



YOUR PRODUCT DEVELOPMENT PARTNER

# 6.5-inch VGA Display for Vehicles

- Ideal for gauges, diagnostic menus and other ancillary functions
- Capable of displaying three simultaneous video feeds
- J1939 compliant CAN interfaces
- Interface with Grayhill's 3J Series Vehicle Display Controller
- Sealed to IP67
- Optional touch screen
- 5 soft keys for menu selection
- Adjustable backlight on soft keys
- Bezel mount or RAM mount compatible



Grayhill 3D Series Displays feature a powerful processor capable of running multiple applications such as video monitoring, cabin controls and virtual gauges. Their rugged construction, sealed enclosure and sunlight readable displays make the 3D Series the ideal platform for system interface on off-highway vehicles.

## ENVIRONMENTAL SPECIFICATIONS

Operating temperature	ANSI/ASEA EP455 5.1.1 Level 2	-30°C to +65°C
Storage Temperature	ANSI/ASEA EP455 5.1.2 Level 2	-40°C to +85°C
Thermal Shock	ANSI/ASEA EP455 5.1.3	-40°C to 70°C at a rate of 4°C/min (1 hour at extremes)
Altitude (Barometric Pressure)	ANSI/ASEA EP455 5.2	101.3kPa to 18.6kPa
Sand and Dust	ANSI/ASEA EP455 5.3	24 hours with 0.88g/m <sup>3</sup>
Solar Radiation	ANSI/ASEA EP455 5.4	43-75W/m <sup>2</sup> UV Radiation (280-400nm wavelength) 300h
Ingress Protection / Rain	ANSI/ASEA EP455 5.6 Level 2	375 kPa and 8.3 L/min for 10 minutes @15°C water temp
Humidity	ANSI/ASEA EP455 5.13	96% humidity at 35°C for 240 hours
Salt Fog	ANSI/ASEA 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)	See Table 1
Thermal Cycling	ISO 16750-4	-40° to 85°C 2 hours at extremes change rate = 1°C/min (8 hours) repeat for 30 cycles.

## EMBEDDED COMPUTER

- 416 MHz PXA270 processor
- 64MB SDRAM
- 128MB NAND program, and file system FLASH
- Windows CE or Linux Operating System
- Real time clock with 10 year battery backup

## INPUT / OUTPUT

- 1 USB host port
- 3 CAN bus ports
- 3 NTSC/PAL video inputs
- 3 isolated serial ports
- 10/100 ethernet port
- Input voltage: 9VDC to 32VDC
- Support for both switched and unswitched power inputs

## CONNECTOR

- AMP 776231-1 on 3D Series Displays
- AMP 776164-1 mating connector
- AMP 770520-1 or AMP 770854-1 contacts

## PART NUMBER | DESCRIPTION

3D65XK-100	6.5 inch VGA Display
3D65TK-100	6.5 inch with touchscreen

# Your Experts in Cab Controls

Grayhill specializes in the design, development and production of human interface controls, including:

- Cab user interface design
- Customized control panels
- CAN-bus interface devices

[www.grayhill.com](http://www.grayhill.com)/CHINA Distributor [www.hmcs.cn](http://www.hmcs.cn)

Agriculture



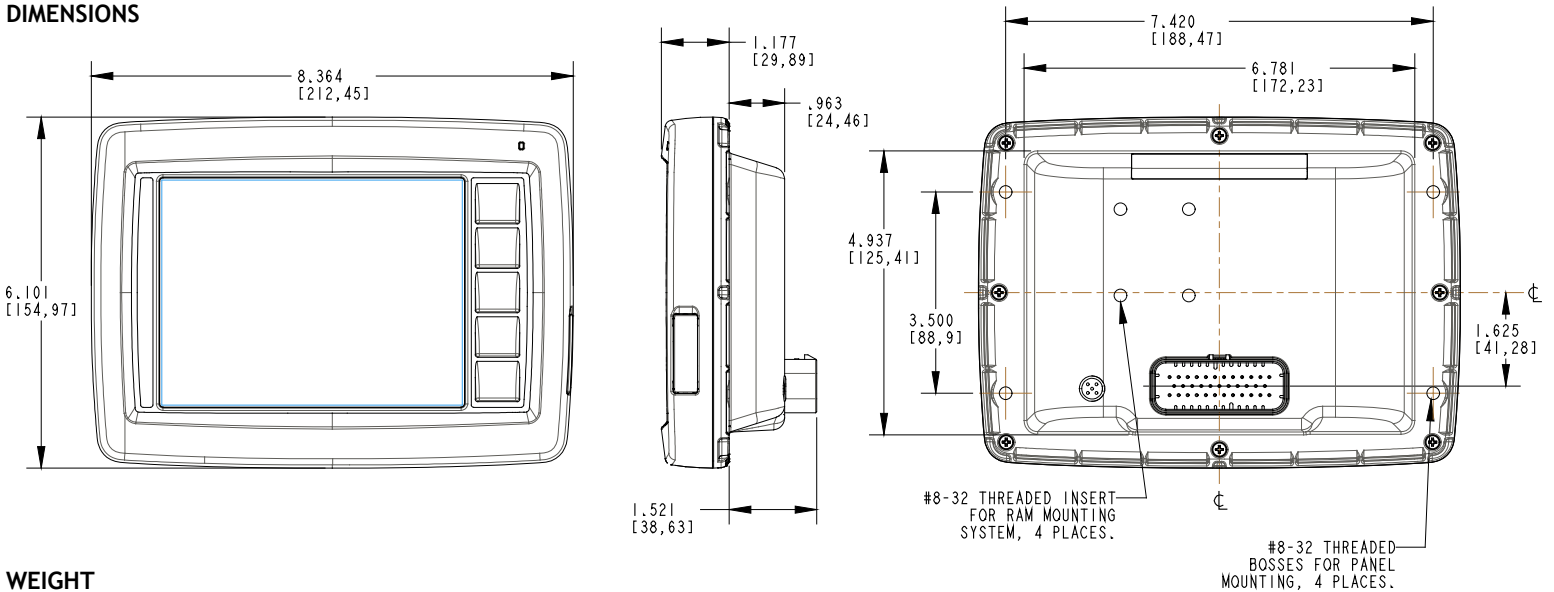
Construction





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**DIMENSIONS**



**WEIGHT**  
2.2 lbs.

**ELECTRICAL PERFORMANCE SPECIFICATIONS**

Maximum load	ANSI/ASEA EP455 5.1.1 Level 2	-40°C 4 hours +85°C for 11 hours max load applied
Jump start forward voltage	ISO 16750-2	36V for 60 minutes
Jump start reverse voltage	ISO 16750-2	-36V for 60 minutes
Short circuit protection	ISO 16750-2	All outputs to ground for 60s
Reverse polarity protection	ISO 16750-2	28V for 60s
Starting profile	ISO 16750-2	See figure 7 below
Battery-less operation	ANSI/ASEA EP455 5.11.3 Level 2	Apply 6+12.6sin(2*pi*f*t) f is swept from 500Hz to 1.5kHz 5min
Load dump	ISO 7637-2 Test Pulse 1	
Switching spikes - negative	ISO 7637-2 Test Pulse 3a	
Switching spikes - positive	ISO 7637-2 Test Pulse 3b	
Wire harness inductance	ISO 7637-2 Test Pulse 2a and 2b	-40° to 85°C 2 hours at extremes change rate = 1°C/min (8 hours) repeat for 30 cycles.
Wire harness inductance-switching	ISO 7637-3 Test Pulse a and b	
Transient protection	ISO 7637	
+/- inductive load pulse	ANSI/ASEA EP455 5.11.4	14-300e <sup>-t</sup> (-t/.001)V 1Hz for 300 cycles
+/- mutual coupling	ANSI/ASEA EP455 5.11.6 Level 2	14+200e <sup>-t</sup> (-t/14x10 <sup>-6</sup> )V 1Hz for 300 cycles
Mutual coupling with clamp	ISO 7637	
Alternator field decay	ANSI/ASEA EP455 5.11.2	-90e <sup>-t</sup> / 0.038 V 0.2Hz for 60 cycles

**ELECTROMAGNETIC COMPATIBILITY SPECIFICATIONS**

ESD	ANSI/ASEA EP455 5.12	+/- 18kV for 10 pulses, 5 of each polarity
Radiated Immunity	ISO14982 6.6	20MHz-1000MHz Range 48mA Bulk Current Injection 24V/m
Electrical Fast Transients	SAE J113-11	
Conducted Immunity	SAE J1113-4	
Power Frequency Magnetic Field	ANSI/ASEA EP455 5.16.4	50/60Hz electromagnetic field with a field strength of 30kV/m
Broadband Radiated Emissions	ISO14982 6.4	64dB to 54dB, 30MHz-75MHz (linearly decreases) 54dB to 65dB, 75MHz-400MHz (linearly increases) 65dB, 400MHz-1000MHz
Narrowband Radiated Emissions	ISO14982 6.5	54dB to 44dB, 30MHz-75MHz (linearly decreases) 44dB to 55dB, 75MHz-400MHz (linearly increases) 55dB, 400MHz-1000MHz
Conducted emissions	SAE J1113-41 Level 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 2m <sup>2</sup> /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.

specifications subject to change



**Grayhill, Inc.**

561 Hillgrove Avenue  
LaGrange, Illinois 60525

CHINA Distributor, Tel: (010)6851-9097

Bulletin 1129

[www.grayhill.com](http://www.grayhill.com)/CHINA Distributor [www.hmcs.cn](http://www.hmcs.cn)