

## VFX72m Electronic Programmable Display

### Programmed with Eaton Pro-FX™ Control Software

32-bit Processor, 7" WVQA Sunlight Viewable Display

The high performance VFX72m display is designed to provide a touch-screen based operator interface for on and off-highway mobile applications. This HMI can accept up to 3 video inputs, features a powerful processor, bright sunlight viewable optically bonded LCD assembly, configurable CAN channels, and flexible I/O to meet the needs of a variety of demanding applications.



#### Technical Data

##### Functional Specification - Physical & Environmental

<b>Dimensions</b>	10.27 x 5.67" x 2.512"
<b>Weight</b>	.96 kg
<b>Case Material</b>	Polycarbonate back case
<b>Storage Temperature Range</b>	-40°C to +85°C
<b>Operating Temperature Range</b>	-40°C to +85°C
<b>Heater</b>	Standard
<b>IP Rating - Front</b>	IP66, IP67
<b>IP Rating - Back</b>	IP66, IP67

##### Power Supply

<b>Supply Voltage</b>	6-36 VDC
<b>Peak Supply Voltage</b>	36 VDC
<b>Max Power Consumption</b>	10 W
<b>Max Power Consumption with Heater Option</b>	22 W
<b>Max Sleep Current</b>	400 mA
<b>Ignition Pin (K15)</b>	Ignition pin will put the unit in 'sleep' mode when it is powered off.



*Powering Business Worldwide*

# Technical Data

## CPU

<b>CPU Type</b>	Freescall i.MX357
<b>Frequency</b>	532 MHz
<b>Bit Width</b>	32 bits
<b>Operating System</b>	Linux

## Memory

<b>RAM</b>	128 MB DDR2
<b>Data Memory (RAM retain)</b>	1 MB
<b>Flash (ROM program &amp; data combined)</b>	2 GB

## Standards

<b>Vibration</b>	7.86 G RMS (5-2000 Hz) SAE J1455 Section 4.9.4.1
<b>Shock</b>	50g - SAE J1455 Section 4.10.4
<b>Radiated Immunity</b>	SAE J1113-21 (150 V/m), SAE J1113-26 (15 kV/m), EN61000-4-3 (10 V/m)
<b>Radiated Emission</b>	SAE J1113-41 (Class 4), CISPR 11 Class B/EN60945 Hybrid
<b>Conducted Immunity</b>	SAE J1113-2 (3.0 Vp-p), SAE J1113-4 (200 mA), SAE J1113-11 (Level 4), SAE J1113-12 (Level 4), EN61000-4-4, EN61000-4-5, EN60945 Sec 10.3 (3 V/10V RMS)

## Certifications

### CE Mark

## Graphical Interface

<b>Display Type</b>	Bonded, color transmissive TFT LCD
<b>LCD Size</b>	7"
<b>Resolution</b>	800 x 480, WQVGA
<b>Color Format Supported</b>	16-bit color
<b>Aspect Ratio</b>	16:9
<b>Orientation</b>	Landscape
<b>Display Back Light</b>	LED, >1000 cd/m <sup>2</sup> (50,000 hr lifetime)
<b>Sunlight Viewability</b>	Direct sunlight

## Touch Interface (Optional feature: not included on all models)

<b>Touch screen technology</b>	Projected capacitive
--------------------------------	----------------------

## Video Interface (Optional feature: not included on all models)

<b>Video Type</b>	3 NTSC/PAL
-------------------	------------

## Boot-up

<b>Boot-up Screen</b>	Customizable
<b>Boot (first powered-on):</b>	TYP. ~ 9 sec. to logo, 17 sec. to first screen
<b>Wake (ignition switched):</b>	TYP. ~1 sec.

# Technical Data

## Communications

### CAN Interface 1

<b>CAN Specification</b>	2.0A, 2.0B
<b>Baud Rates</b>	Configurable 125 kb/s, 250 kb/s, 500 kb/s, 1 Mb/s
<b>Protocols</b>	J1939 and CANopen master

### CAN Interface 2

<b>CAN Specification</b>	2.0A, 2.0B
<b>Baud Rates</b>	Configurable 125 kb/s, 250 kb/s, 500 kb/s, 1 Mb/s
<b>Protocols</b>	J1939 and CANopen master

### USB Interface

<b>USB Specification</b>	USB 2.0
<b>Baud Rate</b>	Supports USB full speed at 6 Mbit/s

Note: USB interface is not protected against battery level faults.

### Real Time Clock

<b>Estimated Battery Life</b>	Minimum 9.5 yr (display never powered)
<b>Rechargeable</b>	No, Lithium (non-replaceable)

### Keypads

<b>Number of Buttons</b>	14
<b>Button Style</b>	Tactile feedback
<b>Button Backlight</b>	Yes

### Digital Inputs x 5

<b>Type</b>	High Side in
<b>Input Impedance</b>	10 kOhm
<b>Scan Rate</b>	10 Hz (100 ms)
<b>Switch-on Level</b>	4.01 V
<b>Switch-off Level</b>	1.04 V
<b>Short Circuit Protection</b>	28 V or Ground

### Analog Inputs x 3 (Software configurable)

<b>Resolution</b>	10 bits
<b>Accuracy</b>	+/- 1% FS
<b>Measuring Ranges</b>	Digital, 0-5 V, 4-20 mA, Resistive
<b>Scan Rate</b>	10 Hz (100 ms)

### Digital Input

<b>Type</b>	High Side in
<b>Input Impedance</b>	10 kOhm
<b>Switch-on Level</b>	4.01 V
<b>Switch-off Level</b>	1.04 V

### Voltage Input - 0 - 5V

<b>Input Impedance</b>	100 Ohm
------------------------	---------

### Current Input - 0 - 24 mA

<b>Input Impedance</b>	200 Ohm
------------------------	---------

# Technical Data

## Resistive (0-5V)

<b>Pull-up Resistance</b>	400 Ohm
---------------------------	---------

## Frequency Input

<b>Type</b>	3.6 VAC – 120 VAC
<b>Input Impedance</b>	14.02 kOhm
<b>Input Frequency</b>	2 Hz - 10 kHz
<b>Switch-on Level</b>	2.10 V
<b>Switch-off Level</b>	1.17 V

## Outputs

### Digital Output – 500 mA

<b>Type</b>	Low Side
<b>Amperage</b>	500 mA Max.
<b>Protection</b>	Short circuit protection

### Frequency Output

<b>Type</b>	Square wave
<b>Duty Cycle</b>	50%, non-adjustable
<b>Frequency Range</b>	2 Hz - 3 kHz

## Connections

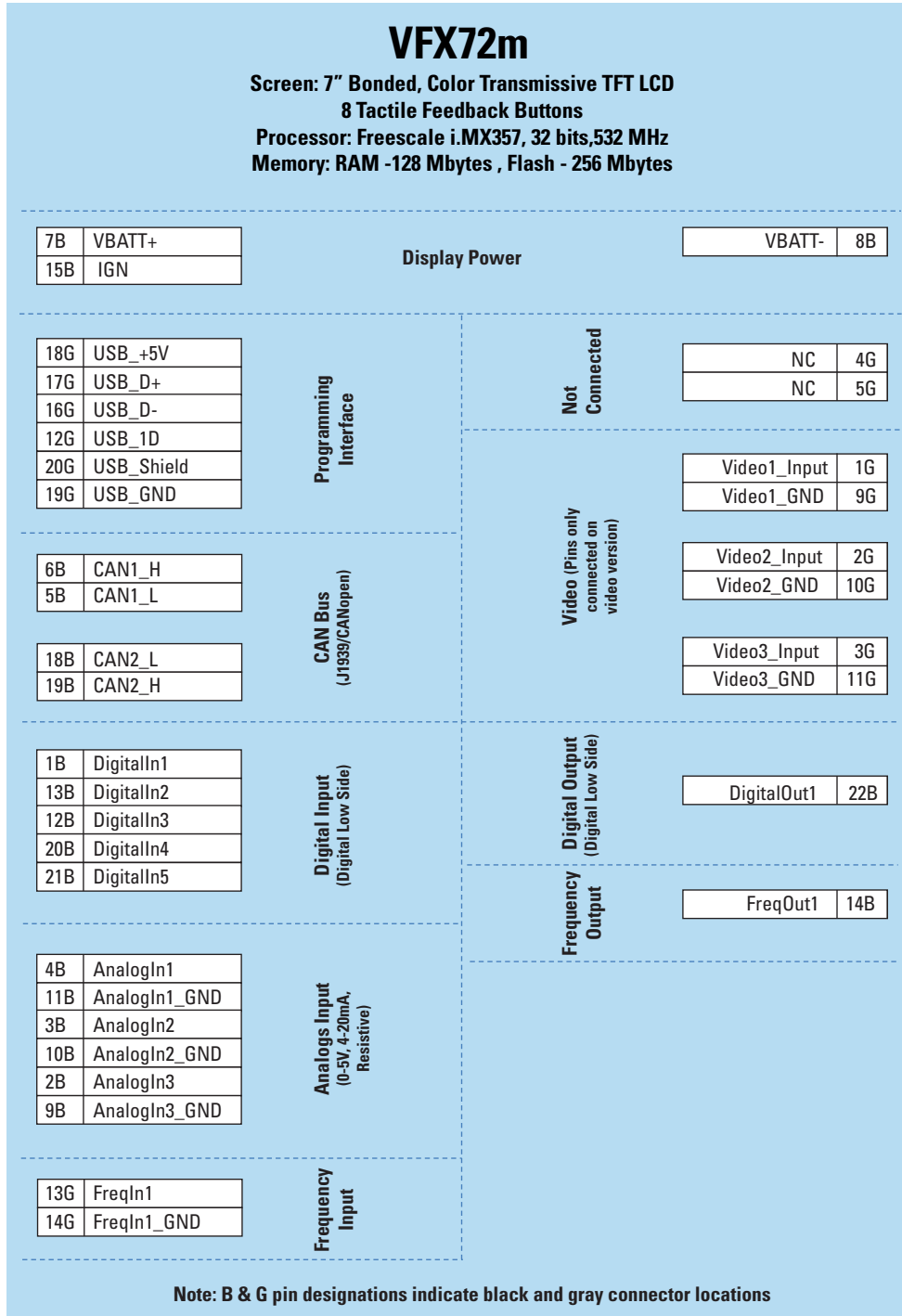
### Connector – 2 x 23 pin Ampseal

<b>Manufacturer</b>	AMP
<b>Model</b>	770680-1 (Black), 770680-4 (Gray)
<b>Contact Surface</b>	Nickel plated

### Tooling

<b>Manufacturer</b>	AMP
<b>Hand Tool Part Number</b>	58529-1
<b>Die Part Number</b>	58529-2

# Block Diagram



# Connector Pins

## Connector 1

Type	Deutsch	AMP770680-1 (Black)
<b>Pin</b>		
1	Digital Input 1	
2	Analog Input 3	
3	Analog Input 2	
4	Analog Input 1	
5	CAN1 L	
6	CAN1 H	
7	Battery	
8	Ground	
9	Analog Input 3 Ground	
10	Analog Input 2 Ground	
11	Analog Input 1 Ground	
12	Digital Input 3	
13	Digital Input 2	
14	Analog gauge output 1	
15	Ignition In	
16	Not Connected	
17	Not Connected	
18	CAN2 L	
19	CAN2 H	
20	Digital Input 4	
21	Digital Input 5	
22	Digital Output	
23	Not Connected	

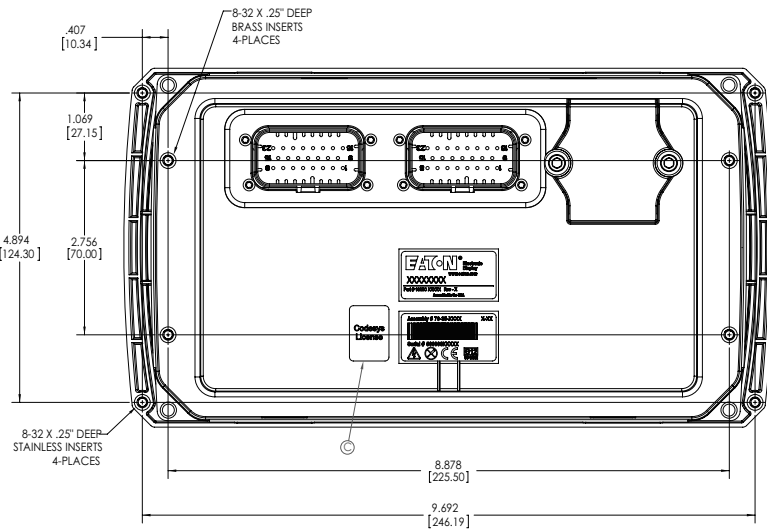
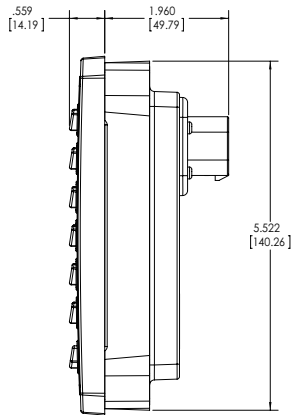
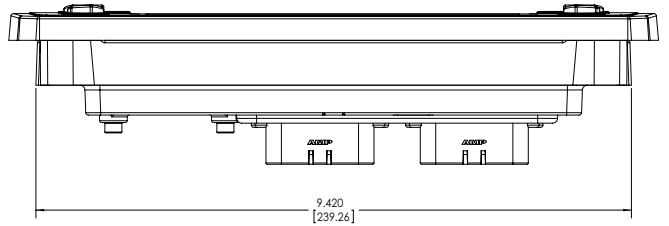
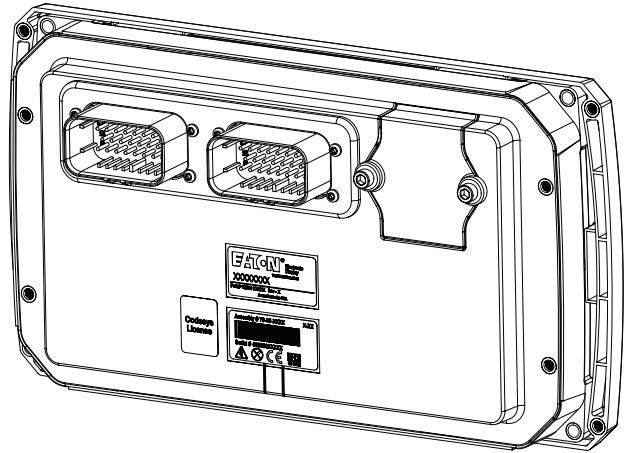
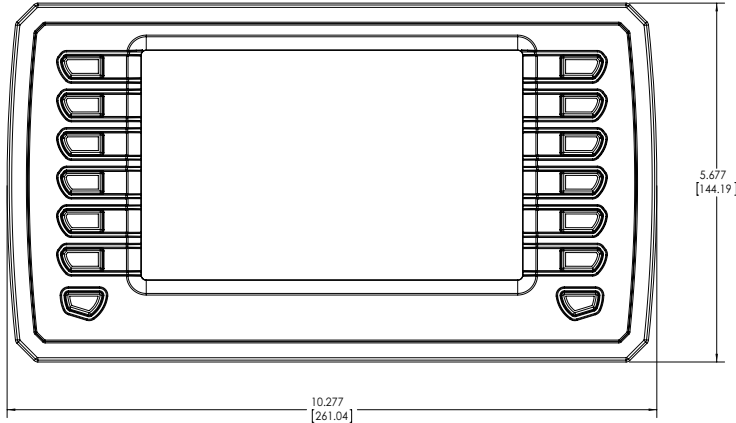
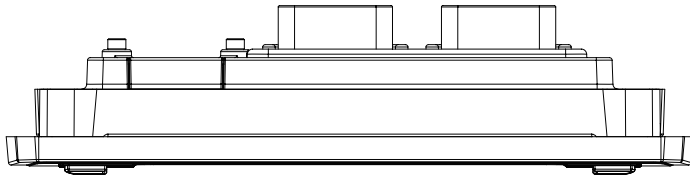
\* Not connected on VFX70m

## Connector 2

Type	Deutsch	AMP770680-4 (Grey)
<b>Pin</b>		
1	Video Input 1*	
2	Video Input 2*	
3	Video Input 3*	
4	Not Connected	
5	Not Connected	
6	Not Connected	
7	Not Connected	
8	Not Connected	
9	Video Input 1 Ground*	
10	Video Input 2 Ground*	
11	Video Input 3 Ground*	
12	USB ID	
13	Frequency Input	
14	Frequency Return	
15	Not Connected	
16	USB D-	
17	USB D+	
18	USB 5V	
19	USB Ground	
20	USB Shield	
21	Not Connected	
22	Not Connected	
23	Not Connected	

# Mounting

## Configurations - Front, Back and Gimble



Eaton  
Hydraulics Group USA  
14615 Lone Oak Road  
Eden Prairie, MN 55344  
USA  
Tel: 952-937-9800  
Fax: 952-294-7722  
[www.eaton.com/hydraulics](http://www.eaton.com/hydraulics)

Eaton  
Hydraulics Group Europe  
Route de la Longeraie 7  
1110 Morges  
Switzerland  
Tel: +41 (0) 21 811 4600  
Fax: +41 (0) 21 811 4601

Eaton  
Hydraulics Group Asia Pacific  
Eaton Building  
No.7 Lane 280 Linhong Road  
Changning District,  
Shanghai 200335  
China  
Tel: (+86 21) 5200 0099  
Fax: (+86 21) 2230 7240



*Powering Business Worldwide*

© 2014 Eaton  
All Rights Reserved  
Printed in USA  
Document No. E-ELDI-TT005-E  
October 2014