3D35 3.5-INCH DISPLAY

Versatile CAN-based Display for Off-Highway Vehicles

– Easy application creation and integration with Touch GFX

– Up to 2 CAN bus ports (FDCan capable)

– Powerful processor with sub-second boot time

– Scratch-resistant/anti-glare cover glass is optically bonded to LCD for superior mechanical and visual performance

– Bright, 1000-nit display is backlit and provides high-contrast text and full-color graphics for excellent sunlight readability

– Convenient flush mounting provides a modern look and feel to seamlessly blend with vehicle cab design

– Armrest, A-post, and dashboard mounting

– Rugged design for extreme environments

– Functions as an engine monitor or input device

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

Grayhill, Inc.   561 West Hillgrove Avenue • La Grange, Illinois 60525 USA   (+1) 708-354-1040   grayhill.com   Series 3D35   Rev. 03/2024

Specifications are subject to change.

VERSATILE DISPLAY.
MANY FEATURES.

Bright.
This 3.5-inch backlit WVGA LCD (480×320) is very bright (1000 nits) providing good daylight readability. It has software controlled LED backlighting and 18 bit color.

Adaptable.
Designed for integration into off-highway vehicles. It functions in 12V/24V operation and is sealed against the ingress of liquids and dust.

Rugged.
The protective cover lens is scratch resistant glass, not plastic. Optical bonding of the cover glass improves impact resistance.

Powerful.
The powerful embedded computer can monitor and display many events simultaneously:
– 550MHz
– 16MB RAM
– 32MB Flash

Adjustable.
There are many system interface options:
– Up to two CAN bus ports
– Up to three analog inputs
– Up to three digital inputs
– Up to two digital outputs

Useful.
Ideal for agriculture and construction vehicle applications, including virtual gauges, diagnostic menus, engine monitor, operator input, fault indicators and service reminders.

Readable.
Optically bonding the display and cover glass reduces reflections. An anti-glare etching further improves readability in bright sunlight.

Easy to Program.
PC-based configuration tools makes application development fast and easy. Add drag and drop graphics, bitmaps, and text with the click of a mouse.

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VERSATILE DISPLAY.
ALL THE SPECIFICATIONS.

Display: 3.5" color transmissive TFT LCD, IPS wide viewing angle

Resolution: 480×320 pixels, 16 bit color

Aspect ratio: 3:2

Backlighting: LED, 1000 cd/m² or nits

Microprocessor: STM32H730, 550MHZ

Flash Memory: 32MB

RAM: 16MB

Real Time Clock: Internal non-rechargeable battery backup

CAN: (2) CAN 2.0 B

Inputs: (3) 0-32 VDC discrete digital

Outputs: (2) digital 200 mA switched high side

Analog: (3) 0-36V

Power Specifications

Operating Voltage	8VDC to 32VDC
Power Consumption	3 Watts (typical)

Environmental Specifications

Operating temperature	ANSI/ASAE EP455 5.1.1	-30°C to +75°C
Storage Temperature	ANSI/ASAE EP455 5.1.2	-40°C to +85°C
Thermal Shock	ANSI/ASAE EP455 5.1.3	-40°C to 65°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	SAE J1455	
Solar Radiation	ISO 4892-2	Method B
Wash Down	IPX6	with mating connector installed
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	
Ingress Protection	IPX7 front and rear	with mating connector installed

Electrical Performance Specifications

Maximum load	ANSI/ASAE EP455 5.1.1	T(min)= -40C; T(max) = +65C
Jump start voltage	EP455 5.10.2	36V for 5 minutes; -36V for 5 minutes
Short circuit protection	EP455 5.10.4	36V
Reverse polarity protection	EP455 5.10.3	-36V
Starting profile	ISO 16750-2:2006-08-01	Code C for 12V, Code E for 24V
Battery-less operation	ANSI/ASAE EP455 5.11.3	Level 1
Load dump	ISO 7637-2:2004 Test Pulse 5a	Level 4
Switching spikes	ISO 7637-2:2004	Level 4
Alternator field decay	ANSI/ASAE EP455 5.11.2	

Mechanical Performance

Vibration, Random	ANSI/ASAE EP455 5.15.1	2h each axis 50Hz to 2000Hz
Vibration, Sinusoidal	ANSI/ASAE EP455 5.15.2	A logarithmic sweep from 10Hz to 2000Hz to 10Hz over a period of 20 minutes for 4 hours in each axis
Shock	ANSI/ASAE EP455 5.14	11ms half sine pulse of 490 m/s2 in 3 axis
Drop	ANSI/ASAE EP455 5.14.2 Level 1	400 mm onto a hardwood benchtop on all practical edges

Ce Compliance

EMC	EN 13309:2010	ESA

Electromagnetic Compatibility Specifications

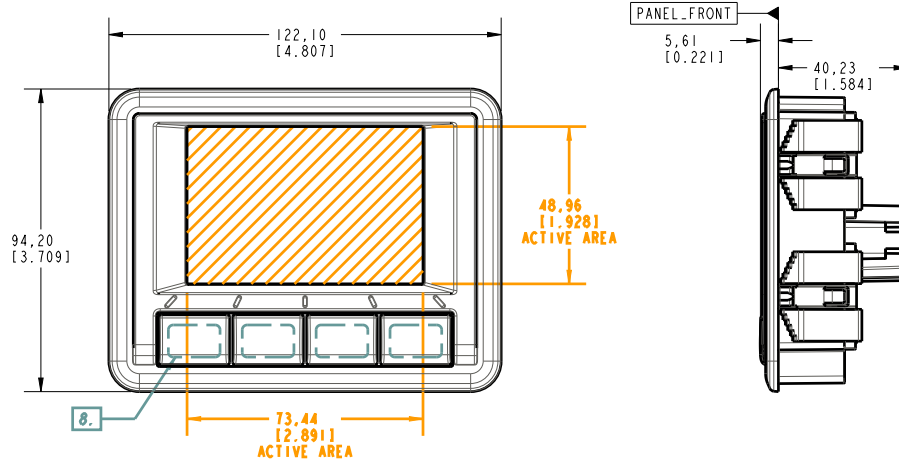|		
ESD	ANSI/ASAE EP455 5.12	Level 1 (Handling), level 2 (Powered)
Radiated Immunity	EP455 5.16	Level 1
Conducted emissions	CISPR25	Level 3
Radiated emissions	ISO14982	

Software Development Tools

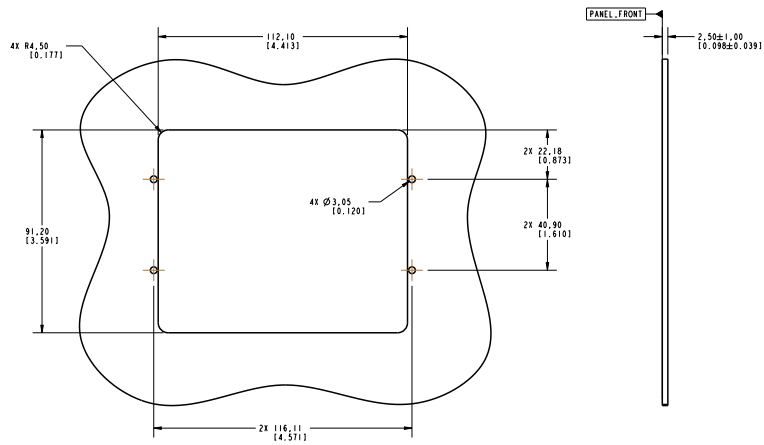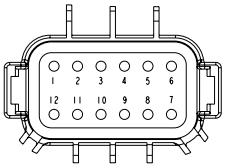|	
TouchGFX	Drag and drop application development. C language backend logic and functions.

Easily create custom graphic icons, text boxes and active gauge elements that can monitor CAN bus parameters such as J1939.

– Applications can be developed in TouchGFX.
– A development kit is offered to provide the hardware and software required to set up a programmer's workstation for use with the device.

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DIMENSIONS in mm

122,10 [4.807]
94,20 [3.709]
48,96 [1.928] ACTIVE AREA
73,44 [2.891] ACTIVE AREA
8.

PANEL_FRONT
5,61 [0.221]
40,23 [1.584]

RECOMMENDED PANEL CUT OUT

Tolerances for this sheet are ±0.50 [0.020].

4X R4,50 [0.177]
112,10 [4.413]
91,20 [3.591]
2X 22,18 [0.873]
4X Ø3,05 [0.120]
2X 40,90 [1.610]
2X 116,11 [4.571]

PANEL_FRONT
2,50±1,00 [0.098±0.039]

REAR CONNECTOR

Mating Connector: DEUTSCH DT06-12SA

PINOUT

Pin	Function	Pin	Function	Pin	Function	Pin	Function	Pin	Function	Pin	Function
1	VBat +	2	VBat return	3	CAN2HI	4	CAN2LO	5	IN1	6	IN2
7	IN3	8	OUT1	9	OUT2	10	ANALOG GND	11	CAN1HI	12	CAN1LO

VERSATILE DISPLAY. ORDER INFORMATION.

ITEM	CAN1	CAN2	RTC	DIG IN / ANALOG IN	DIG OUT	SOFTWARE DEV	IP67
3D35XK-100	Y	Y	Y	3	2	N	Y
3D35XK-101D	Y	Y	Y	3	2	Y	N
3D35DEV-100	Development Kit: 3D35XK-101D display with 3DXX1314-1 Power/CAN cable						

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