

LP420 LOOP-POWERED DISPLAY



DESCRIPTION

The LP420 Loop-Powered Display provides digital indication of a 4/20mA or 10/50mA process loop signal. The display takes its operating power from the loop current and requires no other source of power.

Wide-ranging zero and span adjustments plus switch selectable decimal point location and trailing zero allow the display to be calibrated in engineering units. An Engineering Units/Loop Current switch permits a quick check of the process signal without recalibration.

The LP420 is mounted in an explosion proof housing and operates from -13 to 185°F / (-25 to 85°C). The circuit boards are conformally coated for protection against humidity and contamination.

OPTION R Reverse-Acting Display. The engineering-units display goes downscale as the input current is increased.

WARRANTY

The DIS and Loop Powered Series of products carry a limited warranty of 5 + 5 years. In the event of a failure due to defective material or workmanship, during the 5 year period, the unit will be repaired or replaced at no charge. For a period of 5 years after the initial 5 year warranty, the unit will be repaired, if possible, for a cost of 10 % of the original purchase price.

Relays are not covered by the warranty.

CONTROLS Multi-turn ZERO and SPAN trimpots, accessible by removing the cover of the explosion proof housing, provide

Engineering Units range calibration. Wide-range recalibration capability is provided by ten DIP switches, accessible by removing the instrument assembly from its housing. These switches allow coarse ZERO and SPAN adjustment as well as decimal/trailing zero selection.

A DISPLAY switch, also accessible by removing the instrument from its housing, allows the selection of either Engineering Units for Loop Current. In the Loop Current position the display range will be either 400 to 1999 (4.00 to 19.99mA) or 100 to 500 (10.0 to 50.0mA). The DISPLAY switch does not affect either the decimal point location or the trailing zero.

CALIBRATION

CAUTION: The instrument must not be powered with the cover removed when the potential for explosive atmospheres exists.

ENGINEERING UNITS RANGE

Unscrew the cover of the explosion proof housing to reach the calibration controls. FIGURE 1 shows the control locations. The engineering units ZERO and SPAN trimpots may be adjusted with the instrument in place.

The instrument must be removed from the housing to reach the remaining controls. To remove, grasp the instrument assembly using two fingers on the two spring clips and your thumb on the lower edge of the display. Push the assembly toward the spring clips, tilt the lower edge out of the housing and remove the assembly.

TABLE 1: ZERO SETTINGS (4mA or 10mA input)

For zero settings between:	Switch Settings (normal display)	Switch Settings (reverse action)
+501 and +1999 counts	S5 ON	S6 ON
-500 and + 500 counts	S5 and S6 ON	S5 and S6 ON
-1999 and - 501 counts	S6 ON	S5 ON

TABLE 2:
SPAN SETTINGS (full-scale minus zero)

For spans between:	Switch Settings
0 and 1000 counts	S3 and S4 ON
1001 and 2000 counts	(none)
2001 and 3000 counts	S2 and S3 ON
3001 and 3998 counts	S1 and S3 ON

TABLE 3:
Decimal points and trailing zero

For:	Switch Settings
Dec Pt 1 (1.000)	S7 ON
Dec Pt 2 (10.00)	S8 ON
Dec Pt 3 (100.0)	S9 ON
Trailing Zero (10000)	S10 ON
No decimal, no trailing zero	(none)

To calibrate or change the Engineering Units range, set the ten DIP switches per TABLES 1, 2 and 3. Ignore the decimal point or trailing zero when determining the zero and span settings.

Connect a calibration current source to the LP420's input terminals. If a precision calibrator is not available, the LP420 may be used to measure the input by switching temporarily to the "Loop Current" display range.

Set the input to the low end of its range (4.00 or 10.00mA). With the DISPLAY switch in the "Engineering Units" position, adjust the "Z" (zero) trimpot for the desired low-end display reading.

Increase the input to full scale (20.00 or 50.00mA) and adjust the "S" (span) trimpot for the desired full-scale reading.

Repeat until both readings are correct.

Loop Current Range

The Loop Current range is factory-calibrated. To recalibrate, it will be necessary to remove the unit from its housing.

Connect a precision DC current source to the LP420's input.

Set the input to the low end of its range (4.00 or 10.00mA). With the DISPLAY switch in the "Loop Current" position, adjust the LOOP CURRENT ZERO trimpot for a low-end display of 400 (4.00mA) or 100 (10.0mA). (The

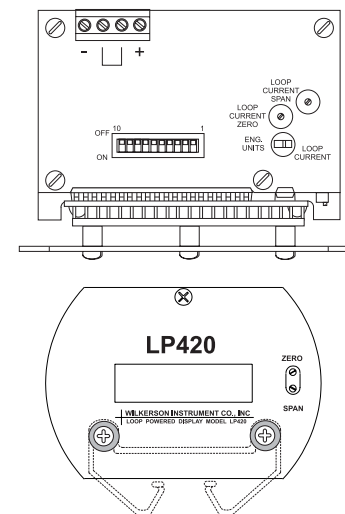
decimal point or trailing zero will remain in its "Engineering Units" setting.)

Increase the input to either 19.00 or 50.00mA and adjust the LOOP CURRENT SPAN trimpot for a full-scale reading of 1900 (19.00mA) or 500 (50.0mA).

Repeat until both readings are correct.

FIGURE 1: Control Locations

The ZERO and SPAN trimpots for the Engineering Units display are accessible without removing the instrument from its housing.



SPECIFICATIONS

INPUT RANGE

4/20mA or 10/50mADC

INPUT VOLTAGE DROP

3.5V max

(Equivalent to 175 ohms at 20mA or 70 ohms at 50mA)

DISPLAY

Digit Size

0.35" LCD, 3½ digits, +1999

Switchable decimal points and trailing zero +1.9.9.9.0

Control Range Zero

+1999

Span

(full scale minus zero)

min span 10 max span 3998

Update

3/sec

DISPLAY SWITCH

Allows quick check of loop current (400/1999 or 100/500).

Decimal point remains in "Engineering Units" position.

CALIBRATION ACCURACY

+(0.05% of reading plus 1 digit)

OPERATING TEMPERATURE

-13°F to 185°F

(-25°C to 85°C)

TEMPERATURE STABILITY

+(0.01% of span plus 0.01% of display zero offset)/ °C

POWER

supplied by input current

no separate power required

HOUSING

Explosion Proof (Killark HK Series)

Housing is:

FM Approved and CSA Certified for the following locations:

Class I, Divisions 1 and 2;

Groups B, C, and D

Class II, Divisions 1 and 2;

Groups E, F, and G

Class III, NEMA 3, 4, 7, & 9

International Approvals

(IEC)

HK series enclosures are designed to meet flameproof requirements as defined by CENELEC

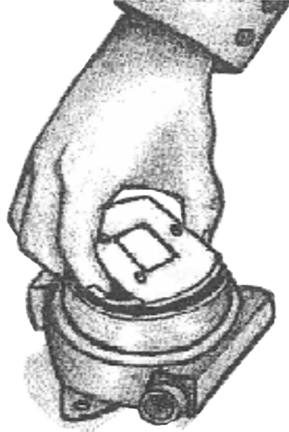
(EURONORM Standard 50018)

BASEEFA Certified

INSTALLATION AND MOUNTING

Unscrew the cover and remove the instrument before installing the housing. To remove, grasp the instrument assembly using two fingers on the two spring clips and your thumb on the lower edge of the display. (See FIGURE 2) Push the assembly toward the spring clips, tilt the lower edge out of the housing and remove the assembly.

FIGURE 2:



Electrical connections are screened next to the terminal block. Wire the LP420 in series with the current loop as illustrated in the Block Diagram and Terminal Connections. The two tie points may be useful as connection points as shown in the Typical Connection diagram.

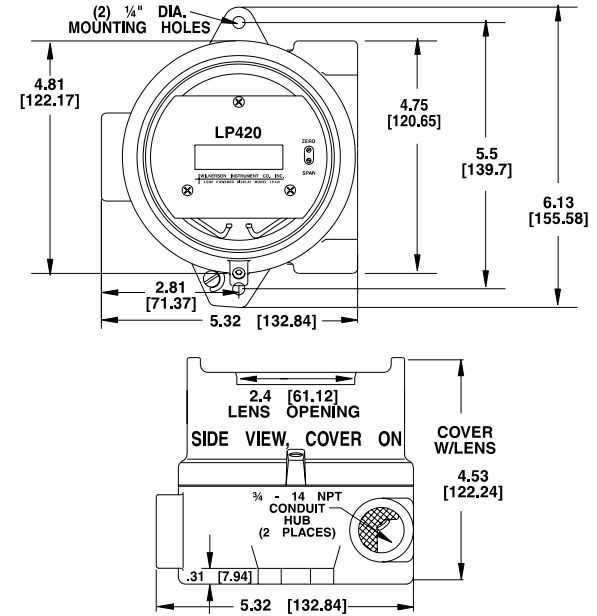
Reinstall the instrument assembly by reversing the removal procedure. Insert the side with the spring clips first, push the assembly toward the spring clips and tilt the lower edge into the housing.

CAUTION:

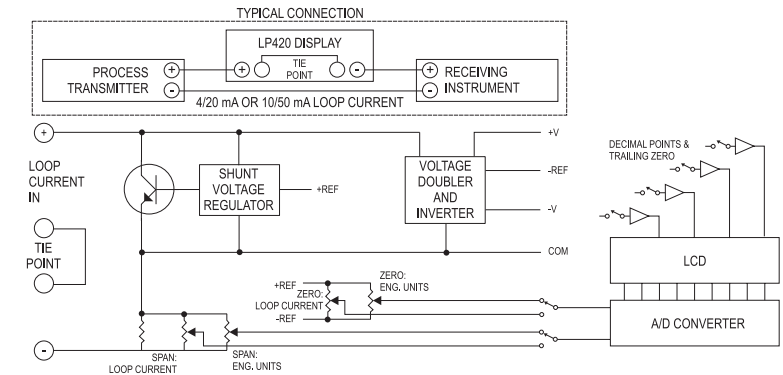
In potentially explosive areas, screw the cover on tightly before applying power to the instrument.

HOUSING DIMENSIONS INCHES [mm]

(Killark HKB-HKGL)



BLOCK DIAGRAM AND TERMINAL CONNECTIONS



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