LOOP-POWERED DIGITAL PANEL METER

Type 500-20A

User Guide

Continuous development may necessitate changes in these details without notice

Document Ref: ud 500-20A.vp Rev 3

PROCESS MEASUREMENT, CONTROL & DISPLAY INSTRUMENTATION

Continuous development may necessitate changes in these details without notice

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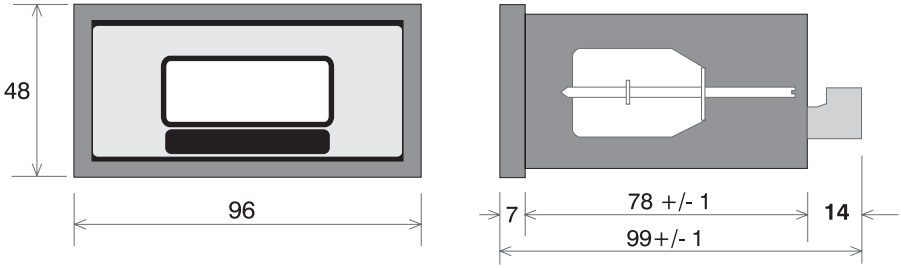
Installation

The 500-20A is a front panel mounting instrument for dry environments. A flexible transparent rubber hood offering front of panel protection up to IP65 is available as an optional extra.

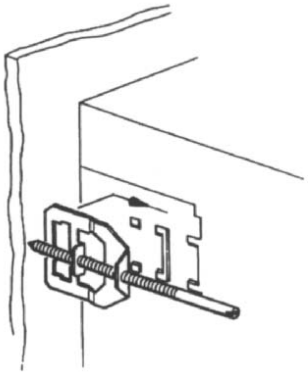
Dimensions & Panel cut out



Dimensions in mm
Panel cut-out to DIN43700: 44 +0.6 -0 x 92 +0.8 -0

Fixing

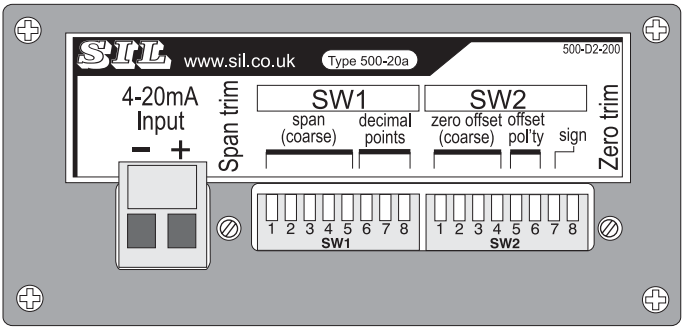
1. From the front of the control panel insert the instrument into the cut-out.
2. From the rear of the control panel fit the two screw clamps as shown and tighten screws to secure.



Wiring and connections

Good instrumentation practice must be observed when wiring to the unit to ensure segregation of signal wiring from power wiring, and the use of suitably screened signal cabling.
The unpluggable screw terminal connector will accept wires 0.2 - 2.5 sq. mm (24 - 12 AWG).

Configuration



The instrument is configured by means of rear panel accessible switches and trim controls.
Span coarse setting - see Table 1
Zero Offset (zero)coarse setting - see Table 2
Zero Offset Polarity - see Table 3
Decimal Points - see Table 4
Display (sign) Polarity - see Table 5

Scaling in engineering units may be set to any portion of the display range i.e. within the range -1999 to +1999;
NB span adjustment range is up to a maximum of 3000 counts. Zero offset adjustment range is -1999 to +1000.
The required readouts at span and zero are set initially by the rear panel switches (coarse setting) followed by fine trimming using the rear panel trim controls.

Configuration procedure follows on next page.

PROCEDURE

Notes

(i) See page 6 for Calibration examples.

(ii) The table values for Span and Zero Offset values are approximate, actual results may vary between instruments due to component tolerances.

(iii) As the maximum display possible is 1999, Table 1 values above 1999 are appropriate only for **span ranges** above 1999 i.e. for those applications requiring a negative offset displayed at 4 mA

1. Set Zero Offset Polarity

The value displayed when the input signal is at zero (i.e. 4 mA) may be set as either a negative or positive quantity or set with no offset (i.e. display zero). Refer to Table 3 and set SW2 to the required settings.

2. Set Zero Offset (coarse)

Skip this section if 'no offset' was selected in Step 1. Refer to Table 2 and select the switch combination for SW2 which will cover the desired zero offset value.

3. Fine Trim Zero Offset

With the input signal at 4mA, trim the display reading to the required value with the Zero Trim control.

4. Set Span (coarse)

Refer to Table 1 and select the switch combination for SW1 which will cover the Full Scale RANGE required.

Please Note

Range = Full Scale display - Zero Offset

For example where a display of '0' at 4mA to '1000' at 20mA is required, the range setting is 1000; if a display of 100 to 1000 is required, the range value is 900. If a display of -1000 to +1999 is required the range value is 2999.

Table 1 - set span

SPAN		SW1 - Position No				
MIN	MAX	1	2	3	4	5
0	210	1	1	1	1	1
130	340	0	1	1	1	1
260	470	1	0	1	1	1
390	600	0	0	1	1	1
520	730	1	1	0	1	1
650	860	0	1	0	1	1
780	990	1	0	0	1	1
910	1100	0	0	0	1	1
1040	1250	1	1	1	0	1
1170	1370	0	1	1	0	1
1290	1500	1	0	1	0	1
1420	1600	1	1	0	0	1
1550	1750	0	1	0	0	1
1680	1890	1	0	0	0	1
1820	2010	0	0	0	0	1
1940	2130	0	0	0	1	0
2070	2280	1	1	1	0	0
2200	2400	0	1	1	0	0
2320	2530	1	0	1	0	0
2450	2630	0	0	1	0	0
2580	2780	1	1	0	0	0
2710	2920	0	1	0	0	0
2830	3040	1	0	0	0	0
2960	3170	0	0	0	0	0

Table 2 - set zero offset

Zero offset		SW2 - Position No.			
MIN	**MAX**	**1**	**2**	**3**	**4**
0	220	1	1	1	1
130	350	0	1	1	1
280	500	1	0	1	1
440	660	0	0	1	1
590	810	1	1	0	1
730	950	0	1	0	1
880	1100	1	0	0	1
1000	1220	0	0	0	1
1180	1400	1	1	1	0
1300	1520	0	1	1	0
1450	1670	1	0	1	0
1750	1970	1	1	0	0
1900	2120	0	1	0	0

Table 3 - set zero offset polarity

Offset polarity	SW2 - Position No.	
	5	**6**
Negative	1	0
Positive	0	1
No offset	0	0

Table 4 - set decimal points

Decimal points	SW1 - Position No.		
	6	**7**	**8**
1.000	0	0	1
10.00	0	1	0
100.0	1	0	0

Table 5 - display polarity

Display polarity	SW2 Position 7
+ (Normal)	0
– (Reversed)	1

5. Fine Trim of Span

With the input signal at 20mA, trim the display reading to the required value with the Span Trim control. Repeat steps 3 and 5 as necessary.

6. Decimal point setting

Refer to Table 4 and select the SW1 switch combination for the decimal point required.

Appendix 1 - Calibration Examples

Example 1 - To display 0-1500

(i) Set SW2, (Table 3) to 00 (No offset)
(ii) Set SW1, (Table 1) to 11001
(iii) Set input to 20mA & Trim Span

Example 2 - To display 100-1270

(i) Set SW2, (Table 3) to 01 (Positive)
(ii) Set SW2, (Table 2) to 1111
(iii) Adjust Zero Trim until display reads 100
(iv) Range required is 1270-100 = 1170. Set SW1, (Table 1) to 11101
(v) Adjust Span Trim until display reads 1270
(vi) Check zero

Example 3 - To display -500 to 1000

(i) Set SW2, (Table 3) to 10 (Negative)
(ii) Set SW2, (Table 2) to 0011
(iii) Adjust Zero Trim until display reads -500
(iv) Range required is 1000-(-500) = 1500
Set SW1, (Table 1) to 11001
(v) Adjust Span Trim until display reads 1000
(vi) Check zero

Example 4 - To display 0-1000 reverse reading, i.e. 0 at 20mA, 1000 at 4mA

(i) Set SW2, (Table 3) to 10 (Negative)
(ii) Set SW2, (Table 2) to 1001
(iii) Adjust Zero Trim until display reads -1000
(iv) Range required: is 0-(-1000) = 1000
Set SW1, (Table 1) to 00011
(v) Adjust Span Trim until display reads 0000
(vi) Check zero

Appendix 2 - Display window legend

The legend for the display window is easily changed. A pocket at the rear of the window is designed to hold a folded paper legend.

Removing the display window

1. DPM installed in a panel

(i). Loosen the panel mounting clamp sufficiently to enable the front panel bezel to be unclipped.

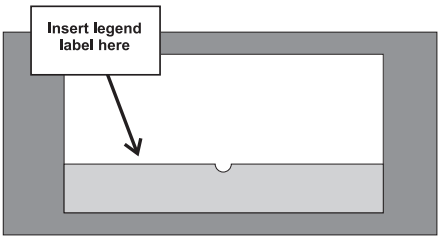
(ii). At approximately 20mm from either corner, using your fingers, prise away the top edge to unclip and remove the bezel.

(iii). Remove the display window by inserting a suitable implement into one of the gaps at each corner and carefully ease the window out.

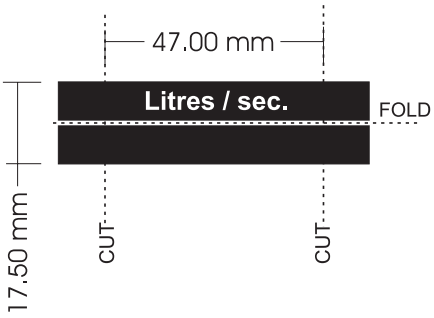
2. DPM removed from panel

(i). As instruction (ii) above

(ii). Tip the panel meter down to allow the display window to drop out.



Legend dimensions



SPECIFICATION

DISPLAY

Type: 12.7mm LCD
Range: 3.5 digit (-1999 to +1999)
Sample rate: 2.5 per second
Overrange display: '1' or '-1' (MSD only) displayed
Polarity: automatic with '-' displayed

ACCURACY

± 0.1% FS ±1 digit (when works calibrated)

LINEARITY

±1 digit

INPUTS

4-20mA
Input volts drop: <2 V
Input protection: to 40mA max

TEMPERATURE COEFFICIENT

± 100ppm/ deg C typ.

ENVIRONMENTAL

Temperature range:	operating -10 to +50 deg C
	storage -20 to +70 deg C
Humidity:	0-95% RH non-condensing

SAFETY & EMC

Safety:	EN61010-1
Immunity:	EN50082-1
Emissions:	EN50081-1

CE certified

MECHANICAL

Weight: approx. 200g

Input signal connector:	un-plugable screw terminal type.
	Wire capacity: 0.2 - 2.5 sq. mm; (24 - 12 AWG)