

# HIGH VOLTAGE DC METER

Javelin D • Model PD644



- 0-300 VDC input
- NEMA 4X, IP65 front
- Scale in engineering units
- Sunlight readable LED display
- 4-20 mA analog output
- Two form C 3 A relays option
- RS-485 serial communications
- Modbus® RTU option
- Data acquisition with MeterView®

## EASY SETUP & PROGRAMMING

The Javelin D is easy to set up and program because everything is done using the simple four-button programming method. There are 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.

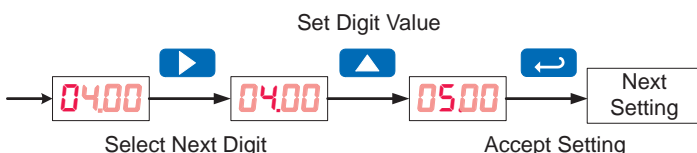
An advanced features menu handles the special functions not commonly used.

- 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.

### Setting Numeric Values

The numeric values are set using the **Right** and **Up** arrow buttons. Press the **Right** arrow button to select next digit and the **Up** arrow button to increment the 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 the **Menu** button to exit without saving changes.

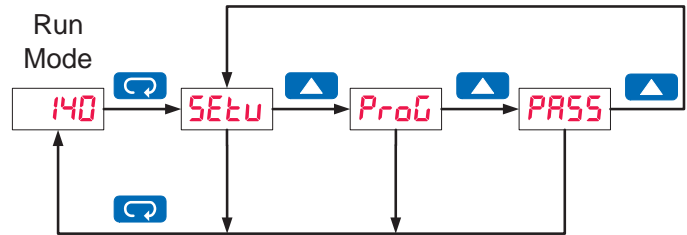


### Main Menu

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

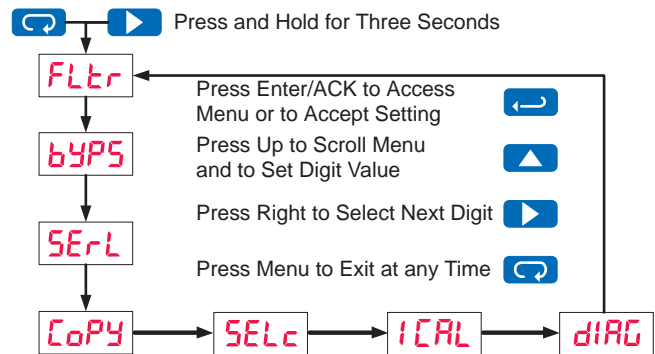
The display moves to the next menu after the **Enter/Ack** button is pressed.



### Advanced Features Menu

To simplify the setup process, the least used features 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.



### 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 the 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 permanently enable the Modbus protocol.

### Meter Copy (COPy)

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

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 (dIAG)

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

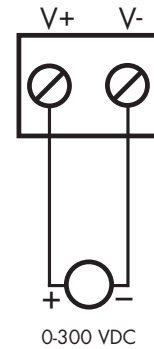
To display the maximum and minimum readings since the last reset/power-up, use the **MAX** button.

## WIRING DIAGRAMS

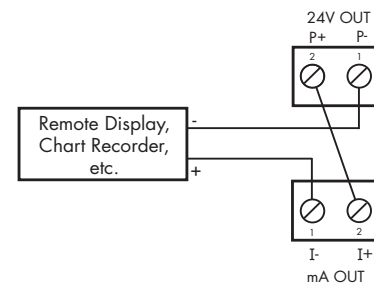
### Voltage Input

The Javelin D is factory calibrated to accept DC voltages up to 300 VDC.

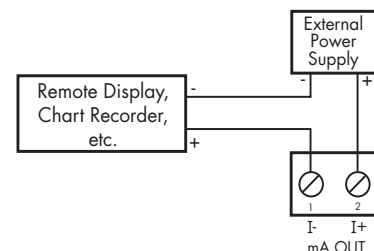
SIGNAL CONNECTOR



### Isolated 4-20 mA Analog Output

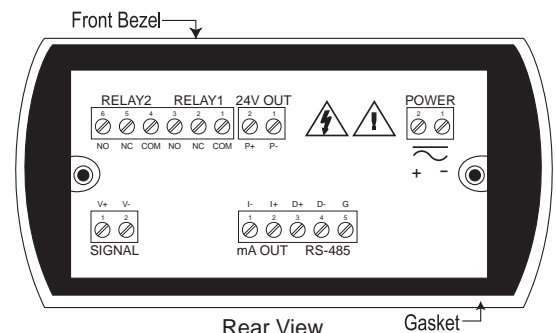


### 4-20 mA Output Powered by Meter



### 4-20 mA Output Powered Externally

### 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.

**ORDERING INFORMATION**

Javelin D • Model PD644		
85-265 VAC** Model	12-36 VDC** Model	Options Installed
PD644-6R3-14		24 VDC Transmitter Supply
PD644-6R5-14		2 Relays & 24 VDC Transmitter Supply
	PD644-7R3-04	None
	PD644-7R5-04	2 Relays

All models supplied with RS-485 communications & 4-20 mA output.  
\*\*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
MeterView	Free Software Download at <a href="http://www.predig.com">www.predig.com</a>
PDN-MODBUS	Modbus Option Enable
PDX6901	Suppressor (snubber): 0.01µF/470 Ω, 250 VAC

\* MeterView® Software may be used for monitoring and data logging of PD644 Javelin meters. Configuration and programming of Javelin meters must be done through the front panel or Modbus registers.

NEMA 4 & NEMA 4X Enclosures			
Model	# of Meters	Description	Mounting
PDA2501	1	Plastic NEMA 4X Enclosure	Through Door
PDA2502	2	Plastic NEMA 4X Enclosure	Through Door
PDA2503	3	Plastic NEMA 4X Enclosure	Through Door
PDA2504	4	Plastic NEMA 4X Enclosure	Through Door
PDA2505	5	Plastic NEMA 4X Enclosure	Through Door
PDA2506	6	Plastic NEMA 4X Enclosure	Through Door
PDA2508	8	Plastic NEMA 4X Enclosure	Through Door
PDA2510	10	Plastic NEMA 4X Enclosure	Through Door
PDA2512	2	Plastic NEMA 4X Enclosure (Large)	Through Door
PDA2601	1	Stainless Steel NEMA 4X Enclosure	Through Door
PDA2602	2	Stainless Steel NEMA 4X Enclosure	Through Door
PDA2603	3	Stainless Steel NEMA 4X Enclosure	Through Door
PDA2604	4	Stainless Steel NEMA 4X Enclosure	Through Door
PDA2605	5	Stainless Steel NEMA 4X Enclosure	Through Door
PDA2606	6	Stainless Steel NEMA 4X Enclosure	Through Door
PDA2701	1	Steel NEMA 4 Enclosure	Through Door
PDA2702	2	Steel NEMA 4 Enclosure	Through Door
PDA2703	3	Steel NEMA 4 Enclosure	Through Door
PDA2704	4	Steel NEMA 4 Enclosure	Through Door
PDA2705	5	Steel NEMA 4 Enclosure	Through Door
PDA2706	6	Steel NEMA 4 Enclosure	Through Door
PDA2801*	1	Plastic NEMA 4X Enclosure	Through Cover

\* Quick Shipment Program product, typically shipped within 2 working days

**SPECIFICATIONS**

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

**General**

**Input:** 0-300 VDC  
**Display:** 0.56" (14.2 mm) red LED, 4 digits (-1999 to 9999)  
**Accuracy:** ±0.05% FS ±1 count  
**Display Intensity:** Eight user selectable intensity levels  
**Decimal Point:** Up to 3 decimals: d.ddd, dd.dd, ddd.d, or dddd  
**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:** 5/second  
**Overrange:** Display flashes 9999  
**Underrange:** Display flashes -1999  
**Recalibration:** Input is calibrated at the factory; recalibration is recommended at least every 12 months.  
**Temperature Drift:** ±50 PPM/°C maximum  
**Input Impedance:** Greater than 1 MΩ  
**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 ten years. **Power Options:** 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:** 8 oz (227 g) (including options)  
**UL File Number:** E160849; 508 Industrial Control Equipment  
**Warranty:** 3 years parts & labor

**Serial Communications**

**Compatibility:** EIA-485  
**Meter Address:** PDC protocol: 0-99, Modbus protocol: 1-247  
**Baud Rate:** 300-19,200 bps  
**Transmit Time Delay:** Programmable 0-199 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:** 0.01-2.54 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:**

**Relays**

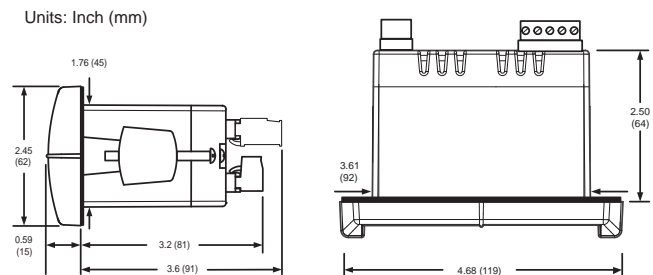
**Rating:** 2 Form C (SPDT); rated 3 A @ 30 VDC or 3 A @ 250 VAC resistive load; 1/14 HP @ 125/250 VAC inductive loads  
**Deadband:** 0-100% FS, user selectable  
**High or Low Alarm:** User may program any alarm for high or low  
**Relay Operation:**  
 1. Automatic (non-latching)  
 2. Latching  
 3. Pump alternation control  
**Relay Reset:** User selectable via front panel buttons or PC  
 1. Automatic reset only (non-latching)  
 2. Automatic + 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**

**Output Range:** 1.00 to 23.00 mA typical  
**Calibration:** Factory calibrated 4.00 to 20.00 mA  
**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:**

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

**Mounting Dimensions**



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

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