Loop Powered Indicator

DS3102



Features:

- Large 20mm LCD display
- Only 1 volt from loop
- Loop powered
- Stainless Steel case 100mm dial
- Sensor / wall / panel mount
- IP65 enclosure

Description:

The GEN500 is a loop powered indicator which is 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 GEN500 needs only 1 volt from the loop. The GEN500X is a version approved for hazardous area use and requires 1.6 volts from the loop. Style Fand G housing will accommodate any suitable in head transmitter.

INSTALLATION & WIRING

General Precautions

a) The indicator should remain in its packaging prior to installation and stored in a dry environment not subject to extremes of temperature.

b) The indicator should not be installed adjacent 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) The electronic circuit will be affected by moisture and in some cases be damaged beyond repair. Always ensure the case is assembled correctly.

in some cases be damaged beyond repair.

Always ensure the case is assembled correctly.

e) On the MD500X 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 A.C. test 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 requirement as specified in BS5345 Part 4 1977.

SPECIFICATION

	DM500	DM500X
Min Operating Current	3.8	3.8 mA
Max Loop Drop @20mA	1.0	1.6 Volts
Display	20mm 3`Digit LCD	
Display Range	-200 to +1999 counts	
Offset	-1000 to +1000 counts at 4mA	
Span	200 to 2000 counts (16mA change)	
Decimal Point	3 positions, plus blank	
Accuracy	±0.1% rdg, ± count	
Operating Temp	0 to 40°C operating	
Case Size	100mm dia body 112.5mm dia bezel	
Entry	M16 & M20	

UKAS CALIBRATION 0043

BSI UKAS QUALITY MANAGEMENT CERTIFICATE NO. FM22358

General Note
TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

© TT electronics plc

TT Electronics | Roxspur Measurement & Control
2 Downgate Drive, Sheffield, South Yorkshire, S4 8BT, UK |Ph: +44 (0) 114-244-2521
www.ttelectronics.com | RoxspurSales@ttelectronics.com

Installation
a) The standard unit may be customised to include requirements by removing the appropriate legend from the sheet supplied and inserting into window in facia label.
b) 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 to 100.0 range. If a new range or calibration check is required refer to section 5.0.

Wiring
a) 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.
b) A two part screw terminal block is provided for connection. The screw terminal section unplugs from the indicator PCB to allow easy connection.

Electromagnetic Compatibility
The unit complies with the protection requirements of directives 89/336/EEC and 92/31/EEC when correctly mounted in its stainless steel housing.

TROUBLESHOOTING
If the indicator is connected and found not to function correctly review the following procedures :
a) Check all electrical connections are clean and tight and of the correct polarity. Check correct links are set.
b) Verify that the loop supply available to the indicator is greater than the minimum operating voltage.
c) Connect a current meter in series with the current loop and check current is between 4/20 mA. If possible vary current over the working range. If no current is present check the PCB mounted fuse FS1 (not fitted to DM500X) and replace if blown. For more details refer to section 6.0.
d) Check that the polarity of the wiring is correct.
e) If the above tests fail to provide a working system, replace the indicator with a new unit and return faulty unit for repair.
Replacement Fuse Order Code: 125mA, 25-100-0112-50

CALIBRATION—CAUTION: Calibration MUST NOT be carried out in the hazardous area.

Equipment
Current calibrator range 0/20 mA DC. Accuracy 0.01%

Procedure
a) Connect calibrator to indicator terminals in order to simulate current loop. Set to 20mA and allow two minutes warm up period.
b) Set the required decimal point position by fitting ‘Decimal Point’ link to the correct position. Refer to Section 6.0 for the correct position.
c) Remove 'Range' link and fit to 'Calibration' position.
d) 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.
e) Remove the link from the 'Calibration' position and return the link to the 'Range' position.
f) 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 cannot be obtained move 'Range' link to 'Positive' position to obtain more adjustment.
g) 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. h) Set current to 12mA and check display reads mid scale +/-1 count.
i) Switch off supply and remove test equipment.

General Note
TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics’ own data and is considered accurate at time of going to print.

© TT electronics plc

Example Range 50/150₀C, Span 100₀C

a) Check 'Decimal Point' link set to 100₀C.
b) Remove 'Range' link and set to normal position.
c) Turn coarse offset potentiometer fully clockwise.
d) Set current to 16mA and adjust coarse and then fine span potentiometers until display reads 100₀C.
e) Set current to 4mA and adjust coarse and the fine offset potentiometers until display reads 50₀C.
f) Set current to 20mA and check display reads 150₀C.
g) Set current to 12mA and check display reads 100₀C, ±1 count.
h) Switch off supply and remove test equipment.

DM500X I.S. SPECIFICATION

U Max In 28V
I Max In 150mA
T Ambient 50°C
EEx ia IICT5
EX90C2062

Range:

LK2 = Calibration
LK4 = Extra Adjust.
VR1 = Coarse Span
VR3 = Fine Offset
LK3 = Normal
VR2 = Fine Span
VR4 = Coarse Offset
Decimal Point
LK1 Positions
1.888
18.88
188.8
9.0 MECHANICAL DETAIL
Loop
Load
SEM110
TRANSMITTER
0 V
DM500
+24 V
- +

LK4
LK3
LK1
4-20mA
VR1
VR2
VR3
VR4
LK2
o FS1
(DM500 only)
3 HOLES DIA 5
ENTRY M16 x 1.5
51
Ø 100
40
Ø 133
3 HOLES DIA 4.5
ENTRY M16 x 1.5
ENTRY M20 x 1.5 ENTRY M16 x 1.5
Ø 112.5
ENTRY M16 x 1.5 ENTRY M20 x 1.5
Ø 112.5
66.5
24
17
17
Ø 33 DIA
51.5
Style 'B' housing, Side entry M16
Style 'D' housing, Rear entry M16
Style 'F' housing, Two Side entries
Style 'G' housing, Rear/Side entries

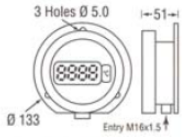
General Note
TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

© TT electronics plc

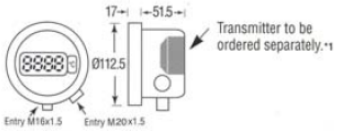
TT Electronics | Roxspur Measurement & Control
2 Downgate Drive, Sheffield, South Yorkshire, S4 8BT, UK |Ph: +44 (0) 114-244-2521
www.ttelectronics.com | RoxspurSales@ttelectronics.com

COMPONENT LOCATION

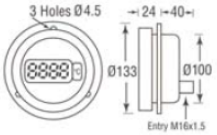
MECHANICAL DETAILS Weight 0.23Kg (excluding optional transmitter)



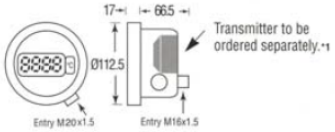
Case Style B. Wall Mounting



Case Style F. Side Entry



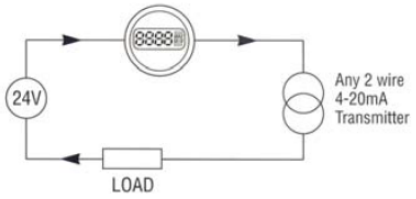
Case Style D. Panel Mounting



Case Style G. Rear Entry

TYPICAL APPLICATION (NON HAZARDOUS AREAS)

TYPICAL APPLICATIONS



For hazardous areas, i.e. I.S. Installations consult appropriate systems certificate wiring diagram.

General Note

TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

© TT electronics plc

TT Electronics | Roxspur Measurement & Control

2 Downgate Drive, Sheffield, South Yorkshire, S4 8BT, UK |Ph: +44 (0) 114-244-2521

www.ttelectronics.com | RoxspurSales@ttelectronics.com