3D32 3.2-INCH DISPLAY

Versatile CAN-based MicroDisplay for Off-Highway Vehicles

Easily Display Custom Graphic Icons, Text Boxes, and Active Gauge Elements:
- Use PC-based software tools to develop graphic objects
- Store graphic objects in on-board flash memory
- Recall objects at run time via J1939 commands, using the menu object, or using the screen list object

Controlled Via J1939 PGNs:
- Native coding not required

Ideal for Off-Highway Vehicle Applications:
- Virtual gauges and diagnostic menus
- Fault indicators and service reminders

Rated for Off-Highway Vehicles:
- Extended operating temperature range: -50 °C – +85 °C (with heater)
- Protected against the ingress of liquids and dust: IP67 rated seal

3.2-inch Backlit LCD (256×128):
- Excellent daylight readability
- Transflective LCD with anti-glare
- Software controlled RGB backlighting
- Four-level grayscale graphics

Custom Options Available:
- Keypad backlight color, key colors, and legends
- Icons/screens pre-loaded

System Interface:
- One CAN bus port
- Two 200 mA outputs (standard option)
- Three discrete inputs (standard option
- One RS-485 serial port (custom option)

Styled to sit next to Grayhill's 3KG1 Keypad

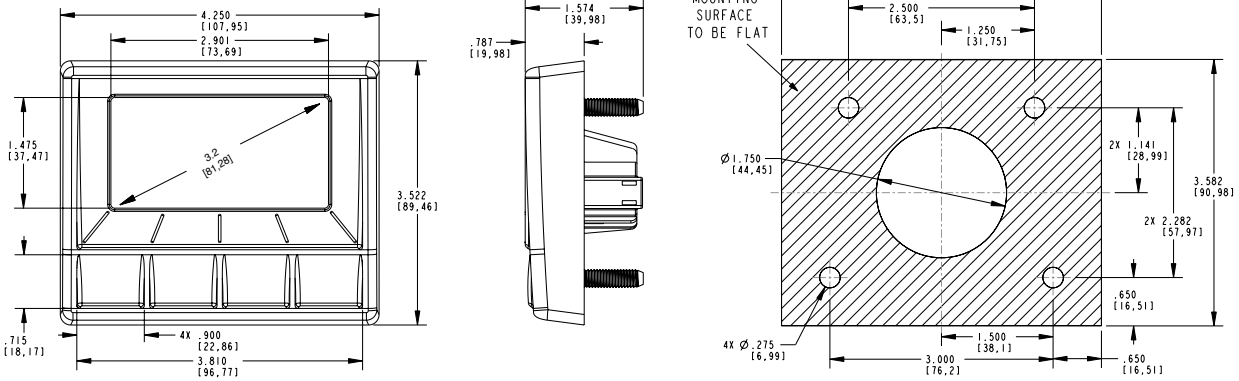
YOUR EXPERTS IN CAB CONTROLS

Grayhill specializes in the design, development, and production of human interface controls, including:
– Cab user interface design – Customized control panels – CAN bus interface devices

The 3D32 MicroDisplay makes it easy to create screens with custom graphics, text and even gauges that automatically adjust based on J1939 values. Due to its innovative design, native coding is not required for custom user interfaces. Screens and graphic objects are created with the included PC software tool and stored in the on-board flash memory.

When in use, the MicroDisplay can be controlled two different ways. First, a vehicle's ECU (Electrical Control Unit) can send and receive commands to control the display. Second, with the new Menu Object and Screen List Object the display can be programmed to provide stand-alone functionality. The menu object allows users to enter and navigate a menu using the menu key. The Screen List Object allows users to quickly navigate through favorite screens (objects) by pressing one of the right and left arrow buttons.

DIMENSIONS in inches [and millimeters]



MOUNTING INFO

Use M6 Nut (1 mm pitch)
Max Torque 25 in-lbs

SPECIFICATIONS

Electrical Performance Specifications

Maximum Load	ANSI/ASAE EP455 5.1.1	Level 2
Jump Start Voltage	EP455 5.10.2	36 V for 60 minutes; -36 V for 60 minutes
Short Circuit Protection	EP455 5.10.4	36 V
Reverse Polarity Protection	EP455 5.10.3	-36 V
Starting Profile	ISO 16750-2	Level II code C, Level IV code A
Battery-Less Operation	ANSI/ASAE EP455 5.11.3	Level 2
Load Dump	ISO 7637-2 Test Pulse 5b	Us* = 60 V
Switching Spikes	ISO 7637-2 Test Pulse 3a and 3b	
Wire Harness Inductance	ISO 7637-2 Test Pulse 2a and 2b	
Wire Harness Inductance-Switching	ISO 7637-3 Test Pulse a and b	
Inductive Load Pulse	ANSI/ASAE EP455 5.11.4	
Mutual Coupling	ANSI/ASAE EP455 5.11.6 Level 2	
Alternator Field Decay	ANSI/ASAE EP455 5.11.2	

Electromagnetic Compatibility Specifications

ESD	ANSI/ASAE EP455 5.12	Level 1 ± 25 KV
Radiated Immunity	EP455 5.16	Level 1
Conducted Emissions	SAE J1113-41	Level 4
Radiated Emissions	ISO14982	

CE Compliance

EMC	EN 13309:2010	ESA

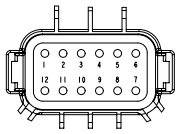
Environmental Specifications

Operating temperature	ANSI/ASAE EP455 5.1.1	Level 2: -50 °C to +85 °C w/ optional heater; -25 °C to +85 °C without heater
Storage Temperature	ANSI/ASAE EP455 5.1.2	Level 2: -50 °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 hr at extremes)
Altitude (Barometric Pressure)	ANSI/ASAE EP455 5.2	101.3 kPa to 18.6 kPa
Sand and Dust	SAE J1455	
Solar Radiation	ISO 4892-2	Method B
Wash Down	ANSI/ASAE EP455 5.6	Level 2
Humidity	ANSI/ASAE EP455 5.13	96% humidity at 35 °C for 240 hrs
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 hrs
Chemical Resistance	ISO 16750-5 EP 455 5.8.2	
Ingress Protection	IP67	With mating connector

Mechanical Performance

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

REAR CONNECTOR



Mating Connector:
DEUTSCH DT06-12SA

PINOUT

Pin	Function	Pin	Function	Pin	Function
1	VIN Positive	**2**	V Return	**3**	RS-485 +
4	RS-485 -	**5**	Digital In 1	**6**	Digital In 2
7	Digital In 3	**8**	Digital Out 1	**9**	Digital Out 1
10	CAN Shield	**11**	CAN HI	**12**	CAN LOW

ORDERING INFORMATION

Contact Grayhill for custom options.

Part Number	Description
3D32XK-200	MicroDisplay with CAN, I/O
3D32HK-200	MicroDisplay with CAN, I/O and heater
3D32XKR-200	MicroDisplay with CAN
3D32HKR-200	MicroDisplay with CAN and heater
3D32CABLE-1	MicroDisplay Programming Cable with Power Supply

Specifications are subject to change.