certification is standard.

Option EPW2 is a double-height enclosure for a 508A loop-powered indicator on top and a 500 Series isolated two-wire 4-20 mA transmitter on the bottom for indicating transmitter applications. FM and CENELEC EEx d II C certification.

## SPECIFICATIONS

### INPUT

**Signal:** 1-5 mA, 4-20 mA or 10-50 mA (jumper-selectable)

**Linear Range:** 0.3 to 50 mA

**Protection:** 200 mA forward, 1000 mA reverse

**Forward Voltage Drop, Max:** 2.5 V up to 50 mA

**Input Resistance:** 50 Ω at 1-5 mA, 12.5 Ω at 4-20 mA, 5 Ω at 10-50 mA

**Zero Adjust:** -2000 to +2000 counts (4 jumper-selectable ranges plus fine adjustment)

**Span Adjust:** 0 to 2000 counts (with fine adjustment)

**NMR:** 46 dB, 50/60 Hz

**CMR, Meter to Case:** 120 dB, DC to 60 Hz

**CMV, Meter to Case:** 700 Vp

**RFI Susceptibility:** Less than ±0.5% of span with conduit fitting or external explosion-proof housing in 10V/m field strength at 27 or 440 MHz

### ACCURACY AT 25°C

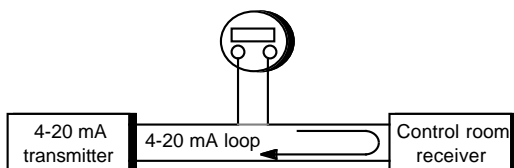
**Maximum Error:** ±0.1% of span ±1 count or Zero tempco ±0.1 count/°C typ, ±0.2 count/°C max

**Span Tempco:** ±0.005% of span/°C typ, ±0.015% of span/°C max

### ANALOG-TO-DIGITAL CONVERSION

**Technique:** Dual-slope, average-value

**Polarity:** Automatic



A Model 508A process-loop indicator may be added to an existing 4-20 mA or 10-50 mA installation. No additional wiring is required, since the meter is powered directly by the current loop.

**Integration Period:** 100 ms

**Read Rate:** 2.5/s

### DISPLAY

**Type:** 7-segment LCD

**Height:** 0.35 in (8.9 mm)

**Symbols:** -1.8.8.8.0 (¾ active digits plus jumper-selectable dummy right-hand zero)

**Decimal Points:** Four positions, jumper-selectable

**Overrange:** Three least-significant active digits blank

### ENVIRONMENTAL

**Operating Temperature:** -40 to +85°C (-40 to +185°F)

**Vibration:** 0.06 in (1.52 mm) double-amplitude cycled at 10-80 Hz

**Shock:** 55 g half-sine, 9-13 ms duration

**Waterproof Pressure:** 35 kPa max (5 psi)

### MECHANICAL

**Weight:** 14 oz (400 g)

**Diameter:** 2.9 in (74 mm)

**Height, Including Barrier:** 1.9 in (48 mm)

### Electrical Connections:

**508A-1:** 3-terminal barrier strip with #6 screws

**508A-2:** ½-inch EMT male conduit fitting with two 0.3 meter #18 stranded wires

**508A-3:** ½-inch NPT male pipe fitting with two 0.3 meter #18 stranded wires

### MOUNTING METHODS

- 508B-1**
- Surface mount with four #6 rear-entry screws from backside of bulkhead.
  - Snap mount into 2.50 in (63.5 mm) relay track.
  - Surface mount with two #8 front-entry screws. Requires MAT1 adapter plate.
  - Snap mount into 2.75 in (69.9 mm) or 3.00 in (76.2 mm) relay track. Requires MAT1 adapter plate.
  - Snap mount into DIN relay track per CENELEC standard EN 50 022. Requires MDT1 rail clamp.
  - Push mount into explosionproof housing EPW3.

**508B-2** • ½-inch EMT male conduit fitting

**508B-3** • ½-inch NPT male pipe fitting

### ► Most Popular Models Indicated Prices shown in U.S. Dollars

To Order (Specify Model Number)		
Model	Price	Configuration
508B-1	\$325	Flat surface or relay track mounting
508B-2	345	EMT conduit mounting
508B-3	345	NPT pipe mounting

### Mounting Options, 508B-1 only

Order Suffix	Add'l. Price	Description
-MAT1	\$10	Adaptor plate for surface mount or 69.9 mm relay track
-MDT1	10	Rail clamp for DIN relay track

### Options

Order Suffix	Add'l. Price	Description
-FS	\$25	Custom configuration and calibration
-IS1	30	CENELEC EEx ia certification label

### Accessories

Model No.	Price	Description
MXS1	\$12	Spring retainers for 508B-1 in explosion proof housing EPW3
MXS2	12	Spring retainers for 508B-1 in explosion proof housing EPW2
EPW3	115	NEMA 4 and NEMA 7 rated environmental enclosure, single height; includes MXS1 hardware
EPW2	135	NEMA 4 and NEMA 7 rated environmental enclosure, double height for 508B-1 and 500 series transmitter; includes MXS1 and MXS2 hardware

Comes with complete operator's manual.

**Ordering Examples: 1.) 508B-1 current loop indicator with flat surface or relay track mounting, \$325.**

**2.) 508B-3 current loop indicator with NPT pipe mounting, \$345.**