



**ENOVATION**  
**CONTROLS**<sup>®</sup>  
 A HELIOS TECHNOLOGIES COMPANY

# POWERSVIEW<sup>®</sup> DISPLAYS OVERVIEW

# WHY POWERVIEW®?

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Technology Without Compromise



Dynamic User Experiences



Proven Reliability in Harsh Environments



Ideal For Gauge Cluster Replacement



Designed For the Life of the Equipment



Tier 4 Final / Stage V Capable

# THE FULL SERIES OF POWERVIEW® DISPLAYS

## Ultimate Color Displays



## Edge-to-Edge Color Displays





## Tactile-Button Color Displays





## Monochrome Displays



 Industry leading durability and environmental protection

 Best-in-class, glare-free sunlight visibility

 Touch screens available (on some models)

 Programmable with PowerVision Configuration Studio®

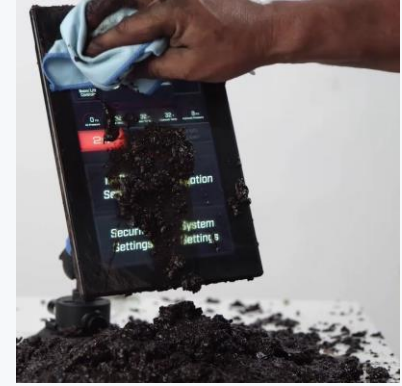
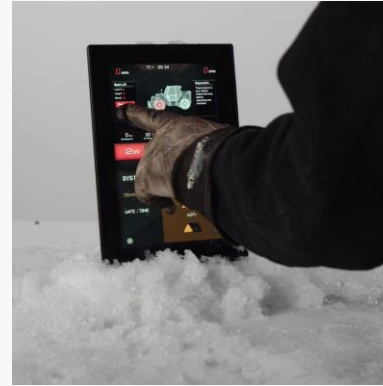
# DESIGNED FOR **RUGGED** MARKETS

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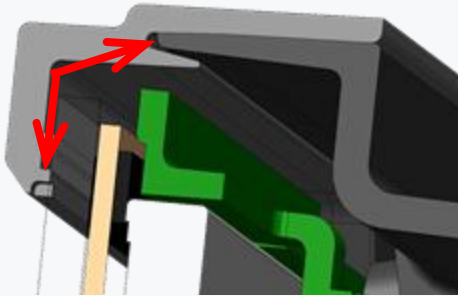


# KEY DIFFERENTIATOR **RUGGED PROTECTION**

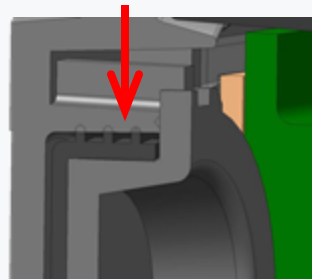
- Rated Up To **IP69K**
- Wide Operating Temperatures
- Dispensed RTV Wet Seal (lens, front, and back housing)



RTV SEAL

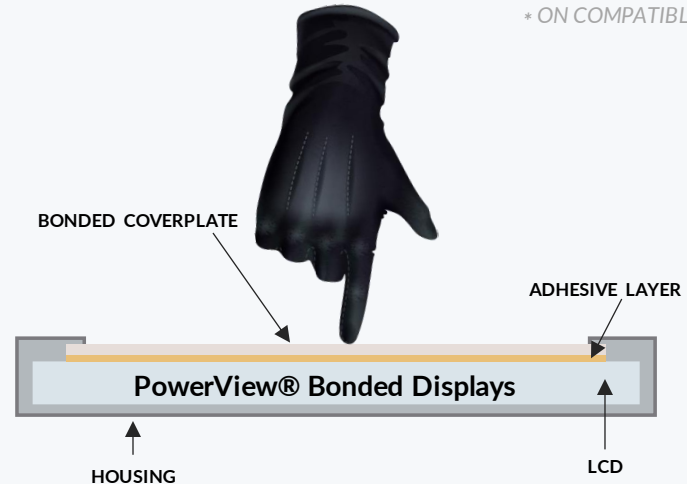
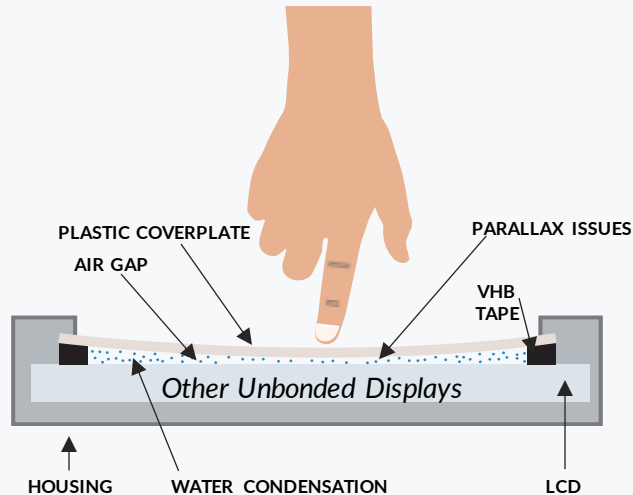


SILICON KEYPAD WITH RADIAL SEAL DESIGN



# KEY DIFFERENTIATOR **MODERN LCD TECHNOLOGY**

- Optically bonded lens improves sunlight viewability and eliminates lens fogging
- Bonding process provides increased protection of LCD and lens from shock/vibration
- Glass lens has superior scratch resistance over plastic
- Acid-etched Anti-Glare (AG) reduces perceived reflection and does not degrade or wash off
- Projected capacitive touch\* with water rejection and gloved hand functionality prevents false touches
- Multi-touch capable\* for fluid gesture control



\* ON COMPATIBLE TOUCH DEVICES

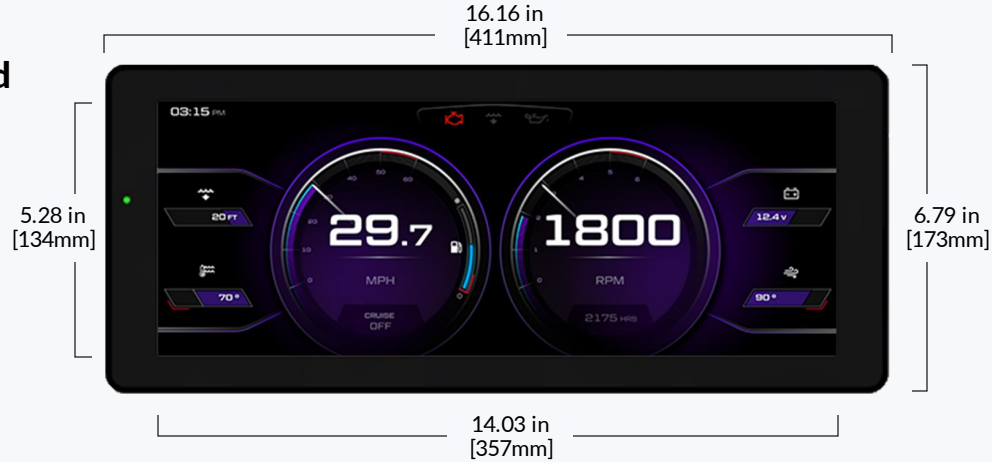


**Ultimate Color Display**

# POWERVIEW U150

The PowerView U150 packs ultimate power and viewability in an ultra-wide rugged display.

- Largest color display in the PowerView line at 15-inches
- Doubles the RAM & Storage of the PV1200
- Bonded glare-free LCD screen for superior visibility in sunlight
- Designed to fit the needs of the recreation marine market



-  All Weather
-  Sunlight Visible
-  Great for In-Cab
-  Engine Monitoring
-  Programmable
-  Gauge Replacement
-  Video Input
-  Glove-Friendly
-  Touch Capable

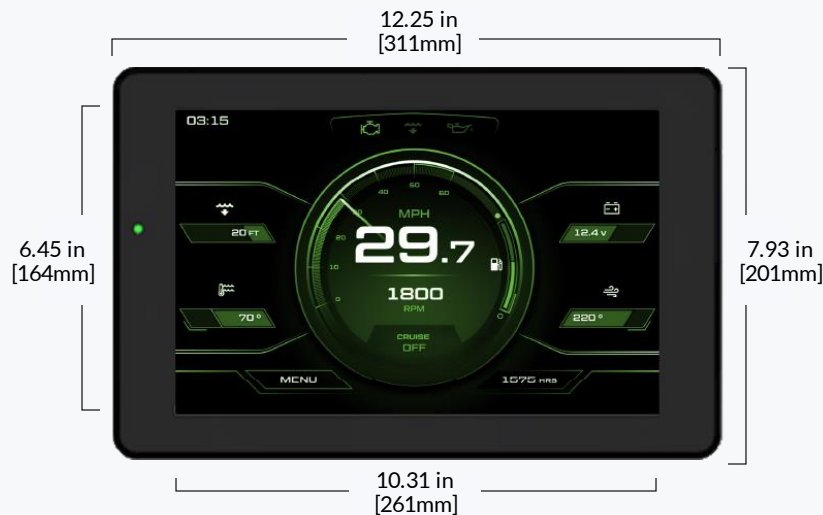













# POWERVIEW U120

The PowerView U120 packs ultimate power and viewability in a wide rugged display.

- 12-inch color display available in portrait and landscape orientations
- Doubles the RAM & Storage of the PV1100
- Powerful processor for smooth animations and video playback
- Bonded glare-free LCD screen for superior visibility in sunlight

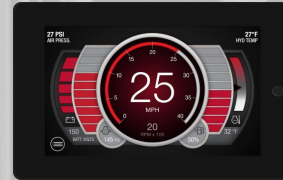


-  All Weather
-  Sunlight Visible
-  Great for In-Cab
-  Engine Monitoring
-  Programmable
-  Gauge Replacement
-  Video Input
-  Glove-Friendly
-  Touch Capable

# ULTIMATE COLOR DISPLAYS COMPARED



	PVU150	PVU120
Screen Size	16.1" inches (411 mm x 173 mm)	12.2" inches (311 mm x 1 mm)
Resolution	1920 x 720	1280 x 768 (WXGA)
Processor	Renesas R-Car M2 with Arm Cortex A15 Dual-core CPU @ 1.5 GHz (32-bit)	
Communications	(2) CAN J1939, (2) USB 2.0, (1) RS-485, Bluetooth 5.0, WiFi	
Video	(4) NTSC/PAL, (2) Digital Ethernet	
Inputs	(3) Analog, (5) Digital, (1) Frequency, (2) Antenna	
Outputs	(1) 500mA switched low-side, (2) Frequency	



# Edge-to-Edge Displays

# POWERVIEW 1200

The PowerView 1200 packs power and viewability in an ultra-wide display.

- Largest color display in the PowerView line at 12.3 inches
- High-speed processor and 8GB of internal storage
- Glass display surface offers enhanced clarity and strength
- Available with or without touch



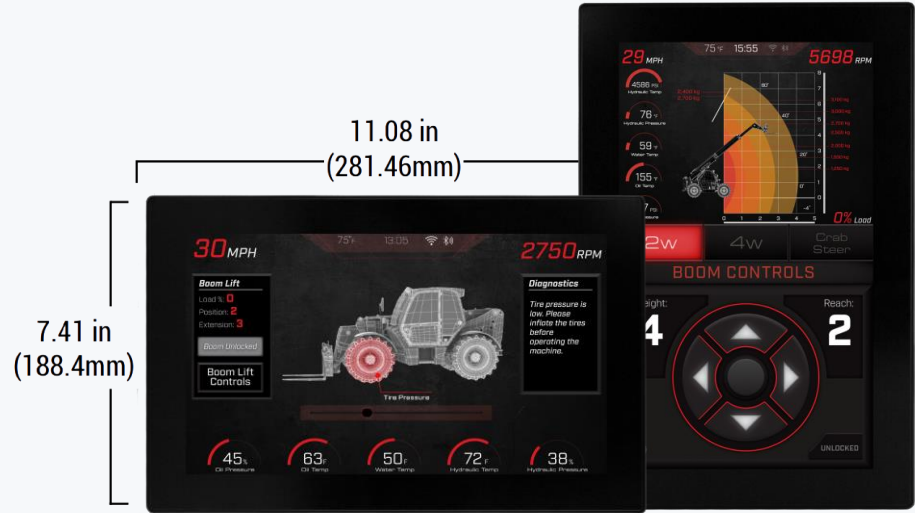
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|--|-------------------|---|-------------------|
|   | All Weather       |  | Gauge Replacement |
|   | Sunlight Visible  |  | Video Input       |
|   | Great for In-Cab  |  | Glove-Friendly    |
|   | Engine Monitoring |  | Touch Capable     |
|  | Programmable      |   |                   |



# POWerview 1100

The PowerView 1100 display streamlines size and speed in a single display.

- 10.6-inch color display available in portrait and landscape orientations
- High-speed processor and 8GB of internal storage
- Highest resolution PowerView display (1280x768)
- Bonded glare-free LCD screen with high-brightness for superior visibility in sunlight

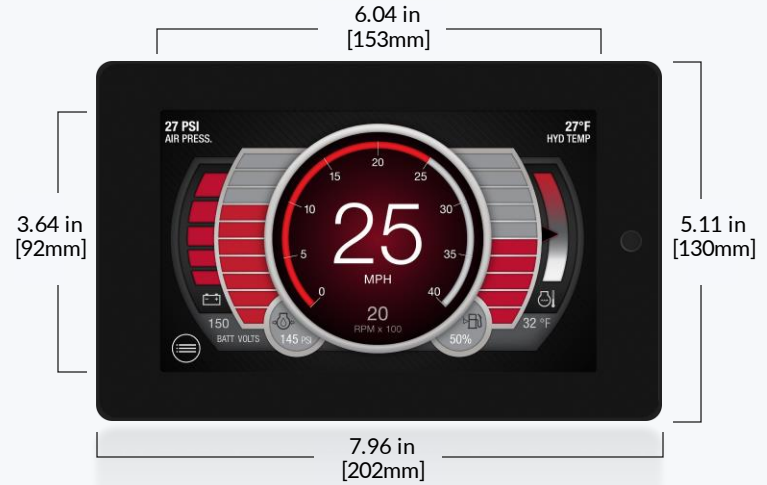


-  All Weather
-  Sunlight Visible
-  Great for In-Cab
-  Engine Monitoring
-  Programmable
-  Gauge Replacement
-  Video Input
-  Glove-Friendly
-  Touch Capable

# POWerview P70

The PowerView P70 combines the modern glass-front form factor of a PV-700 with the full I/O complement of the PV-485

- 7" Premium color touchscreen display
- Bonded glare-free LCD screen for superior visibility in sunlight offers enhanced clarity and strength
- All weather durability



-  All Weather
-  Sunlight Visible
-  Great for In-Cab
-  Engine Monitoring
-  Programmable
-  Gauge Replacement
-  Video Input
-  Glove-Friendly
-  Touch Capable

# POWERVIEW 700

The PowerView 700 packs power and viewability in a compact display.

- 7-inch display with rich color graphics
- IP69K-rated enclosure for harsh environments
- Connect four video inputs and watch two feed simultaneously
- Glass display surface offers enhanced clarity and strength



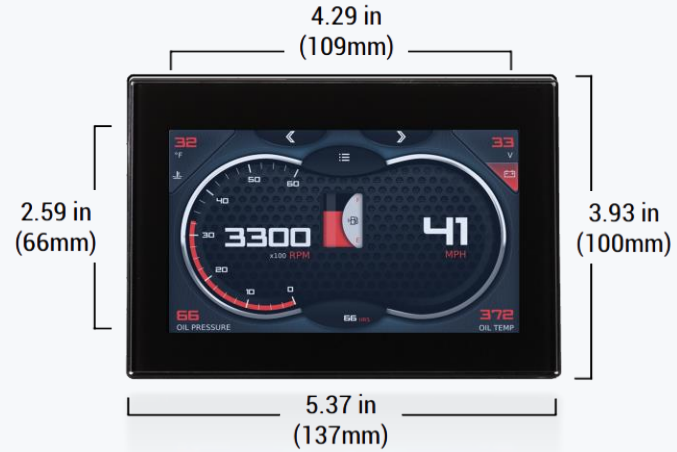
-  All Weather
-  Sunlight Visible
-  Great for In-Cab
-  Engine Monitoring
-  Programmable
-  Gauge Replacement
-  Video Input
-  Glove-Friendly
-  Touch Capable



# POWerview 500

The PowerView 500 packs power and versatility in an ultra-small footprint.

- Optically-bonded 5-inch color display designed for harsh environments
- High brightness screen for full sunlight viewability
- Glass lens offers enhanced clarity and strength



-  All Weather
-  Sunlight Visible
-  Great for In-Cab
-  Engine Monitoring
-  Programmable
-  Gauge Replacement
-  Video Input
-  Glove-Friendly
-  Touch Capable





# EDGE-TO-EDGE DISPLAYS COMPARED



	PV1200	PV1100	PVP70	PV700	PV500
Screen Size	12.3 inches (320 mm x 130 mm)	10.6 inches (231.36 mm x 138.82 mm)	7-inches (178 mm)		5-inch (108 mm x 64.8 mm)
Resolution	1280 x 480	1280 x 768 (WXGA)	800 x 480 (WVGA)		
Processor	Dual-core CPU @ 1.5 GHz		Dual-core CPU @ 1.0 GHz	Dual-core CPU @ 1.5 GHz	Dual-core CPU @ 1.0 GHz
Communications	(2) CAN 2.0B		(2) CAN 2.0B (2) USB 2.0 (2) BT v4.2, Wi-Fi	(2) CAN 2.0B	(2) CAN 2.0B, (1) RS-485, (1) USB 2.0
Video	(3) NTSC/PAL Single-Channel Viewable		(4) NTSC/PAL Single-Channel Viewable	(4) NTSC/PAL Dual-Channel Viewable	(2) NTSC/PAL Single-Channel Viewable
Inputs	(3) Analog, (5) Digital, (1) Frequency		(4) Analog (4) Digital (1) Frequency	(3) Analog (5) Digital (1) Frequency	(1) Analog (2) Digital
Outputs	(1) Digital, (1) Frequency		(6) Digital (1) Frequency	(1) Digital (1) Frequency	(2) Digital



## Color Tactile-Button Displays

# POWerview 780B

The PowerView 780B display provides power and reliability with an easy-to-read interface.

- 7-inch display featuring rich color graphics
- 10 tactile configurable soft keys with white LED backlight
- High-speed processor and 8GB of internal storage.
- Available in touch and non-touch models









- |   |                   |   |                   |
|---|-------------------|---|-------------------|
|  | All Weather       |  | Gauge Replacement |
|  | Sunlight Visible  |  | Video Input       |
|  | Great for In-Cab  |  | Glove-Friendly    |
|  | Engine Monitoring |  | Touch Capable     |
|  | Programmable      |   |                   |

# POWerview 485

The PowerView 485 is an all-in-one color display and controller designed to meet the needs of modern electronic engines and equipment applications.

- 4.3-inch display featuring rich, color graphics
- 5-tactile configurable soft keys
- Customizable I/O with RS485 serial connection
- Optically-bonded glare-free LCD screen for superior visibility in sunlight



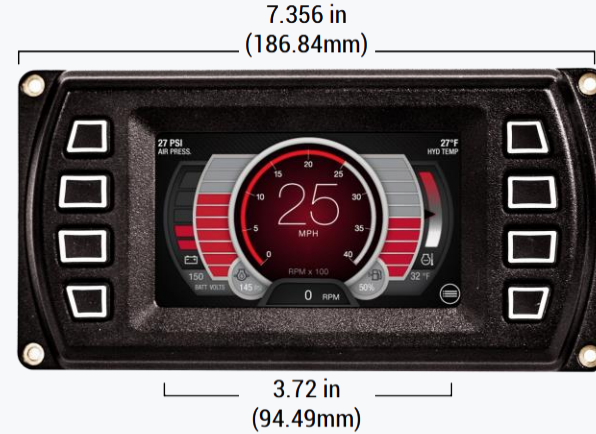
-  All Weather
-  Sunlight Visible
-  Great for In-Cab
-  Programmable
-  Gauge Replacement
-  Engine Monitoring
-  Glove-Friendly



# POWerview 450

The PowerView 450 features a rich features set and full customization in a compact size.

- 4.3-inch display featuring rich, color graphics
- 8-tactile configurable soft keys
- Customizable bezel, I/O interface and more
- Optional NMEA 2000 isolation
- CSA PV450 version available (Class I Div 2 Groups B, C & D)



-  All Weather
-  Sunlight Visible
-  Great for In-Cab
-  Engine Monitoring
-  Gauge Replacement
-  Video Input
-  Glove-Friendly
-  Programmable



# COLOR TACTILE-BUTTON DISPLAYS COMPARED



	PV450	PV485	PV780B
<b>Screen Size</b>	4.3-inches (109.22 mm)		7-inch (177.8 mm)
<b>Resolution</b>	480 × 272 (WQVGA) with 16-bit color		800 × 480 (WVGA) with 24-bit color
<b>Processor</b>	CPU @ 532MHz		Dual-core CPU @ 1.5 GHz
<b>Communications</b>	(2) CAN 2.0B Optional NMEA 2000 isolation	(1) CAN 2.0B (1) RS-485	(2) CAN 2.0B
<b>Video</b>	(2) NTSC/PAL Single-Channel Viewable	-	(3) NTSC/PAL Single-Channel Viewable
<b>Inputs</b>	(1) Analog	(6) Analog (3) Digital (1) Frequency	(3) Resistive Analog (5) Digital (1) Frequency
<b>Outputs</b>	(1) Digital	(4) Digital, (1) Analog	(1) Digital, (1) Frequency






# Monochrome Displays

# POWerview 380

The PowerView 380 is a robust, multifunction display for advanced monitoring of electronic engines and mechanical engines.

- Easy-to-read 3.8-inch (97 mm) QVGA monochrome LCD screen
- Loaded with standard configuration.  
(Customizable using the PowerVision Configuration Studio® software)
- Setpoint alarm and shutdown control
- Equipped with five tactile push buttons to quickly access a convenient menu



-  All Weather
-  Sunlight Visible
-  Great for In-Cab
-  Programmable
-  Gauge Replacement
-  Engine Monitoring
-  Glove-Friendly












# POWerview 350

The PowerView 350 is a robust, multifunction display for advanced monitoring of electronic engines with an NMEA 2000 isolated CAN port.

- Easy-to-read 3.8-inch (97 mm) QVGA monochrome LCD screen
- Loaded with standard configuration.  
(Customizable using the PowerVision Configuration Studio® software)
- Equipped with five tactile push buttons to quickly access a convenient menu



-  All Weather
-  Sunlight Visible
-  Great for In-Cab
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-  Gauge Replacement
-  Engine Monitoring
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# MONOCHROME TACTILE-BUTTON **DISPLAYS COMPARED**

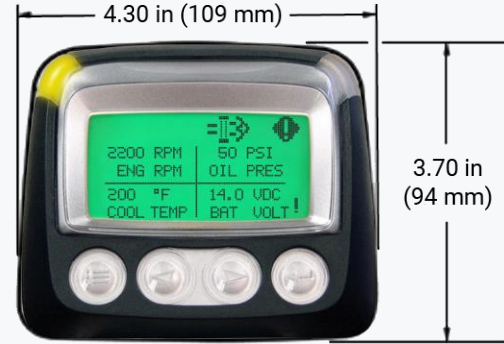


	PV350	PV380
Screen Size	3.8-inch (97 mm) monochrome LCD screen	
Resolution	320 × 240 (QVGA)	
Processor	CPU @ 168MHz	
Communications	(2) CAN 2.0B Second port is NMEA 2000 isolated	(1) CAN 2.0B (1) RS-485 serial
Inputs	(1) Resistive Analog <i>Backlight Control</i>	(4) Resistive Analog (3) Analog (1) Frequency
Outputs	(1) Digital	(2) Digital

# POWerview 101

The PowerView 101 displays 50 standard SAE J1939 parameters and offers a simple connection to optional components.

- Service Reminders – Five service reminders allow users to set hours for: Change Engine Oil, Air Filters, Hydraulic Oil, and Service Engine and Service Machine
- Enhanced alarm indicators with ultra-bright alarm and shutdown LEDs
- Resistive touch buttons
- Multiple language options



All Weather



Engine Monitoring

# POWerview 101 SPECIFICATIONS



	PV101
Screen Size	1.3 x 2.6 in. (33 x 66 mm)
Resolution	64 x 128 pixels
Communications	(1) CAN [Supports 50 SAE J1939 Parameters] (1) Auxiliary RS-485
Inputs	(1) Resistive Analog <i>Backlight Control or Fuel Sender</i>
Outputs	(1) 5V PVM Power

# THE FULL HMI EXPERIENCE WITH POWERVIEW DISPLAYS

## Designed for Custom Software

- Work with Enovation Controls' partners and in-house software experts to design custom software built to your application's requirements and users
- Or build on your own with **PowerVision Configuration Studio®** software. Our library of [tutorials, examples and video](#) will help you quickly develop software that gives your customers the ultimate interface experience with total machine control

### Features and Benefits of PowerVision Configuration Studio

- Drag-and-drop page designer and programming interface
- Program logic using state machines, activity programs and C-based scripting
- Full support for NMEA 2000 & SAE J1939 messaging, DM1, and DM2
- Includes built-in applications for data logging, machine hours, and external radio head control
- Common development platform makes it easy to move your configuration work from one display to another
- Connect directly to displays for reprogramming over USB
- Multi-language programming support for 10+ languages
- Available for download through the SPARK® Software Management cloud with annual per-user licensing





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**THANK YOU**

# APPENDIX 1: INGRESS PROTECTION RATINGS

<b>IP66</b> Powerful water jets	<b>IP67</b> Immersion (depth up to 1 meter)	<b>IP68</b> Immersion (1 meter or more depth)	<b>IP69K</b> Powerful high temperature water jets
PV1200 PV1100 PV780B PV700 PV500 PV485 PV450 PV380* PV350*	PV1200 PV1100 PV780B PV500 PV485 PV450 PV380 PV350	PV101	PV700 PV101-HAZ

\* with panel gasket

Unless otherwise noted, to meet ratings, displays must have plugs in all connectors

# APPENDIX 2: VIBRATION AND SHOCK

3-Axis Vibration Tested	
PV1100 PV1200	3.9 Grms (10 - 350Hz)
PV780B PV700 PV485 PV450 PV380 PV350	7.86 Grms (5-2000Hz)
PV500	8.17 Grms (5-2000Hz)

**All Displays:** Shock tested  $\pm 50G$  in 3 axes



# APPENDIX 3: WIDE TEMPERATURE RANGES

Display	Max. Cold Temp
PV1200 PV1100 PV780B PV700 PV500 (Storage) PV485 PV450 PV380* PV350* PV101*	-40° C (-40° F)         * With Heater
PV500 (Operation)	-30° C (-22° F)

Display	Max. Hot Temp
PV1200 (Storage) PV1100 (Storage) PV780B PV700 PV500 PV485 PV450 PV380 PV350 PV101	+85° C (+185 F)
PV1200 (Operation) PV1100 (Operation)	+70° C (+158 F)

Unless otherwise noted, temperatures cover maximum storage and operating ranges

# APPENDIX 4: VOLTAGE RANGE

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Display	Minimum VDC	Maximum VDC
PV1200 PV1100 PV780B PV700 PV500 PV380 PV350	6	36
PV485 PV450	6	32
PV101	8	32

Reverse Polarity Protected