



## 10.4-inch Display for Vehicles

- Ideal for gauges, diagnostic menus and other vehicle functions
- Sealed to IP67, Bezel Mount
- Four video inputs: capable of displaying three simultaneous cameras
- Easy apps creation and integration with VUI Builder (J1939) and Qt
- Scratch resistant/Anti-glare cover glass
- Optically bonded display for superior mechanical and visual performance
- 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)

### SELECT 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/m <sup>3</sup>                                                     |
| Solar Radiation                | ANSI/ASAE EP455 5.4           | 43-75W/m <sup>2</sup> 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. |

specifications subject to change



### EMBEDDED COMPUTER

- 800 MHZ i.MX6 processor
- 512MB DDR3
- 4GB e.MMC
- Linux Operating System\*
- Real time clock with 10 year battery backup

### INPUT / OUTPUT

- 1 USB host port
- 3 CAN bus ports
- 4 NTSC/PAL video inputs
- 1 RS-232 ports
- 4 I/O Ports (200 mA max)
- 10/100 ethernet port
- Input voltage: 9VDC to 32VDC

### CONNECTOR

- AMP 776164-1 mating connector
- AMP 770520-1 or AMP 770854-1 contacts

### CERTIFICATES: CE MARK

| PART NUMBER  | DESCRIPTION            |
|--------------|------------------------|
| 3D2104XK-100 | 10.4 inch Display      |
| 3D2104TK-100 | 10.4 inch, touchscreen |

## Grayhill, Inc.

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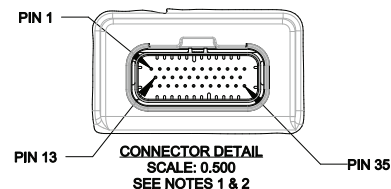
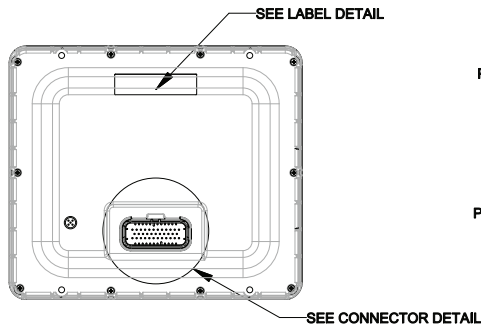
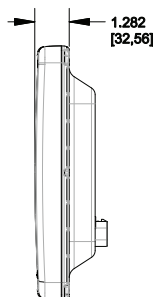
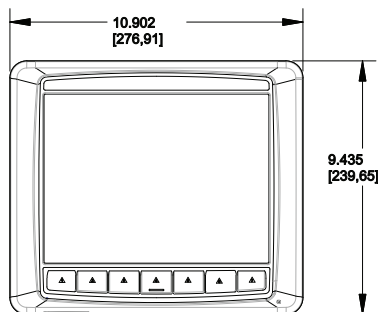
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# PRELIMINARY



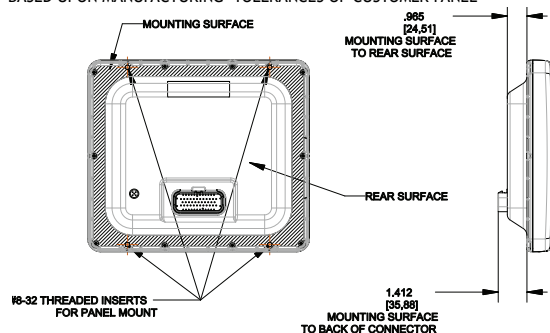


## DIMENSIONS



## PANEL MOUNTING DETAILS

MAXIMUM TORQUE: 25 IN-LBS  
NOMINAL PANEL/POCKET DIMENSIONS SHOWN MAY REQUIRE ADJUSTMENT  
BASED UPON MANUFACTURING TOLERANCES OF CUSTOMER PANEL



## WEIGHT

1400 Grams Max

## ELECTRICAL PERFORMANCE SPECIFICATIONS

|                                   |                                |                                                      |
|-----------------------------------|--------------------------------|------------------------------------------------------|
| 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 5b            | Us = 174V, Ri = 2 Ohms, Td = 350mS, Us* = 70V        |
| 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                                              |
| Mutual Coupling (Signal/ Input)   | ANSI / ASAE EP455 Sec 5.11.6.2 |                                                      |

## ELECTRICAL PERFORMANCE SPECIFICATIONS (CONTINUED)

|                               |                              |         |
|-------------------------------|------------------------------|---------|
| 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 2 |

## MECHANICAL PERFORMANCE

|                       |                                |                                                                                                                                                                                                                                     |
|-----------------------|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Vibration, Random     | ANSI/ASEA EP455 5.15.1         | 2h each axis @52.4m/s <sup>2</sup> RMS overall acceleration and spectral power density of 2m2/s <sup>3</sup> 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/s <sup>2</sup> RMS from 40Hz to 2KHz |
| Shock / Crash Safety  | ANSI/ASEA EP455 5.14           | 11ms half sine pulse of 490 m/s <sup>2</sup> 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.                                                                                                                                                              |

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