

**MURPHY**®

by **ENOVATION** CONTROLS



# PowerView™ PVM20 & PVM35 Series Gages

## *Installation Instructions*

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Section 78

In order to consistently bring you the highest quality, full featured products, we reserve the right to change our specifications and designs at any time. The latest version of this manual can be found at [www.fwmurphy.com](http://www.fwmurphy.com).

**Warranty** - A limited warranty on materials and workmanship for one year is given with this Murphy product. A copy of the warranty may be viewed or printed by going to [www.fwmurphy.com/support/warranty.htm](http://www.fwmurphy.com/support/warranty.htm)



Please read the following information before installing.

**BEFORE BEGINNING INSTALLATION OF THIS MURPHY PRODUCT:**

A visual inspection of this product for damage during shipping is recommended before mounting.

It is your responsibility to have a qualified person install this unit.

Read and follow all installation instructions.

Disconnect all electrical power to the machine.

Make sure the machine cannot operate during installation.

Follow all safety warnings of the machine manufacturer.

Please contact ENOVATION CONTROLS immediately if you have any questions.

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## Product Description

The PowerView™ PVM Series gages are intelligent gages designed to display easy-to-read information transmitted by the PowerView. The PVM gages communicate with the PowerView via a single RS485 twisted pair MODBUS® RTU serial link. The gages can be daisy-chained using quick-connect harnesses.

The major feature of the PVM gages is their balance between design and functionality. These modern gages offer a selection of bezel styles and colors.

The PVM gages also include features such as a smooth stepper motor operation for the 270° sweep pointer, an environmentally sealed case with two Amp Mini Universal Mate-N-Lok connectors molded into the casing, and green LED back lighting. They are available for standard 2-1/16 in. (52 mm) and 3-3/8 in. (86 mm) diameter hole sizes. In addition, their plastic cases incorporate a “D” shape allowing panel cutouts that eliminate gage rotation during installation.

### PVM20 Series Models

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- PVM20-A = Engine Oil Pressure
- PVM20-B = Coolant Temperature
- PVM20-C = Voltmeter
- PVM20-D = Percent Load at current RPM
- PVM20-E = Transmission Oil Pressure
- PVM20-F = Transmission Oil Temperature
- PVM20-G = Engine Oil Temperature
- PVM20-H = Hydraulic Oil Temperature
- PVM20-J = Percent Fuel Level
- PVM20-K = Boost Pressure
- PVM20-L = Exhaust Gas Temperature
- PVM20-M = Intake Manifold Temperature
- PVM20-N = Auxiliary Temperature
- PVM20-P = Auxiliary Pressure
- PVM20-T = Tachometer

### PVM35 Series Models

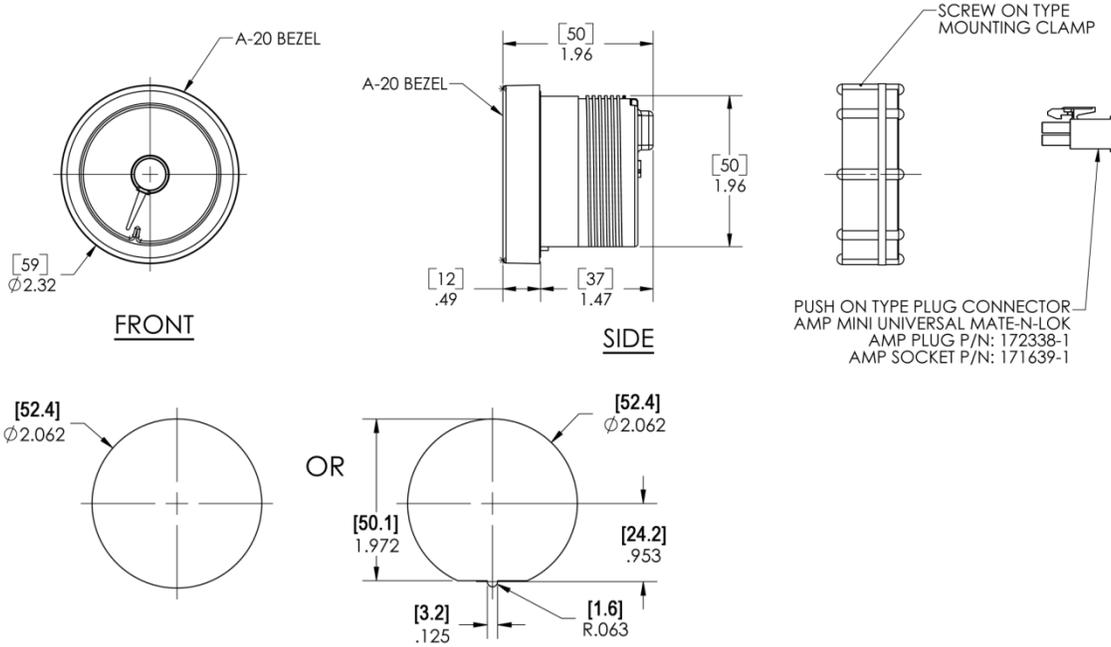
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- PVM35-T = Tachometer
- PVM35-S = Speedometer

# Dimensions and Mounting

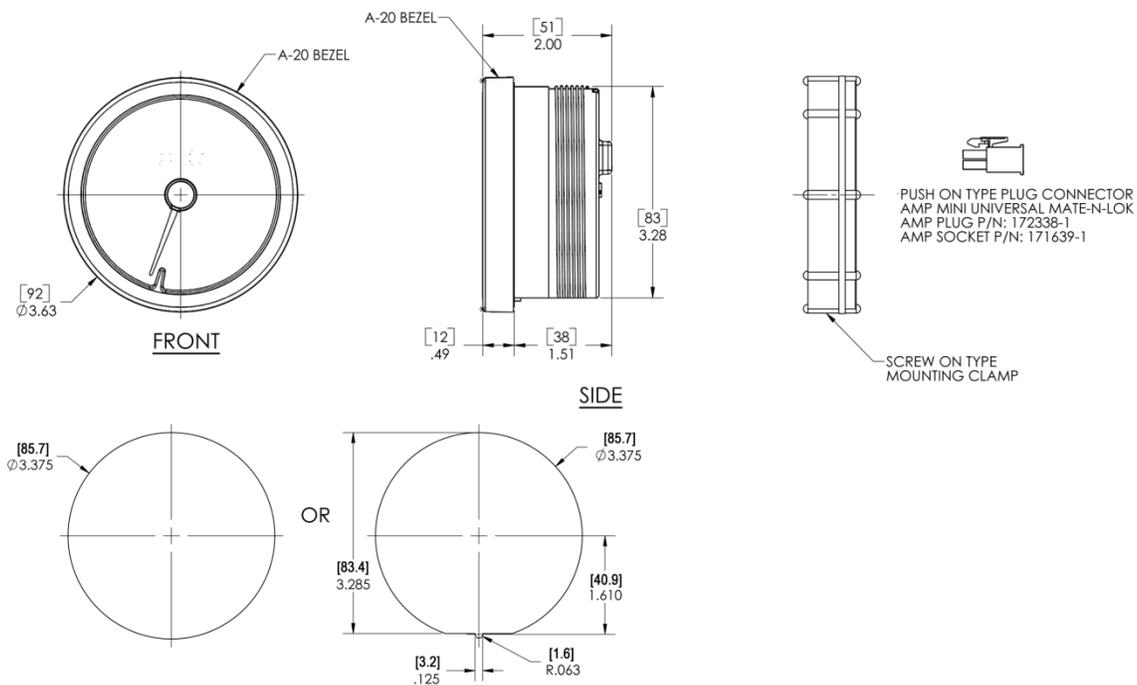
## PVM20 Series Typical Installation and Mounting Dimensions

### PVM20 Series



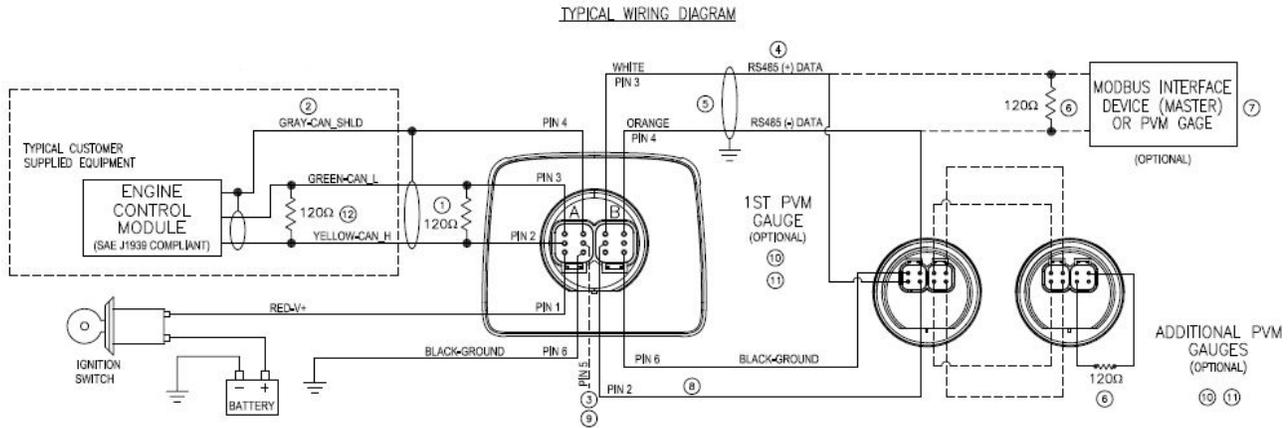
## PVM35 Series Typical Installation and Mounting Dimensions

### PVM35 Series



# Wiring Diagrams

## PowerView Gages Back View



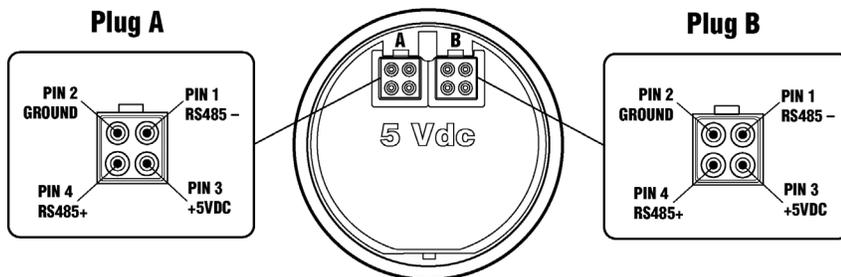
## Wiring Notes

### WIRING NOTES

- ① PLACE RESISTOR BETWEEN CAN\_H AND CAN\_L LINE NEAR POWERVIEW (INCLUDED IN PWV-P OR FACTORY PURCHASED PANELS).
- ② USE SAE J1939 COMPLIANT WIRING.
- ③ OPTIONAL: POTENTIOMETER, 1000 OHM, 1/4W. TO USE INPUT AS A FUEL SENDER, SEE NOTE 9.
- ④ ONLY USE 120 OHM CHARACTERISTIC IMPEDANCE CABLE, EX BELDEN 984.
- ⑤ RS485 SHIELD CONNECTED TO POWERVIEW END ONLY.
- ⑥ PLACE RESISTOR AT END OF LINE ON LAST PVM GAGE OR MODBUS INTERFACE DEVICE. (INCLUDED IN PWJR OR FACTORY PURCHASED PANELS).
- ⑦ PVM GAGES CAN NOT BE USED IN A SYSTEM UTILIZING AN OPTIONAL MODBUS MASTER DEVICE.
- ⑧ PVM GAGES ONLY POWER CONNECTION IS PORT B PIN 2. DO NOT CONNECT TO BATTERY VOLTAGES PORT A PIN 1 OR PORT B PIN 1. DO NOT CONNECT EXTERNAL PVM POWER SUPPLY TO THIS PIN.
- ⑨ OPTIONAL: USE FW MURPHY APPROVED FUEL SENDER ONLY. USE A TWO WIRE SENDER AND TERMINATE GROUND WIRE TO PORT A PIN 6. DO NOT CONNECT A POTENTIOMETER AND FUEL SENDER AT THE SAME TIME AS ERRATIC OPERATION WILL RESULT.
- ⑩ TOTAL OF 5 PVM GAGES MAY BE USED
- ⑪ TOTAL DISTANCE FROM FIRST GAGE TO PV101 NOT TO EXCEED 20 FEET (6 METERS). DISTANCE BETWEEN GAGES NOT TO EXCEED 20 INCHES (.5 METERS). TOTAL LENGTH OF ALL HARNESSES NOT TO EXCEED 28 FEET (8.5 METERS).
- ⑫ TERMINATING RESISTOR AT ECU END OF HARNESS. **WARNING:** TWO 120 OHM RESISTORS SHOULD BE LOCATED AT OPPOSITE ENDS OF THE J1939 CAN BUS. FAILURE TO COMPLY WILL CAUSE BUS FAILURES. ONLY TWO 120 OHM RESISTORS ARE ALLOWED ON THE J1939 CAN BUS. ECU TERMINATING RESISTOR IS TYPICALLY LOCATED IN THE HARNESS, BUT CAN BE LOCATED INSIDE THE ECU'S. FOR ECU RESISTOR LOCATION CHECK WITH OEM, EQUIPMENT SUPPLIER, OR ECU SPECIFICATION.

## Typical Connector PIN Designation

### PVM Gages Back View

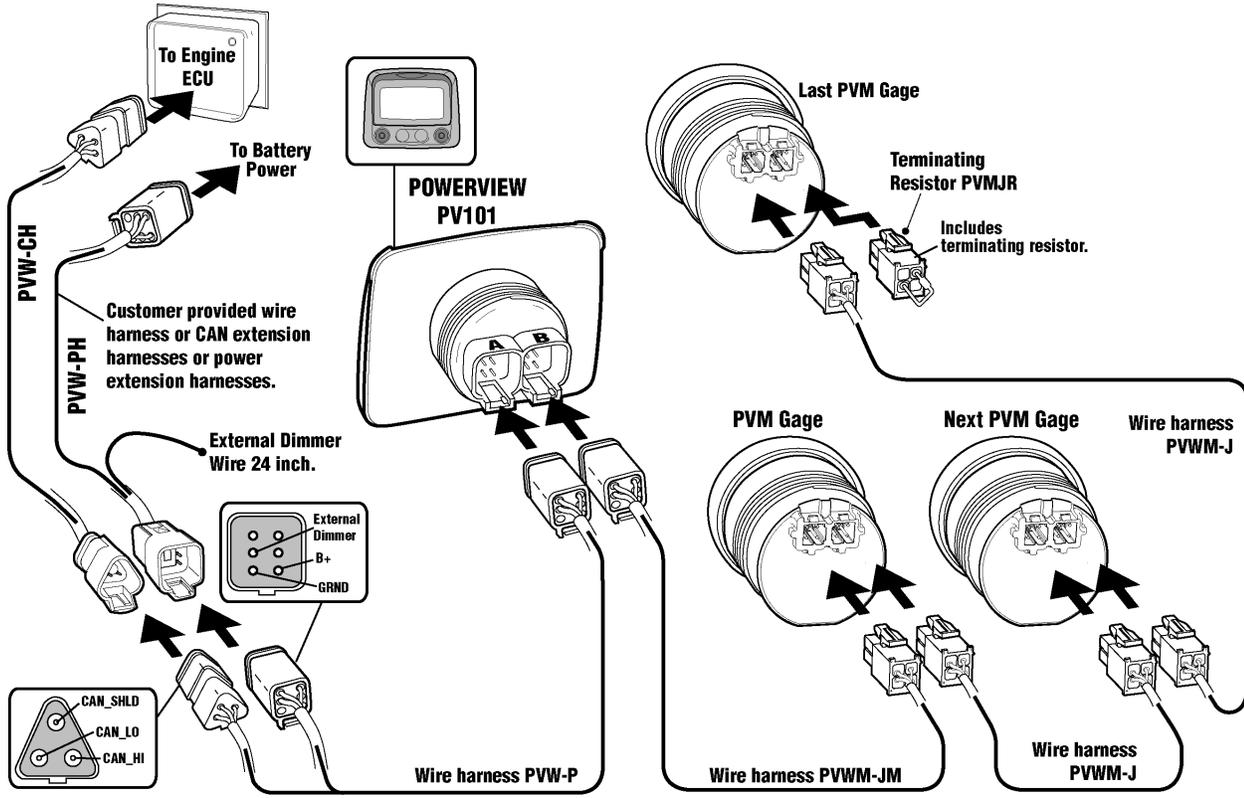


## Recommended Connectors:

Housing: AMP 172338-1

PIN Contact: AMP 170362-1

# Typical Quick-Connect Diagram



## Specifications

### PV101 Compatibility -

- **Maximum supported:** 5 PVM Gages
- **Maximum distance to last gage:** 8.5 Meters

### Power Supply Input Voltage

- 5V (4.5-5.5 VDC minimum & maximum voltage)

### Power Supply Operating Current (@ 5 VDC)

- PVM20, PVM35: 18 mA minimum; 80 mA maximum

**Backlight Maximum Current:** 60mA

**Input:** RS485 MODBUS® RTU data.

**Output:** Analog Readout.

### Environmental -

**Operating Temperature:** -40 to 185°F (-40° to 85°C)

**Storage Temperature:** -67 to 185°F (-55° to 85°C)

### Environmental Sealed Enclosure:

- Sealing: IP68, ±5 PSI (± 34.4 kPa)

**Dial:** White numerals over black background

**Return-To-Zero Needle Movement:** Not Available for PVM20 models.

**Indicating Pointer:** Stepper motor operation with 270° sweep

**Gage Accuracy:** Better than ± 1.0% of scale

**Maximum Panel Thickness:** 3/8 inch (9.6 mm)

### Connectors -

- Amp Mini Universal Mate-N-Lok
- Amp Plug P/N: 172338-1
- Amp Socket P/N: 171639-1

**Shipping Weight:** 1 Lb. (450 g.)

### Shipping Dimensions:

- 6 x 6 x 6 in. (153 x 153 x 153 mm)

# NOTES

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**ENOVIATION CONTROLS CORPORATE HEADQUARTERS**

5311 S 122ND EAST AVENUE  
TULSA, OK 74146

**ENOVIATION CONTROLS – SAN ANTONIO OFFICE**

5757 FARINON DRIVE  
SAN ANTONIO, TX 78249

**ENOVIATION CONTROLS – HOUSTON OFFICE**

105 RANDON DYER RD  
ROSENBERG, TX 77471

**ENOVIATION CONTROLS – UNITED KINGDOM**

CHURCH ROAD LAVERSTOCK  
SALISBURY SP1 1QZ UK

**MURPHY ECONTROLS TECHNOLOGIES (HANGZHOU) CO, LTD.**

77 23RD STREET  
HANGZHOU ECONOMIC & TECHNOLOGICAL DEVELOPMENT AREA  
HANGZHOU, ZHEJIANG 310018 CHINA

**DOMESTIC SALES & SUPPORT**

**ECONTROLS PRODUCTS**

PHONE: 210 495 9772  
FAX: 210 495 9791  
EMAIL: [INFO@ECONTROLS.COM](mailto:INFO@ECONTROLS.COM)  
[WWW.ECONTROLS.COM](http://WWW.ECONTROLS.COM)

**MURPHY PRODUCTS**

PHONE: 918 317 4100  
FAX: 918 317 4266  
EMAIL: [SALES@FWMURPHY.COM](mailto:SALES@FWMURPHY.COM)  
[WWW.FWMURPHY.COM](http://WWW.FWMURPHY.COM)

**MURPHY CONTROL SYSTEMS & SERVICES**

PHONE: 281 633 4500  
FAX: 281 633 4588  
EMAIL: [CSS-SOLUTIONS@FWMURPHY.COM](mailto:CSS-SOLUTIONS@FWMURPHY.COM)

**MURPHY INDUSTRIAL PANEL DIVISION**

PHONE: 918 317 4100  
FAX: 918 317 4124  
EMAIL: [IPDSALES@FWMURPHY.COM](mailto:IPDSALES@FWMURPHY.COM)

**INTERNATIONAL SALES & SUPPORT**

**UNITED KINGDOM**

PHONE: +44 1722 410055  
FAX: +44 1722 410088  
EMAIL: [SALES@FWMURPHY.CO.UK](mailto:SALES@FWMURPHY.CO.UK)  
[WWW.FWMURPHY.CO.UK](http://WWW.FWMURPHY.CO.UK)

**CHINA**

PHONE: +86 571 8788 6060  
FAX: +86 571 8684 8878  
EMAIL: [APSALES@FWMURPHY.COM](mailto:APSALES@FWMURPHY.COM)

**LATIN AMERICA & CARIBBEAN**

PHONE: 918 317 2500  
EMAIL: [LASALES@FWMURPHY.COM](mailto:LASALES@FWMURPHY.COM)

**SOUTH KOREA**

PHONE: +82 70 7951 4100  
EMAIL: [SKOREASALES@FWMURPHY.COM](mailto:SKOREASALES@FWMURPHY.COM)

**INDIA**

PHONE: +91 91581 37633  
EMAIL: [INDIASALES@FWMURPHY.COM](mailto:INDIASALES@FWMURPHY.COM)

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