LOW-COST TEMPERATURE METER

JAVELIN T • Model PD740

c UL us LISTED

- TC and RTD inputs
- NEMA 4X, IP65 front
- Sunlight readable LED display
- RS-485 serial communications
- Modbus® RTU option
- Two Form C relays or 4-20 mA output
- Data acquisition with MeterView®

Overview

The new PD740 Javelin T Low-Cost Temperature Meter has the functionality of the PD765 Trident Meter temperature inputs. It comes with built-in RS-485 serial communications, which makes it easy to integrate with other devices.

EASY SETUP & PROGRAMMING

The Javelin T is easy to set up and program because everything is done using the simple four-button programming method. There is only one switch on the entire meter, no jumpers, and no need to ever open the case. After completing setup of one meter additional meters can be "cloned" using the time-saving *Copy* function.

Front Panel Buttons

User Friendly Menu Structure

To simplify programming, the Javelin's setup functions are divided into two menus. A main menu handles all the basic setup functions. An advanced features menu handles the special functions not commonly used.

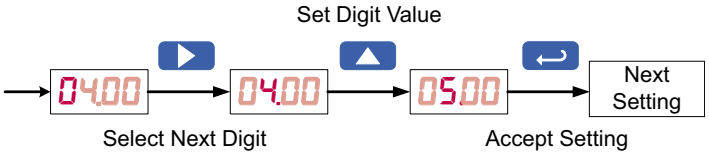
- Press the **Menu** button to enter or exit the Programming Mode at any time.
- Press the **Right** arrow button to move to the next digit during digit programming.
- Press the **Up** arrow button to scroll through the menus, decimal point, or to increment the value of a digit.
- Press the **Enter/Ack** button to access a menu, accept a setting, or to acknowledge relays.

Numeric Values

The numeric values are set using the **Right** and **Up** arrow buttons. Press **Right** arrow to select next digit and **Up** arrow to increment digit value.

The digit being changed is displayed brighter than the rest.

Press the **Enter/ACK** button, at any time, to accept a setting or **Menu** button to exit without saving changes.

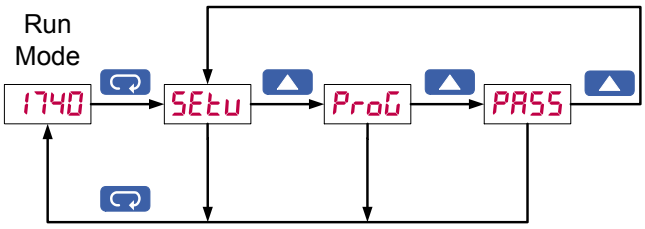


Main Menu

The main menu consists of the three most commonly used functions: Setup, Program, and Password. Press **Menu** button to enter the Programming Mode then press **Up** arrow button to scroll main menu.

The Setup menu is used to select the input signal, °F or °C, and relay setup. The Program menu is used to calibrate the meter. The Password menu is used to program a password.

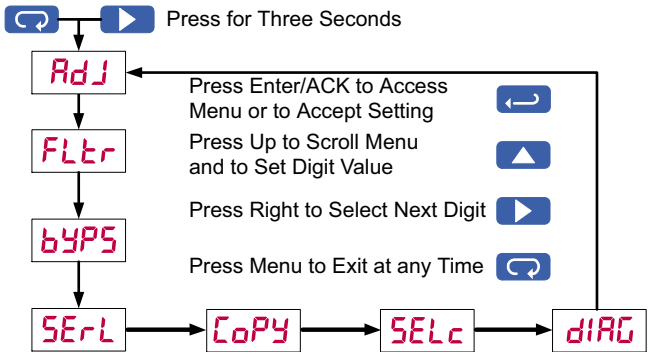
The display moves to the next menu after the **Enter/ACK** button is pressed.



Advanced Features Menu

To simplify the setup process, the features least used in most applications are located in the *Advanced Features* menu.

To access the *Advanced Features* menu, press and hold the **Right** arrow button first and then press and hold the **Menu** button for three seconds.



Offset Adjustment (AdJ)

This function allows the user to select an offset adjustment to the temperature being displayed. This value can be either positive or negative and can be any number within +/-19.9°.

Noise Filter (FLtr)

This function averages any minor or quick changes in the input signal and displays the reading with greater stability.

Noise Filter Bypass (byPS)

The meter can be programmed to filter small input changes (with noise filter function), but allow larger input changes to be displayed immediately by setting the noise filter bypass function accordingly. If the change in input signal exceeds the bypass value, no filtering will occur and the new value will be displayed immediately.

Serial Communication (SErL)

This menu is used to program the *Serial* communication parameters such as the address for each meter when used in a multi-drop mode. The meter is equipped with serial communication capability as a standard feature using PDC Serial Communication Protocol. The Modbus RTU Protocol is optional and can be purchased at any time.

Protocol Selection Menu (Prot)

The *Protocol* selection menu is used to select either the PDC or the Modbus protocol. If Modbus option is purchased separately, it is necessary to enter a four-digit code to permenantly enable the Modbus protocol.

Meter Copy (CoPY)

The *Copy* function is used to copy (or clone) all the settings from one Javelin T meter to other Javelin T meters

In less than 5 seconds!

The *Copy* function is a standard feature on all meters, and does not require a serial communication adapter

Select Menu (SELc)

The *Select* menu is used to select display intensity. Selection for analog output is a factory setting depending on the option installed.

Display Intensity Menu (int Y)

The *Display Intensity* function allows the selection of eight user selectable levels of intensity to help compensate for various lighting conditions, including direct sunlight.

Diagnostic Menu (d iAG)

The *Diagnostic* function aids in troubleshooting by providing a convenient way to review setup and programming parameters.

VERSATILE OPERATION

The Javelin Max/Min function, two relays, and serial communication options provide all the utility you need to handle all the common applications.

Powerful Relay Functionality

All relay functions are set up from the front panel

- Automatic reset only
- Automatic or manual reset
- Latching or non-latching relays
- Alternation control
- On and off time delays from 0 to 199 seconds
- Fail-safe operation is user selectable

Maximum/Minimum Readings

To display the maximum and minimum readings since the last reset/power-up, use the **MAX** button.

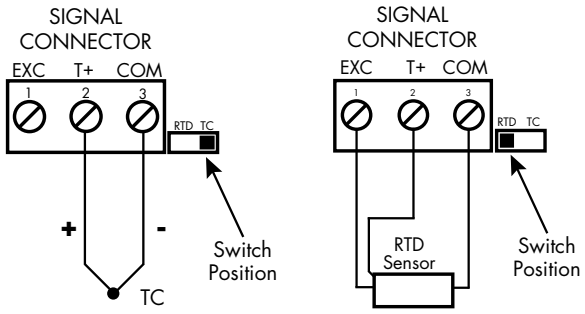
TEMPERATURE SENSOR INPUTS

The Javelin T is factory calibrated to accept type J,K,T, or E thermocouples and 100 Ω platinum RTDs. It can be programmed to display in degrees Fahrenheit or Celsius and the type K thermocouple can display up to 2300°F.

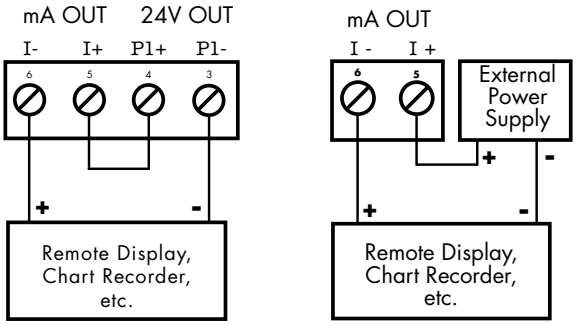
Thermocouple & RTD Inputs

Setting up the Javelin T to accept a thermocouple or RTD input is simply a matter of setting a switch at the rear of the case and selecting the input type from the menu.

The meter accepts type J,K,T, or E thermocouples as well as two, three, or four-wire 100 Ω platinum RTDs.

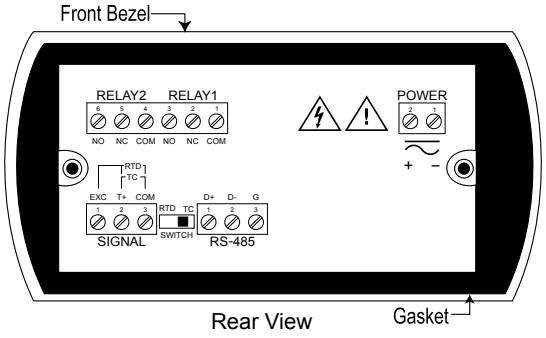


Isolated 4-20 mA Analog Output



4-20 mA Output

Connector Locations



Meter with Relays Option

FIELD ENCLOSURES

The Javelin is available with a wide variety of NEMA 4, NEMA 4X, and explosion-proof enclosures.

NEMA 4 & NEMA 4X Enclosures

The NEMA 4 and NEMA 4X enclosures are available in plastic, stainless steel, and steel. They come with pre-punched 1/8 DIN cutouts for up to ten meters. The meters are mounted in the enclosure door so they can be programmed without opening the enclosure. Options include 2" pipe mounting kits and engraved plastic labels.

See the Trident Enclosures data sheet for complete details and specifications regarding the NEMA 4 and NEMA 4X Enclosures.

Low-Cost Plastic NEMA 4X Enclosure

The PDA2801 is a low-cost, compact, plastic NEMA 4X enclosure that will house one Javelin.

Plastic, Steel & Stainless Steel

These NEMA 4 and 4X enclosures house from one to ten meters and feature a hinged door.

Enclosures and meters are ordered and packaged seperately.

Engraved Plastic Labels

These custom engraved plastic labels are the perfect solution for identifying both the enclosure and labeling each individual meter.

Whether the meters are mounted in one of our enclosures or installed into your existing control panel these custom engraved plastic labels are the answer you're looking for!

Explosion-Proof Enclosures

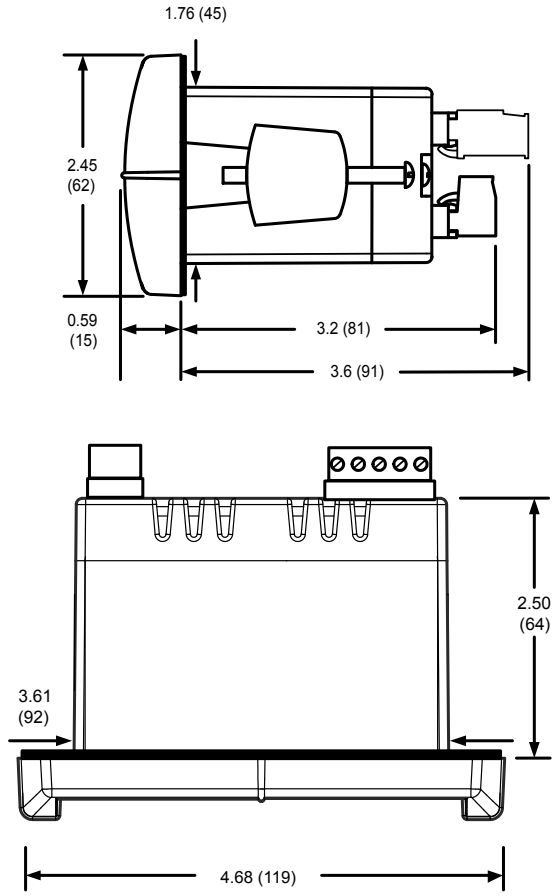
These explosion-proof enclosures house one or two Javelins and are UL and C-UL Classified as NEMA 7 and 9 for location in Class I Groups C and D, Class II, Groups E,F,G and Class III. Enclosures and meters are ordered and packaged seperately.

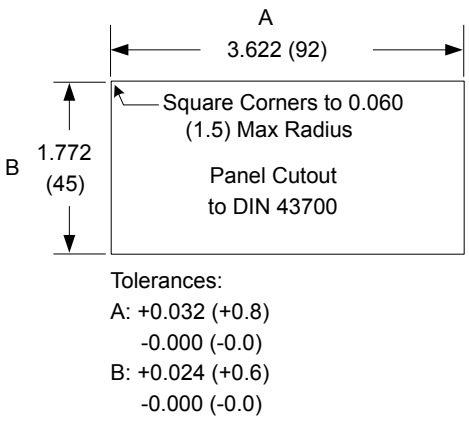
QUICK INSTALLATION

The Javelin is housed in a shallow-depth case that is designed for easy installation and servicing. The extra large front bezel is rated Type 4X, IP65. The mounting brackets are locked in place to make it easy to mount the meter in the panel. Removable screw terminal connectors make for easy and convenient wiring.

Mounting Dimensions

Units: Inch (mm)





Tolerances:
A: +0.032 (+0.8)
-0.000 (-0.0)
B: +0.024 (+0.6)
-0.000 (-0.0)

Notes:

1. Panel cutout required: 1.772" x 3.622" (45 x 92 mm)
2. Panel thickness: 0.040" – 0.250" (1.0 – 6.4 mm)
3. Mounting brackets lock in place for easy mounting

ORDERING INFORMATION

Javelin T Model PD740		
85-265 AC Model**	**12-36 VDC** Model**	**Options Installed**
PD740-6R0-04	PD740-7R0-04	None
PD740-6R2-04	PD740-7R2-04	2 Relays
	PD740-7R3-04	4-20 mA Output
PD740-6R3-14		4-20 mA Output, 24 VDC Supply

All models supplied with RS-485 communications.

**All models may be powered from AC or DC, see Specifications for details.

Accessories	
Model	**Description**
PDA7485-I	RS-232 to RS-422/485 Isolated Converter
PDA7485-N	RS-232 to RS-422/485 Non-Isolated Converter
PDA8485-I	USB to RS-422/485 Isolated Converter
PDA8485-N	USB to RS-422/485 Non-Isolated Converter
PDA7503-1*	MeterView® Software for 1 Meter
PDA7503-2*	MeterView® Software for 1-10 Meters
PDA7503-3*	MeterView® Software for 1- 100 Meters
PDN-MODBUS	Modbus Option Enable
PDX6901	Suppressor (snubber): 0.01µF/470 Ω, 250 VAC
PDN-EXTWRNTY1-X**	Extended Warranty 1 year
PDN-EXTWRNTY2-X**	Extended Warranty 2 years

* MeterView® Software may be used for monitoring and data logging of PD740 Javelin meters. Configuration and programming of Javelin meters must be done through the front panel or Modbus registers.

** Replace the X with "0" if list price is $0 - $299 or with "1" if list price is $300 - $599

Setup, Calibration & Labels	
Model	**Description**
PDN-CAL	2-Point Input Calibration
PDN-CAL3	4-20 mA Output Calibration
PDN-CSETUP	Custom Setup
PDN-CERTCAL	Certificate of Calibration
PDN-CERTCAL2	Certificate of Calibration with Data
PDLXXXX	Engraved Plastic Labels

NEMA 4 & 4X Enclosures			
No. of Meters	**Plastic**	**Stainless Steel**	**Steel**
1	PDA2501	PDA2601	PDA2701
2	PDA2502	PDA2602	PDA2702
3	PDA2503	PDA2603	PDA2703
4	PDA2504	PDA2604	PDA2704
5	PDA2505	PDA2605	PDA2705
6	PDA2506	PDA2606	PDA2706
7	PDA2507		
8	PDA2508		
9	PDA2509		
10	PDA2510		
2	PDA2512	Large enclosure for two meters	
1	PDA2801	Low-cost enclosure for one meter	

Enclosures and meters are ordered and packaged seperately

SPECIFICATIONS

Except where noted all specifications apply to operation at +25°C.

General

Inputs: Factory calibrated, field selectable: type J, K, T, or E thermocouples and 100 Ω platinum RTD (0.00385 or 0.00392 curve)
Display: 0.56" (14.2 mm) red LED, 4 digits (-1999 to 9999)
Display Intensity: Eight user selectable intensity levels
Accuracy: See Precalibrated Ranges table below
Resolution: 1°; type T, 1° or 0.1°
Cold Junction Reference: Automatic
Temperature Drift: ±2°C maximum
Offset Adjustment: Programmable to ±19.9°. This parameter allows the user to apply an offset value to the temperature being displayed.
Input Impedance: Greater than 100 kΩ
Sensor Break: All relays and alarm status LEDs go to alarm state.
Front Panel: NEMA 4X, IP65; panel gasket provided.
Programming Methods: Four front panel buttons, cloning with Copy feature, and Modbus registers
Noise Filter: Programmable 2 to 199 (0 will disable filter)
Display Update Rate: RTD: 3.7-5/sec; TC: 1.8-2.5/sec
Overrange: Display flashes 9999
Underrange: Display flashes -1999
Recalibration: All inputs are calibrated at the factory; recalibration is recommended at least every 12 months.
Max/Min Display: Stored until reset by user or meter is turned off.
Password: Restricts modification of programmed settings
Non-Volatile Memory: Settings stored for a minimum of 10 years.
Power: 85-265 VAC, 50/60 Hz; 90-265 VDC, 20 W max or 12-36 VDC; 12-24 VAC, 6 W max.
Required Fuse: UL Recognized, 5 A max, slow blow; up to 6 meters may share one fuse.
Normal Mode Rejection: 64 dB at 50/60 Hz
Isolation: 4 kV input/output-to-power line; 500 V input-to-output or output-to-24 VDC supply
Operating Temperature: 0 to 65°C
Storage Temperature: -40 to 85°C
Relative Humidity: 0 to 90% non-condensing
Connections: Removable screw terminals accept 12 to 26 AWG
Enclosure: 1/8 DIN, high impact plastic, 94V-0, color; gray
Weight: 9 oz (255 g) (including options)
UL File Number: E160849; 508 Industrial Control Equipment
Warranty: 1 year parts & labor
Extended Warranty: 1 or 2 years, refer to Price List for details

Precalibrated Ranges

Type	Range	Accuracy	Range	Accuracy
J	-58º to 1382ºF	±2ºF	-50º to 750ºC	±1ºC
K	-58º to 2300ºF	±2ºF	-50º to 1260ºC	±1ºC
T	-292º to 700ºF	±2ºF	-180º to 371ºC	±1ºC
E	-58º to 1700ºF	±2ºF	-50º to 927ºC	±1ºC
RTD	-328º to 1382ºF	±1ºF	-200º to 750ºC	±1ºC

Relays

Rating: 2 Form C (SPDT); rated 3 A @ 30 VDC or 3 A @ 250 VAC resistive load; 1/14 HP @ 125/250 VAC inductive loads
Deadband: 0-100% FS, user selectable
High or Low Alarm: User may program any alarm for high or low
Relay Operation:
1. Automatic (non-latching) 2. Latching 3. Alternation control
Relay Reset: User selectable via front panel buttons or PC
1. Automatic reset only (non-latching)
2. Automatic plus manual reset at any time (non-latching)
3. Manual reset only, at any time (latching)
4. Manual reset only after alarm condition has cleared (latching)
Automatic Reset: Relays reset when input passes the reset point
Manual Reset: Front panel button, MeterView, Modbus registers
Time Delay: 0 to 199 seconds, on and off delays; programmable
Fail-Safe Operation: Programmable, independent for each relay. Relay coils are energized in non-alarm condition. In case of power failure, relays will go to alarm state.

Isolated 4-20 mA Transmitter Output

Scaling Range: 1.00 to 23.00 mA; reverse scaling allowed.
Calibration: Factory calibrated 4.00 to 20.00 mA
Scaling Range: 0.00 to 23.99 mA, see output range above
Accuracy: ±0.1% FS ±0.004 mA
Temperature Drift: 50 PPM/°C
Note: Analog output drift is separate from input drift
Transmitter Supply: Isolated 24 VDC ±10% @ 200 mA max
Isolation: 500 V input-to-output or output-to-24 VDC supply; 4 kV input/output-to-power line
External Power: 35 VDC maximum
Output Loop Resistance:

	Loop Resistance	
Power supply	Minimum	Maximum
24 VDC	10 Ω	700 Ω
35 VDC (external)	100 Ω	1200 Ω

Serial Communications

Compatibility: EIA-485
Protocol: PDC and Modbus RTU
Meter Address: PDC protocol: 0 to 99, Modbus protocol: 1 to 247
Baud Rate: 300 to 19,200 bps
Transmit Time Delay: Programmable 0 to 199 ms
Data: 8 bit (1 start bit, 1 stop bit)
Parity: None, even, or odd
(Modbus only; PDC protocol does not use parity)
Byte-to-Byte Timeout: 0.01 to 2.54 seconds (Modbus only)
Turn Around Delay: Less than 2 ms (fixed)

Refer to PDC and Modbus Serial Communications Protocol Specifications for details.

YOUR LOCAL DISTRIBUTOR IS:

LDS740_C 06/05

PRECISION DIGITAL CORPORATION
19 Strathmore Road • Natick MA • 01760 • USA • Tel: (800) 343-1001 • Fax: (508) 655-8990
PRECISION DIGITAL
www.predig.com