

# PowerView™ PV25

## Engine and Diagnostic Display

The PowerView 25 is an engine and diagnostic display in an economical, compact package. This J1939-compliant device provides electronic engine parameter data, is simple to install, matches the PowerView line of rugged displays and can be powered by 12-volt or 24-volt systems.

The PV25 is equipped with two push buttons to quickly access a convenient menu. In addition, a back-lit graphic display and two LEDs indicate Active-fault Alarm or Shutdown status.

Active and Stored Fault messages display the SPN (Suspect Parameter Number), FMI (Failure Mode Indicator) and the OC (Occurrence Count) using the SAE J1939 protocol.

The PV25 displays up to 20 standard J1939 parameters in standard or metric units. The following are some of the engine parameters of the PV25 displays:

Engine RPM	Coolant Temperature
Engine Oil Pressure	ITA/Stage IIIB Parameters
Engine Hours	Active Service Codes
System Voltage	Stored Service Codes

## Specifications

### Tier 4 / Stage IIIB/IV Compliant Ready

**Operating Voltage:** 6 VDC minimum to 36 VDC maximum

### Power Supply Operating Current:

460mA max @ 12 VDC

810mA max @ 24 VDC

**Reversed Polarity:** Withstands reversed battery terminal polarity

### Environmental

**Operating Temperature:** -40° to 158°F (-40 to 70°C)

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

**Sealing:** IP68

**CAN Bus:** SAE J1939 compliant

### Connectors

4-pin AMP Mini-universal Mate-N-Lok Connector

AMP Plug: P/N 172338-1

AMP Socket: P/N 171639-1 (4 each, assumes 18 gage wire. See

AMP Plug specification to match socket and wire size.)

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

**Shipping Weight:** (all models) 0.2 lb. (0.1 kg)

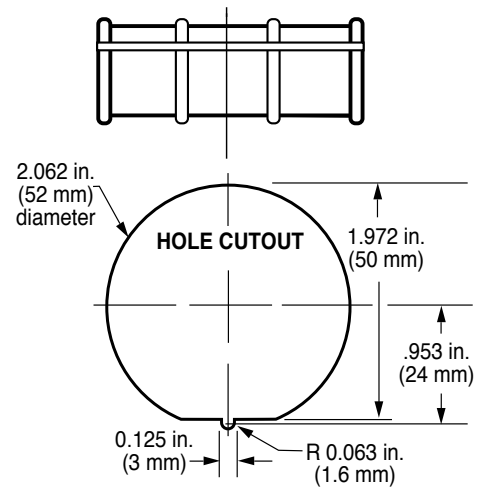
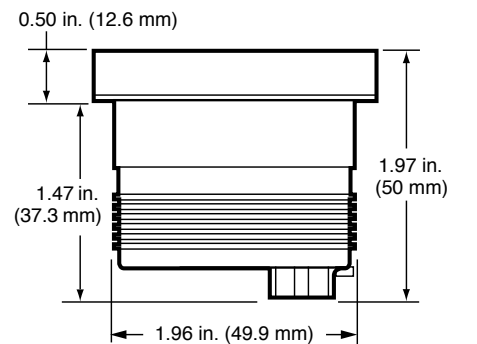
**Shipping Dimensions:** (all models)

3-7/8 x 2-3/4 x 2-3/4 in.

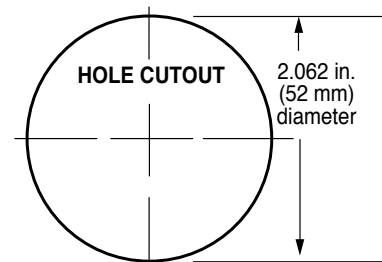
(98.4 x 69.85 x 69.85 mm)



## Dimensions







**OR**



# Bezel Options

Two Bezel styles are available. One is low profile, and both are constructed of ABS.

PV25 Bezel Styles	
AB A-20 Style	BB Low Profile SAE Style
<div></div> <div>†</div>	<div></div> <div>†</div>

# How to Order

Part Number	Description	Notes
78700541	PV25 Bezel type (flat lens) AB = A20 (Black)	Displays
78700571	PV25 Bezel type (flat lens) BB = Low Profile SAE (Black)	
78000613	Wiring Harness PVW-PDA-12 PowerView 10 CAN & Power	Accessories
78000614	Wiring Harness PA-30View 10 Loose Wiring	
78000480	Terminating Resistor, PVMJRM	

# PowerView® PV101

## Engine and Diagnostic Display

The PowerView PV101 display is a multifunction tool that enables equipment operators to view standard engine and transmission parameters and active/stored trouble codes. The display can show a single or a four-parameter simultaneous display with text descriptions for most common fault conditions. The enhanced alarm indicators have ultra-bright alarm and shut-down LEDs.



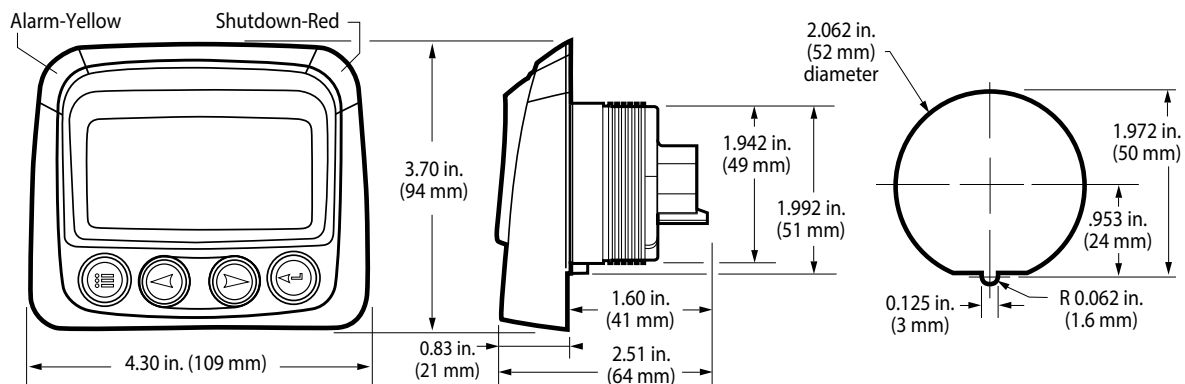
### All models Tier 3/Euro Stage III and earlier (PV101-A) and Tier 4/Euro Stage IV (PV101-C-T4) share the following features:

- Multiple language options – English, Spanish, German, Italian, French, Brazilian Portuguese, Chinese, Japanese, Czech and Russian.
- Sender Input – Select between backlight dimmer function or fuel level. Can be calibrated to use non-Murphy fuel senders.
- Service Reminders – Five service reminders allow users to set hours for: Change Engine Oil, Air Filters, Hydraulic Oil, and Service Engine and Service Machine.
- Select Source Address – Select the exact address the PV101 will claim on the bus.
- The ability to select CAN bus Data Rate.
- Displays more than 50 standard SAE J1939 parameters.
- Shows helpful troubleshooting description of supported parameters.

### Additional features for the Tier 4/Euro Stage IV (PV101-C-T4) models include:

- The menu offers Auto Regen, Request Regen and Inhibit Regen. Visible icons indicate:
  - Active Regeneration
  - Diesel Exhaust Fluid Level (DEF)
  - Diesel Particulate Filter (DPF) Restricted
  - Inhibit Regeneration or High Exhaust Temp
  - After Treatment Fault
- OEM Menu – A password protected menu offers access to MODBUS Setup, Engine Speed Control ON/OFF, DEF Regen Menu ON/OFF, SCR Enable Disable and other critical menu items that require restricted access.
- TSC1 (Torque Speed Control) – Allows users to set run speed via CAN if supported by engine manufacturer.
- Additional 4-Up Screen – Allows user to have two 4-Up screens to toggle between. Second user configurable screen is defaulted to show Tier 4 Parameters: DEF Level (Diesel Exhaust Fluid Level), DPF Active Regen Status, Exhaust Filter Outlet Temp and Exhaust Filter Inlet Temp.
- Shows SPN, FMI and OC for all faults.
- PV101-C Configuration Tool – PC tool allows users to create, view, edit and download configurations for the PV101-C.

## Dimensions

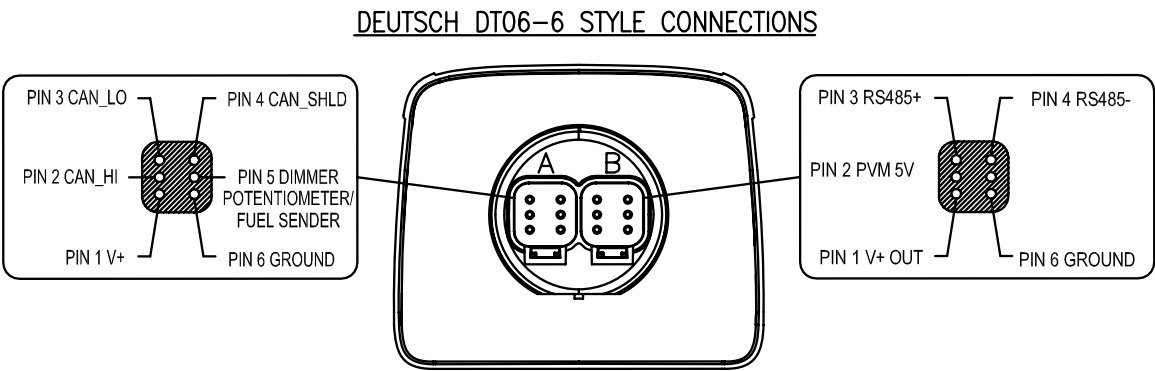


# Specifications

**Operating Voltage:** 8 - 32 VDC  
**Reversed Polarity:** Withstands reversed battery terminal polarity indefinitely within operating temperatures  
**Environmental**  
**Operating Temperature:** -40° to 185° F (-40° to 85° C)  
**Display Viewing Temperature:** -20° to 185° F (-29° to 85° C)  
**Storage Temperature:** -40° to 185° F (-40° to 85° C)  
**Environmental Sealing:** IP68, ± 5 PSI (± 34 kPa)  
**Power Supply Operating Current**  
    (@ 14 VDC) 52 mA min., 300 mA max  
    (@ 32 VDC) 1A max (with LCD heater)  
**CAN Bus:** SAE J1939 compliant  
**Case:** Polycarbonate/polyester  
**Maximum Panel Thickness:** 3/8 inch (9.6 mm)

**Auxiliary RS485 Communications Port:**  
User configurable as Modbus Master or Modbus RTU Slave  
Master Active (default) drives optional PVA or PVM gages  
Slave Active offers user adjustable communication parameters  
**Resistive Input:** User selectable as one of the following  
**Backlighting Potentiometer:** 1 K Ohm, 1/4 W  
**Murphy Fuel Sender:** 33 Ohm full, 240 Ohm empty set standard from factory for use with Murphy fuel sender. Programmable for use with non-Murphy fuel senders.  
**Shipping Weight:** 1 Lb. (450 g.)  
**Shipping Dimensions:** 5 x 6 x 6 in. (127 x 152 x 152 mm)  
**Clamp:** PBT  
**Connectors:** 6-pin Deutsch DT Series

# Pinout



# How To Order

Part Number	Model	Description	Languages Available
78700615	PV101-C-MSTD-TIER4	Murphy STD	English, Spanish, French, Italian, German
78700610	PV101-C-M01-TIER4	Murphy STD Russian	English, Russian
78700611	PV101-C-M02-TIER4	Murphy STD Chinese	English, Chinese
78700612	PV101-C-M03-TIER4	Murphy STD Japanese	English, Japanese
78700613	PV101-C-M04-TIER4	Murphy STD Brazilian Portuguese	English, Brazilian Portuguese, French, German, Spanish
78700614	PV101-C-M05-TIER4	Murphy STD Czech	English, Czech, French, German, Spanish
78700439	PV101-C	Murphy STD	English, Spanish, French, Italian, German
78700497	PV101-C-M01	Murphy STD Russian	English, Russian
78700498	PV101-C-M02	Murphy STD Chinese	English, Chinese
78700499	PV101-C-M03	Murphy STD Japanese	English, Japanese
78700500	PV101-C-M04	Murphy STD Brazilian Portuguese	English, Brazilian Portuguese, French, German, Spanish
78700501	PV101-C-M05	Murphy STD Czech	English, Czech, French, German, Spanish
78700435	PV101-C Configuration Tool Kit	User Configuration Tool	
78700244	PV101-A	Murphy STD	English, Spanish, French, Italian, German
78700396	PV101-A-M01	Murphy STD Russian	English, Russian
78700409	PV101-A-M02	Murphy STD Chinese*	English, Chinese
78700411	PV101-A-M03	Murphy STD Japanese*	English, Japanese

\*Added features not available in these language models.

# PowerView® PV350

## Engine and Diagnostic Display

The PowerView 300 Series features robust, multifunctional displays for advanced monitoring of multiple electronic engines. The PV350 display in this series monitors multiple engine and machine parameters on an easy-to-read 3.8-inch (97 mm) QVGA monochrome LCD. The display is capable of handling sophisticated engine diagnostics as well as basic engine alarm/shutdown.

The PV350 display is customizable using the PowerVision Configuration Studio® software, an intuitive tool designed to make customization simple. Utilizing the software tool, users can tailor basic graphics, designate screen layout and define custom parameters.

The PV350 is equipped with five tactile push buttons to quickly access a convenient menu. In addition, a backlit, heated graphic display and two LEDs indicate active-fault alarm or shut-down status.



### Specifications

**Operating voltage:** 6-36 VDC

**Vibration and shock:** 7.86 random vibrate (5-2000 Hz) and  $\pm 50$  g shock in three axes

**Reversed polarity:** Withstand reversed battery terminal polarity

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

**Storage temperature:** -40° F to 185° F (-40° C to 85° C)

**Communications:** (2) CAN 2.0B; second CAN port is NMEA 2000 isolated; J1939 and NMEA 2000 protocol; proprietary messaging

**EMC/EMI:** 2004/108/EC and 2006/95/EC directives

EN61000-6-4:2001 (emission)

EN61000-6-2:2001 (immunity)

EN-50121-3-2 and EN 12895

**Connectors:** Deutsch DT series 6 pin; M12 for NMEA 2000 (micro-C)

**Inputs:** (1) resistive analog

**Outputs:** (1) 500 mA; switched low-side

**SAE J1113/2, 4, 11, 12, 21, 24, 26 and 41 display**

**E-Mark:** ECE-R10.05

**Display:** 3.8" (97 mm) QVGA (320 x 240 pixels); monochrome transreflective LCD with white LED backlight and heater

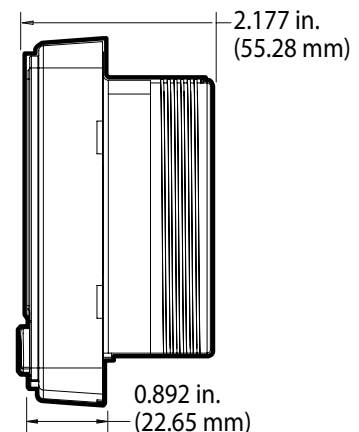
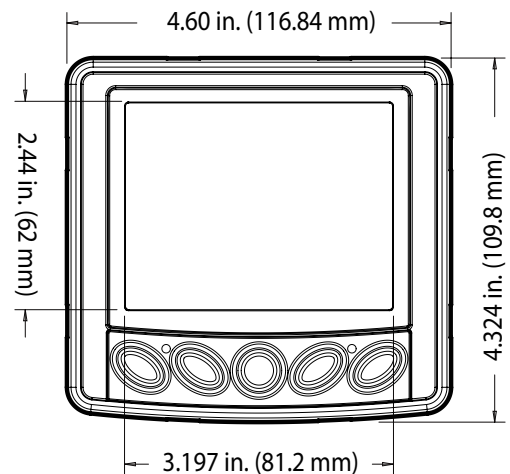
**Viewing angle:**  $\pm 50^\circ$  horizontally;  $+45^\circ/-60^\circ$  vertically

**Keys:** 5 tactile push buttons

**Alarms:** Red and amber warning LEDs; capable of set points-triggered output for external piezo buzzer or shutdown relay

**Real-time clock:** With Li-ion rechargeable battery backup

### CE Dimensions



# Pinout



# How To Order

Part Number	Description	Notes
78700616	PV350-R2, Murphy Standard	Display
78090100	Programming Kit, PV380-350 with dongle	Accessories
78051077	Seal, PV380-350 gasket	Service
78000752	PowerVision Configuration Studio® CD and license	Software



# PowerView® PV380

## Engine & Diagnostic Display

The PowerView 300 Series features robust, multifunction displays for advanced monitoring of multiple electronic engines. The PV380 display in this series monitors multiple engine and machine parameters on an easy-to-read 3.8-inch (97 mm) QVGA monochrome LCD. The display is capable of handling sophisticated engine diagnostics as well as basic engine alarm/shutdown.

Customize the PV380 display utilizing the PowerVision Configuration Studio® software, an intuitive tool designed to make customization simple. Using the software tool, users can tailor basic graphics, designate screen layout and define custom parameters.

The PV380 is equipped with five tactile push buttons to quickly access a convenient menu. In addition, a backlight and heated graphic display with LEDs indicate alarm or shutdown status.



### Specifications

**Operating Voltage:** 6-36 VDC

**Vibration and Shock:** 7.86 random vibs (5-2000Hz) and  $\pm 50g$  shock in 3 axes

**Reversed Polarity:** Withstands reversed battery terminal polarity

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

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

**Communications:** (1) CAN 2.0B; J1939 Protocol; Proprietary Messaging; (1) RS-485 serial

**EMC/EMI:**

2004/108/EC and 2006/95/EC directives

EN61000-6-4:2001 (emission)

EN61000-6-2:2001 (immunity)

EN-50121-3-2 and EN 12895

**Connectors:** Deutsch DT Series 6 and 12 pin

**Inputs:** (4) resistive analog; (3) analog; 0-5 V analog or digital; (1) frequency 2-10000 Hz, 3.6-120 VAC

**Outputs:** (2) 500 mA; switched low-side

**SAE J1113/2, 4, 11, 12, 21, 24, 26 and 41**

**Display:** 3.8" (97 mm) QVGA (320 x 240 pixels); monochrome transfective LCD with white LED backlight and heater

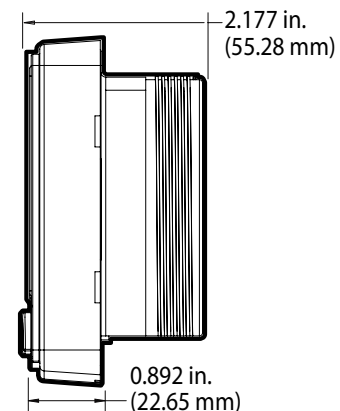
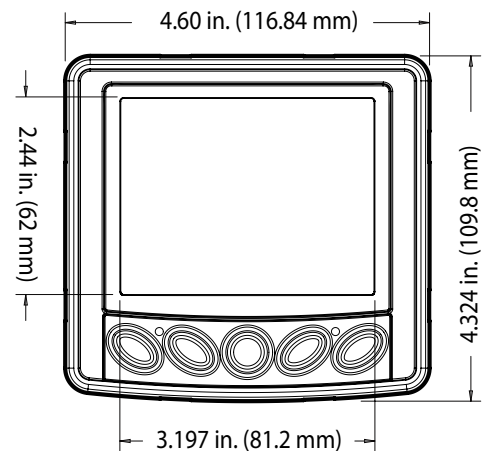
**Viewing Angle:**  $\pm 50^\circ$  horizontally;  $+45^\circ/-60^\circ$  vertically

**Keys:** 5 tactile push buttons

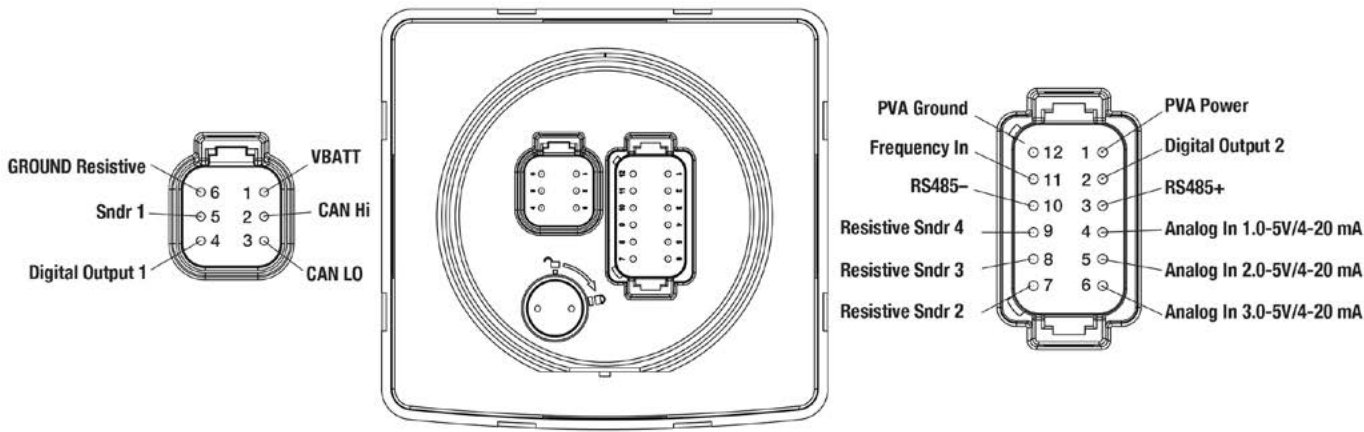
**Alarms:** Red and amber warning LEDs; capable of set point-triggered output for external piezo buzzer or shutdown relay

**Real-time clock:** With Li-ion rechargeable battery backup

### Dimensions



# Pinout



# How To Order

Part Number	Description	Notes
78700609	PV380-R2, Murphy Standard	Display
78000752	PowerVision Configuration Studio® CD and license	Software
78051077	Seal, PV380-350 gasket	Service
78001104	Connector Kit, PV380, 12 and 6 position connector	Accessories
78001060	12 position, one foot whip harness	
78090100	Programming Kit, PV380-350 with dongle	



# PowerView® PV450

## Engine and Diagnostic Display

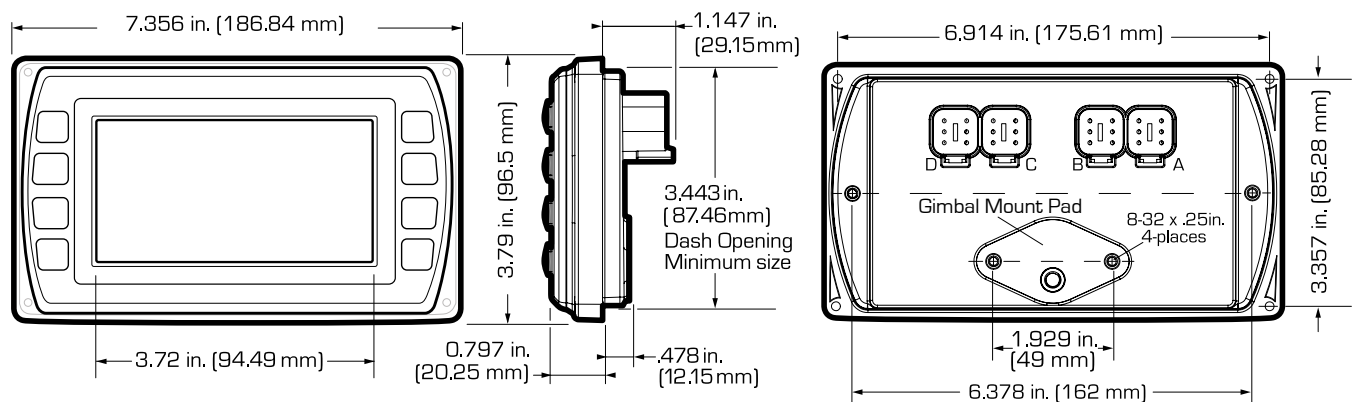
The PowerView 450 display features a freely configurable design allowing custom software to be quickly developed.

The display is compatible with PowerVision Configuration Studio® software to enable quick and easy changes to the programming.

The highly durable display features a full-color, robust 4.3-inch bonded LCD for best-in-class sunlight readability. The PV450's rugged design makes it a great solution for all types of environments and applications.



## Dimensions



## Specifications

### Technical

**Display:** Bonded 4.3" color transmissive TFT LCD  
**Resolution:** WQVGA, 480 x 272 pixels, 16-bit color  
**Aspect Ratio:** 16:9  
**Orientation:** Landscape or portrait  
**Backlighting:** LED, 500-650 cd/m<sup>2</sup> (30,000 hr lifetime)  
**Microprocessor:** Freescale i.MX357 32bit, 532Mhz  
**QNX Realtime Operating System**  
**Flash Memory:** 256 MB  
**RAM:** 128 Mbytes DDR2 SDRAM  
**Operating Voltage:** 6-32 VDC, protected against reverse polarity and load dump (CSA, 6-30 VDC)  
**Power Consumption:** 10W max. (CSA, 163 mA max @ 30VDC)  
**CAN:** (2) CAN 2.0B; optional NMEA 2000 isolation, isolation with HVS450  
**Protocols:** J1939, NMEA 2000, CAN open  
**RS-485:** (1) MODBUS Master/Slave  
**Video input (Optional):** (2) NTSC/PAL input channels with one displayed at a time  
**Connection:** (4) Deutsch DT 6-pin connectors  
**Keyboard:** (8) tactile buttons with white LED backlight  
**USB:** 2.0 host, full speed  
**Output:** (1) Open-drain, capable of sinking 500 mA

**Input:** (1) Resistive, 0-5 V or 4-20 mA (software configurable) (10-bit resolution)

**Clock:** Real time clock with built-in rechargeable Li-ion battery backup (0.033 mWh)

### Environmental

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

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

**Protection:** IP 66 and 67, front and back

### Electromagnetic Compatibility:

2004/108/EC EN 60945:2002

EN 61000-6-4 EN 50121-3-2

EN 61000-6-2 (immunity) EN 12895

J1113/2, 4, 11, 12, 21, 24, 26 and 41

**Vibration:** Random vibration, 7.86 Grms (5-2000 Hz), 3 axes

**Shock:** ± 50G in 3 axes

### Specifications applicable to CSA-certified PV450 only

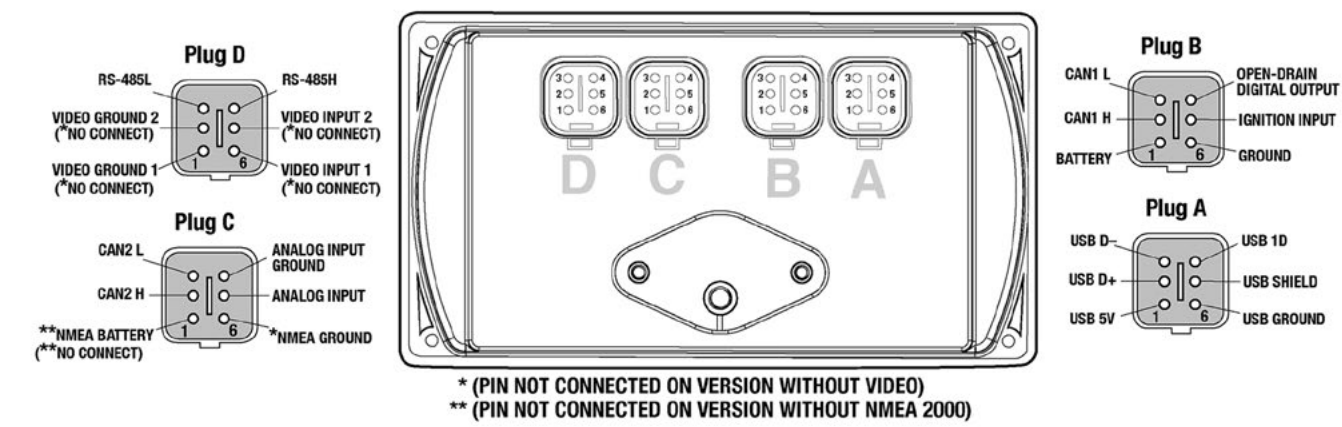
**CSA Certification:** Class I Div 2 Groups B, C & D; T4; IP66

**CAN:** (2) CAN 2.0B (transmission rates up to 1Mbps)

**Protocols:** J1939 and CAN open

**Environmental Protection:** IP 66 and 67

Pinout



How To Order

Part Number	Model/Description	Notes
78700436	PV450	Display
78700538	PV450, J1939, NMEA, with Video	
78700515	PV450, with Video	
78700543	PV450-01-CSA, with Video (cCSAus)	
78700544	PV450NV-01-CSA, (cCSAus)	
78000831	PV450, Visor Kit	Accessories

# PowerView® PV485

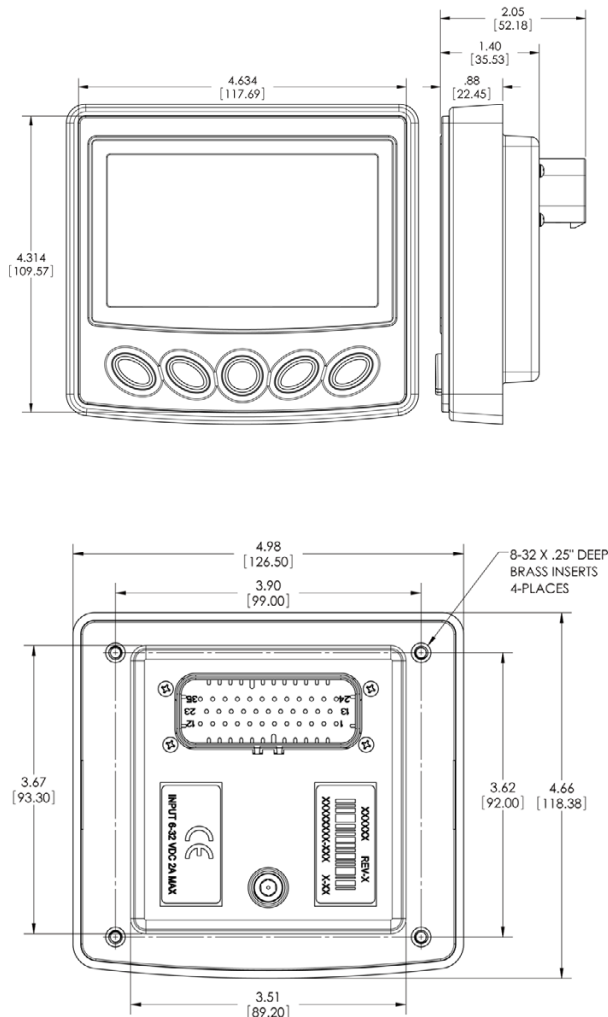
## Engine and Diagnostic Display

The PowerView 485 is a customizable, all-in-one color display and controller designed to meet the needs of modern electronic engines and equipment applications. Its rugged design offers a wide array of configurable I/O and supports both mechanical and J1939 electronic engines.

The PV485 also supports Tier 4 and stage IV engines, helping to make your transition to Tier 4 easier.

The PV485 controller is compatible with the PowerVision Configuration Studio® software, so custom configurations can be quickly developed. With the PowerVision Configuration Studio software, it is easy to define the user interface screens, as well as the functionality and sequence of events controlled by the PV485. You can configure equipment control such as: autostart, pressure control, data logging and alarms. You can even add custom graphics and company branding to the user interface.

## Dimensions



Graphic interface not included, custom configuration required

## Specifications

### Technical

**Display:** Bonded 4.3"/109mm color transmissive TFT LCD  
**Resolution:** WQVGA, 480 x 272 pixels, 16-bit color  
**Aspect Ratio:** 16:9  
**Orientation:** Landscape  
**Backlighting:** LED, 900-1000 cd/m2 (30,000 hr lifetime)  
**Microprocessor:** Freescale i.MX35 32bit, 532Mhz  
**Operating System:** QNX Real-Time Operating System  
**Flash Memory:** 256 MB  
**RAM:** 128 Mbytes DDR2 SDRAM  
**Operating Voltage:** 6-32 VDC, protected against reverse polarity and load dump  
**Power Consumption:** 10W max.  
**CAN:** (1) CAN 2.0B  
**Protocols:** J1939, FreeForm CAN support  
**Connection:** (1) 35-pin AMP seal connector (AMP 776231-1)  
**Keyboard:** (5) tactile buttons  
**USB:** (1) USB 2.0 host (full speed)  
**Digital Inputs:** (3) Digital Inputs  
**Digital Outputs:** (4) Low Side Open-drain, capable of sinking 500 mA  
**Analog Inputs:** (6) total, (4) software configurable (0-5V, 4-20mA, Resistive) + Battery Voltage + 2nd Battery Voltage  
**Analog Outputs:** (1) 0-5V  
**Frequency Inputs:** (1) Alternator and Magnetic Pickup  
**Real-time clock:** with battery backup

### Communication:

(1) CAN 2.0B according to ISO-11898-2; J1939 and CANopen protocols; proprietary messaging

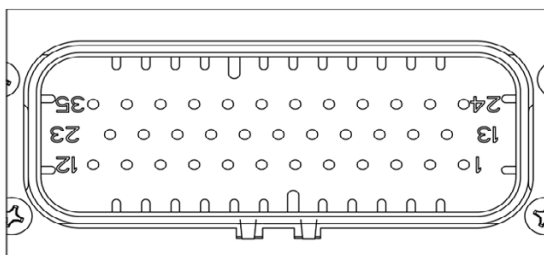
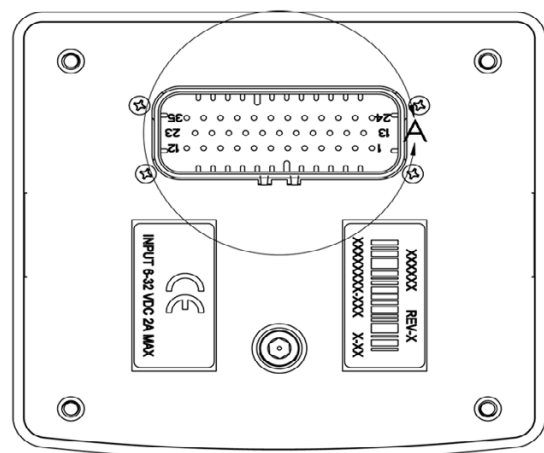
### Environmental

**Operating Temperature:** -40°C to +85°C (-40°F to +185°F)  
**Storage Temperature:** -40°C to +85°C (-40°F to +185°F)  
**Protection:** IP 67, front and back  
**Emissions/Immunity:** SAE J1113 or customer-specified;  
 (CE) - EN61000-6-2, EN12895, ISO 13766  
**Vibration:** Random vibration, 7.86 Grms (5-2000 Hz), 3 axes  
**Shock:** ± 50G in 3 axes

### Mechanical

**Case Material:** Polycarbonate/ABS

## Wiring



DETAIL A  
SCALE 2 : 1

Pin #	Pin Assignment	Pin Notes
1	USB D-	For reprogramming
2	USB ID	For reprogramming
3	Digital output 1 (low side, 500 mA)	For an alarm if needed
4	Digital output 3 (low side, 500 mA)	For an alarm if needed
5	Frequency input (alternator or mag)	Tach (for analog engines)
6	Digital input 1	May use for switch inputs
7	Digital input 3	May use for switch inputs
8	A/D input 2 (0-5V, 4-20 mA, resistive)	Fuel (for analog engines)
9	A/D input 4 (0-5V, 4-20 mA, resistive)	Trim (for analog engines)
10	Analog output (0-5V)	Do not use
11	N/C	Do not use
12	N/C	Do not use
13	USB shield	For reprogramming
14	CAN -	CAN low (for CAN engines)
15	Digital output 2 (low side, 500 mA)	For an alarm if needed
16	Digital output 4 (low side, 500 mA)	For an alarm if needed
17	Frequency input return	Tach ground
18	Digital input 2	May use for switch inputs
19	A/D input 1 (0-5V, 4-20 mA, resistive)	Analog input, open for now
20	A/D input 3 (0-5V, 4-20mA, resistive)	Honda trim
21	A/D ground	Ground for tach, trim, fuel
22	Analog output ground	Do not use
23	N/C	Do not use
24	USB D+	For reprogramming
25	USB Vbus	For reprogramming
26	CAN +	CAN high
27	Ignition	Ignition switched input
28	Batt +	Main power
29	Batt -	Ground
30	Batt 2+	Volts
31	N/C	Do not use
32	N/C	Do not use
33	N/C	Do not use
34	RS485-	For RS485 negative
35	RS485+	For RS485 positive

## How To Order

Part Number	Model/Description	Notes
78700639	PV485	Display
78000815	Rear-Mount Bracket	Accessories
78000824	Wiring Harness, Loose Leads, 24 inches	
78090077	Programming Harness	
78700590	Programming Kit	

Optically-bonded 5-inch LCD  
designed for harsh environments

High-brightness screen for full  
sunlight viewability

Glass display surface offers  
enhanced clarity and strength

Glove-friendly touch panel



## FEATURE-RICH GLASS-FRONT DISPLAY BRINGS RUGGED PERFORMANCE FOR SMALL FOOTPRINTS

For rugged applications without a lot of space, the PowerView 500 is the perfect fit. With a 5-inch LCD screen, operators can get the full view of their equipment on a single all-weather display.

Perfect for all kinds of vehicles and equipment, the PV500 is easily viewed in full sunlight and contains an optically-bonded high-bright LCD inside its IP67-rated case to keep it safe in all weather environments.

Equipped with a high-speed processor, the PV500 delivers seamless graphics, animations and video for a rich user experience.

The PV500 is available with a glass-front, with a glove-friendly touchscreen and non-touchscreen models to suit the needs of your application.

### BUILT FOR POWERVISION

PowerVision Configuration Studio® software lets programmers design stunning user interfaces, create intelligent applications with scripting and prototype quickly with a vast library of standard engine parameters.



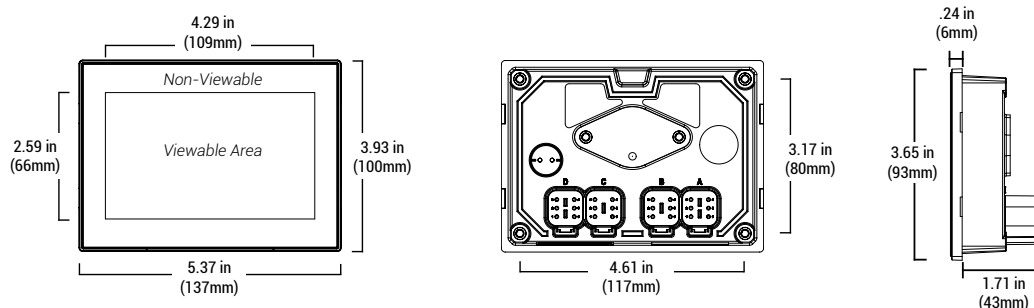
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67**



# POWerview® 500

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## DIMENSIONS



## PRODUCT SPECIFICATIONS

COMPUTING	
PROCESSOR	Renesas® RZ/G1E Arm® Cortex®-A7 dual-core processor @ 1.0 GHz
OPERATING SYSTEM	QNX® Realtime Operating System
STORAGE	8 GB flash memory
RAM	256 MB DDR3-SDRAM

DISPLAY	
DISPLAY AREA	5" (108mm [H] x 64.8mm [V])
TYPE	LVDS TFT LCD with LED backlight, 24-bit color
RESOLUTION	800 x 480 (WVGA)
CONTRAST RATIO	Typ. 1000:1
BRIGHTNESS	900 cd/m² (900 nits)
SURFACE	Anti-glare
TOUCH PANEL	Projected capacitive (PCAP) with glove touch

HARDWARE	
REAL TIME CLOCK	Li-Ion battery backup (Typ. lifespan 10 years) non-rechargeable, non-replaceable
CONNECTORS	(4) 6-position DEUTSCH® style DT series
VIDEO INPUTS	(2) NTSC/PAL (single channel viewable)

COMMUNICATION	
CAN	(2) CAN 2.0B according to ISO-11898-2; J1939 and proprietary messaging
SERIAL	(1) RS-485 MODBUS Master/Slave Port
USB	USB 2.0 full speed host

ELECTRICAL	
OPERATING VOLTAGE	6 – 36 VDC, reverse polarity protected Min current draw @ 24V: 0.202A Max current draw @ 24V: 0.297A Min current draw @ 12V: 0.318A Max current draw @ 12V: 0.438A
INPUTS	(1) Analog 0–5 VDC, 4–20 mA, resistive, 10-bit resolution (1) Discrete digital, active-high
OUTPUTS	(2) 500 mA switched low-side

ENVIRONMENTAL	
OPERATING TEMPERATURE	-30°C to +85°C (-22°F to +185°F)
STORAGE TEMPERATURE	-40°C to +85°C (-40°F to +185°F)
PROTECTION	IP66 and IP67, front and back, for outdoor use
VIBRATION	Random vibration, 8.17 Grms (5–2000Hz), 3 axes
SHOCK	±50G in 3 axes
EMC/EMI	SAE J1113, ISO 13766, CE per 2014/30/EU

**⚠ WARNING:** This product can expose you to chemicals including lead, which is known to the State of California to cause cancer. For more information, go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

## SALES CONTACT

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[www.enovationcontrols.com](http://www.enovationcontrols.com)

**CONTACT**  
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☎ +1 918.317.4100

**CORPORATE HEADQUARTERS**  
5311 S 122nd E Ave  
Tulsa, Oklahoma, USA 74146  
United States • United Kingdom • India • China



FM 28221 (Tulsa, OK-USA)  
FM 29422 (UK)



# PowerView™ PV780

## Engine and Diagnostic Display

The PowerView 780 display is a full-featured, configurable display that shows integrated engine, transmission and diagnostic information in an easy-to-read operator interface. Equipment functionality can be further integrated through the available I/O and controlled via the CAN bus.

The PV780 features a full-color, 7-inch bonded LCD for brighter, smoother graphics and best-in-class sunlight readability. The rugged design makes this display a great solution for extreme environments.

The PV780 display is compatible with PowerVision Configuration Studio® which allows users to edit CAN parameters, add OEM branding and create custom equipment screens for a unique and sophisticated user interface.

Features include:

- CAN-based display with rich, full-color graphics
- Compatible with both mechanical and electronic engines
- Rugged design for extreme environments
- Multiple languages

## Specifications

### Tier 4 / Euro Stage IV Ready

#### Environmental

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

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

**Protection:** IP66 and 67, front and back.

#### EMC/EMI:

- 2004/108/EC and 2006/95/EC directives
- EN 61000-4-3 (radiated EMF immunity radiated)
- EN 61000-4-4 (EFT immunity power and I/O lines)
- EN 61000-4-5 (surges power lines)
- EN 61000-4-6 (RF immunity)
- EN 61000-4-8 (magnetic field immunity)
- EN 60945 (ESD)
- EN 60945 (conducted emissions)
- HYBRID EN 60945 CISPR 11 CLASS B (radiated emissions)

#### Electrical:

- J1113-2, -4, -11, -13, -21, -26 and -41

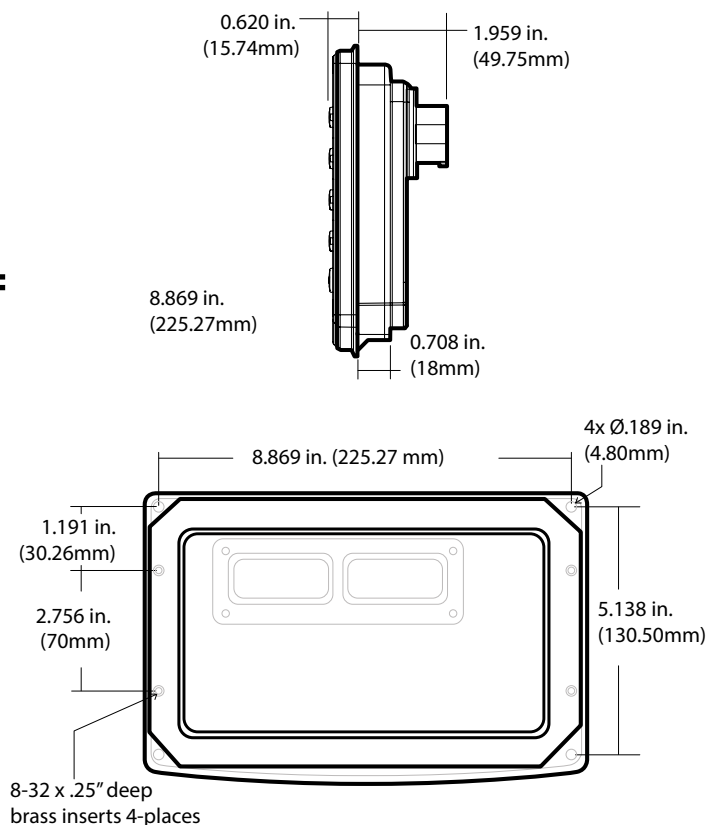
**Vibration:** Random vibration, 7.86 Grms (5-2000 Hz), 3 axes

**Shock:** ±50G in 3 axes

Specifications are continued on the next page.



## Dimensions



## Specifications - continued

### Technical

**Display:** Bonded print/glare-free glass and 7" (178mm) color transmissive TFT LCD

**Resolution:** WVGA, 800 x 480 pixels, 16-bit color

**Viewing Angle:** ±65° horizontal, +55°/-65° vertical

**Orientation:** Landscape or portrait

**Backlighting:** LED, 1000 nit typical brightness 40,000 hr. minimum

**Contrast Ratio:** 400:1

**Refresh Rate:** 60 Hz

**Microprocessor:** Freescale™ i.MX357, 32 bit, 532 MHz, ARM11 core QNX® Realtime Operating System

**Flash Memory:** 2 GB

**RAM:** 128 Mbytes SRAM

**Operating Voltage:** 6-36 VDC, reverse polarity protected

**Video Inputs:** 3 NTSC/PAL (single channel viewable)

**Connectors:** 2 AMPSEAL 23 Pin (AMP 770680-1 and AMP 770680-4)

**Keyboard:** 10 tactile pushbuttons with white LED backlight

**Touchscreen:** (optional) projected capacitive

**USB:** (1) USB 2.0 host (full speed)

**Real time clock:** with Li-ion rechargeable battery backup

### Communications:

- (2) CAN 2.0B according to ISO-11898-2; J1939 and CANopen protocols; proprietary messaging
- (1) RS-485 serial (MODBUS master/slave or PVA gage)
- (1) USB host

### Outputs:

- (1) 500mA switched low-side
- (1) Frequency Out (2Hz - 3 kHz, Vbat rms square wave) for tach

### Inputs:

- (3) Analog 0-5VDC, 4-20 mA, or resistive, 10-bit resolution
- (5) Discrete Digital, Active High
- (1) Frequency In (2Hz - 10 kHz), 5Vpk-pk min, 120Vpk-pk max

### Mechanical

**Dimensions:** 8.37 x 6.0 in. (212.5 x 152.3 mm) landscape

**Unit Depth:** 3.57 in. (90.8 mm)

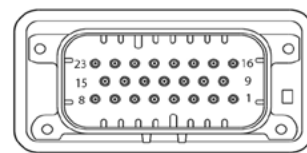
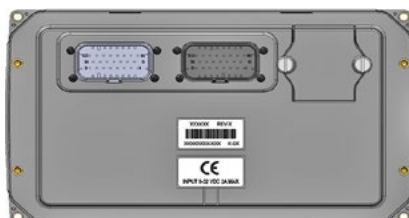
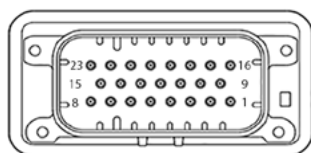
**Case Material:** PC/ABS, ISO 3795 (SAE J369, FMVSS 302) rated

**Mounting Options:** Front mount, back mount or RAM mount

### Certifications:

- CE
- E-mark capable

## Pinout



Connector 2 (Gray)			
Pin	Description	Pin	Description
1	Video Input 1	13	Frequency Input
2	Video Input 2	14	Frequency Return
3	Video Input 3	15	no connect
4	RS-485 High	16	USB D-
5	RS-485 Low	17	USB D+
6	no connect	18	USB 5V
7	no connect	19	USB GND
8	no connect	20	USB Shield
9	Video Input 1 GND	21	no connect
10	Video Input 2 GND	22	no connect
11	Video Input 3 GND	23	no connect
12	USB ID		

Connector 1 (Black)			
Pin	Description	Pin	Description
1	Digital Input 1	13	Digital Input 2
2	Analog Input 3	14	Frequency Output 1
3	Analog Input 2	15	Ignition In
4	Analog Input 1	16	no connect
5	CAN 1 L	17	no connect
6	CAN 1 H	18	CAN 2 L
7	Battery	19	CAN 2 H
8	Ground	20	Digital Input 4
9	Analog Input 3 GND	21	Digital Input 5
10	Analog Input 2 GND	22	Digital Output
11	Analog Input 1 GND	23	no connect
12	Digital Input 3		

## How To Order

Part number	Description	Note
78700560	PV780 Display, Murphy Standard Configuration	Displays
78700564	PV780 Touch Display (no configuration; bootloader only)	
78090098	Programming Kit, PV780	Accessories
78051181	Cover, PV780	
78001053	Bracket Kit (screws included)	
78001055	Harness, Gray Connector, USB	
78001056	Harness, Gray Connector, Flying Leads	
78001057	Harness, Black Connector, Flying Leads	
78001017	Harness, Black Connector, Development	
78001018	Harness, Gray Connector, Development	
78090069	Harness, PV750 Conversion, Power/CAN	Service
78051180	Bezel, PV780	

7-inch color display featuring  
rich color graphics

Powerful processor for smooth  
animations and video playback

10 tactile configurable soft  
keys with white LED backlight

Bonded glare-free LCD screen  
for superior visibility in sunlight



## SUNLIGHT VIEWABLE ENGINE DISPLAY WITH GLOVE-FRIENDLY TOUCH AND SOFT KEYS

The PowerView 780B is a full-color configurable display that integrates vital engine, transmission and diagnostic information into an easy-to-read operator interface.

This 7-inch display features expansive storage and a high-speed processor to boot quickly and seamlessly showcase graphics, transitions and videos.

The display's bonded LCD can easily be viewed in full sunlight, and its available glove-friendly touchscreen and rugged design make it a perfect solution for all types of environments and applications.

The PV780B is available in glove-friendly touchscreen and non-touchscreen options.

### BUILT FOR POWERVISION

PowerVision Configuration Studio® software lets programmers design stunning user interfaces, create intelligent applications with scripting and prototype quickly with a vast library of standard engine parameters.

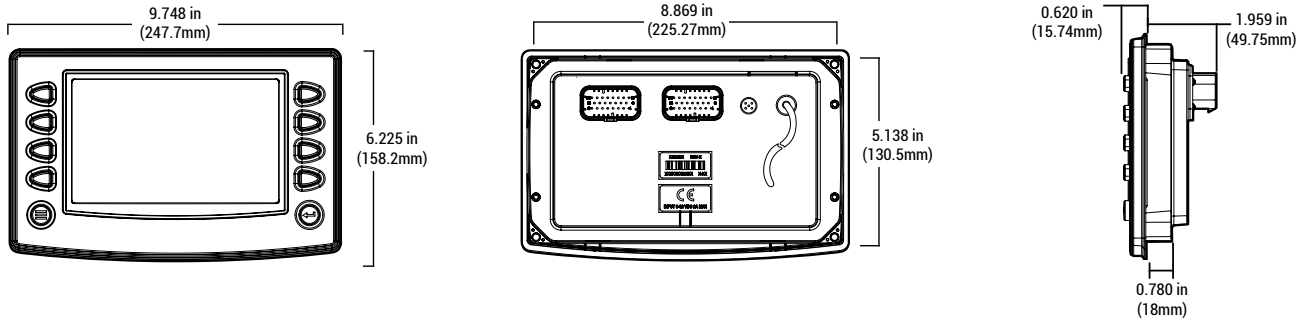


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67**

# POWerview® 780B

1712046  
01-2019

## DIMENSIONS



## PRODUCT SPECIFICATIONS

COMPUTING	
PROCESSOR	Renesas® R-Car M2 with Arm® Cortex®-A15 dual-core processor @ 1.5 GHz (32-bit)
OPERATING SYSTEM	QNX® Realtime Operating System
STORAGE	8 GB flash memory
RAM	512 MB DDR3-SDRAM
GRAPHICS	Renesas graphics processor
DISPLAY	
SCREEN SIZE	7 inches (178 mm)
TYPE	LVDS TFT LCD with LED backlight, 24-bit color
RESOLUTION	800 × 480 (WVGA)
CONTRAST RATIO	Typ. 600:1
BRIGHTNESS	1000 cd/m²
SURFACE	Anti-glare
TOUCH PANEL	Projected capacitive (PCAP) with glove touch
HARDWARE	
KEYPAD	10 tactile configurable soft keys with white LED backlight
REAL TIME CLOCK	Available with battery backup
CONNECTORS	(2) AMPSEAL 23 pin (main) (1) M12 5 pin [Ethernet] (optional) (1) USB pigtail
VIDEO INPUTS	(3) NTSC/PAL (single channel viewable)

COMMUNICATION	
CAN	(2) CAN 2.0B according to ISO 11898-2, J1939 and proprietary messaging
SERIAL	RS-485 serial (Modbus: master or slave)
USB	USB 2.0 full speed host
ETHERNET	1 X Ethernet 10/100 Base-T (optional)
WI-FI	802.11 b/g radio (optional)
BLUETOOTH	Fully integrated Bluetooth 2.1, class 1 (optional)
ELECTRICAL	
OPERATING VOLTAGE	6 – 36 VDC, reverse polarity protected
INPUTS	(3) Analog 0 – 5 VDC, 4-20 mA, resistive, 10-bit resolution (5) Discrete digital, active-high (1) Frequency in (2Hz – 10kHz) 5V pk-pk min, 49V pk-pk max
OUTPUTS	(1) 500 mA switched low-side (1) Frequency output (2Hz – 3KHz)
ENVIRONMENTAL	
OPERATING TEMPERATURE	-40°C to +85°C (-40°F to +185°F)
STORAGE TEMPERATURE	-40°C to +85°C (-40°F to +185°F)
PROTECTION	IP66 and IP67, front and back, for outdoor use
VIBRATION	7.86 Grms (5 – 2000Hz), 3 axes
SHOCK	±50G in 3 axes
EMC/EMI	SAE J1113, ISO 13766, CE per 2014/30/EU

**⚠ WARNING:** This product can expose you to chemicals including lead, which is known to the State of California to cause cancer. For more information, go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

FOR MODEL & PART INFORMATION

[ENOVATIONCONTROLS.COM/PV780B](http://ENOVATIONCONTROLS.COM/PV780B)

FOR MANUAL & SUPPORT DOCUMENTS

[SUPPORT.ENOVATIONCONTROLS.COM](http://SUPPORT.ENOVATIONCONTROLS.COM)

FOR SUPPORT & WARRANTY

[ENOVATIONCONTROLS.COM/SUPPORT](http://ENOVATIONCONTROLS.COM/SUPPORT)

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FM 28221 (Tulsa, OK-USA)  
FM 29422 (UK)



10.6-inch high-definition display for rich color graphics

Powerful processor for smooth animations and video playback

Glass display surface offers enhanced clarity and strength

Bonded glare-free LCD screen for superior visibility in sunlight



## LARGE, FULL-COLOR DISPLAY BRINGS ENHANCED USER EXPERIENCE TO RUGGED APPLICATIONS

The PowerView 1100 is a full-color configurable display that integrates vital engine, transmission and diagnostic information into an easy-to-read operator interface. This large 10.6-inch high-definition display features expansive storage and a high-speed processor to boot quickly and seamlessly showcase graphics, transitions and videos.

The display's bonded LCD can easily be viewed in full sunlight, and its available glove-friendly touchscreen and rugged design make it a perfect solution for all types of environments and applications.

The PV1100 is available in portrait or landscape options.

### BUILT FOR POWERVISION

PowerVision Configuration Studio® software lets programmers design stunning user interfaces, create intelligent applications with scripting and prototype quickly with a vast library of standard engine parameters.

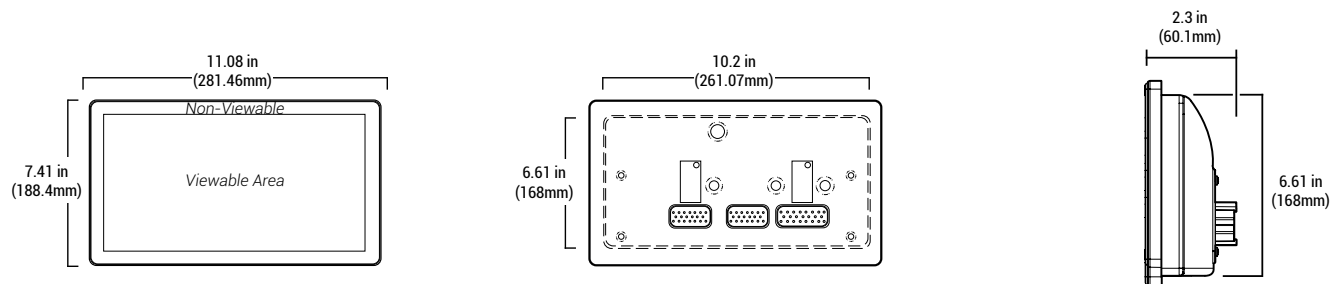


**IP  
67**

# POWerview® 1100

1712047  
01-2019

## DIMENSIONS



## PRODUCT SPECIFICATIONS

COMPUTING	
PROCESSOR	Renesas® R-Car M2 with Arm® Cortex®-A15 dual-core processor @ 1.5 GHz (32-bit)
OPERATING SYSTEM	QNX® Realtime Operating System
STORAGE	8 GB flash memory
RAM	512 MB DDR3-SDRAM
GRAPHICS	Renesas graphics processor
DISPLAY	
SCREEN SIZE	10.6 inches (231.36 mm × 138.82 mm)
TYPE	LVDS TFT LCD with LED backlight, 24-bit color
RESOLUTION	1280 x 768
CONTRAST RATIO	Typ. 1000:1
BRIGHTNESS	1000 cd/m²
SURFACE	Anti-glare
TOUCH PANEL	Projected capacitive (PCAP) with glove touch
HARDWARE	
REAL TIME CLOCK	Available with battery backup
CONNECTORS	(2) AMPSEAL 23 pin (main) (1) AMPSEAL 35 pin (optional) (1) M12 5 pin [Ethernet] (optional) (1) USB pigtail (1) Radio antenna jack (optional)
VIDEO INPUTS	(3) NTSC/PAL (single channel viewable)
COMMUNICATION	
CAN	(2) CAN 2.0B according to ISO 11898-2, J1939 and proprietary messaging
SERIAL	RS-485 serial (Modbus: master or slave)
USB	USB 2.0 full speed host
ETHERNET	1 X Ethernet 10/100 Base-T (optional)
WI-FI	802.11 b/g radio (optional)
BLUETOOTH	Fully integrated Bluetooth 2.1, class 1 (optional)
ELECTRICAL	
OPERATING VOLTAGE	6 – 36 VDC, reverse polarity protected
INPUTS	(3) Analog 0 – 5 VDC, 4-20 mA, resistive, 10-bit resolution (5) Discrete digital, active-high (1) Frequency in (2Hz – 10kHz) 5V pk-pk min, 49V pk-pk max
OUTPUTS	(1) 500 mA switched low-side (1) Frequency output (2Hz – 3KHz)
ENVIRONMENTAL	
OPERATING TEMPERATURE	-40°C to +70°C (-40°F to +158°F)
STORAGE TEMPERATURE	-40°C to +85°C (-40°F to +185°F)
PROTECTION	IP66 and IP67, front and back, for outdoor use
VIBRATION	3.9 Grms (10–350Hz), 3 axes (ISO 15003)
SHOCK	±50G in 3 axes
EMC/EMI	SAE J1113, ISO 13766, CE per 2014/30/EU

**⚠ WARNING:** This product can expose you to chemicals including lead, which is known to the State of California to cause cancer. For more information, go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

FOR MODEL & PART INFORMATION

[ENOVATIONCONTROLS.COM/PV1100](http://ENOVATIONCONTROLS.COM/PV1100)

FOR MANUAL & SUPPORT DOCUMENTS

[SUPPORT.ENOVATIONCONTROLS.COM](http://SUPPORT.ENOVATIONCONTROLS.COM)

FOR SUPPORT & WARRANTY

[ENOVATIONCONTROLS.COM/SUPPORT](http://ENOVATIONCONTROLS.COM/SUPPORT)

## SALES CONTACT

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United States • United Kingdom • India • China



FM 28221 (Tulsa, OK-USA)  
FM 29422 (UK)



Largest display in the  
PowerView line at 12.3 inches

Boasts high-speed processor  
and wide-format display

Glass display surface offers  
enhanced clarity and strength

Bonded glare-free LCD screen  
for superior visibility in sunlight



## ULTRA-WIDE, FULL-COLOR DISPLAY BRINGS POWER AND PERFORMANCE TO RUGGED APPLICATIONS

For rugged applications that need a wide view, the PowerView 1200 is the perfect fit. With a 12.3-inch ultra-wide LCD screen, operators can get the full view of their equipment on a single all-weather display.

Perfect as a gauge replacement, the PV1200 is easily viewed in full sunlight and contains a bonded LCD inside its IP67-rated case to keep it safe in all weather environments.

Equipped with a high-speed processor and 8 GB of storage, the PV1200 delivers seamless graphics, animations and video playback for a rich user experience.

The PV1200 is available in glove-friendly touchscreen and non-touchscreen models to suit the needs of your application.

### BUILT FOR POWERVISION

PowerVision Configuration Studio® software lets programmers design stunning user interfaces, create intelligent applications with scripting and prototype quickly with a vast library of standard engine parameters.

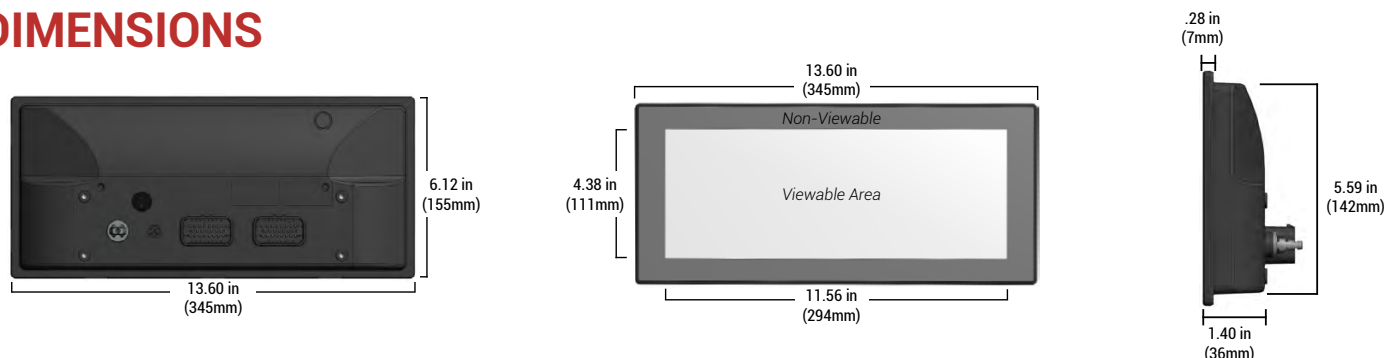


**IP  
67**

# POWERVIEW® 1200

1712048  
01-2019

## DIMENSIONS



## PRODUCT SPECIFICATIONS

COMPUTING	
PROCESSOR	Renesas® R-Car M2 with Arm® Cortex®-A15 dual-core processor @ 1.5 GHz (32-bit)
OPERATING SYSTEM	QNX® Realtime Operating System
STORAGE	8 GB flash memory
RAM	512 MB DDR3-SDRAM
GRAPHICS	Renesas graphics processor
DISPLAY	
SCREEN SIZE	12.3 inches (320 mm x 130 mm)
TYPE	LVDS IPS LCD with LED backlight, 24-bit color
RESOLUTION	1280 x 480
CONTRAST RATIO	Typ. 800:1
BRIGHTNESS	1000 cd/m²
SURFACE	Anti-glare
TOUCH PANEL	Projected capacitive (PCAP) with glove touch
HARDWARE	
REAL TIME CLOCK	Available with battery backup
CONNECTORS	(2) AMPSEAL 23 pin (main) (1) M12 5 pin [Ethernet] (optional) (1) USB pigtail
VIDEO INPUTS	(3) NTSC/PAL (single channel viewable)

COMMUNICATION	
CAN	(2) CAN 2.0B according to ISO 11898-2, J1939 and proprietary messaging
SERIAL	RS-485 serial (Modbus: master or slave)
USB	USB 2.0 full speed host
ETHERNET	1 X Ethernet 10/100 Base-T (optional)
WI-FI	802.11 b/g radio (optional)
BLUETOOTH	Fully integrated Bluetooth 2.1, class 1 (optional)
ELECTRICAL	
OPERATING VOLTAGE	6 – 36 VDC, reverse polarity protected
INPUTS	(3) Analog 0–5 VDC, 4–20 mA, resistive, 10-bit resolution (5) Discrete digital, active-high (1) Frequency in (2Hz–10kHz) 5V pk-pk min, 49V pk-pk max
OUTPUTS	(1) 500 mA switched low-side (1) Frequency output (2Hz–3KHz)
ENVIRONMENTAL	
OPERATING TEMPERATURE	-40°C to +70°C (-40°F to +158°F)
STORAGE TEMPERATURE	-40°C to +85°C (-40°F to +185°F)
PROTECTION	IP66 and IP67, front and back, for outdoor use
VIBRATION	3.9 Grms (10–350Hz), 3 axes (ISO 15003)
SHOCK	±50G in 3 axes
EMC/EMI	SAE J1113, ISO 13766, CE per 2014/30/EU

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FOR MODEL & PART INFORMATION

[ENOVATIONCONTROLS.COM/PV1200](http://ENOVATIONCONTROLS.COM/PV1200)

FOR MANUAL & SUPPORT DOCUMENTS

[SUPPORT.ENOVATIONCONTROLS.COM](http://SUPPORT.ENOVATIONCONTROLS.COM)

FOR SUPPORT & WARRANTY

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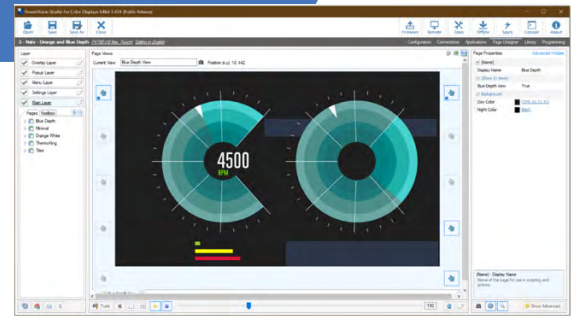
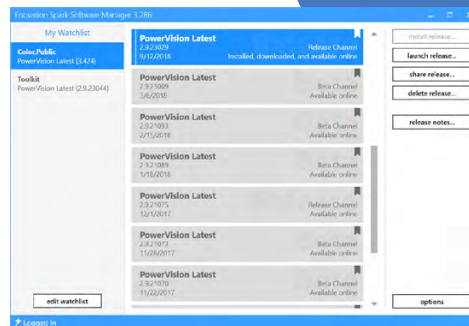
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FM 29422 (UK)

Download the latest versions of  
PowerVision Configuration Studio®

Install multiple PowerVision  
versions from one application

Single-seat annual license

Required to program the  
newest PowerView displays



## INSTALL, LAUNCH AND MANAGE MULTIPLE POWERSVISION VERSIONS FROM A SINGLE DESKTOP APPLICATION

SPARK® Software Manager makes it easy to download and install the latest version of PowerVision Configuration Studio®. From the simple interface, users can launch, install and manage past, current and future versions of PowerVision from a single desktop application.

SPARK Software Manager is licensed\* annually on a per-seat basis and is the exclusive home of PowerVision Configuration Studio versions 2.9 and above. Future PowerView hardware will require versions of PowerVision exclusively available through SPARK Software Manager.

# POWERSHION CONFIGURATION STUDIO® + SPARK® SOFTWARE MANAGER

1900100 11-2019

## LICENSE COMPARISON

	POWERSHION STUDIO LEGACY KEY ID LICENSES	POWERSHION STUDIO SPARK SUBSCRIPTION
<b>SEATS</b>	Unlimited seat site license	1 seat per subscription
<b>PURCHASE TERM</b>	Lifetime	Annual subscription
<b>TRIAL PERIOD</b>	Unlimited, unable to export to hardware	30-days, full-featured
<b>SOFTWARE VERSIONS</b>	Limited to 2.9 and below	Includes 2.9, 4.0 and all future releases
<b>SOFTWARE UPDATES</b>	Bug fixes only	New features and bug fixes
<b>SUPPORTED HARDWARE</b>	Some color displays (PV450/HV450, PV480, PV485, PV780, PV780B, PV1100 and PV1200), Monochrome displays (PV350, PV380), PowerCore controllers and panels	All current and future displays

## ABOUT POWERSHION CONFIGURATION STUDIO®



PowerVision Configuration Studio software is versatile enough to handle even the most demanding programming and application requirements.

### Programming features include:

- Drag-and-Drop Interface for WYSIWYG programming
- State Machines with Visual Flow Diagrams, Transitions, Actions and Event Timers
- C/C++ Syntax Scripting Capabilities for In-Depth Programming
- Data Simulation for Off-Line Viewing of Configurations

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