PRODUCT FAX SHEET

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Temp View Mini I Current Meter and Temp View Mini V Volt Meter

UL Recognized Component, File # E179259

- *LCD, POSITIVE REFLECTIVE OR NEGATIVE TRANSMISSIVE WITH YELLOW/GREEN OR RED BACKLIGHTING*

CE

- *FOUR SELECTABLE D.C. RANGES*
  0 to 199.9 mV, 1.999 V, 19.99 V, 199.9 V (CUB4V)
  0 to 199.9 µA, 1.999 mA, 19.99 mA, 199.9 mA (CUB4I)
- *0.6 INCH (15.2 mm) HIGH LCD DIGITS*
- *BUILT-IN SCALING PROVIDED*
- *AUTO ZEROING CIRCUIT*
- *SELECTABLE DECIMAL POINTS*
- *WIRE CONNECTIONS MADE VIA SCREW CLAMP TYPE TERMINALS*
- *FITS DIN STANDARD CUT-OUT 2.68" (68 mm) x 1.30"(33 mm)*
- *NEMA 4X/IP65 SEALED FRONT PANEL BEZEL*
- *9 TO 28 VDC POWERED*

DESCRIPTION

The **Temp View Mini I Current** and **Temp View Mini V Volt** meters are designed and manufactured using the latest technology for a high quality, compact, affordable instrument for use in industrial environments. Each unit has a 3½-digit LCD display with 0.6 inch (15.2 mm) high digits and a DIP switch selectable decimal point. The displays are available in positive image reflective (black digits, reflective background) or negative image transmissive (illuminated digits, dark background) with red or yellow/green backlighting.

The units are constructed of a lightweight, high impact plastic case with a clear viewing window. The sealed front panel meets NEMA 4X/IP65 specifications for wash-down and/or dusty environments, when properly installed. A **Temp View Mini I** or **Temp View Mini V** unit can be mounted in the same panel cutout as the Temp View VD and Temp View ID units.

The optional Micro Line/Sensor Power Supply (MLPS0000) is designed to attach to the rear of an installed Temp View Mini V or Temp View Mini I to provide the necessary power for the unit. The optional supply can be powered from either a 115 or 230 VAC source.

SAFETY SUMMARY

All safety related regulations, local codes and instructions that appear in the manual or on equipment must be observed to ensure personal safety and to prevent damage to either the instrument or equipment connected to it. If equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

CAUTION: Read complete instructions prior to installation and operation of the unit.

CAUTION: Risk of electric shock.

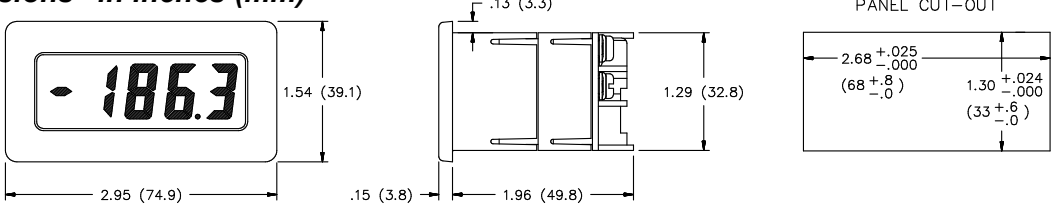
SPECIFICATIONS

1. **DISPLAY:** 3½-digit (-1999 to 1999), 0.6" (15.2 mm) high digits. Minus (-) sign is displayed when voltage or current is negative.
2. **DECIMAL POINTS:** DIP switch selectable decimal points allow the display to be read in tenths, hundredths or thousandths.
3. **POWER REQUIREMENTS:**
   Reflective Versions: 9 to 28 VDC at 4 mA max.
   Backlight Versions: 9 to 28 VDC @ 35 mA typ., 50 mA max. Above 26 VDC, derate operating temperature to 50ºC.
4. **INPUT RANGES:**

D.C. VOLTAGE (DIP Switch Selectable)	D.C. CURRENT (JMPR. Selectable)
±199.9 mVDC	±199.9 µADC
±1.999 VDC	±1.999 mADC
±19.99 VDC	±19.99 mADC
±199.9 VDC	±199.9 mADC

5. **ACCURACY:** (@ 23ºC, less than 85% RH)
   D.C. Voltage: ±(*0.1% + 1 digit*)
   D.C. Current:
   199.9 µA, 1.999 mA, 19.99 mA ranges: ±(*0.1% + 1 digit*)
   199.9 mA range: ±(*0.15% + 1 digit*)
6. **OVERRANGE RATINGS, PROTECTION & INDICATION:**
   9 to 28 VDC power circuit is not isolated from the signal circuit.
   Max Input Voltage:
   0 to 199.9 mVDC Range: 75 VDC
   All other voltage Ranges: 300 VDC
   Max Input Current:
   199.9 µA through 19.99 mA: 10 times max. range current
   199.9 mA: 1 amp
   Overrange Indication: Overrange is indicated by a "1" displayed in the most significant digit and the blanking of the three least significant digits.
7. **READING RATE:** 2.5 readings per second
8. **RESPONSE TIME:** 1.5 seconds to settle for a step change
9. **NORMAL MODE REJECTION:** 60 dB 50/60 Hz

Dimensions "in inches (mm)"



Note: Recommended minimum clearance (behind the panel) for mounting clip installation is 2.15" (54.6) H x 3.00" (76.2) W.

10. **INPUT IMPEDANCE:**
Voltmeter: 1 MW
Current Meter:
199.9 µA - 1 KW
1.999 mA - 100 W
19.99 mA - 10 W
199.9 mA - 1 W

11. **CERTIFICATIONS AND COMPLIANCES:**
UL Recognized Component, File#E179259
Recognized to U.S. and Canadian requirements under the Component Recognition Program of Underwriters Laboratories, Inc.

Immunity to EN 50082-2		
electrostatic discharge	EN 61000-4-2	level 2; 4 Kv contact level 3; 8 Kv air
electromagnetic RF fields	EN 61000-4-3	level 3; 10 V/m [1] 80 MHz - 1 GHz
fast transients (burst)	EN 61000-4-4	level 4; 2 Kv I/O level 3; 2 Kv power
RF conducted interference	EN 61000-4-6	level 3; 10 V/rms [2] 150 KHz - 80 MHz
power frequency magnetic fields	EN 61000-4-8	level 4; 30 A/m
simulation of cordless telephone	ENV 50204	level 3; 10 V/m 900 MHz ± 5 MHz 200 Hz, 50% duty cycle
Emissions to EN 50081-2		
RF interference	EN 55011	enclosure class A power mains class A

ELECTROMAGNETIC COMPATIBILITY
Notes:
1. Self-recoverable loss of performance during EMI disturbance at 10 V/m.
Process signal may deviate during EMI disturbance.
For operation without loss of performance:
Unit is mounted in a metal enclosure (Buckeye SM7013-0 or equivalent)
I/O and power cables are routed in metal conduit connected to earth ground.
2. Self-recoverable loss of performance during EMI disturbance at 10 Vrms.
Process signal may deviate during EMI disturbance.
For operation without loss of performance:
Install power line filter RLC#LFIL0000 or equivalent at the unit.
Refer to the EMC Installation Guidelines section of this bulletin for additional information.

12. **ENVIRONMENTAL CONDITIONS:**
Operating Temperature: 0º to 60ºC *(above 50ºC, derate backlight operating voltage to 26 VDC maximum)*.
Storage Temperature: -40º to 80ºC
Operating and Storage Humidity: 85% max relative humidity (non-condensing) from 0 to 60ºC.
Temperature Coefficient: 100 PPM/ºC
Altitude: Up to 2000 meters.

13. **CONSTRUCTION:** High impact plastic case with clear viewing window. (Panel gasket and mounting clip included.) This unit is rated for NEMA 4X/IP65 indoor use. Installation Category II, Pollution Degree 2

14. **WEIGHT:** 3.3 oz. (93.5g)

WIRING CONNECTIONS

The electrical connections are made via screw-clamp terminals located on the back of the unit. When wiring the unit, use the label to identify the wire position with the proper function. All conductors should meet voltage and current ratings for each terminal. Also cabling should conform to appropriate standards of good installation, local codes and regulations. It is recommended that power supplied to the unit be protected by a fuse or circuit breaker. Strip the wire, leaving approximately ¼" bare wire exposed (stranded wires should be tinned with solder). Insert the wire into the screw-clamp terminal and tighten the screw until the wire is clamped tightly. Each terminal can accept up to two #14 AWG wires.

DECIMAL POINT SELECTION

The T**emp View Mini V Volt and Mini I Current Meters** can be set-up to read in 10ths, 100ths, or 1000ths. The decimal point position is DIP switch selectable for one of three locations. If all the DIP switches are set to the *"OFF"* position, then **NO** decimal point will appear in the display. The DIP switches are located at the rear of the unit.

TEMP VIEW MINI V SIGNAL INPUT

The voltage range is selected by setting one of the DIP switches S1 to S4 for the desired input voltage. The unit will indicate the direct readout for the range selected.

Note: Only one voltage range switch (S1-S4) should be selected (ON).

The SCALE DIP switch (S5) and the Scaling Potentiometer are used when it is necessary to scale the display to indicate other engineering units. The Scale switch should be left in the "OFF" position when the application requires direct voltage readout on the display.

The Calibration Potentiometer has been set at the factory and should not be adjusted unless the unit is being re-calibrated with an accurate voltage source.

The power supply common and signal common are connected internally the same screw terminal marked COMM. The power supply common, and the signal common must be at the same voltage potential. The voltmeter cannot measure a voltage with a reference that is different than the power supply common.

Caution: The Maximum Voltage for each switch position must not be exceeded or the unit may be damaged (See Specifications).

Caution: 9 to 28 VDC power circuit is not isolated from the signal circuit.

VOLTMETER SCALING

In many industrial applications, a voltmeter is required to display a reading in terms of PSI, RPM, or some other unit of measure. The signal voltage being measured is normally generated by a transducer which senses the variable and delivers a linear output voltage. To provide the desired readout at the specified voltage, the voltmeter must be scaled. The Scale switch, when in the "ON" position, enables the Scale Potentiometer. The Scale Potentiometer is used with a voltage range to provide a method of scaling the unit. The voltage DIP switches are used to select one of the four coarse Division Factor ranges and the Scale Potentiometer is a fine scale adjustment within the selected range. The chart below shows the division factor range associated with each range selection switch.

DIVISION FACTOR RANGE SELECTION CHART
S1: 0-199.9 mVDC (0.1 D.F. 1.2)
S2: 0-1.999 VDC (1.2 D.F. 10.5)
S3: 0-19.99 VDC (10.5 D.F. 100.5)
S4: 0-199.9 VDC (100.5 D.F. 1300)

Note: Enabling the Scale Potentiometer does NOT affect the calibration of the unit.

To determine the proper voltage range for an application requiring scaling, the "Division Factor" required to provide the proper display reading must first be determined by using the following formula.

USING THE FORMULA:

$$D.F = \frac{VT \times D.D.P.}{D.R.}$$

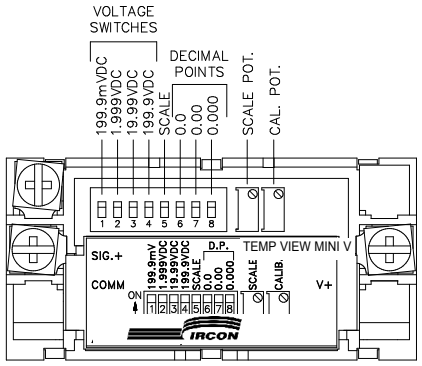
WHERE:

VT	=	Maximum Transducer Output
D.D.P.	=	Display Decimal Point
D.F.	=	Division Factor
D.R.	=	Desired Reading

D.D.P.			
0.000	=	1	The DISPLAY DECIMAL POINT (D.D.P.)
00.00	=	10	is determined by the desired decimal
000.0	=	100	point placement in the readout.
0000	=	1000	

Note: See drawing on page 3

TEMP VIEW MINI V VOLTMETER DIAGRAM



After the Division Factor for the application has been calculated, the proper voltage range switch that will provide for the Division Factor is set to the "ON" position. Use the "Division Factor Range Selection Chart" to choose the proper DIP switch setting

.Note: Only one voltage DIP switch should be turned on. Set the switch before the voltage signal is applied.

EXAMPLE: A relative humidity transducer delivers a 7.0 VDC voltage at a relative humidity of 75%.

$$D.F. = \frac{VT \times D.D.P.}{D.R.} = \frac{7.0 \times 1000}{75} = 93.3$$

This Division Factor is between 10.5 and 100.5, therefore DIP switch position S3 is set to the "ON" position. The Scaling Potentiometer is then adjusted for the desired readout at a known relative humidity.

TEMP VIEW MINI I SIGNAL INPUT

The **Temp View Mini I Current Meter** has four current ranges that are selected by positioning the jumper in the proper location on the male header strip.

The SCALE DIP switch (S1) and the Scaling Potentiometer are used when it is necessary to scale the display to indicate other engineering units. The Scale switch should be left in the "OFF" position when the application requires direct current readout on the display.

When the power supply is floating (unreferenced) to the desired measurement points, the (-) signal input and the power supply common should be connected. If the power supply is not floating (referenced), the common mode voltage between the (-) signal input and power supply common terminal must not be greater than 1.0 V peak. A common mode voltage higher than 1.0 V peak will result in a measurement error.

The Calibration Potentiometer has been set at the factory and should not be adjusted unless the unit is being re-calibrated with an accurate current source.

Caution: The maximum current for each jumper position must not be exceeded or the unit may be damaged. See specifications

CURRENT METER SCALING

The current meter display can be scaled to almost any lower numerical value. Setting the Scale switch to the "ON" position enables the Scale Potentiometer, which is used with the current range selection jumper to scale the unit. The Scale potentiometer can be set to divide the normal current reading by a division factor between 1 and 13.

EXAMPLE: The **Temp View Mini I Current Meter** has been connected to measure a circuit cuttent to 120.0 mA maximum. However, in this application, the display is to indicate percent of load current with 120.0 mA equivalent to 100.0 on the display.

Scaling to obtain a numerical readout higher than the normal value of the current can also be accomplished in most cases by selecting a lower current range. However, the maximum current for the range must not be exceeded. See specifications for maximum input currents.