MURPHY®

by ENOVATION CONTROLS

HelmView™ 450
Model HV450

Installation Manual

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.

WARNING

Please read the following information before installing.

BEFORE BEGINNING INSTALLATION OF THIS MURPHY PRODUCT:

- Read and follow all installation instructions.

- Please contact Enovation Controls immediately if you have any questions.

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

- It is your responsibility to ensure that qualified mechanical and electrical technicians install this product.

Contact Enovation Controls Technical Service if you have any questions or concerns at: +1 918-317-4100.

Table of Contents

THIS PAGE INTENTIONALLY LEFT BLANK

Hardware Installation

The following instructions will guide you through installing the HelmView™ HV450 display.

Inspecting Package Contents

Before attempting to install the product, it is recommended that you ensure all parts are accounted for and inspect each item for damage (which sometimes occurs during shipping). The items included in the box are:

Installation kit – P/N 78-00-0782 includes:

- 4 ea. machine screws and flat washers
- 4 Nylock nuts
- 1 small bag

Dash-Mounted Installation

Tools Needed

- Drill with 5/32" size bit
- Jigsaw or tool that can make a clean cut through the dash material
- Wrench or socket

Preparing the Dash

Determine the location of the HV450 in the dash. Use the Installation Template (included at the end of the manual) as a guideline to cut a hole in the dash to the specified dimensions. Drill holes where indicated on the template for the mounting screws.

> **NOTE**: When using the paper template from the manual, please be aware that if you downloaded this document from the FW Murphy website, the pdf file may not automatically print to scale. When submitting the file for print, you will need to select None for Page Scaling. Check the accuracy of the printed template by verifying the measurements labeled on the template are correct.
>
> **NOTE**: If this manual was supplied with your product, the template will be correct

Front Installation of Display

1. Place the back side of the display through the opening in the dash.

2. Use the 4 screws to line up the unit with the drilled holes.

3. Push the unit through the opening and the screws through the drilled holes until the back of the case is flush.

4. Use the Nylock nuts provided to tighten unit to the dash. Use the appropriate wrench or socket to tighten. Torque lock nuts to 8-10 inch pounds.

Back Installation of Display

1. Cut the dash to allow for the display. Ensure the materials are available to properly secure the unit within the dash. Torque the 6-32 Nylock nuts to 5 inch pounds.

2. Place the display behind dash and line up the four mounting holes on the display with the holes in dash.

3. Install four bolts and tighten nuts.

Gimbal Mounted Installation

If it is desired to gimbal mount the HV450, the gimbals can be sourced from Ram Mounting Systems Inc. at www.ram-mount.com

The RAM parts, drawings and models are accompanied by a ordering guide at http://www.rammount.com/SupportCenter/GlossaryofTerms/tabid/149/Default.aspx

The HV450 has a matching bolt pattern for the RAM Diamond base with 9/16" ball (P/N RAM-A-238).
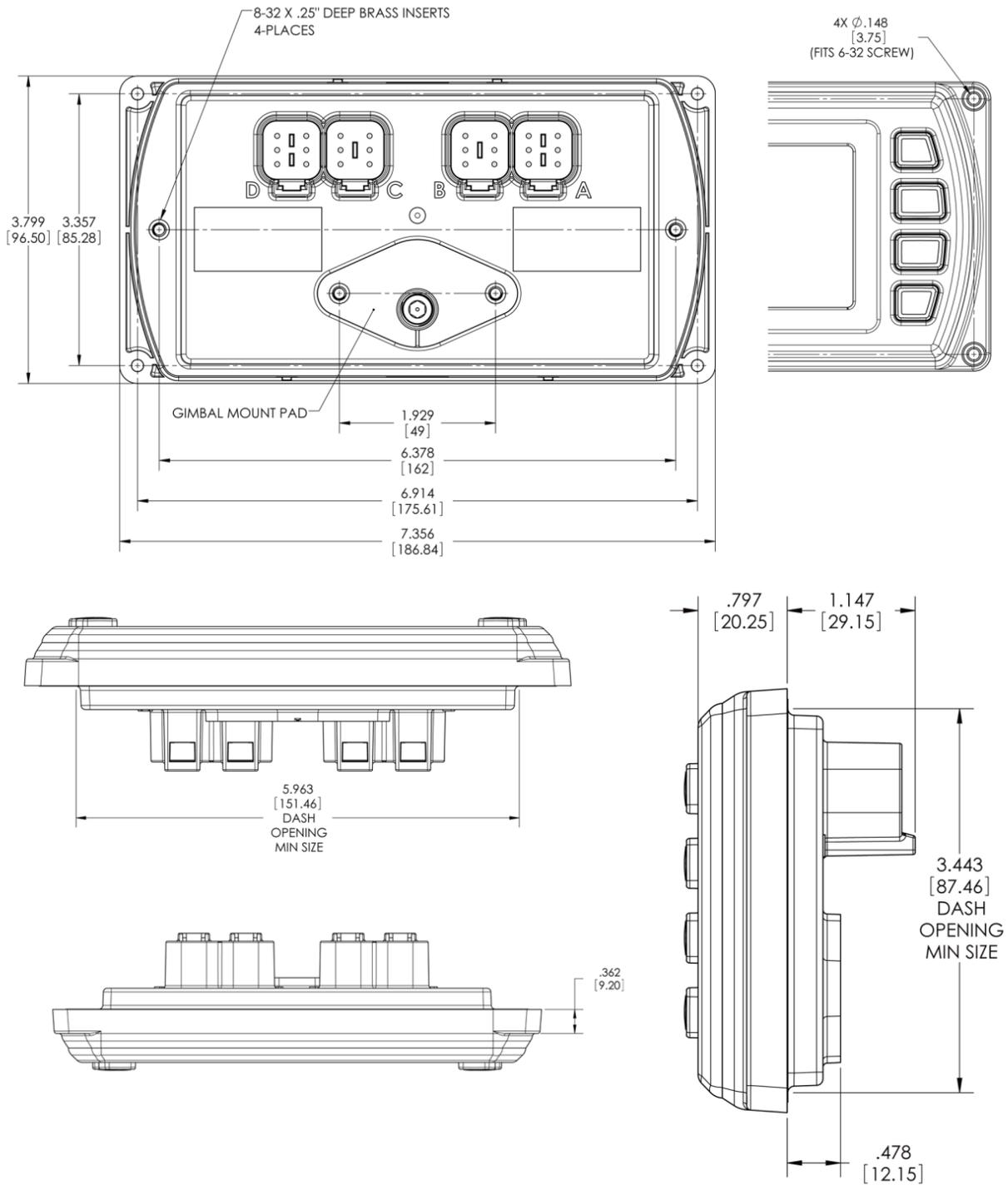
Aesthetics

Murphy offers a set of plugs for the gimbal-mount application to cover the mounting holes for aesthetic purposes:

- Part # 78000814: Kit, Mounting, Plug, HV450

Dimensions for Installation

8-32 X .25" DEEP BRASS INSERTS
4-PLACES

4X ⌀.148
[3.75]
(FITS 6-32 SCREW)

D   C   B   A

3.799
[96.50]

3.357
[85.28]

GIMBAL MOUNT PAD

1.929
[49]

6.378
[162]

6.914
[175.61]

7.356
[186.84]

.797
[20.25]

1.147
[29.15]

5.963
[151.46]
DASH
OPENING
MIN SIZE

.362
[9.20]

3.443
[87.46]
DASH
OPENING
MIN SIZE

.478
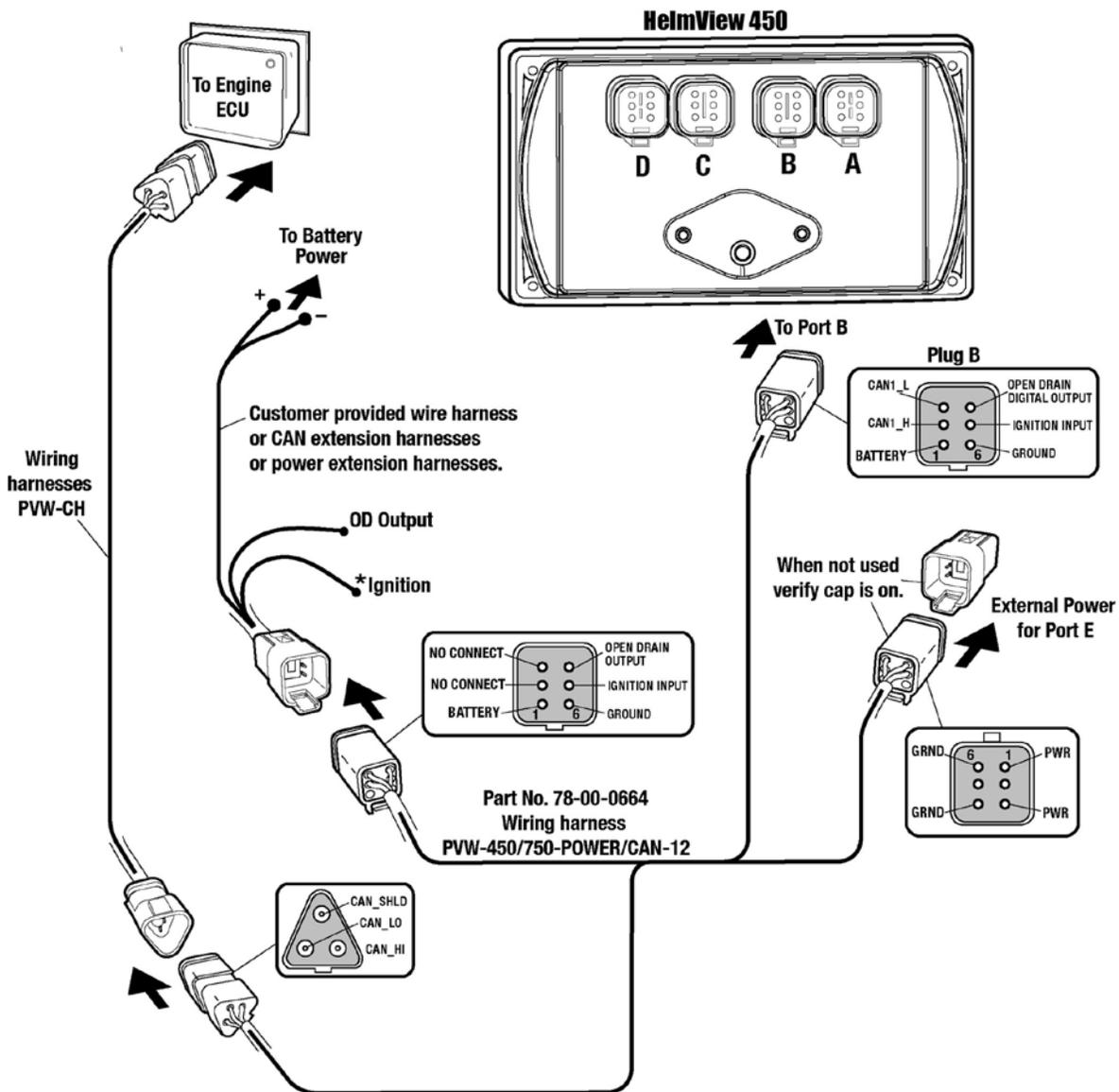[12.15]

Wiring Instructions

The following illustrations are examples of various typical quick-connect options for setup. Wiring harnesses are sold separately.

> ⚠ **WARNING**: Failure to install the unit per the specified wiring diagrams may cause damage to the unit. **DO NOT** connect power to the video ground. Warranty is void for damage caused by incorrect wiring.
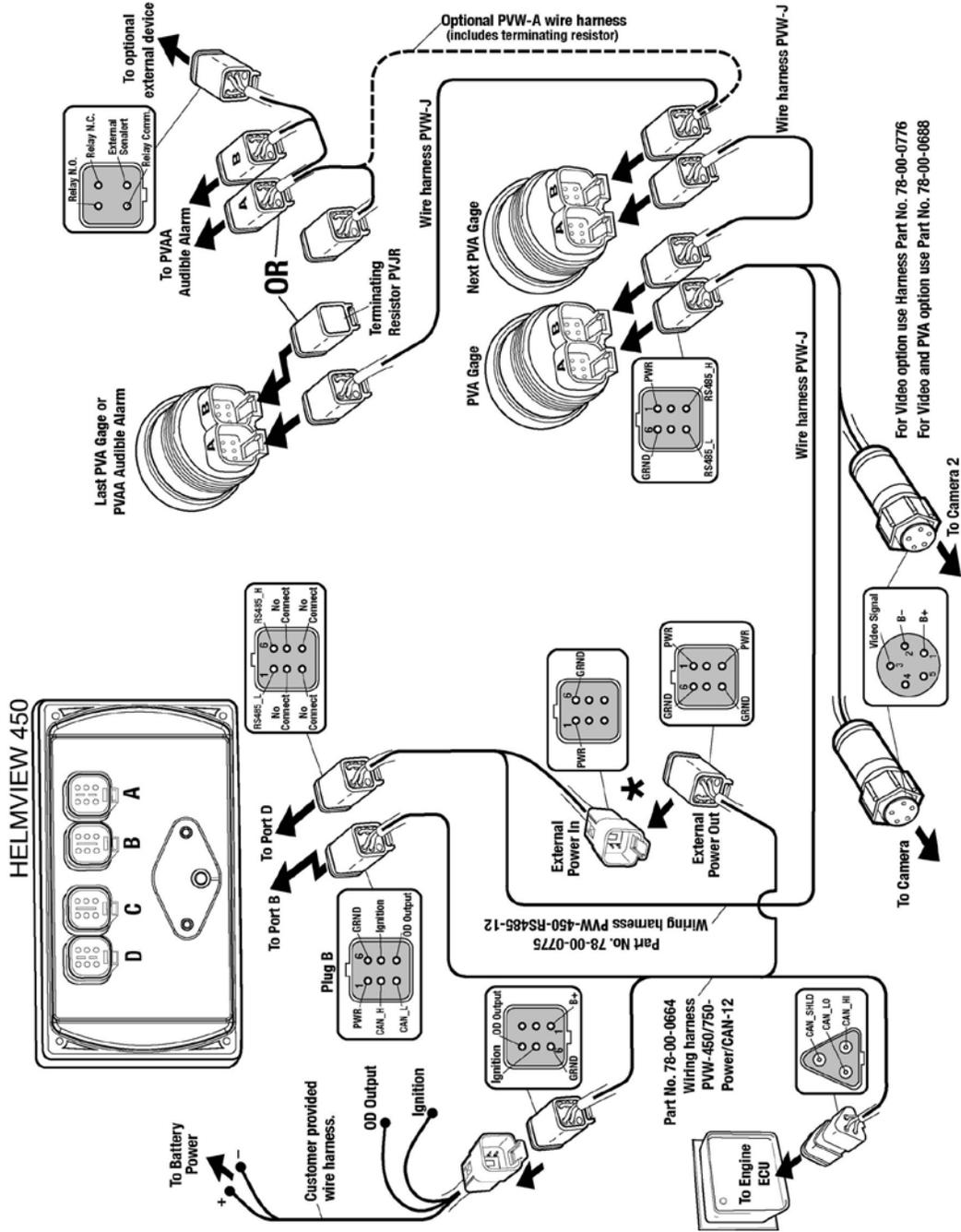
Single Engine

The pinout is as viewed from the back of mating plug.

* Note: Ignition must be connected to the battery or to an ignition switch for the display to turn "ON".
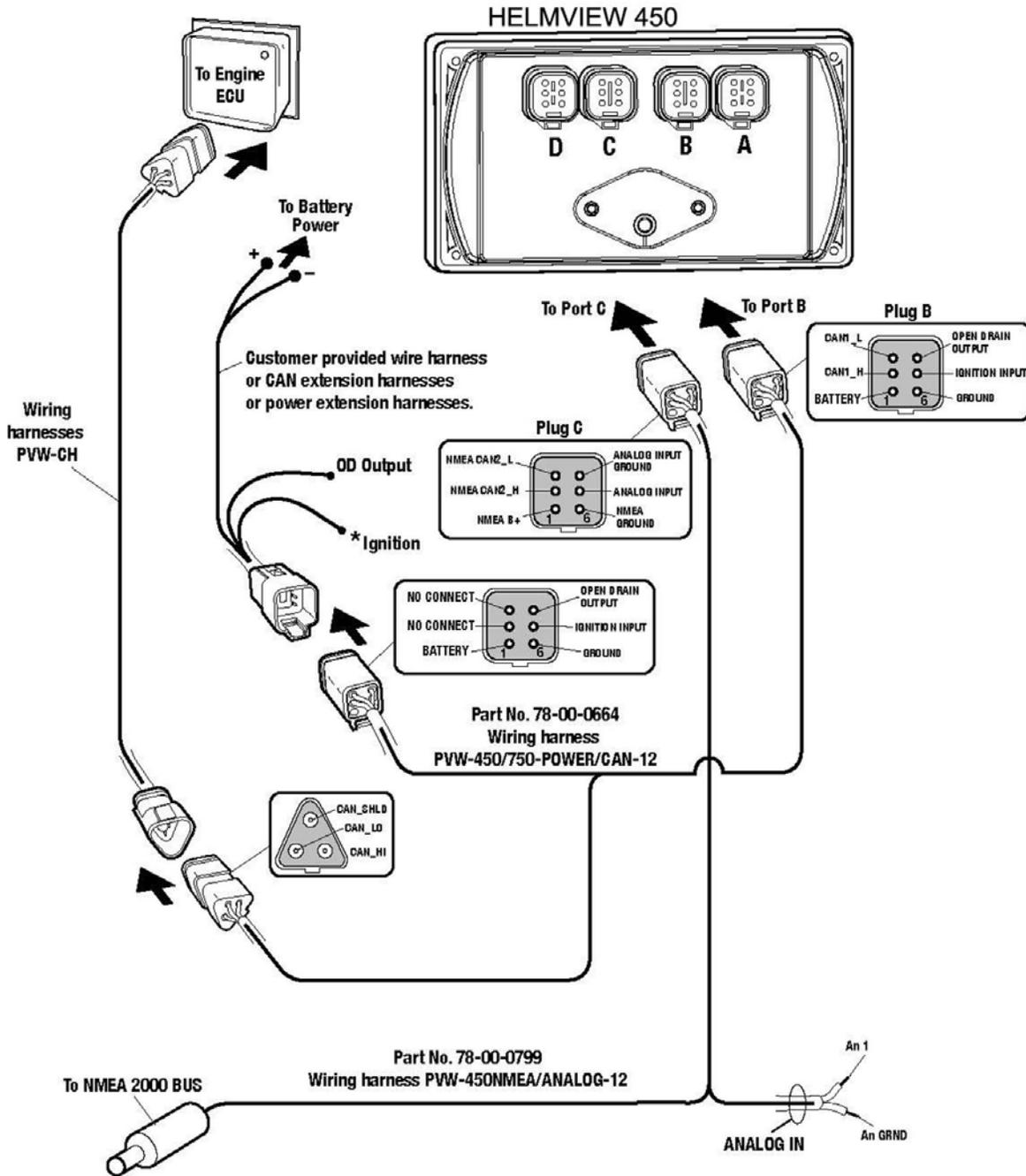
PVA Gages

The pinout is as viewed from the back of mating plug.

WARNING: Failure to install the unit per the specified wiring diagrams may cause damage to the unit. **DO NOT** connect power to the video ground. Warranty is void for damage caused by incorrect wiring.
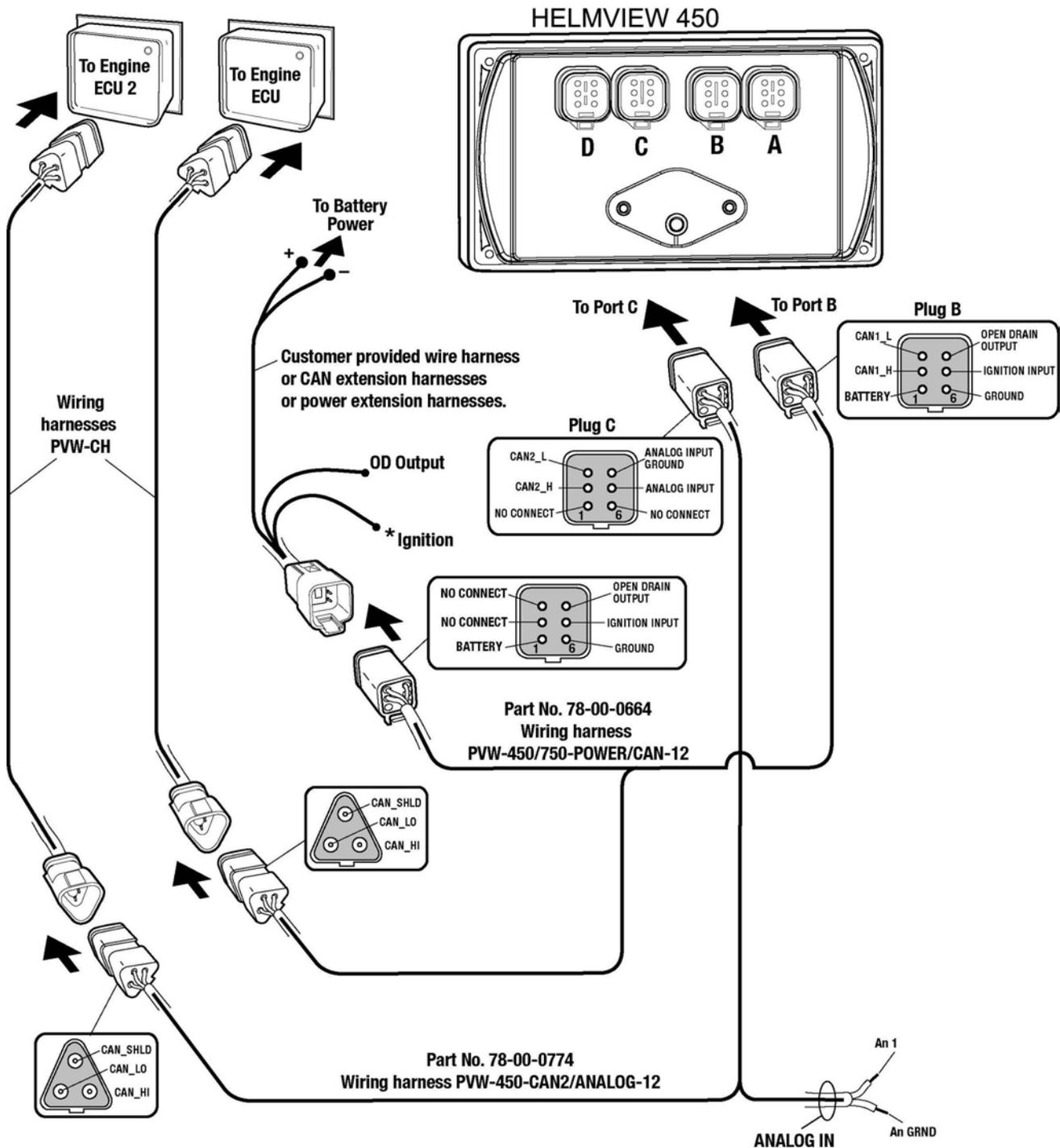
NMEA Gages

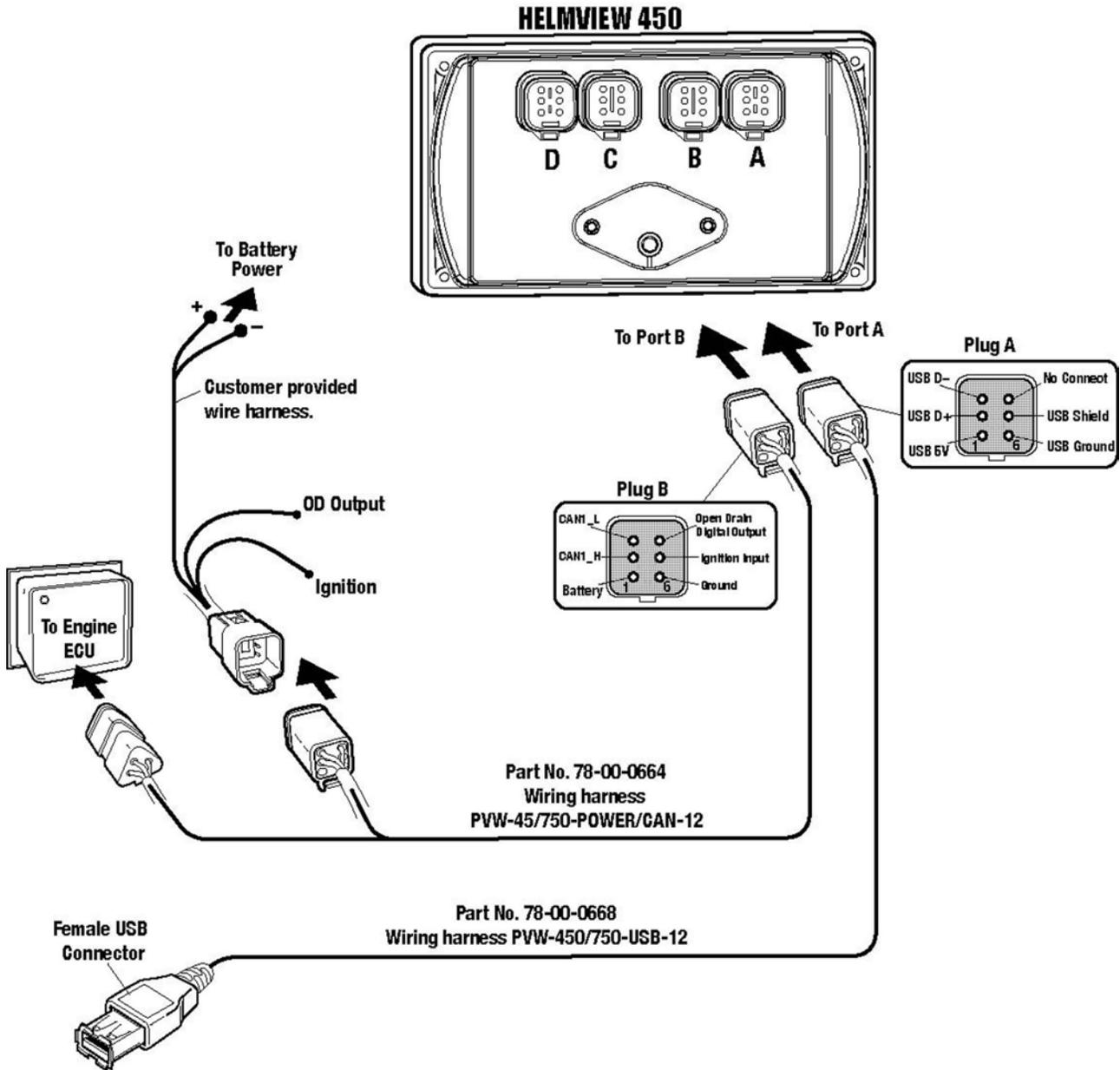The pinout is as viewed from the back of mating plug.

Dual Engine Gages

The pinout is as viewed from the back of mating plug.

HELMVIEW 450

D C B A

To Engine ECU 2

To Engine ECU

To Battery Power

+ −

Customer provided wire harness or CAN extension harnesses or power extension harnesses.

Wiring harnesses PVW-CH

OD Output

*Ignition

To Port C

To Port B

Plug B

CAN1_L	OPEN DRAIN OUTPUT
CAN1_H	IGNITION INPUT
BATTERY 1	6 GROUND

Plug C

CAN2_L	ANALOG INPUT GROUND
CAN2_H	ANALOG INPUT
NO CONNECT 1	6 NO CONNECT

NO CONNECT	OPEN DRAIN OUTPUT
NO CONNECT	IGNITION INPUT
BATTERY 1	6 GROUND

Part No. 78-00-0664
Wiring harness
PVW-450/750-POWER/CAN-12

CAN_SHLD
CAN_LO
CAN_HI

CAN_SHLD
CAN_LO
CAN_HI

Part No. 78-00-0774
Wiring harness PVW-450-CAN2/ANALOG-12

An 1

ANALOG IN   An GRND

NOTE: Port B and C connectors are keyed differently than Port A and D connectors to ensure proper connection.

USB Wiring

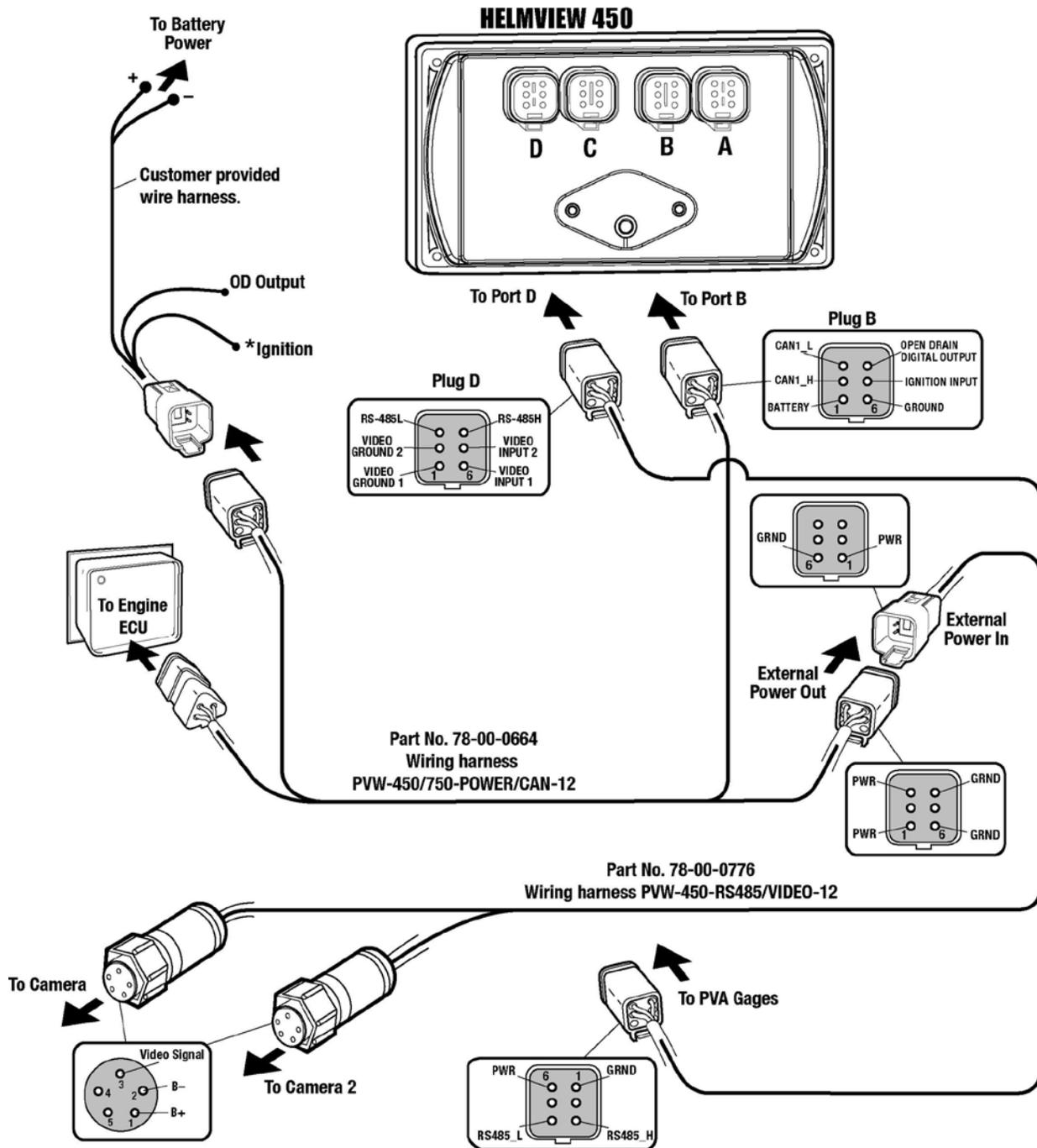The pinout is as viewed from the back of mating plug.

HELMVIEW 450

To Battery Power

Customer provided wire harness.

OD Output

Ignition

To Engine ECU

To Port B

To Port A

Plug A

USB D–		No Connect
USB D+		USB Shield
USB 5V		USB Ground

Plug B

CAN1_L		Open Drain Digital Output
CAN1_H		Ignition Input
Battery		Ground

Part No. 78-00-0664
Wiring harness
PVW-45/750-POWER/CAN-12

Female USB Connector

Part No. 78-00-0668
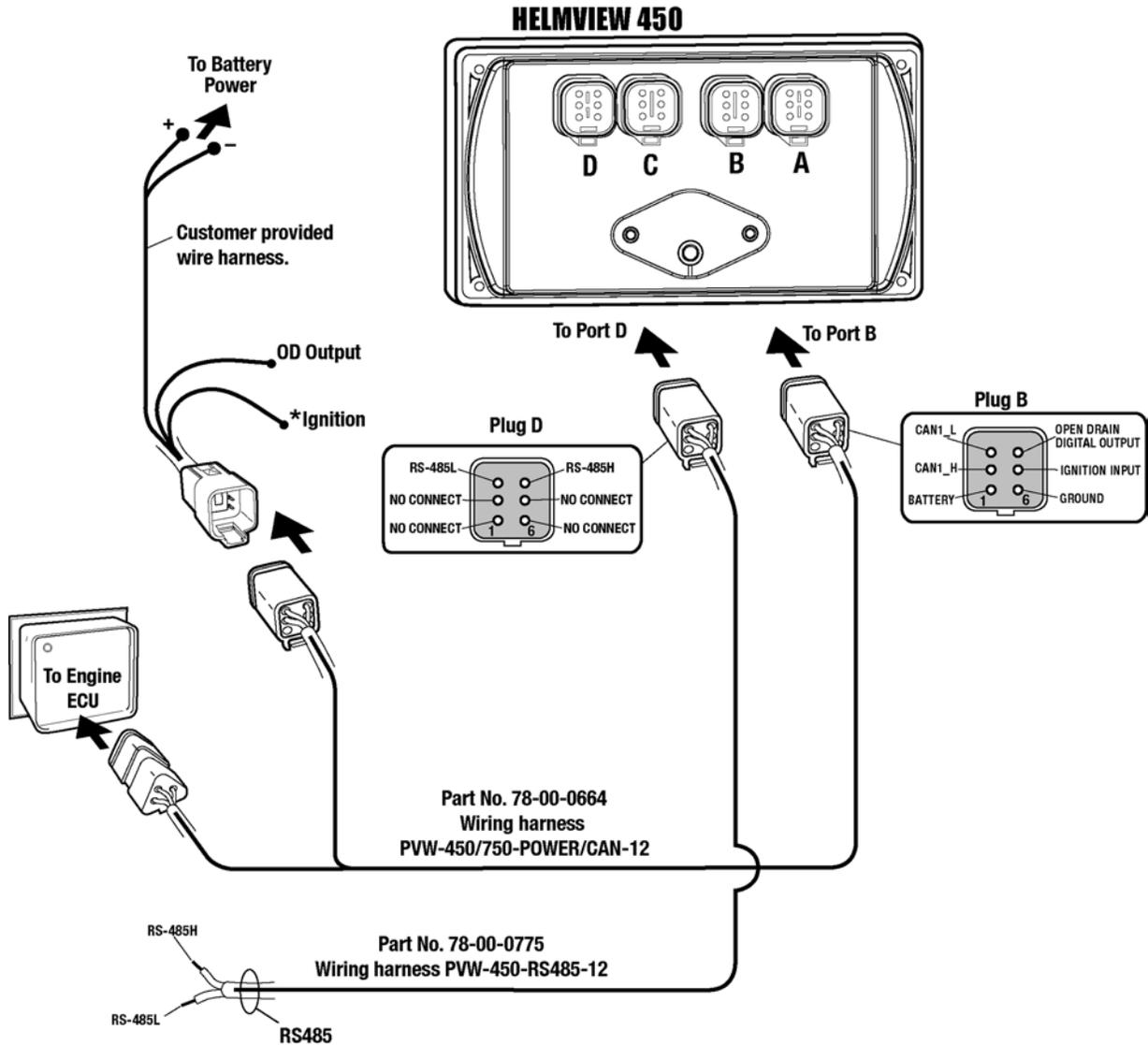Wiring harness PVW-450/750-USB-12

Analog Video

The pinout is as viewed from the back of mating plug.

WARNING: Failure to install the unit per the specified wiring diagrams may cause damage to the unit. **DO NOT** connect power to the video ground. Warranty is void for damage caused by incorrect wiring.

No Video Wiring

The pinout is as viewed from the back of mating plug.

HELMVIEW 450

To Battery Power

+ −

Customer provided wire harness.

OD Output

*Ignition

To Port D

To Port B

Plug D

RS-485L — RS-485H
NO CONNECT — NO CONNECT
NO CONNECT — NO CONNECT
1 — 6

Plug B

CAN1_L — OPEN DRAIN DIGITAL OUTPUT
CAN1_H — IGNITION INPUT
BATTERY 1 — 6 GROUND

To Engine ECU

Part No. 78-00-0664
Wiring harness
PVW-450/750-POWER/CAN-12

RS-485H

Part No. 78-00-0775
Wiring harness PVW-450-RS485-12

RS-485L

RS485

* Note: Ignition must be connected to the battery or to an ignition switch for the display to turn "ON".
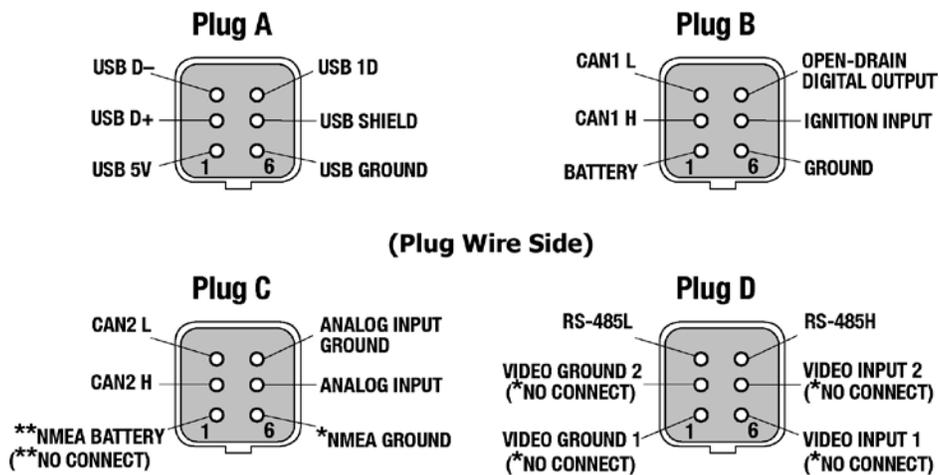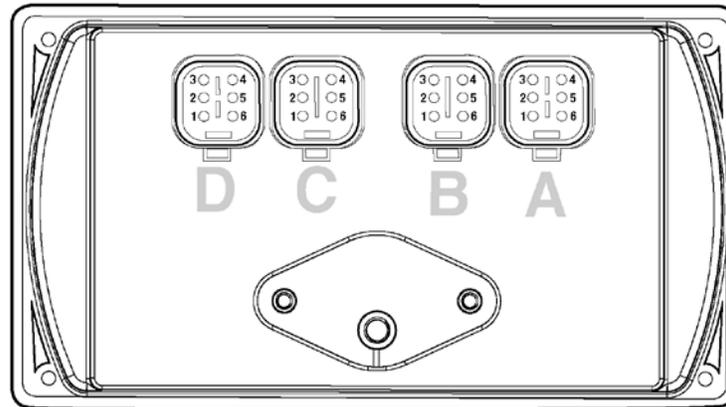
⚠ **WARNING**: Failure to install the unit per the specified wiring diagrams may cause damage to the unit. **DO NOT** connect power to the video ground. Warranty is void for damage caused by incorrect wiring.

Pin Specifications for Deutsch DT04-6P Style Connections

The pinout is as viewed from the back of mating plug.

HELMVIEW 450 BACKVIEW

Plug A

USB D–	USB 1D
USB D+	USB SHIELD
USB 5V	USB GROUND

Plug B

CAN1 L	OPEN-DRAIN DIGITAL OUTPUT
CAN1 H	IGNITION INPUT
BATTERY	GROUND

(Plug Wire Side)

Plug C

CAN2 L	ANALOG INPUT GROUND
CAN2 H	ANALOG INPUT
NMEA BATTERY (NO CONNECT)	*NMEA GROUND

Plug D

RS-485L	RS-485H
VIDEO GROUND 2 (*NO CONNECT)	VIDEO INPUT 2 (*NO CONNECT)
VIDEO GROUND 1 (*NO CONNECT)	VIDEO INPUT 1 (*NO CONNECT)

* (PIN NOT CONNECTED ON VERSION WITHOUT VIDEO).
** (PIN NOT CONNECTED ON VERSION WITHOUT NMEA 2000).

WARNING: Failure to install the unit per the specified wiring diagrams may cause damage to the unit. **DO NOT** connect power to the video ground. Warranty is void for damage caused by incorrect wiring.

Signal Definitions

- CAN: 2.0A and 2.0B
- 1 port isolated according to NMEA 2000 (optional)
- USB 2.0, Video input (optional): NTSC/PAL, analog input (1) 0-5 VDC or 4-20 mA
- Digital output, capable of syncing 500mA.

Specifications

Electrical

Display	Bonded 4.3" color transmissive TFT LCD
Resolution	WQVGA, 480 x 272 pixels, 16-bit color
Aspect Ratio	16:9
Orientation	Landscape
Backlighting	LED, 500-650 cd/m2 (30,000 hr lifetime)
Microprocessor	Freescale iMX35, 32bit, 532 MHz
Operating System	QNX Real Time
Flash Memory	256 MB (expandable to 8GB)
RAM	128 Mb DDR2 SDRAM
Operating Voltage	6 - 32 VDC, protected against reverse polarity and load-dump
Power Consumption	10W Max
CAN	Two CAN 2.0B; one with NMEA 2000 isolation
RS-485	1 MODBUS Master/Slave
Protocols	J1939, NMEA 2000, CANopen
Connection	4 Deutsch DT 6-pin connectors
Keyboard	8 tactile buttons
USB	USB 2.0 host (full speed), optional OTG support
Input	(1) Resistive, 0-5 V, or 4-20 mA (software configurable)
Video Input (optional)	Two NTSC/PAL input channels with one displayed at a time
Output	(1) open-drain, capable of sinking 500mA
Real-time Clock	With battery backup

Environmental

Operating Temperature	-40° C to +85° C
Storage Temperature	-40° C to +85° C
Protection	IP67, front and back
Emissions and Immunity	Electromagnetic Compatibility: 2004/108/EC J1113/2, 4, 11, 21, 26 and 41 • EN61000-6-4 • EN 61000-6-2 (immunity) • EN 501121-3-2 • EN 12895
Vibration	Random vibration, 7.86 Grms (5-2000 Hz), 3 axis
Shock	+/− 50G in 3 axes

Mechanical

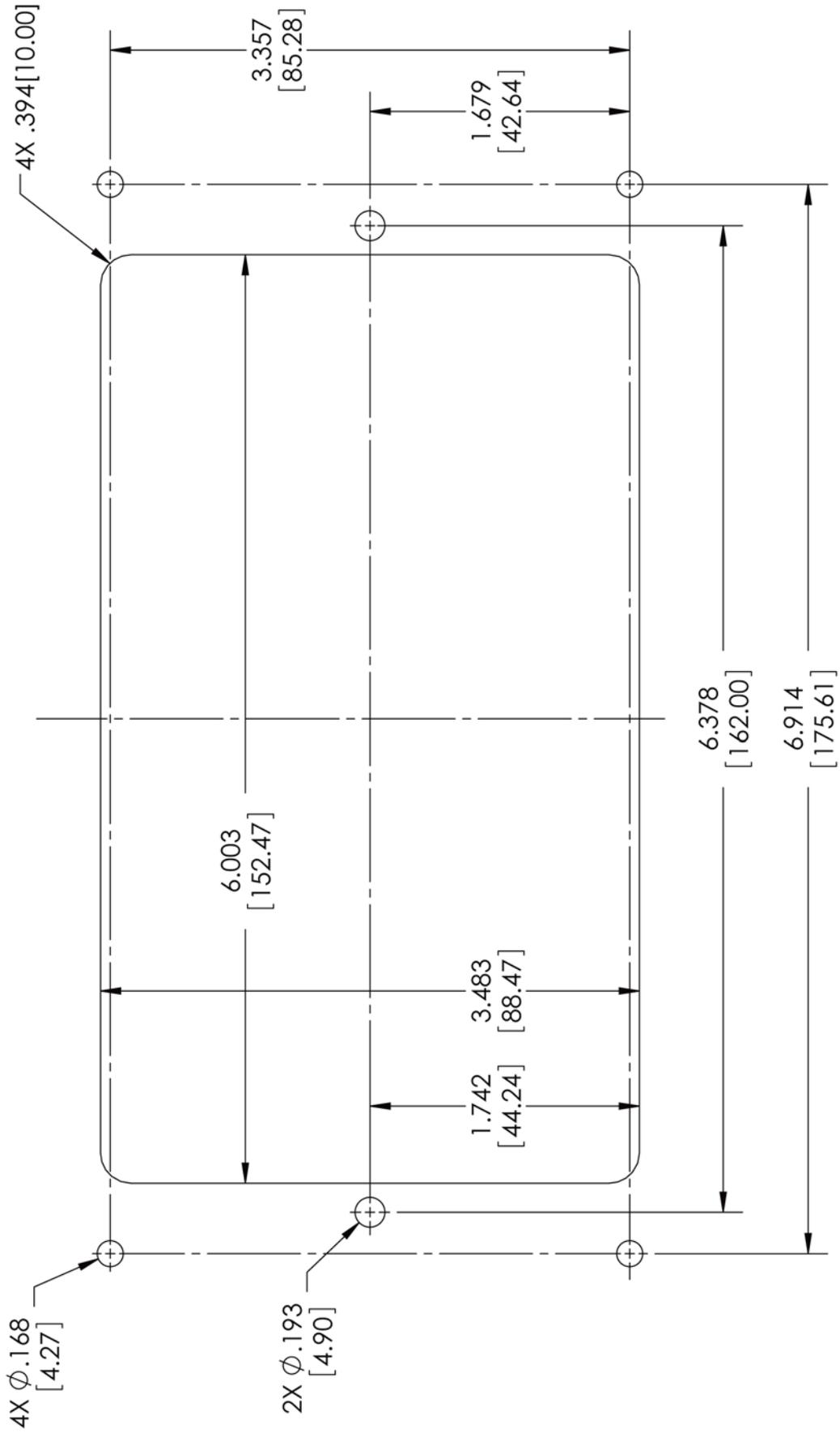|	
Case Material	Polycarbonate back case

Addendum

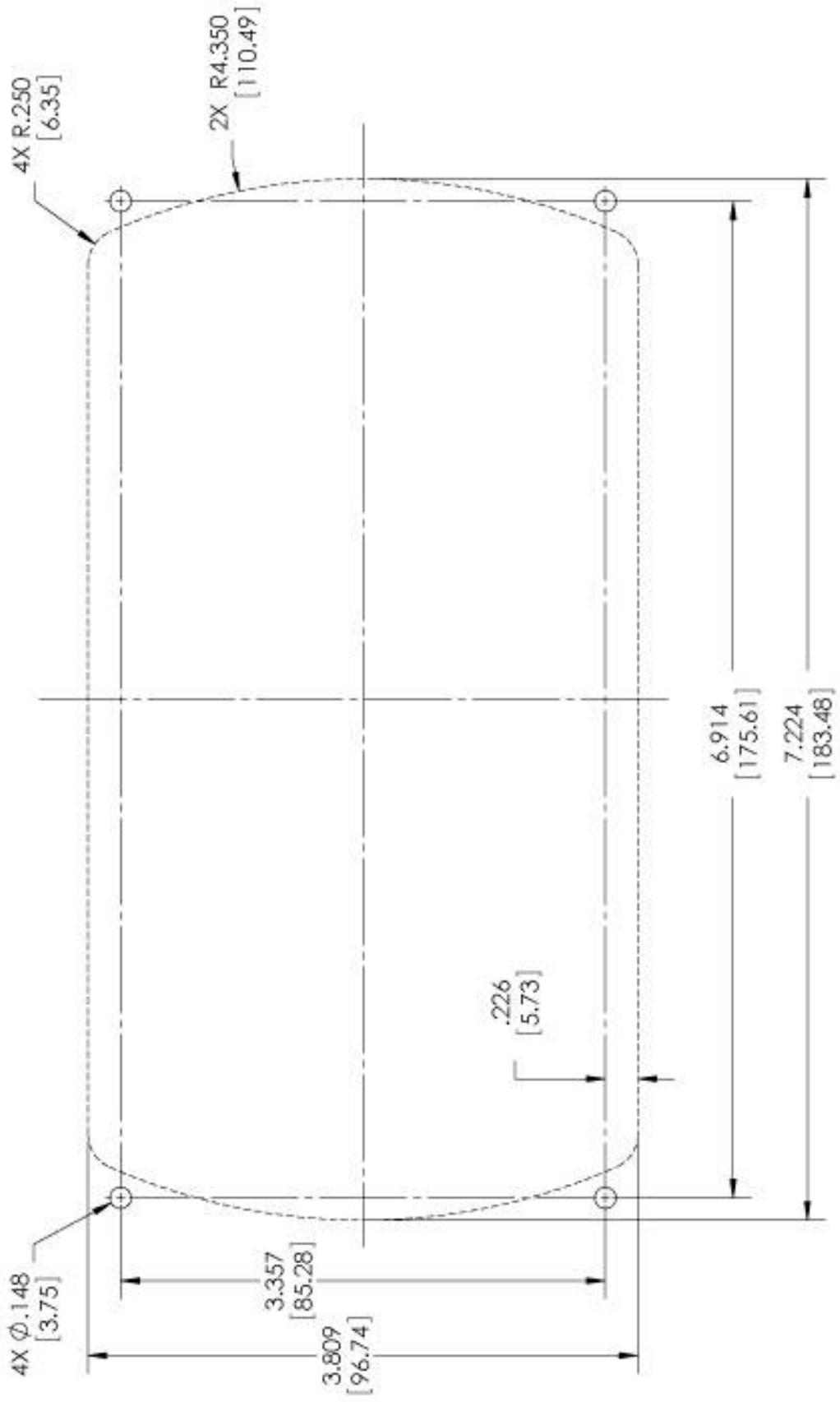## How to Install a Configuration From a USB Drive for the HV450

1. READ ALL INSTRUCTIONS BEFORE CONTINUING!

2. Power OFF the display unit.

3. Insert USB drive with the configuration file into USB port.

4. Press and hold the top left button (continue to hold).

5. Power ON the display while continuing to hold the button a few more seconds then release.

6. Use the keys next to up/down arrows to find the desired file.

7. Use the key next to the right arrow to select and continue. (The right arrow turns green, press again to confirm. Exit by pressing the key next to the red left arrow.)

8. When the installation is complete, a check mark is displayed in the middle of the screen.

9. The unit will reset itself automatically and boot to the new configuration.

THIS PAGE INTENTIONALLY LEFT BLANK

4X .394[10.00]

3.357
[85.28]

1.679
[42.64]

6.378
[162.00]

6.914
[175.61]

6.003
[152.47]

3.483
[88.47]

1.742
[44.24]

4X ⌀.168
[4.27]

2X ⌀.193
[4.90]

HV450 CUTOUT

THIS PAGE INTENTIONALLY LEFT BLANK

4X R.250
[6.35]

2X R4.350
[110.49]

6.914
[175.61]

7.224
[183.48]

.226
[5.73]

4X Ø.148
[3.75]

3.357
[85.28]

3.809
[96.74]

HV450 BACK MOUNT CUTOUT 11-05-2012 (SCALE: 1:1)

THIS PAGE INTENTIONALLY LEFT BLANK

THIS PAGE INTENTIONALLY LEFT BLANK

ENOVATION CONTROLS CORPORATE HEADQUARTERS
5311 S 122ND EAST AVENUE
TULSA, OK 74146

ENOVATION CONTROLS – SAN ANTONIO OFFICE
5757 FARINON DRIVE
SAN ANTONIO, TX 78249

ENOVATION CONTROLS – HOUSTON OFFICE
105 RANDON DYER RD
ROSENBERG, TX 77471

ENOVATION CONTROLS LTD. – 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
WWW.ECONTROLS.COM

MURPHY PRODUCTS
PHONE: 918 317 4100
FAX: 918 317 4266
EMAIL: SALES@FWMURPHY.COM
WWW.FWMURPHY.COM

MURPHY CONTROL SYSTEMS & SERVICES
PHONE: 281 633 4500
FAX: 281 633 4588
EMAIL: CSS-SOLUTIONS@FWMURPHY.COM

MURPHY INDUSTRIAL PANEL DIVISION
PHONE: 918 317 4100
FAX: 918 317 4124
EMAIL: IPDSALES@FWMURPHY.COM

INTERNATIONAL SALES & SUPPORT

UNITED KINGDOM
PHONE: +44 1722 410055
FAX: +44 1722 410088
EMAIL: SALES@ENOVATIONCONTROLS.EU
WWW.FWMURPHY.EU

CHINA
PHONE: +86 21 6237 5885
FAX: +86 21 6237 5887
EMAIL: APSALES@FWMURPHY.COM

LATIN AMERICA & CARIBBEAN
PHONE: 918 317 2500
EMAIL: LASALES@FWMURPHY.COM

SOUTH KOREA
PHONE: +82 70 7951 4100
EMAIL: SKOREASALES@FWMURPHY.COM

INDIA
PHONE: +91 91581 37633
EMAIL: INDIASALES@FWMURPHY.COM

bsi. ISO 9001 Quality Management
FM 28221 (Tulsa, OK - USA)
FM 620667 (San Antonio, TX - USA)
FM 28221 (Rosenberg, TX - USA)
FM 29422 (UK)

bsi. ISO 9001 Quality Management / TS 16949 Automotive Quality Management
FM 523851 (China) / TS 589322 (China)

Printed in the USA