EM SERIES DIGITAL PANEL METERS

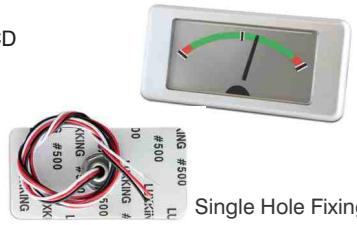
S - Normally Stock
L - Limited Stock
O - Ex Order

LASCAR

A series of low profile digital panel meters, designed to be mounted in a 5.5mm (7/32") diameter hole. The EM series has a splashproof option, by fitting the rubber seal provided, when installing the meters. All have a bezel size of 44x21mm.

EMA 1710 (Analog DC Voltmeter)

- 9 segment virtual analog LCD
- Colour scale
- Auto-zero
- 1V full scale deflection
- No calibration required
- 3 wire connection



Single Hole Fixing.

EMT 1900 (Thermometer)

- 3 digit LCD with °C and °F
- 12.5mm (0.5") digit height
- 4 measurement ranges
- Internal or external sensor
- 5 wire connection

Single Hole Fixing.

EMV 1025S-01 (DC Voltmeter)

- 3½ digit LCD with low batt .sign
- 12.5mm (0.5") digit height
- 200mV full scale reading
- 3 wire connection

Single Hole Fixing.

EMV 1200 (2 Wire DC Voltmeter)

EMV 1200-40 1-40V d.c Version

- 3 digit LCD
- 12.5mm (0.5") digit height
- Signal powered
- Range: 4-25V
- Reverse polarity protection
- No calibration required
- 2 wire connection

Single Hole Fixing.

EMV 1125 (DC Voltmeter)

- 3½ digit LCD low battery warning
- 12.5mm (0.5") digit height
- Programmable decimal points
- Auto-zero, auto polarity
- 6-10 wire connection
- Supplied with screw terminal board

Single Hole Fixing.

EMC 1500 (Elapsed hour meter Single-Hole Mounting)

- 5 digit LCD with annunciators
- 9.0mm (0.35") digit height
- Volt sense input
- Reset and trip/total inputs
- Leading zero blanking input
- Pulse output every hour
- Remembers elapsed time on power loss
- 3-8 wire connection

Single Hole Fixing.

EM 32 SERIES DIGITAL PANEL METERS

S - Normally Stock
L - Limited Stock
O - Ex Order

LASCAR

The EM32 Series consists of an LCD and LED digital voltmeter designed to be panel mounted in most low and medium volume applications. Panel cut-out: ϕ32.5mm. These meters feature an 8mm digit height, 3½ or 4 digit display, 3 decimal points, auto-polarity, auto zero, 200mV full scale reading and low current consumption. Each product has been designed so that NO soldering is required. Connection is via screw terminals & options are selected via jumper links. The modules feature a round metal bezel, requiring a 32.5mm(1.28") diameter cut out, it is secured with the nut provided. Protection from the front to IP67 / NEMA 4X standards is achieved by fitting the rubber seal provided between the module and panel during assembly.

EM32-1B

- 3½ digit LCD with 8mm digit height
- 200mV d.c. full scale reading
- 500µA @ 3.5 to 6.5V d.c. or 150µA @ 7.5 to 14V d.c. Operation

EM32-1B-LED

- 3½ digit LED with 8mm digit height
- 200mV d.c. full scale reading
- 50mA @ 5V d.c. operation

LED

EM32-4-LED

- 4 digit LEDwith 8mm digit height
- 20mA @ 5V d.c. Operation
- Drives up t0 4 External LED's
- Connection via 2 rows of posts

LED

EM32-1900 LCD NTC Thermometer

- 3 digit LED with 12.5mm digit height
- Range -40 to 105˚C
- 3 samples / sec
- Supply Voltage 4 to 28 V d.c.
- Supply Current 1- 10mA

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SP SERIES — DIGITAL PANEL METERS

S - Normally Stock
L - Limited Stock
O - Ex Order

LASCAR

A new series of digital panel meters combining a low profile with miniature "Component style" body. The SP series can provide splash-proof protection, when the supplied silicon seal is fitted. All these units have a 35x22mm bezel & a 34x21mm cut-out.

SP100 (LED VOLTMETER, 12 PIN VERSION)

- 3½ digit LED voltmeter
- 9.4mm (0.37") digit height
- Auto-zero, auto polarity
- Programmable decimal points
- 200mV full scale reading
- Display blanking facility
- Compatible with other manufacturer's modules
- DIL connection
- Digital hold version ***Sp101***

SP200 (LCD VOLTMETER, 12 PIN VERSION)

- 3½ digit LCD voltmeter
- 9.75mm (0.38") digit height
- Low battery warning
- Auto-zero, auto-polarity
- Programmable decimal points
- 200mV full scale reading
- LED backlighting
- Compatible with other manufacturer's modules
- DIL connection

SP300 (LED VOLTMETER, 8 PIN VERSION)

- 3½ digit LED voltmeter
- 9.4mm (0.37") digit height
- Auto-zero, auto polarity
- Programmable decimal points
- 200mV full scale reading
- SIL connection

SP300 BLUE LED BACKLIGHTING

SP 300 - 8 Pins.

SP400 (LCD VOLTMETER, 9 PIN VERSION)

- 3½ digit LCD voltmeter
- 9.75mm (0.38") digit height
- Low battery warning
- Auto-zero, auto-polarity
- Programmable decimal points
- 200mV full scale reading
- LED backlighting
- SIL connection

SP400 BLUE LED BACKLIGHTING

SP400-EB

- 3½ Digit LCD Voltmeter
- Enhanced Black LCD
- LED Backlighting
- 200mV Full Scale Reading
- 9 Pin SIL Connection
- 7 colour options

SP5 / SP8 SERIES — DIGITAL PANEL METERS

S - Normally Stock
L - Limited Stock
O - Ex Order

LASCAR

The SP5 series consists of a 2-wire, signal powered voltmeter, 1V d.c. virtual analog voltmeter and a graphics display in a clip mount housing. This range of modules has a very low profile design. Once fitted, the face of the module sits almost flush with the panel. At the rear of the module, the mounting depth is also kept to a minimum, allowing use of the space behind the module. For harsher applications, the SP5 series is supplied with a rubber seal which, once fitted makes the modules splashproof from the front. Typical applications for this series include handheld Instrumentation and process equipment. All these units have a 48x36mm bezel & a 47x35mm cut-out.

SP5-GFX1 (128 x 64 Pixel Graphics Display)

- 128 x 64 pixel LCD
- LED backlighting
- 6 o'clock viewing direction
- Serial data interface
- No callibration required
- Supplied with splashproof seal
- SIL 10-way connection

SP8-100 (LED Voltmeter, 8 Pin version)

- 3½ digit LED voltmeter
- 14.2mm (0.56") digit height
- 200mV d.c. full scale reading
- 50mA @ +5V d.c. power supply
- Auto-zero and auto-polarity
- Programmable decimal points
- Bright red LED display

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A series of digital panel meters with a one-piece, snap-in design, making installation a quick and easy procedure. Each meter has a large display in a miniature housing. All are backlit or use LED displays.

DPM116 (3 ½ Digit LCD Voltmeter)

This compact panel meter features a 3½ digit LCD with 12.5mm (0.5") digit height and a low-profile bezel for mounting.12-way SIL.

DPM125 (3 ½ Digit LCD Voltmeter)

This compact panel meter features a 3½ digit LCD with 12.5mm (0.5") digit height and a low-profile bezel for mounting. Single-in-line SIL.

DPM125-BL (3 ½ Digit LCD Voltmeter LED backlit)

This compact panel meter features a 3½ digit LCD with 12.5mm (0.5") digit height and a low-profile bezel for mounting. Single-in-line SIL.

DPM160 (4 ½ Digit LCD Voltmeter)

This 200mV/2V voltmeter features a 4½ digit LCD with 12.5mm (0.5") digit height and a low-profile bezel for mounting.

DPM160S (4 ½ Digit LCD Voltmeter Single Rail Version)

This 200mV/2V voltmeter features a 4½digit LCD with 12.5mm (0.5") digit height and a low-profile bezel for mounting.

DPM 1AS-BL (Compact 3 ½ Digit LCD Voltmeter)

This compact panel meter features a 3½ digit LCD with 5.5mm (0.22") digit height, one-piece snap-in housing and LED backlighting.

DPM2000 (3 ½ Digit LCD Voltmeter)

Compact 200mV d.c. panel meter featuring a 3½ digit LCD with 15mm (0.6") digit height and a low-profile bezel for mounting.

DPM2000S (3 ½ Digit LCD Voltmeter Single Rail Version)

Compact 200mV d.c. panel meter featuring a 3½ digit LCD with 15mm (0.6") digit height and a low-profile bezel for mounting.

DPM 2AS-BL (Compact 3 ½ Digit LCD Voltmeter)

Compact 200mV d.c. panel meter featuring a 3½ digit LCD with 8.25mm (0.32") digit height, one piece snap-in housing and LED backlighting.

DPM340 (Compact 3 ½ Digit LCD Voltmeter)

Compact 200mV d.c. panel meter featuring a 3½ digit LED with 8mm (0.31") digit height, one piece snap-in housing.

LED

DPM342 (Compact 4-20mA Loop Powered LCD Meter)

Compact 4-20mA loop powered panel meter featuring a 3½ digit LCD with 11mm (0.43") digit height, LED backlighting and one-piece snap-in housing.

DPM 3AS-BL (Compact 3 ½ Digit LCD Voltmeter)

Compact 200mV d.c. panel meter featuring a 3½ digit LCD with 11mm (0.43") digit height, one-piece snap-in housing and LED backlighting.

DPM40 (200mV LED Voltmeter)

This panel meter features a 3½ digit LED display with 11mm (0.43") digit height.

LED

DPM400 (3 ½ Digit LCD Voltmeter)

This compact panel meter features a 3½ digit LCD with 10mm (0.4") digit height, annunciators and a low-profile bezel for mounting.

DPM500 (3 ½ Digit LCD Voltmeter)

This compact panel meter features a 3½ digit LCD with 12.5mm (0.5") digit height, annunciators and a low-profile bezel for mounting.

DPM500S (3 ½ Digit LCD Voltmeter Single Rail)

This compact panel meter features a 3½ digit LCD with 12.5mm (0.5") digit height, annunciators and a low-profile bezel for mounting, Single Rail.

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A series of digital panel meters with a one-piece, snap-in design, making installation a quick and easy procedure. Each meter has a large display in a miniature housing. All are backlit or use LED displays.

DPM600 (200mV LCD Voltmeter with Annunciators)

This panel meter features a 3½ digit LCD with 12.5mm (0.5") digit height and annunciators.

DPM600S (200mV LCD Voltmeter with Annunciators)

This Single rail panel meter features a 3½ digit LCD with 12.5mm (0.5") digit height and annunciators.

DPM700 (200mV LCD Voltmeter with Annunciators)

This panel meter features a 3½ digit LCD with 12.5mm (0.5") digit height, annunciators and LED backlighting.

DPM700S (Bezel Mounted LCD Voltmeter with LED Backlighting)

This panel meter features a 3½ digit LCD with 12.5mm (0.5") digit height, annunciators and LED backlighting.

DPM702S (Dual 200mV Voltmeter with LED Backlighting)

This dual channel 3½ digit LCD panel meter features 6.4mm (0.25") digit height, 200mV d.c. full scale reading, auto-zero and auto-polarity.

DPM742-BL (4-20mA Loop Powered LCD Meter with LED Backlighting)

4-20mA loop powered panel meter featuring a 3½ digit LCD with 12.7mm (0.5") digit height and LED backlighting.

DPM750S-BL (200mV LCD Voltmeter with Backlighting)

This panel meter features a 3½ digit LCD with 12.7mm (0.5") digit height, annunciators and LED backlighting.

DPM750S-EB-W (LCD Voltmeter with White Digits & Black Background)

DPM942 (Large 4-20mA Loop Powered LCD Meter)

This large loop powered indicator features a 3½ digit LCD with 19mm (0.75") digit height.

DPM942-BL (Large 4-20mA Loop Powered LCD Meter & LED Backlighting)

DPM942-FPSI (Large 4-20mA Loop Powered LCD Meter with Red/Green Programmable Backlighting)

This large loop powered indicator features a 3½ digit LCD with 19mm (0.75") digit height and programmable LED backlighting.

DPM950 (Large Voltmeter with LED Backlighting)

This large panel meter features a 3½ digit LCD with 19mm (0.75") digit height and LED backlighting.

DPM950S (Large 200mV LCD Single Rail Voltmeter with LED Backlighting`

Compact 4-20mA loop powered panel meter featuring a 3½ digit LCD with 11mm (0.43") digit height, LED backlighting and one-piece snap-in housing.

DP950S-EB (Large 200mV Single-rail Voltmeter with White Digits & Black Background)

This large panel meter features a 3½ digit LCD with 19mm (0.75") white on a black background.

DPM950S-FPSI (Large 200mV LCD Voltmeter with Red/Green Programmable Backlighting)

This large panel meter features a 3½ digit LCD with 19mm (0.75") digit height and programmable LED backlighting.

DPM959B (Large 200mV LED Voltmeter)

This large panel meter features a 3½ digit LED display with 19mm (0.75") digit height.

LED

DPM970 (Large AC LCD Voltmeter with LED Backlighting)

This large panel meter features a 3½ digit LCD with 19mm (0.75") digit height and LED backlighting.

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OEM SERIES

S - Normally Stock
L - Limited Stock
O - Ex Order

LASCAR

DIGITAL PANEL METERS

Designed as component style meters, the OEM series are ideally suited to both Medium & high volume applications. Typical uses for this series include personal instrumentation, integral sensor indicators and power supply monitoring. The range consists of two LCD meters, a bare PCB style meter & metal framed version and a potted LED meter. The LED meter is dimensionally compatible with the metal framed LCD version and has the same digit height.

OEM 1B (Ultra Compact LCD Voltmeter)

This ultra-compact, low current consumption panel meter features a 3½ digit LCD voltmeter with 8mm (0.31") digit height.

OEM 1B-LED (Ultra Compact LED Voltmeter)

This ultra-compact, low current consumption panel meter features a 3½ digit LED voltmeter with 8mm (0.31") digit height.

V SERIES

S - Normally Stock
L - Limited Stock
O - Ex Order

LASCAR

DIGITAL PANEL METERS

A series of digital panel meters intended for use in high volume applications. Each meter has good performance, Is easy to use and offers value for money. The V 1, V 125 and V 600 modules are only available in packs of 10. All modules are supplied with bezels. An evaluation pack V EVAL, containing one of each meter and a demonstration unit is also available.

V1 (Low Cost 200mV LCD Voltmeter)

- 3½ digit LCD voltmeter
- 6.3mm (0.25”) digit height
- Auto-zero, auto-polarity
- User selectable decimal points
- 200mV full scale reading
- DIL connection

V125 (Low Cost 200mV LCD Voltmeter)

- 3½ digit LCD voltmeter
- 12.5mm (0.5”) digit height
- Auto-zero, auto-polarity
- User selectable decimal points
- 200mV full scale reading
- SIL connection

V600 (Low Cost 200mV LCD Voltmeter)

- 3½ digit LCD voltmeter
- 15mm (0.6”) digit height
- Auto-zero, auto-polarity
- User selectable decimal points
- 200mV full scale reading
- Compatible with industry-standard types
- SIL connection

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DPM 342

LED Backlit 4-20mA Loop Powered Indicator

A compact loop powered indicator giving an accurate, zero corrected indication of 4-20mA loop current. Calibration is by two multi-turn potentiometers which allow sensitive adjustment of the instrument. The DPM 342 features an integral snap-in bezel, making installation easy. The module's LED backlighting ensures a clear display, even under low light conditions. No soldering is required. Connection to the current loop is via two screw terminals. The correct decimal point is selected via a jumper link.

- 11mm (0.43") Digit Height
- Programmable Decimal Points
- Low Volt Drop
- Loop Powered LED Backlighting
- Simple Screw Terminal Connections
- Wide Adjustment Range
- Auto-polarity on Display

RoHS

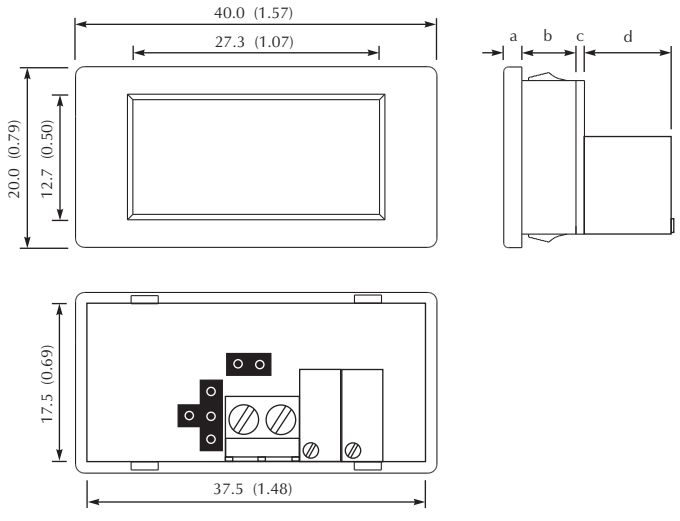
Standard Meter			Stock Number DPM 342	
Specification	Min.	Typ.	Max.	Unit
Accuracy (overall error) *	0.05		0.1	%(±1 count)
Linearity			±1	count
Sample rate		3		samples/sec
Operating temperature range	0		50	°C
Temperature stability		200		ppm/°C
Loop Volt Drop	5	5.6	6	V
Supply current	4			mA
Full scale reading (20mA)	0		1999	Count
Offset adjustment range + (span x 0.25)	-950		+950	Count

*To ensure maximum accuracy, re-calibrate periodically.

CONNECTOR SOURCING GUIDE

METHOD	Screw Terminals - No Connector Required

DIMENSIONS All dimensions in mm (inches)

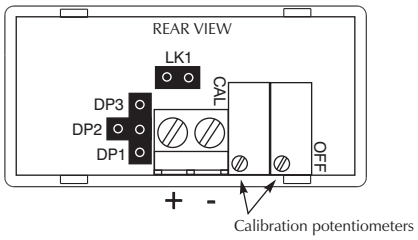


a. 2.00 (0.08)
b. 6.00 (0.24)
c. 1.60 (0.06) max
d. 9.50 (0.37)

Panel cut-out
38.0 x 18.0 (1.50 x 0.71)

Panel thickness
1.0 to 2.5 (0.04 to 0.1)

ON BOARD JUMPER LINKS



TERMINAL FUNCTIONS

1. + Positive current input.
2. - Negative current input.

CALIBRATION

The meter is supplied calibrated to read 000 for 4mA loop current and 1000 for 20mA. Calibration is carried out in two simple stages because the DPM 342 has a very wide adjustment range . Place the jumper link across LK1. This disables the offset adjustment to enable span adjustment to be made first. After span adjustment is complete, the jumper link is removed and the offset adjustment is made. The jumper link is then used to display one of the decimal points if necessary.

Example to re-calibrate: Meter to read -40.0 for 4mA and 150.0 for 20mA.

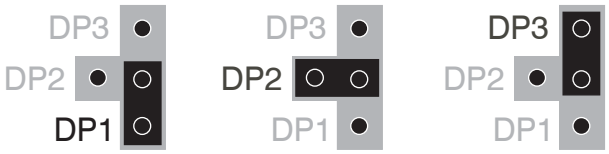
1. Calculate the span by subtracting the desired reading at 4mA from the desired reading at 20mA: 1500 - (-400) = 1900
2. Short jumper link Lk1 with the link header normally used to select the desired Decimal Point.
   Link Lk1 is located above the screw terminals.
3. Apply 16mA between the + and - screw terminals.
4. Adjust the CAL potentiometer so the DPM 342 indicates 1900.
5. Remove jumper link Lk1 and place it back on the desired Decimal Point (DP1 in this case).
6. Apply 4mA between the - and + screw terminals.
7. Adjust the OFF potentiometer so the DPM 342 indicates the desired reading at 4mA: -40.0
8. Adjust CAL and OFF as necessary for optimum accuracy, by repeating steps 2 to 7.

SAFETY

The user must ensure that the incorporation of the DPM into the user's equipment conforms to the relevant sections of BS EN 61010 (Safety Requirements for Electrical Equipment for Measuring, Control and Laboratory Use). No inputs other than 4-20mA indicating loop current should be made.

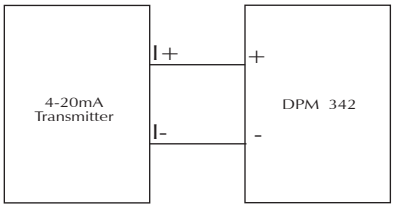
JUMPER LINKS:

In order to quickly and easily select the required Decimal Point, the meter has several on-board jumper links.



CURRENT LOOP CONNECTION:

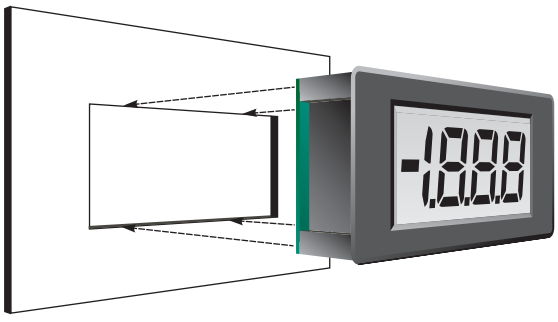
The DPM 342 and its backlighting are powered from the 4-20mA signal loop and need no other power supply. Ensure correct polarity when connecting.



Connecting the DPM 342 to a 4-20mA Current Loop.

PANEL FITTING

Locate the meter by passing it through the front of the panel cut-out and gently push until the rear of the bezel is flush with the panel (DO NOT PUSH ON THE LCD). The snap-in lugs will now automatically hold the meter firmly in position. Take care when inserting the meter, not to damage the current loop wires and not to short them on the panel.



DPM 742-BL

4-20mA Loop Powered Indicator with Backlighting

PRODUCT DESCRIPTION

The DPM 742-BL gives an accurate, zero adjusted indication of a 4-20mA current. Calibration is by three multi-turn potentiometers which allow sensitive adjustment of the instrument over a very wide range. Decimal points are jumper link selectable. A low drift bandgap reference circuit ensures accurate readings over a wide temperature range.LED backlighting ensures excellent readability under low light conditions. Connection is via screw terminals. The module's low cost means it will suit high and low volume applications. This module is supplied with a plastic mounting bezel. A waterproof seal to IP67 / NEMA 4X is achievable, using the optional BEZ 700-IP metal bezel.

FEATURES

- 12.7 mm (0.5") Digit Height
- 4-20mA Loop Powered Indication
- Low Volt Drop
- Programmable Decimal Points
- LED Backlighting (30mA @ 5V typ.)
- Bandgap Reference
- Wide Adjustment Range
- Auto-polarity on Display
- IP67 / NEMA 4X Protection via BEZ 700-IP

ORDERING INFORMATION

	Stock Number
Standard Meter	DPM 742-BL
IP67 / NEMA 4X Bezel	BEZ 700-IP

ELECTRICAL SPECIFICATIONS

Specification	Min.	Typ.	Max.	Unit
Accuracy (overall error) *	0.05		0.1	% (± 1 count)
Linearity			±1	count
Sample rate		2.5		samples/sec
Operating temperature range	0		50	°C
Temperature stability		200		ppm/°C
Loop Volt Drop	5	5.6		V
Supply current	4		20	mA
Backlight supply voltage	4.75	5.0	**	V d.c.
Backlight supply current @ 5V d.c.		30	50***	mA
Full scale reading (@ 20mA)	0		1999	Count
Offset adjustment range	-1900		+ 1900	Count

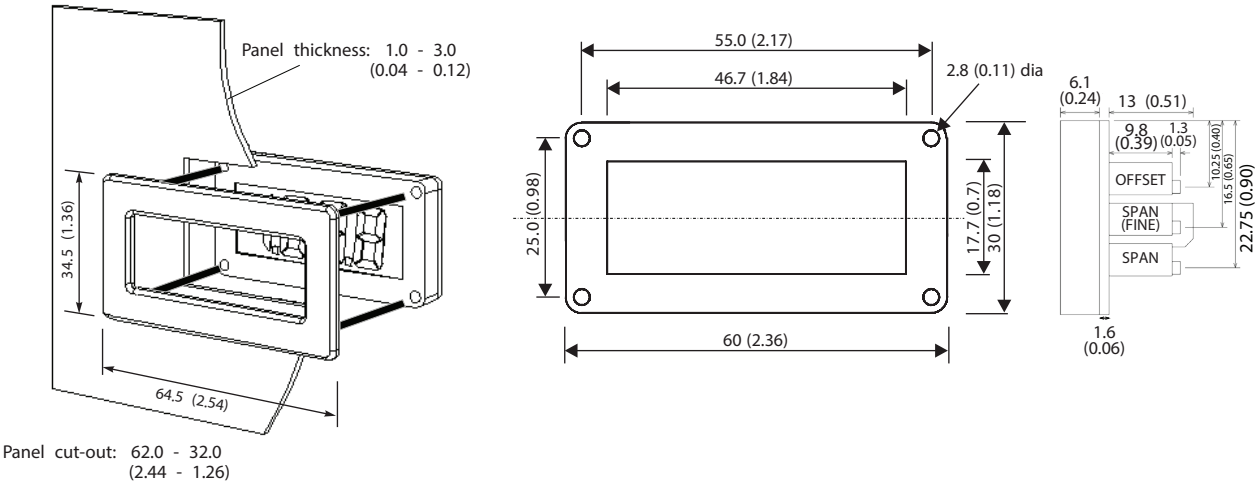
* To ensure maximum accuracy, re-calibrate periodically.
** An external series resistor is required above 5V, see Applications.
*** This specification linearly derates to 30mA @ 50°C.

DPM 742-BL

4-20mA Loop Powered Indicator with Backlighting

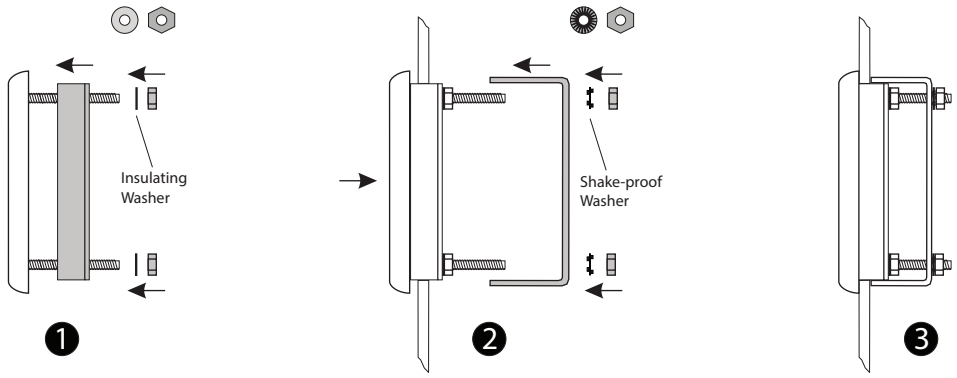
DIMENSIONS

All dimensions in mm (inches)

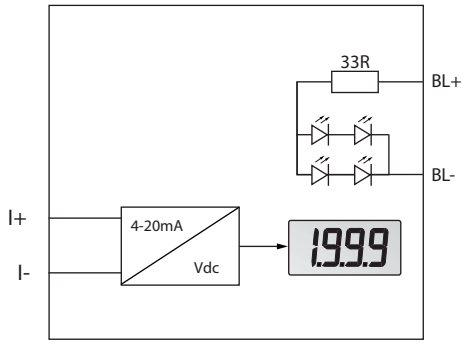


Panel cut-out: 62.0 - 32.0
(2.44 - 1.26)

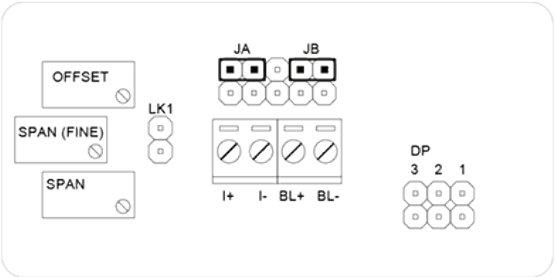
PANEL FITTING



FUNCTIONAL BLOCK DIAGRAM



CONNECTIONS (rear view)

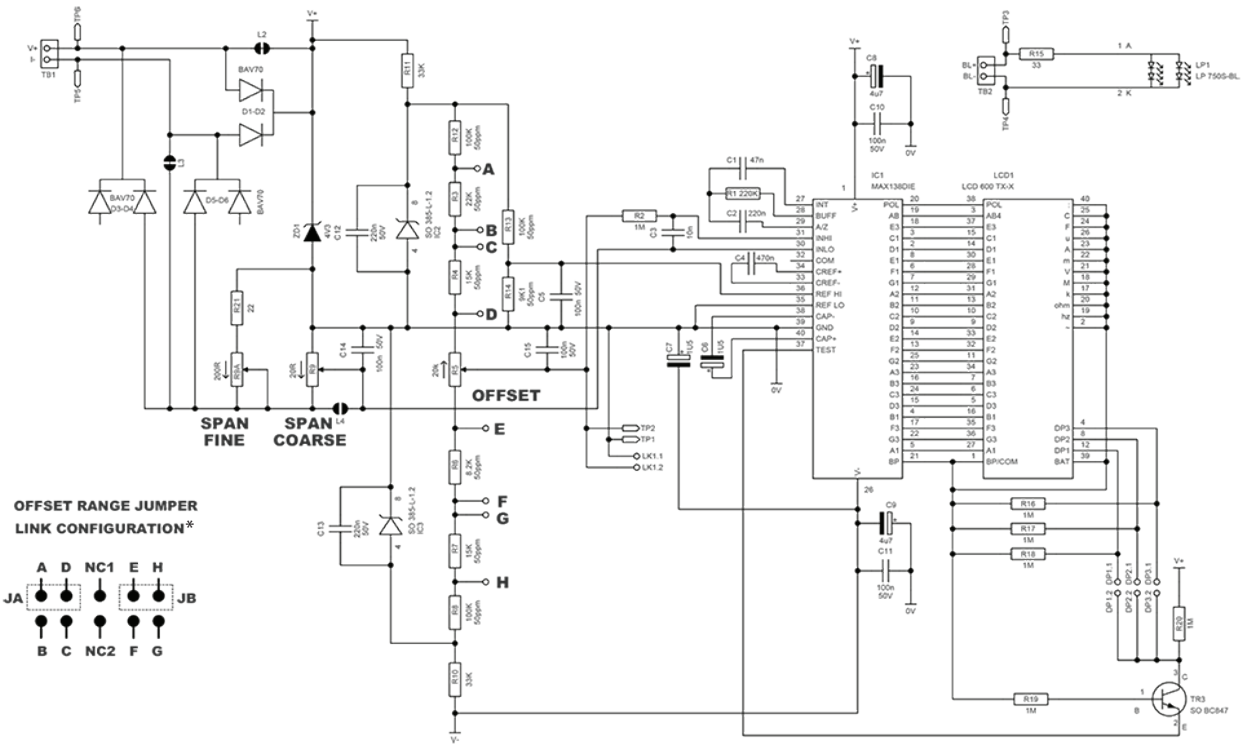


DPM 742-BL

Johannesburg Branch
MIMIC COMPONENTS
Cape Town Branch
Mimic Cape

4-20mA Loop Powered Indicator with Backlighting

CIRCUIT DIAGRAM



*By applying one link across A-B, C-D, E-F or G-H, the Offset range can be altered.

SCREW TERMINAL FUNCTIONS

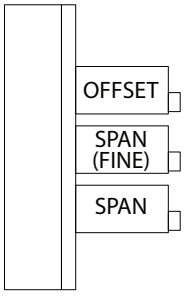
I+ Positive current input.
I- Negative current input.
BL+ Positive power supply connection to the LED backlighting.
BL- Negative power supply connection to the LED backlighting.

CALIBRATION

To re-calibrate, place the Jumper Link across LK1. This disables the Offset adjustment to enable Span adjustment to be made first. After Span adjustment is complete, the Jumper Link is removed and the Offset adjustment is made. The Jumper Link is then used to display one of the decimal points if necessary.

Example to re-calibrate: Meter to read -40.0 at 4mA and 150.0 at 20mA.

1. Calculate the Span by subtracting the desired reading at 4mA from the desired reading at 20mA: 1500 - (-400) = 1900
2. Place Jumper Link Lk1 with the link header normally used to select the desired Decimal Point. Link Lk1 is located to the left of the screw terminals.
3. Apply 16mA between the + and - screw terminals.
4. Set the Fine Span control to approximately mid-way. Set the Coarse Span adjustment to give a reading of 1900. Use the Fine Span control as necessary to get a precise reading.
5. Remove Jumper Link Lk1 and place it back on the desired Decimal Point (DP1 in this case).
6. Apply 4mA between the - and + screw terminals.
7. Adjust the Offset potentiometer so the DPM 742-BL indicates the desired reading at 4mA: -40.0
8. Adjust Span and Offset as necessary for optimum accuracy. First apply 20mA and adjust Span untill the reading is 150.0. Then apply 4mA and adjust Offset untill the reading is -40.0. Repeat step 8 until correct readings are obtained at 4mA and at 20mA.

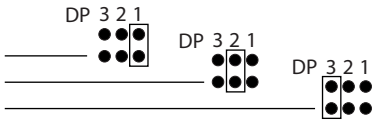


DPM 742-BL

4-20mA Loop Powered Indicator with Backlighting

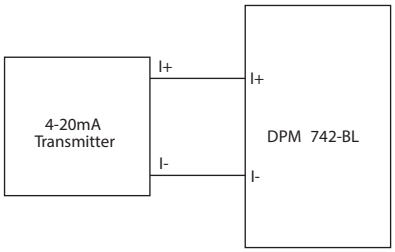
JUMPER LINKS

DP1	Displays decimal point DP1 (199.9).
DP2	Displays decimal point DP2 (19.99).
DP3	Displays decimal point DP3 (1.999).
Lk1	Used during calibration (see above).

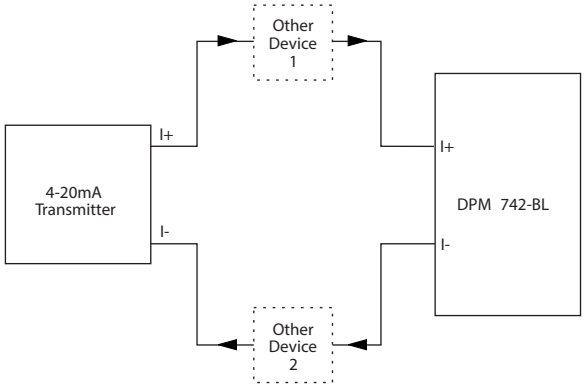


APPLICATIONS

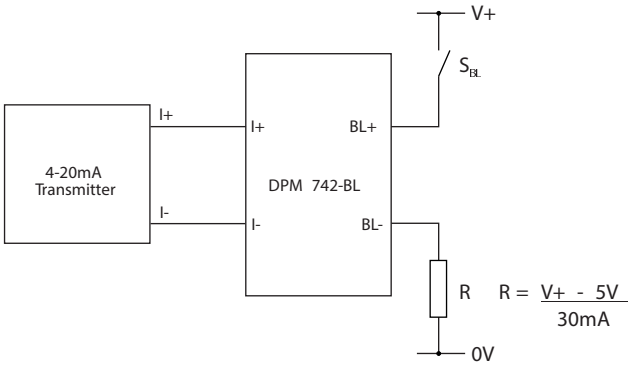
The DPM 742-BL is powered from the 4-20mA signal loop and needs no other power supply. The LED backlighting requires a separate d.c. power supply. Ensure correct polarity when connecting.



Measuring a 4-20mA loop current.



Measuring a 4-20mA loop current with other devices in the loop.



Measuring a 4-20mA loop current with LED Backlighting switched on.

Note:
If the backlighting supply voltage (V+ - 0V) = 5V, then no resistor R is required, and connect BL- to 0V.

DPM 942

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4-20mA Loop Powered Indicator

A loop powered indicator giving an accurate, zero corrected indication of 4-20mA loop current. Calibration is by two 20-turn cermet potentiometers which allow sensitive adjustment of the instrument. The meter is housed in a robust carrier, which can be bolted in place or panel mounted using the low profile bezel and clips provided.

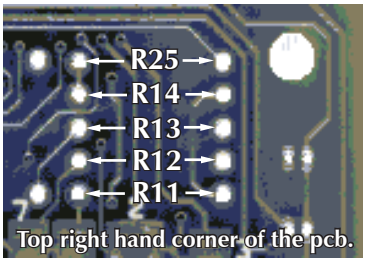
- 19mm (0.75“) Digit Height
- Programmable Decimal Points
- Low Volt Drop
- Simple Screw Terminal Connections

CUSTOM SCALING

For alternative scaling to the standard 0 - 1000, cut Link 8 and short Link 7. Add two resistors R12 and R13 which will set the basic scale of the meter. The highest practical value for the R12 and R13 series combination is 12R. To select your desired scaling, use the following formula:

$$R12 + R13 = \frac{\text{Full Scale reading at 20mA}}{160}$$

Re-calibrate as necessary.



Standard Meter				Stock Number DPM 942
Specification	**Min.**	**Typ.**	**Max.**	**Unit**
Accuracy (overall error) *	0.05		0.1	%(±1 count)
Linearity			±1	count
Sample rate		3		samples/sec
Operating temperature range	0		50	℃
Temperature stability		100		ppm/℃
Loop Volt Drop	3.9	4.3	4.8	V

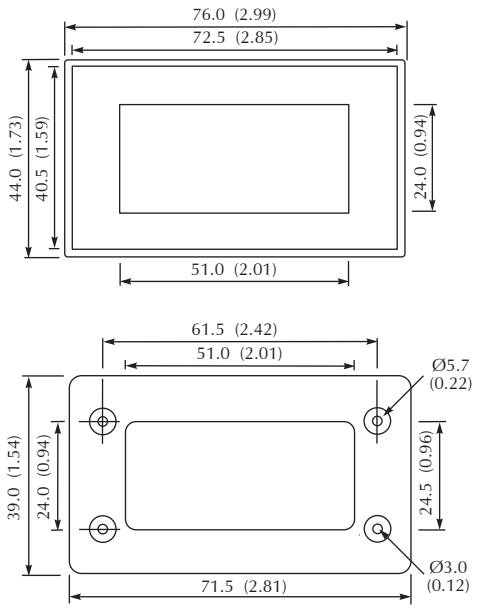
*To ensure maximum accuracy, re-calibrate periodically.

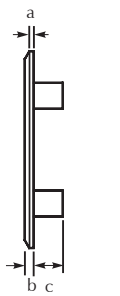
CONNECTOR SOURCING GUIDE

METHOD	Screw Terminals - No Connector Required

DIMENSIONS All dimensions in mm (inches)

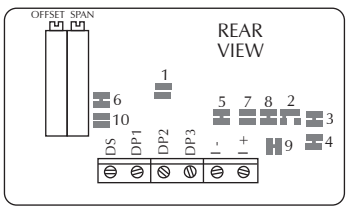
Panel cut-out 72 x 40 (2.83 x 1.57)
Maximum panel thickness 3mm (0.12).





a. 1.0 (0.04)
b. 2.0 (0.08)
c. 6.5 (0.26)
d. 11.5 (0.45)
e. 12.5 (0.49)*

*typical depth of tallest component behind PCB, this dimension is for guidance only.



ON BOARD
SOLDER LINKS

TERMINAL FUNCTIONS

1. I+ Positive current input.
2. I- Negative current input.
3. DP3 1.000
4. DP2 10.00 — Decimal point inputs.
5. DP1 100.0
6. DS Decimal Point select. Connect to required DP input to display decimal point.

CALIBRATION

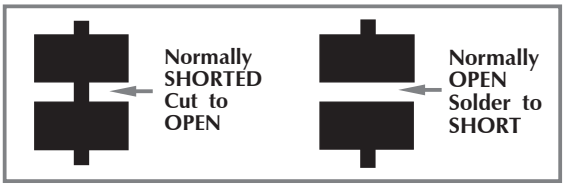
The meter is supplied calibrated to read 000 for 4mA loop current and 1000 for 20mA.
To re-calibrate:
1. **Apply 4mA to I+/I- and adjust 'OFFSET' to read 000.**
2. **Apply 20mA and adjust 'SPAN' to read 1000.**
3. **Repeat steps 1 and 2 until there is no more adjustment of 'SPAN' and 'OFFSET' required to give desired readings.**

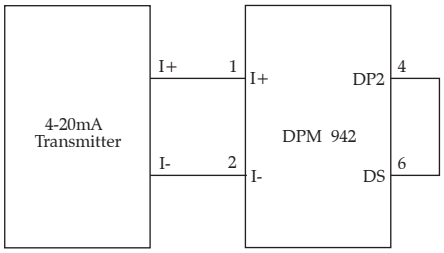
SAFETY

To comply with the Low Voltage Directive (LVD 93/68/EEC), input voltages to the module's pins must not exceed 60Vdc. If voltages to the measuring inputs do exceed 60Vdc, then fit scaling resistors externally to the module. The user must ensure that the incorporation of the DPM into the user's equipment conforms to the relevant sections of BS EN 61010 (Safety Requirements for Electrical Equipment for Measuring, Control and Laboratory Use)

VARIOUS OPERATING MODES

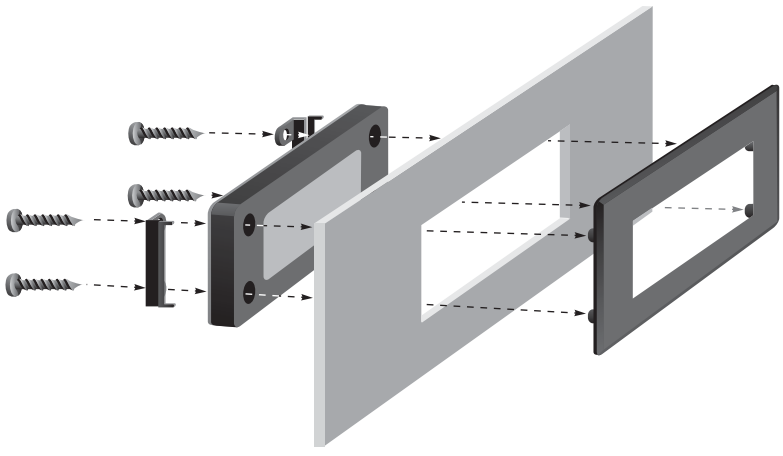
ON-BOARD LINKS: In order to quickly and easily change operating modes for different applications, the meter has several "on-board links". They are designed to be easily opened (cut) or shorted (soldered).
The DPM 942 is powered from the 4-20mA signal loop and needs no other power supply. Ensure correct polarity when connecting.





DP2 selected in this example.

PANEL FITTING



DPM 942-FPSI

4-20mA Loop Meter with Programmable Backlighting

Johannesburg Branch
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Mimic Cape

ORDERING INFORMATION

Standard Instrument (panel meter, fixing kit, data sheet)	DPM 942-FPSI

FEATURES

- 19mm (0.75”) digit height
- Dual colour backlight with programmable status indication
- Open collector outputs that mirror the backlight status (with inverted output option)
- 5V supply voltage
- 4–20mA measurement range

The DPM 942-FPSI is a 3 ½ digit LCD current loop meter that can also be used for dual colour go-stop status indication. This functionality is ideal for simplifying monitoring applications, where an operator needs to know the status of the equipment at a glance. During standard operation the backlight is green, however if the reading goes beyond the user programmable thresholds, the display will turn red. Three open collector outputs are included, that indicate high, ok and low conditions. Both the backlight colour and outputs can be inverted.

Module setup is a simple operation using an eight-way DIP switch and two push buttons. No special tools or equipment are required.

SPECIFICATIONS

	Minimum	Typical	Maximum	Unit
Accuracy (overall error)		0.05	0.1	% (±1 count)
Linearity			±1	count
Sample rate		3		samples/second
Hysteresis (high and low thresholds)		2		counts
Operating temperature range	0 (32)		50 (122)	°C (°F)
Temperature stability		100		ppm/°C
Supply voltage	4.5	5	5.5	V
Supply current (not including backlight)		1		mA
Backlight voltage		5		V
Backlight current			40	mA

DPM 942-FPSI

4-20mA Loop Meter with Programmable Backlighting

PIN FUNCTIONS

1. I-	Negative current loop input
2. I+	Positive current loop input
3. V-	Negative supply connection
4. V+	Positive supply connection
5. LP+	Positive backlight connection
6. ALM HI	Open collector alarm output. Goes low when the high threshold of the module has been passed.
7. ALM OK	Open collector alarm output. Goes low when the module is measuring a signal between the high and low thresholds.
8. ALM LO	Open collector alarm output. Goes low when the lower threshold of the module has been passed.
9. SW-	Negative switch input for flashing backlight acknowledgement.
10. SW+	Positive switch input for flashing backlight acknowledgement.

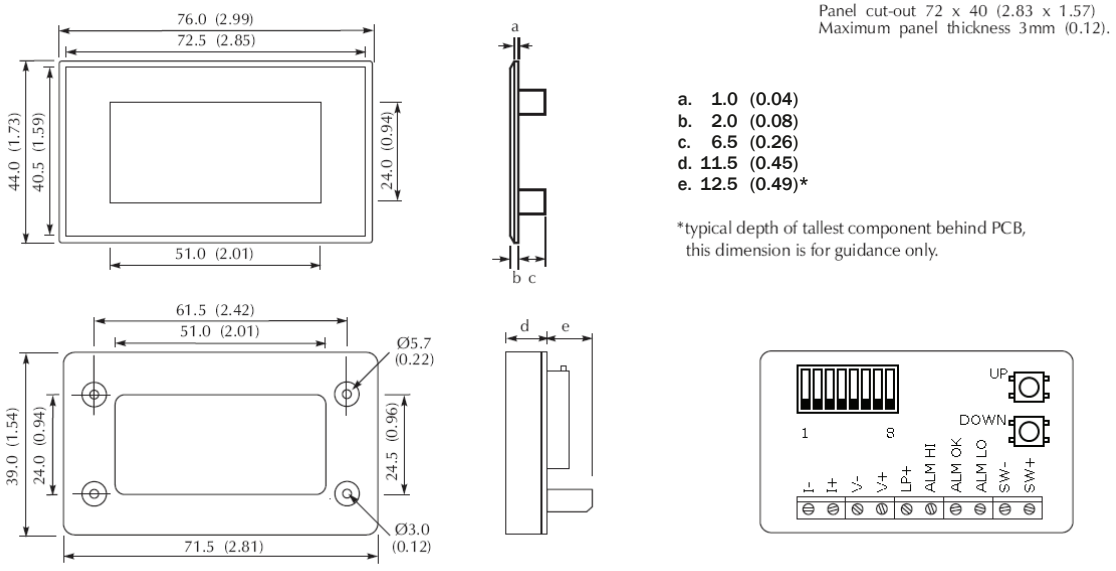
LCD SYMBOLS

'Err' Return dip switches 1 to 5 to the off position. Only 1 of theses switches may be in the on position at a time.

⚠ The unit is in set-up mode. To view the measured signal, ensure switches 1 to 5 are in the off position.

DIMENSIONS

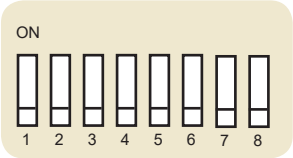
All dimensions in mm (inches)



DPM 942-FPSI

4-20mA Loop Meter with Programmable Backlighting

DIP SWITCH CONFIGURATION



1. Enter offset calibration mode
2. Enter span calibration mode
3. Enter high threshold setup mode
4. Enter low threshold setup mode
5. Enter decimal place setup mode
6. Invert alarm operation
7. Invert outputs
8. Select backlight supply

OFFSET AND SPAN CALIBRATION

Calibration is performed in two steps. The first step is to adjust the offset value. The second is to adjust the span.

To adjust the offset, move DIP 1 to the 'on' position and input a known constant current (typically 4mA). By default, 000 will be displayed. The user can then use the 2 push buttons mounted on the rear of the device to adjust the value on the display. Pressing the 'up' button once will increase the value on the LCD by one count. Pressing the 'down' button once will decrease the value on the LCD by one count.
If either button is held down, the value will continuously change until the button is released again. When the desired value is on the display, return DIP 1 to the 'off' position.

To adjust the span, move DIP 2 to the 'on' position and input a known current (typically 20mA). By default 1000 will be displayed. The value can then be adjusted in the same way as the offset.

THRESHOLD SETUP

There are two independent thresholds on the unit which control the backlight colour and open-collector outputs. The high threshold is triggered when exceeded by the input signal and the low threshold is triggered when the input signal drops below it. Both thresholds can be set, enabled and disabled independently.

By default the backlighting is green when an input is normal and red when the input exceeds a threshold (see INVERT BACKLIGHT COLOURS for more information). The thresholds can be set to any value between -1999 and 1999, however, it is not possible to assign a value to the low threshold which exceeds that of the high threshold and vice versa. In addition to numerical values, it is also possible to set both values to an 'over range' condition. This will only trigger the backlight when the input goes beyond a value that can be displayed.

To adjust the threshold calibration:

First select a position on the miniature DIP switch, mounted on the reverse of the module.

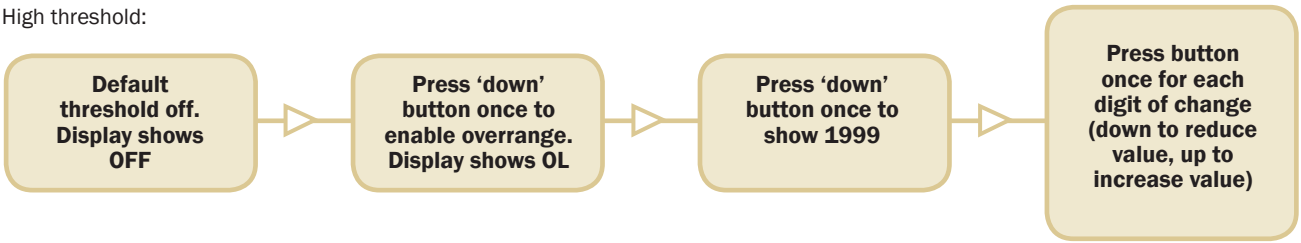
- Moving position 3 to 'on' will display the high threshold value
- Moving position 4 to 'on' will display the low threshold value

When a threshold is selected, it can then be adjusted using the two push buttons mounted on the rear of the device. The thresholds are adjusted as shown overleaf.

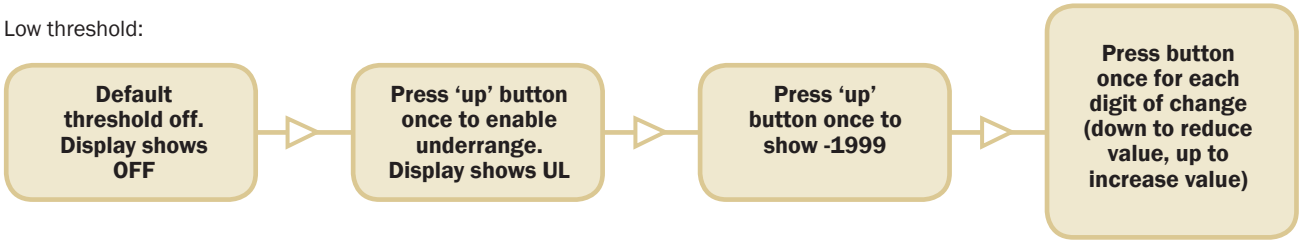
DPM 942-FPSI

4-20mA Loop Meter with Programmable Backlighting

High threshold:



Low threshold:



When the DIP switches are returned to the 'on' positions the display shows the current loop value, as defined by the offset and span settings previously programmed.

In standard operation, the high and low thresholds have a hysteresis value of two counts. This only applies when going from an alarm condition to a non-alarm condition (i.e. the signal has to go at least 2 counts into the non-alarm condition before the backlight will return to green). This is to prevent flickering and unnecessary repeat alarms.

DECIMAL PLACE AND LEADING ZERO SELECTION

The position of the decimal point and number of leadings zeros is changed by setting DIP switch '5' to the 'on' position and using the up and down buttons on the rear of the module. The decimal point has three possible positions as well as an 'off' option. The leading zeros can be set to one (the user can select the decimal point position and the leading zero will move accordingly) or 'all on'. Return DIP switch '5' to the 'on' position before installing the module in the application.

INVERT ALARMS

The red and green backlighting and three alarm outputs can be inverted by moving DIP switch 6 to the 'on' position.

INVERT OUTPUTS

Changing DIP switch 7 to 'on' inverts the three alarms outputs. i.e. the output that was previously on is now off, and the two outputs that were previously off are now on. This can be used in conjuction with DIP switch 6 to set the outputs back to the 'original' position.

SELECT BACKLIGHT SUPPLY

V+ and LP+ share a common ground (V-). By default, V+ and LP+ are not connected. Moving DIP switch 8 to the 'on' position connects LP+ directly to V+, removing the need for a separate supply.

FLASHING BACKLIGHT

By default, the backlight will flash red when an alarm threshold is exceeded. Temporarily connecting the SW+ and SW- inputs will stop the flashing (the backlight will remain red however). The backlight will not flash again, until the alarm has cleared (i.e. returned to green) and another threshold is exceeded.

Connecting a wire link permanently between SW+ and SW- will disabled flashing and the backlight will remain as a solid colour.

DPM 942-FPSI

4-20mA Loop Meter with Programmable Backlighting

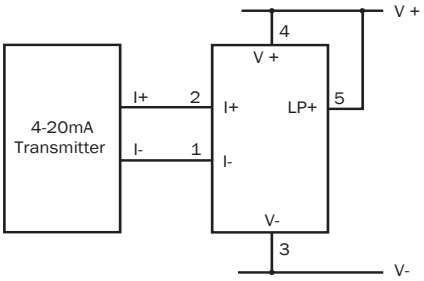
FACTORY RESET

Module calibration can be reset to the factory default by moving all 8 dip switches to 'on' and powering up the unit. The LCD will display 4 dashes when the reset is complete. Moving all the dip switches back to the 'off' position will return the module to the operating mode.

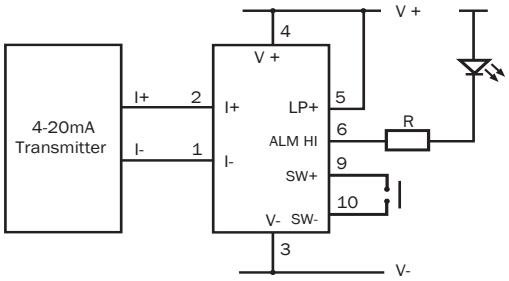
SAFETY

To comply with the Low Voltage Directive (LVD 93/68/EEC), input voltages to the module's pins must not exceeD 60V d.c. If voltages to the measuring inputs do exceed 60V d.c., then fit scaling resistors externally to the module. The user must ensure that the incorporation of the DPM into the user's equipment conforms to the relevant sections of BS EN 61010 (Safety Requirements for Electrical Equipment for Measuring, Control and Laboratory Use).

VARIOUS OPERATION MODES



Measuring a current loop. The meter power supply should be isolated from the 4-20mA transmitter power supply



Using an external LED as a high alarm and a switch to acknowledge the alarm (to stop it flashing)

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