Panel Meters

MODEL IMY - INTELLIGENT THERMISTOR METER

- ● ACCEPTS 2252 Ω, "400 SERIES" AND THERMOLINEAR™, " 700 SERIES" THERMISTORS
- ● FULL 6-DIGIT, HIGH VISIBILITY, 0.56" HIGH, RED LED DISPLAY
- ● TIME TEMPERATURE INTEGRATOR *(Optional)*
- ● PEAK/VALLEY MEMORY *(Optional)*
- ● PROGRAMMABLE TEMPERATURE OFFSET *(Optional)*

EMC COMPLIANT	NEMA 4 / IP65	PARAMETER LOCKOUT	FRONT PANEL PROGRAMMABLE	ALARMS	ANALOG OUTPUT	COMMUNICATIONS CAPABILITY

Product Features

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DOC # 05007

The Apollo Intelligent Thermistor Meter (IMY) accepts standard Thermistor inputs and precisely linearizes them for temperature readings. Like an RTD, a thermistor is also a temperature sensitive resistor, but the thermistor provides a much larger resistance change per degree. Since thermistors provide a large resistance change, significant errors from long lead lengths or switches are eliminated. Other advantages of using a thermistor are accuracy, repeatability, long term stability, and sensor cost. A full 6-digit display accommodates a wide range of temperature inputs and holds large totalization values. Digital circuitry virtually eliminates errors due to drift.

The IMY supports two popular thermistor series - the 400 Series 2,252 Ohm thermistor, and the 700 Series Thermolinear™ thermistor. Selection of the type is done in Programming Module #1.

The indicator features a readout choice of either Fahrenheit or Celsius with 0.1 or 1 degree of resolution. English Style display prompts and front panel buttons aid the operator through set-up and operation. A front panel lock-out menu protects set-up data and operation modes from unauthorized personnel. Programmable digital filtering enhances the stability of the reading. Remote input *"E1-CON"* can be utilized to control a variety of functions including, totalizing, display hold, set point and peak/valley reading operations. All set-up data is stored in non-volatile E^2 PROM.

The indicator has several built-in diagnostic functions to alert operators to any malfunction. Extensive testing of noise interference mechanisms and a full burn-in make the indicator extremely reliable in industrial environments. The die-cast front bezel meets NEMA 4/IP65 requirements for washdown applications. Plug-in style terminal blocks simplify installation wiring and change-outs.

OPTIONS

An optional integrator *(totalizer)* can be used to totalize or integrate temperatures up to a maximum display value of 999,999. It features independent scaling, decimal point selection, and a low temperature cut-out to suit a wide variety of temperature integration/totalization applications. Programmable remote input *"E2-CON"* is included with this option and can be utilized to control a variety of functions, such as integrating/totalizing, alarm control, peak/valley readings, display hold or temperature offset operations, simultaneously with remote input *"E1-CON"*. Peak/valley *(max/min)* reading memory and programmable temperature offset functions are included with this option and they are easily recalled and controlled by either the front panel or a remote input. All readings are retained at power-down.

Optional dual relays with parallel solid state outputs are fully programmable to operate in a wide variety of modes to suit many control or alarm applications.

Optional 20 mA loop, bi-directional serial communications provides computer and printer interfacing to extend the capabilities of the indicator. More than one unit can be connected in the loop with other RLC products which have serial communications capabilities.
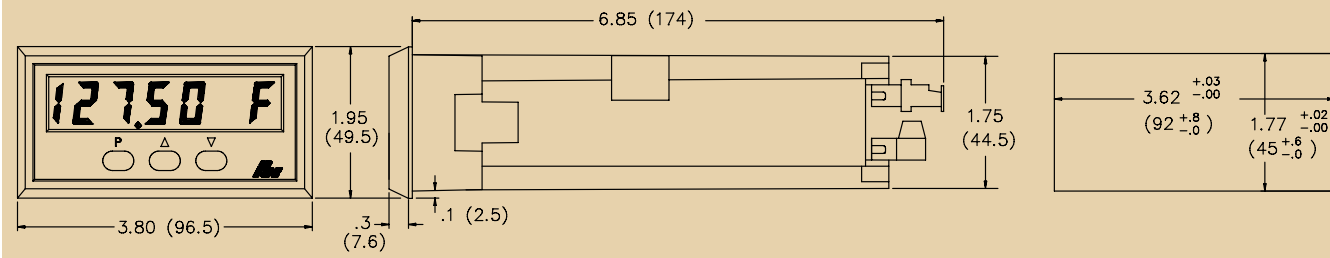
An optional 4 to 20 mA or 0 to 10 VDC re-transmitted analog output can be scaled by the user to interface with a host of recorders, indicators and controllers.

DIMENSIONS "In inches (mm)"

6.85 (174)

1.95 (49.5)

1.75 (44.5)

3.62 +.03/-.00 (92 +.8/-.0)

1.77 +.02/-.00 (45 +.6/-.0)

3.80 (96.5)

.3 (7.6)

.1 (2.5)

General Specifications

1. **DISPLAY**: 4-digit with F/C indication, 0.56" *(14.2 mm)* high LED, minus sign displayed for negative temperatures. 6-digits for totalizer, *"Flashing"* display during totalizer overflow. *"OLOLOL"* displayed during temperature display out of range *(positive)*. *"ULULUL"* displayed during temperature display out of range *(negative)*. *"SHORT"* displayed for shorted input and *"ULULUL"* displayed for unconnected input.

2. **POWER REQUIREMENTS**:
   A.C. Power: Switch Selectable 115/230 VAC, ±10%, 50/60 Hz, 14 VA

3. **CONTROLS**: Three front panel push buttons for modifying alarm values and indicator set-up. Three external inputs; one for disabling the front panel, and two for programmable function inputs.

4. **TOTALIZER**: Front panel button for input/total display select. External totalizer reset/enable. Programmable time-base, scale factor *(0.001-100.000)* and low-temp. cut-out. Response Time = 0.2 sec. max.

5. **ENVIRONMENTAL CONDITIONS**:
   Operating Temperature Range: 0 to 50°C
   Storage Temperature Range: -40 to 80°C

Operating and Storage Humidity: 85% max. (non-condensing) from 0 to 50°C.
Span Drift: 50 ppm/°C
Zero Drift: 0.001°C/°C
Altitude: Up to 2000 meters

6. **PEAK/VALLEY/SLOPE/OFFSET (Optional)**:
   Peak and Valley recording. Programmable temperature offset and slope.

7. **CERTIFICATIONS AND COMPLIANCES**:
   SAFETY
   EN 61010-1, IEC 1010-1
   ELECTROMAGNETIC COMPATIBILITY
   Immunity to EN 50082-2
   Emissions to EN 50081-2

8. **CONSTRUCTION**: Die-cast metal front bezel that meets NEMA 4/IP65 requirements for indoor use when properly installed. Installation Category II, Pollution Degree 2. Case body is black, high impact plastic (panel gasket and mounting clips included).

9. **CONNECTION**: Removable terminal blocks

10. **WEIGHT**: 1.2 lbs (0.5 kg)

Input Specifications

1. **SIGNAL INPUT**: 2-Wire, 400 Series 2,252 Ω Thermistor; or 3-wire, 700 Series Thermolinear™ thermistor.
   Max. Input Signal Voltage: ±15 VDC.

2. **OPEN THERMISTOR DETECTION**:
   Display: *"ULULUL"*
   Setpoint Outputs: Disabled *(Deactivated)*
   Serial Outputs: *"ULULUL"* in data field
   Integration/Totalization: Disabled
   Analog Output: 4 mA, or 0 VDC

3. **RANGE**: 400 Series -40.0° to 125.0°C *(-40.0° to 257°F)* 700 Series -30.0° to 100.0°C *(-22.0° to 212°F)*.

4. **RESOLUTION**: 0.1 or 1 degree.

5. **ACCURACY**: ±0.2°C (0.36°F) ±1/2 LSD, @ 23°C and 10 min. warm-up.

6. **READING RATE**: 2.5 readings/second

7. **RESPONSE TIME**: 2 seconds to settle for step input *(increases with programmable digital filtering)*

8. **E1-CON & E2-CON**: External remote inputs that allow activation of various functions. *(Reset total, peak indicator mode, trigger mode, etc.)* V_{IL} = 0.8 V_{MAX} ; V_{IH} = 2.0 V_{MIN}. Response Time = 0.2 sec. max.

9. **NORMAL MODE REJECTION**: 40 dB at 50/60 Hz (may be improved by programmable digital filtering)

10. **COMMON MODE REJECTION**: 120 dB, DC to 50/60 Hz

Output Specifications

1. **SERIAL COMMUNICATIONS (Optional)**:
   Type: Bi-directional 20 mA current loop, 20 mA source provided on transmit loop. (Powers up to 7 units in a loop with internal current source).
   Baud Rate: programmable 300 to 2400
   Maximum address: 99 *(Actual number in a single loop is limited by serial hardware specifications.)*
   Data Format: 10 bit frame, Odd parity *(one start bit, 7 data bits, one odd parity bit, and one stop bit.)*
   Serial Hardware Specifications:
   SO - Output Transistor Rating: V_{MAX} = 30 VDC, V_{SAT} = 1 V_{MAX} at 20 mA.
   Note: This will allow up to 28 units max. in each loop.
   SI - Input Diode Rating: V_F = 1.25 V_{TYP} ; 1.5 V_{MAX}
   Note: The compliance voltage rating of the source must be greater than the sum of the voltage drops around the loop. (Typically a 30 VDC powered source would be capable of operating between 18 and 22 units in a loop.)

2. **ALARMS (Optional)**:
   Solid State: Two, isolated, sinking open collector NPN transistors acting in parallel with relays. V_{SAT} = 1 V @ 100 mA max., V_{MAX} = 30 VDC.

Relays:
   Type: Form C (2)
   Max. Rating: 5 Amps @ 120/240 VAC or 28 VDC (resistive load) , 1/8 hp @ 120 VAC (inductive load).
   Relay Life Expectancy: 100,000 cycles at max. rating. (As load level decreases, life expectancy increases.)

3. **ANALOG OUTPUT (Optional)**:
   4 to 20 mA: Digital scaling and offsetting within a 4 to 20 mA range
   Accuracy: 0.1% of full scale
   Resolution: 12 bits
   Compliance Voltage: 10 VDC *(500 Ω max. loop resistance)*
   0 to 10 VDC: Digital scaling and offsetting within a 0 to 10 VDC range
   Accuracy: ±(0.1% of reading +35 mV)
   Resolution: 12 bits
   Min. Load Resistance: 10 kΩ (1 mA max)

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Ordering Information

MODEL NO.	DESCRIPTION	TOTALIZER/ PEAK/VALLEY/ SLOPE/OFFSET/ E2-CON	DUAL ALARM	SERIAL OUTPUT	ANALOG OUTPUT	PART NUMBERS FOR AVAILABLE SUPPLY VOLTAGES
						115/230 VAC
IMY	Intelligent Meter for Thermistor Inputs	NO	NO	NO	NO	IMY00160
		NO	YES	NO	NO	IMY00162
		YES	NO	NO	NO	IMY02160
		YES	NO	YES	NO	IMY02161
		YES	YES	NO	NO	IMY02162
		YES	NO	NO	4 to 20 mA	IMY02163
		YES	YES	YES	4 to 20 mA	IMY02167
		YES	YES	YES	0 to 10 VDC	IMY02169