



BREARLEY

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TEMPERATURE

Product Data Sheet

DS3106

Loop Powered Indicator

GEN400 SERIES

The GEN400 Series loop powered indicators are designed for series connection into a 4/20mA current loop and to display digitally, in engineering units, the process variable represented by the current flow. The 3½ digit LCD display is incorporated into a cap which can be fitted to a SCH4 body. This base is equipped with a variety of fittings, which enable it to be probe or wall mounted. The assembly is fully sealed to IP67. The GEN400 needs only 1 volt from the loop. The DM401 is identical to the DM400 except that it requires 3 volts from the loop. The DM400X is a version approved for Hazardous Area use and requires 1.6 volts from the loop.

All units are CE compliant in accordance with BS EN 50081-1 and BS EN 50082-1.



INSTALLATION & WIRING GENERAL PRECAUTIONS

- a) The indicator should remain in its packaging prior to installation and stored in a dry environment not subject to extreme temperature
- b) The indicator should not be installed to switch gear, electromagnetic starters, contactors, thyristor power units or motors.
- c) The signal cables connected to the indicator should not run in the same trunking as power cables. Screened cables are recommended at all times.
- d) Always fit the correct size cable glands and 'O' ring seal to the SCH4 base unit to preserve the IP67 sealing. The electronic circuit will be affected by moisture and in some cases be damaged beyond repair.
- e) Always ensure the cap retaining nut is screwed down tightly.
- f) The indicator must be correctly installed on a base for "CE" compliance.
- g) On the GEN400X, the following precautions **MUST** be observed when used in hazardous areas:
 - 1) The electrical circuit in the hazardous area must be capable of withstanding an AC voltage of 500V RMS to earth or frame of the apparatus.
 - 2) The capacitance and either the inductance or the inductance to resistance (L/R) ratio of the hazardous area cables must not exceed the parameters specified in the schedule of the appropriate safety barrier certificate and/or systems certificate.
 - 3) The installation must comply with requirements as specified in BS5345, Part 4 1977.
 - 4) For further information, ask for systems drawing SD3-1247-01.

SPECIFICATION

Input 4-20mA, Two Wire (Reverse, Polarity Protected)

Min Operating Current	DM400	3.8mA
	DM400X	3.8mA
	DM401	3.8mA
Max Loop Drop @ 20mA	DM400	1.0 Volts
	DM400X	1.6 Volts
	DM401	3.0 Volts
Display	3½ Digit LCD	
Display Range	-1000 to +1999 counts 3½ Digit	
Offset	-1000 to +100 counts at 4mA	
Span	200 to 2000 counts (16mA change)	
Decimal Point	3 Positions, plus Blank	
Accuracy	±0.1% rdg, ± Count	
Ambient	0 to 50°C Operating	
Case Size	85mm dia x 114mm Overall	
Entry	M16 & M20	

INSTALLATION

- Legends are fitted by the user into the pocket on the underside of the product label. Units are supplied with the label and legend sheet loose. The required legend must be cut from the sheet provided and inserted into the pocket BEFORE the label is fixed to the indicator.
Note: on the GEN400X, the label and legend are fitted during manufacture.
- The indicator cap mounts directly onto a SCH4 base unit. The base unit may be directly mounted onto the probe assembly or surface mounted. Room is provided in the base to house a two wire transmitter. Base units are available with upto three entries.
- Indicators are normally supplied factory calibrated to the specified range at the time of ordering and no further adjustments are required. If the range was not specified, the unit will be set for 0.0 to 100.0°C range. If new range or calibration check is required, refer to section 5.0.
- Once installation has been completed, remove the protected film from the label.

WIRING

Warning: Wiring Directly 24v Supply will blow the fuse

- The indicator is a two wire device, designed to be connected in series with a 4/20mA current loop. Connection can be made at any point. Refer to section 6.0 for connection details.
- A two part screw terminal block is provided for connection. The screw terminal section unplugs from the indicator PCB to allow easy connection.

TROUBLE SHOOTING

If the indicator is connected and found not to function correctly, review the following procedures:

- Check all electrical connections are clean and tight and of the correct polarity. Check correct links are set.
- Verify that the loop supply available to the indicator is greater than the minimum operating voltage.

CALIBRATION

CAUTION Calibration MUST NOT be carried out in a Hazardous Area.

EQUIPMENT

Current calibrator range 0/20 mA dc. Accuracy 0.01%.

PROCEDURE

- Connect calibrator to indicator terminals in order to simulate current loop. Set to 20mA and allow two minutes warm up period.
- Set the required decimal point position by fitting 'Decimal Point' link to the correct position. Refer to Fig 1 for the correct position.
- GEN400 & GEN400X set 'Range' link to 'Normal' position. On the GEN401, remove 'Range' link and fit to 'Calibration' position. Turn coarse offset potentiometer to fully clockwise position.
- Set current to 16mA, adjust coarse and then fine span potentiometers to obtain the required display span. Note: span equals the expected 20mA reading minus the expected 4mA reading.
- On the GEN401, only remove the link from the 'Calibration' position and return the link to the 'Range' position.
- Set the current to 4mA and adjust coarse and then fine offset potentiometers to obtain the required reading at 4mA. If the required reading is positive and can not be obtained, move 'Range' link to 'Positive' position to obtain more adjustment.
- Set current to 20mA and check display for the correct 20mA reading. Small errors of up to two counts may be trimmed out using the fine potentiometer. Errors greater than two counts point to incorrect calibration in step d) possibly due to the incorrect calculation of span. Return to step c) and repeat procedure.
- Set current to 12mA and check display reads mid scale +/- 1 count.
- Switch off supply and remove tests equipment.

Example Range 50/150°C, Span 100°C for GEN400/GEN400X

- Check 'Decimal Point' link set to 100.0°C
- Ensure 'Range' link is set to normal position
- Turn coarse offset potentiometer fully clockwise
- Set current to 16mA and adjust coarse and then fine span potentiometers until display reads 100.0°C
- Set current to 4mA and adjust coarse and the fine offset potentiometers until display reads 50°C.
- Set current to 20mA and check display reads 150°C
- Set current to 12mA and check display reads 100°C, +/- count
- Switch off supply and remove test equipment.

MECHANICAL DETAILS

Diameter: 85mm including retaining nut, (indicator only)

Length: 61.5mm (indicator only)

Note: SCH4 body is purchased separately

Every effort has been made during the preparation of this document to ensure the accuracy of statements and specifications. However, we do not accept liability for damage, injury, loss or expense caused by errors or omissions made. We reserve the right to withdraw or amend products or documentation without notice.

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