



## 10.4-inch Display for Vehicles

- Ideal for gauges, diagnostics, cameras, guidance and other vehicle functions
- Sealed to IP67
- Bezel mount or VESA MIS-D standard mount
- Four video inputs: capable of displaying three simultaneous cameras
- Easy apps creation and integration with VUI Builder (J1939) and Linux Qt (J1939 and CANopen)
- Scratch resistant/Anti-glare cover glass
- Optically bonded display for superior mechanical and sunlight readability
- Wide viewing angle
- 600 NITS backlight intensity
- XGA resolution (1024 X 768)
- 16-Bit color TFT, LED backlight
- Optional touch screen
- 7 soft keys with adjustable backlight
- 3 second boot time (VUI Builder)



### Processor AND MEMORY

- 800 MHZ i.MX6 Dual Core Processor
- 512MB DDR3
- 4GB e.MMC
- Linux 4.1.15 Operating System
- Real time clock with 10 year battery backup

### INTERFACES

- 1 USB host port
- 3 CAN bus ports
- 10/100 ethernet port

### INPUT / OUTPUT

- 4 NTSC/PAL video inputs
- 1 RS-232 ports
- 4 I/O Ports (200 mA max)

### MATING CONNECTOR

- AMP 776164-1 mating connector which works with either AMP 770520-1 or AMP 770854-1 socket

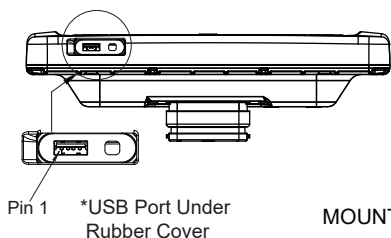
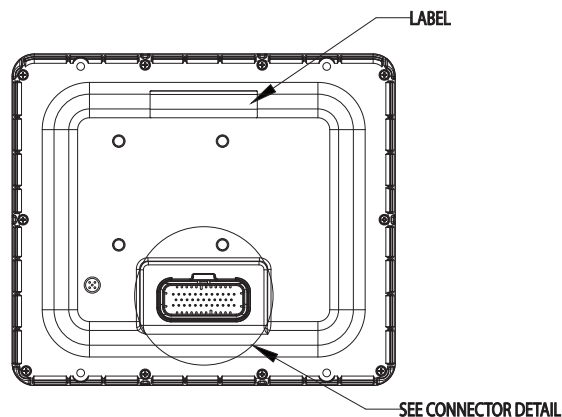
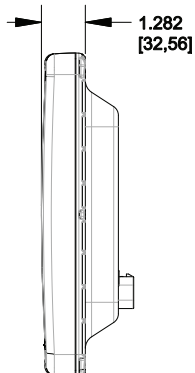
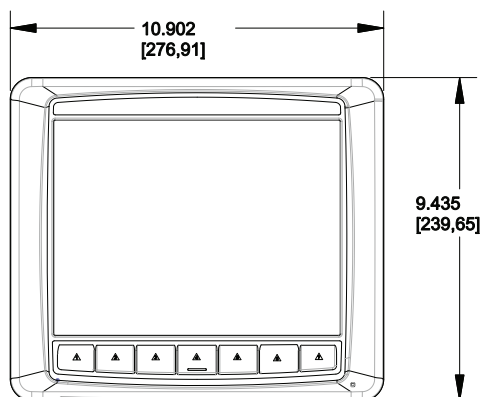
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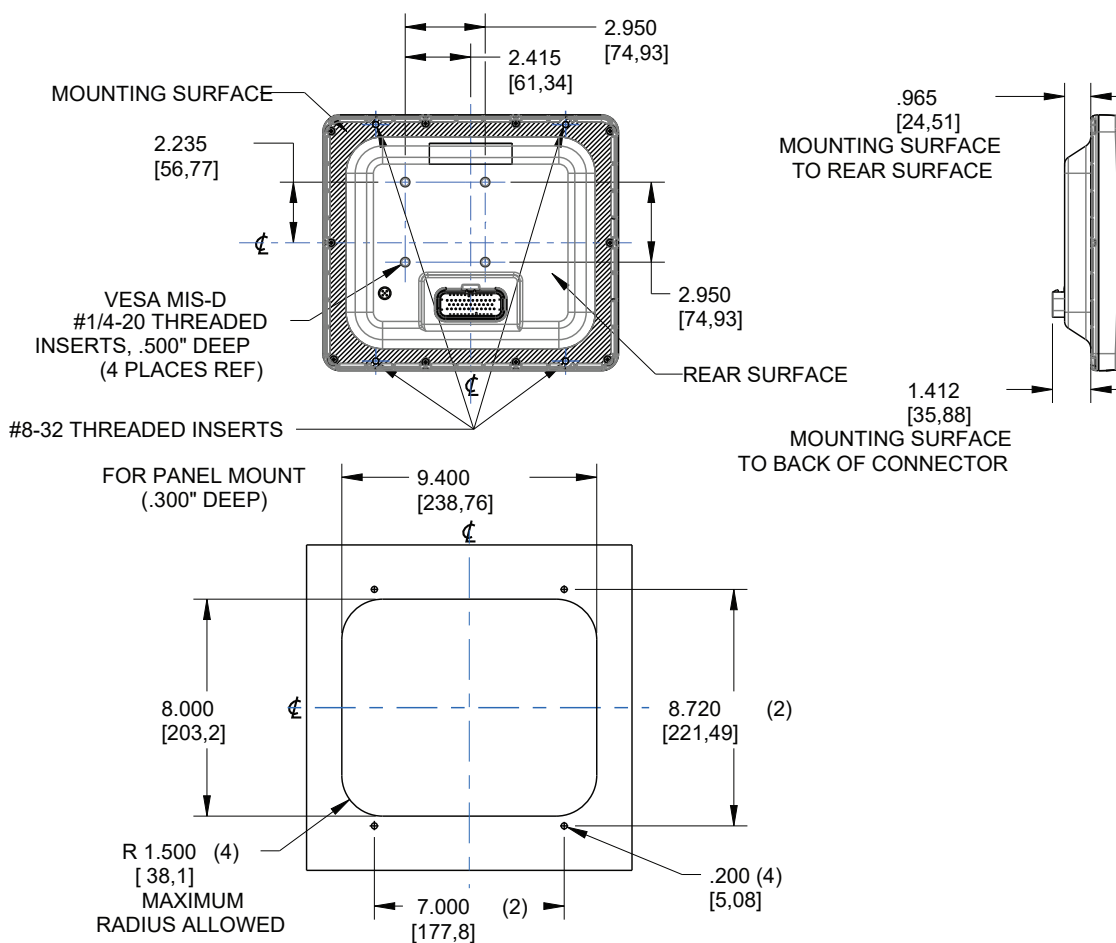
## DIMENSIONS



## PANEL MOUNTING DETAILS

RECOMMENDED TORQUE: 25 IN-LBS

MAXIMUM TORQUE: 40 IN-LBS



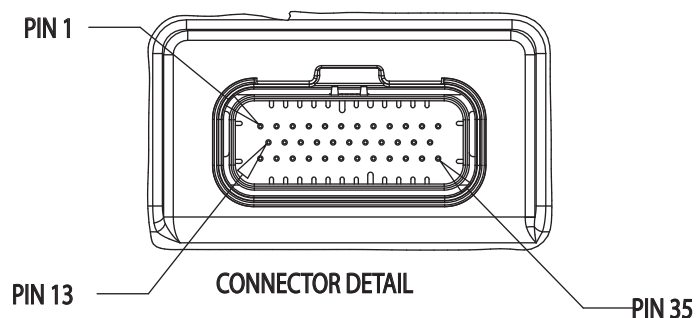
## PANEL MOUNT CUTOUT INFORMATION

NOMINAL PANEL/POCKET DIMENSIONS SHOWN MAY REQUIRE ADJUSTMENT  
BASED UPON MANUFACTURING TOLERANCES OF CUSTOMER PANEL



## PINOUTS

| Pin | Function      | Pin | Function        | Pin | Function      |
|-----|---------------|-----|-----------------|-----|---------------|
| 1   | VIDEO1+       | 13  | VIDEO2+         | 24  | VIDEO3+       |
| 2   | VIDEO1-       | 14  | VIDEO2-         | 25  | VIDEO3-       |
| 3   | CAN1 HI       | 15  | ETH TPO+        | 26  | ETH TPI+      |
| 4   | CAN1 SH       | 16  | ETH TPO-        | 27  | ETH TPI-      |
| 5   | CAN1 LO       | 17  | CAN3 SH         | 28  | CAN3 HI       |
| 6   | CAN2 HI       | 18  | CAN2 SH         | 29  | CAN3 LO       |
| 7   | CAN2 LO       | 19  | VIDEO4+         | 30  | RS232 RX      |
| 8   | RS232 GND     | 20  | VIDEO4-         | 31  | RS232 TX      |
| 9   | Digital I/O 4 | 21  | Digital I/O 2   | 32  | Digital I/O 3 |
| 10  | Digital I/O 1 | 22  | N/C             | 33  | N/C           |
| 11  | N/C           | 23  | VIN SWITCHED    | 34  | N/C           |
| 12  | VIN Return    |     | (On/Off Signal) | 35  | VIN Positive  |
|     |               |     |                 |     | (Power Input) |



## PART NUMBERS

| Part Number   | RS232                                     | USB 2.0 | CAN1 | CAN2 | CAN3 | VIDEO1 | VIDEO2 | VIDEO3 | VIDEO4 | RTC | TOUCH | ETHERNET | BUZZER | DIGITAL I/O |
|---------------|-------------------------------------------|---------|------|------|------|--------|--------|--------|--------|-----|-------|----------|--------|-------------|
| 3D2104XK-200  | X                                         | X       | X    | X    | X    | X      | X      | X      | X      | X   |       | X        | X      | X           |
| 3D2104TK-200  | X                                         | X       | X    | X    | X    | X      | X      | X      | X      | X   | X     | X        | X      | X           |
| 3D2104DEV-200 | Development Kit with 3D2104TK-200 display |         |      |      |      |        |        |        |        |     |       |          |        |             |

## DEVELOPMENT KIT



Front View



Back View

A development kit is offered to provide the hardware and software required to set up a programmer's workstation for the use with the chosen development environment.

### Inside the Kit:

- 3D2104 Display
- Development Stand
- Interface PCB
- Interface Cables



## ELECTRICAL PERFORMANCE SPECIFICATIONS

|                                   |                                                            |                                                      |
|-----------------------------------|------------------------------------------------------------|------------------------------------------------------|
| Operating-voltage                 | 8-32 VDC                                                   |                                                      |
| Digital Inputs                    | 32V tolerant, VIL=2.2V(max), VIH=2.7V(min), 12.4K pulldown |                                                      |
| Digital Outputs                   | SWITCH VBAT TO LOAD, 200mA (max)                           |                                                      |
| Maximum Load                      | ANSI / ASAE EP455 Sec 5.1.1                                | T(min) = -40C, T(max) = +65C                         |
| Over-voltage                      | ANSI / ASAE EP455 Sec 5.10.2                               | Level 1, extended to 36V                             |
| Reverse Polarity                  | ANSI / ASAE EP455 Sec 5.10.3                               | extended to -36V                                     |
| Short-circuit Protection          | ANSI / ASAE EP455 Sec 5.10.4                               | extended to 36V                                      |
| Starting Profile                  | ISO 16750-2 Sec. 4.6.3                                     | 12V, Code C / 24V Code E                             |
| Battery-less Operation            | ANSI / ASAE EP455 Sec 5.11.3                               | Level 1                                              |
| Load Dump                         | ISO 7637-2 Pulse 5a                                        | Us = 174V, Ri = 2 Ohms, Td = 350mS                   |
| Switching Spikes                  | ISO 7637-2 Pulse 3a and 3b                                 | Pulse 3a: Us = -200V, Pulse 3b: Us = 200V, 3000 reps |
| Wire Harness Inductance           | ISO 7637-2 Pulse 2a                                        | Us = 50V, t1 = 5s, 60 reps                           |
| Motor Shutdown Transients         | ISO 7637-2 Pulse 2b                                        | Us = 20V, t1 = 5s, Ri < .05 Ohms, 60 reps            |
| Wire Harness Inductance Switching | ISO 7637-3 Pulse a and b                                   | Pulse a: -80V, Pulse b: 80V, Class A, 6 min.         |
| Inductive Load Switching          | ANSI / ASAE EP455 Sec 5.11.4                               | Level 1                                              |
| Mutual Coupling (Power)           | ANSI / ASAE EP455 Sec 5.11.6.1                             | Level 2                                              |
| Alternator Field Decay            | ANSI / ASAE EP455 Sec 5.11.2                               |                                                      |
| ESD                               | ANSI / ASAE EP455 Sec 5.12                                 | Level 2                                              |
| Radiated Immunity                 | ANSI / ASAE EP455 Sec 5.16                                 | Level 1                                              |
| Broadband Radiated Emissions      | ISO 14982 Sec 6.4                                          |                                                      |
| Narrowband Radiated Emissions     | ISO 14982 Sec 6.5                                          |                                                      |
| Conducted Emissions               | SAE J1113-41                                               | Class 3                                              |

## ENVIRONMENTAL SPECIFICATIONS

|                                |                               |                                                                                        |
|--------------------------------|-------------------------------|----------------------------------------------------------------------------------------|
| Operating temperature          | ANSI/ASAE EP455 5.1.1 Level 2 | -30°C to +65°C                                                                         |
| Storage Temperature            | ANSI/ASAE EP455 5.1.2 Level 2 | -40°C to +85°C                                                                         |
| Thermal Shock                  | ANSI/ASAE EP455 5.1.3         | -40°C to 70°C at a rate of 4°C/min (1 hour at extremes)                                |
| Altitude (Barometric Pressure) | ANSI/ASAE EP455 5.2           | 101.3kPa to 18.6kPa                                                                    |
| Sand and Dust                  | ANSI/ASAE EP455 5.3           | 24 hours with 0.88g/m3                                                                 |
| Solar Radiation                | ANSI/ASAE EP455 5.4           | 43-75W/m2 UV Radiation (280-400nm wavelength) 300h                                     |
| Ingress Protection / Rain      | ANSI/ASAE EP455 5.6 Level 2   | 375 kPa and 8.3 L/min for 10 minutes @15°C water temp                                  |
| Humidity                       | ANSI/ASAE EP455 5.13          | 96% humidity at 35°C for 240 hours                                                     |
| Salt Fog                       | ANSI/ASAE EP455 5.9           | 5% aqueous solution of NaCl @ 35°C and a pH between 6.5 and 7.2 for 48 hours           |
| Chemical resistance            | ISO 16750-5 EP 455 (5.8.2)    |                                                                                        |
| Thermal Cycling                | ISO 16750-4                   | -40° to 85°C 2 hours at extremes change rate = 1°C/min (8 hours) repeat for 30 cycles. |

## MECHANICAL PERFORMANCE SPECIFICATIONS

|                       |                                |                                                                                                                                                                                                                         |
|-----------------------|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Vibration, Random     | ANSI/ASEA EP455 5.15.1         | 2h each axis @52.4m/s2 RMS overall acceleration and spectral power density of 2m2/s3 from 50Hz to 2000Hz                                                                                                                |
| Vibration, Sinusoidal | ANSI/ASEA EP455 5.15.2         | A logarithmic sweep from 10Hz to 2000Hz to 10Hz over a period of 20 minutes for 4 hours in each of 3 orthogonal axes with amplitude 1.5mm from 10Hz to 40Hz and a constant acceleration of 35m/s2 RMS from 40Hz to 2KHz |
| Shock / Crash Safety  | ANSI/ASEA EP455 5.14           | 11ms half sine pulse of 490 m/s2 in 3 perpendicular axes                                                                                                                                                                |
| Drop                  | ANSI/ASEA EP455 5.14.2 Level 1 | Drop component 400 mm onto a hardwood benchtop on all practical edges.                                                                                                                                                  |
| Weight                |                                | 1400 Grams Typical                                                                                                                                                                                                      |



Ask us about our complete CANBUS UI Package

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