Document Number:
XE-WLA2PM-R0A

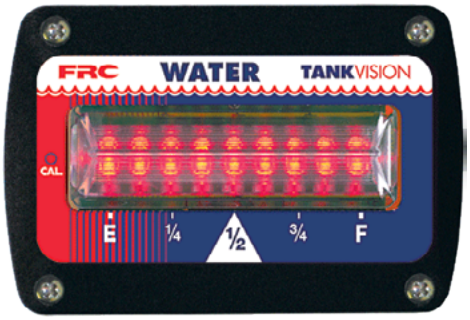
FRC
A Safe Fleet Brand

TANKVISION

TANK INDICATOR
WLA200 WATER TANKS
WLA260 CLASS A FOAM CONCENTRATE TANKS
WLA270 CLASS B FOAM CONCENTRATE TANKS

PRIMARY and REMOTE DISPLAYS

MAXVISION LED TANK DISPLAY



HORIZONTAL OPTION

CAB MINIATURES

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INTRODUCTION

Overview

The FRC TankVision indicator shows the actual volume of liquid in a tank. The liquid in the tank exerts a pressure that is measured by a sensor. As the amount of liquid changes, the pressure it exerts on the sensor changes proportionally. The pressure change is used to calculate the exact volume of liquid in the tank. The TankVision can be calibration to accurately display the volume of liquid in tanks of all shapes and sizes.

The display module is able to communicate with other display modules over the FRC datalink. This allows for one master display module to control multiple displays. The module also provides an output for cab miniature displays, remote light drivers, and a low level warning buzzer.

The TankVision indicator is a unique design made up of an extended wide view lens with nine super bright LEDs mounted behind it. This allows the display to be visible and clearly read from all line-of-sight angles for a full 180 degrees.

The pressure/vacuum foam tank vent is supplied for use on foam concentrate storage tanks. These tanks should remain closed to the atmosphere. The FRC vent enables the tank to compensate for changes in pressure or vacuum due to thermal expansion, filling, or when withdrawing foam concentrate from the tank.

The MaxVision LED tank display provides a remote, wide angle view of how much is in the tank in 1/8 tank level increments.

The remote light driver provides the option to have four 60 watt remote lights controlled by the TankVision to show full, 3/4, 1/2, and 1/4 tank.

Features

Self-Calibrating for Any Shape or Size Tank

Visual Warnings At 1/4 and Almost Empty Tank Conditions

Unlimited Remote Displays

Pressure/Vacuum Foam Tank Vent for Sealed Foam Tanks

Color Coded for Water, Class A, or Class B Foam

Self-Diagnostic Capabilities

Cab Miniature Display (Optional)

MaxVision LED Tank Display (Optional)

Remote Light Driver (Optional)

Low Level Warning Buzzer (Optional)

Tank Thin Wall Adapter Kit (Optional)

Output for Foam Fill and Auto Tank Systems (Factory Programmed)

Specifications

Display Module

Supply Voltage:	9 - 30 VDC
Supply Current:	0.25 Amp Maximum
Dimensions:	4 3/8 by 3 Inches
Housing:	Waterproof Cast Aluminum
Indicators:	9 Super Bright LEDs
Viewing Angle:	180°

Cab Miniature Display

Supply Voltage:	9 - 30 VDC
Supply Current:	0.15 Amp Maximum
Dimensions:	2 1/4 by 1 1/2 Inches

Pressure Sensor

Housing:	Stainless Steel with 1/4-18 NPT for Mounting
Sensor:	Ceramic Diaphragm
Pressure Range:	0 - 5 PSI (Maximum Tank Height - 10 Feet)
Excitation Voltage:	5 VDC

Pressure/Vacuum Foam Tank Vent

Material:	PVC and Aluminum with Delrin Valves
Relief Pressure:	±0.01 PSI
Maximum Flow Rate:	Compensates 100% for Concentrate Flow Rates Below 60 GPM

MaxVision LED Tank Display

Supply Voltage:	12/24 VDC
Supply Current:	1 Amp Maximum at 12 VDC
Dimensions:	14 3/8 by 1 7/8 Inches
Indicators:	96 Super Bright LEDs

Remote Light Driver

Supply Voltage:	9 - 30 VDC
Supply Current:	0.1 Amp Maximum
Switch:	Solid State
Switching Voltage:	9 - 30 VDC
Switching Current:	20 AMPS Maximum @ 12 VDC 10 AMPS Maximum @ 24 VDC

GENERAL DESCRIPTION

Components

The TankVision consists of the following components:

Display Module

Cab Miniature Display (Optional)

Pressure Sensor

Pressure/Vacuum Relief Vent (Foam Tanks)

MaxVision LED Tank Display (Optional)

Remote Light Driver (Optional)

Buzzer (Optional)

Cables

Display Module

The tank display module is waterproof and has dimensions of 4.4 inches high by 3 inches wide. An output signal from a pressure sensor mounted on the tank is input to the primary display module. It is processed and the volume of liquid in the tank is shown on the 9 LED display. Outputs from the primary display module provide tank volume information to other displays and remote devices.

Non-standard primary displays are used for Foam Fill FFA100 and Auto Tank ATA400 systems. These require special programs for the correct controlling output on display connector pin 5.

Cab Miniature Display (Optional)

The cab miniature display has dimensions of 2.75 inches high by 1.5 inches wide. It provides the option of mounting a remote display in the cab that uses a minimum of panel space. An output signal from the primary display module is input to the cab miniature display and the volume of liquid in the tank is shown on the 5-LED display.

Pressure Sensor

The pressure sensor is mounted on a side of the tank near the bottom. It provides a signal that is proportional to the volume of liquid in the tank to the input of the primary display module. The electrical connector is waterproof and molded into the pressure sensor housing.

The standard pressure sensor is used on tanks between 1 and 10 feet in vertical height. For tanks taller than 10 feet contact FRC for options.

Pressure/Vacuum Foam Tank Vent

The pressure/vacuum foam tank vent is supplied for use on sealed foam tanks. The vent compensates for changes in tank pressure due to thermal expansion or when withdrawing foam concentrate from the tank. Internal passageways provide a path for air to move between the tank and a center cavity in the vent. These passageways are self-draining and designed to prevent splashing foam from entering the center cavity and clogging the pressure and vacuum valves. The pressure and vacuum valves are easily accessed and disassembled for periodic cleaning or inspections. (Refer to Maintenance section.)

Note: The vent can compensate for a maximum foam concentrate flow rate of 60 GPM. If the flow rate of foam concentrate from the tank will exceed 60 GPM, two (2) vents will be required.

MaxVision LED Tank Display (Optional)

The LED display is waterproof and has dimensions of 14 3/8 inches high by 1 7/8 inches wide by 7/8 inch deep. It has 96 RGB LEDs and built in LED drivers. A signal from the primary display module is output on a two wire datalink and input to the LED light to show the volume of liquid in the tank.

The display shows the level in 1/8 tank increments. It has a photo sensor that adjust brightness for day or night operations. The LEDs are programmable for two modes of display and ten brightness levels:

Ultra - All LEDs are one color and change at each 1/4 tank increment.

Typical - LEDs show four colors for 1/4 tank increments.

Remote Light Driver (Optional)

The remote light driver is waterproof and has dimensions of 4 inches high by 2.75 inches wide by 1 inch deep. An output signal from the primary display module is input to the remote light driver. This provides the option to power four (4) 60 watt remote lights that show the volume of liquid in the tank. The lights will show full, 3/4, 1/2, and 1/4 tank levels.

Buzzer (Optional)

The buzzer provides an audio alarm when the tank volume drops to 25%. The buzzer resets when the tank volume goes above 25%.

Note: When the TankVision primary is used to control a Foam Fill FFA100 or Auto Tank ATA400 system, pin 5 does not provide a ground for the buzzer. The primary display is programmed from the factory with a control output on display connector pin 5 for each of these special systems. These displays are not interchangeable.

INSTALLATION

The TankVision primary display module is connected to the pressure sensor and is the only module that needs to be calibrated.

Note: The calibration procedure needs to be performed every time a primary display module is installed.

Install Display Module

The full size display modules all have the same mounting dimensions. Standard display modules are interchangeable.

Note: It is recommended to mount the display at eye level.

1. Measure and mark mounting location for display module panel cutout and mounting screw holes. Make sure there is clearance behind the panel for the display and cables before cutting holes. Refer to Figure 1 for layout and dimensions.
2. Cut out a 4 by 2 1/8-inch hole and drill four (4) holes (clearance or tapped) for 6-32 mounting screws.
3. Place display module in position and secure with four (4) screws.
4. Connect the display module cables and wires. (Refer to Wiring Section.)

Install Cab Miniature Display

1. Measure and mark mounting location for cab miniature display mounting hole. Make sure there is clearance behind the panel before drilling hole. Refer to Figure 2 for layout and dimensions.
2. Drill a clearance hole for 3/8" threads.
3. Place cab miniature display in position and secure with nut.
4. Connect the cab miniature display wires. (Refer to Wiring Section.)

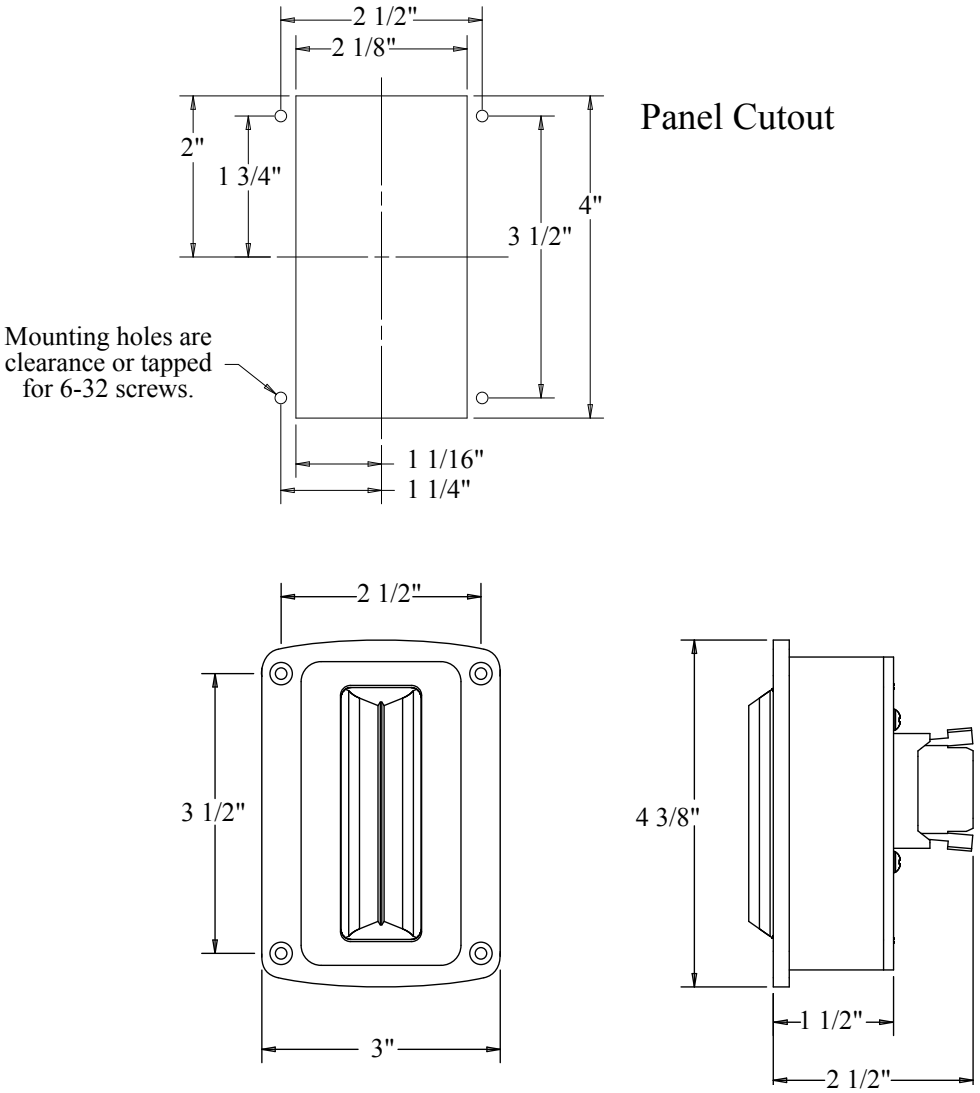


Figure 1. Display Module Mounting Dimensions

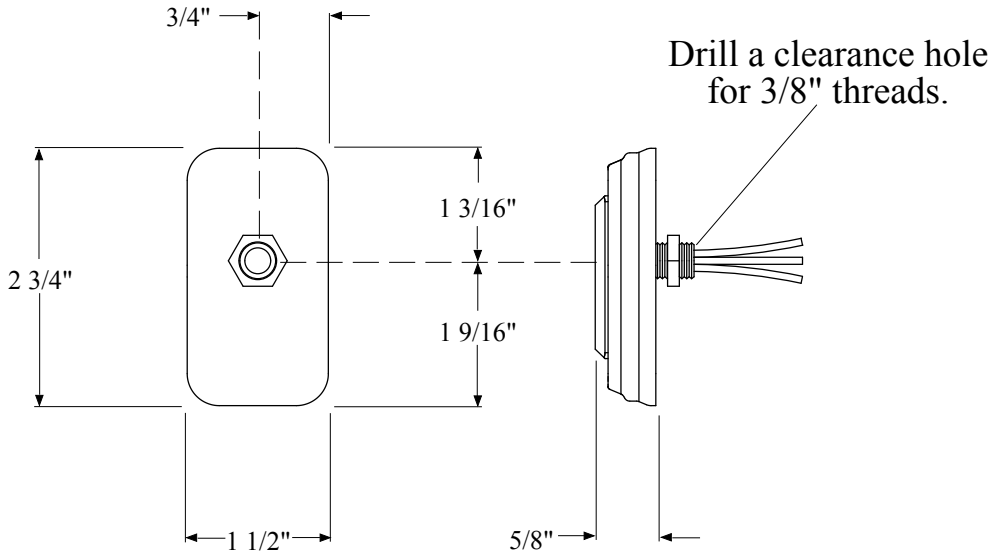


Figure 2. Cab Miniature Display Mounting Dimensions

Install Pressure Sensor

The pressure sensor is mounted on one of the tank sides approximately 2 inches from the bottom. If the tank has a vertical height greater than 10 feet contact FRC, a different sensor may be required.

Pressure sensors are interchangeable. It is recommended that the calibration procedure be performed if the pressure sensor is changed.

Note: When mounting the pressure sensor on a tank with thin walls, less than 3/8", it is recommended that the tank wall be reinforced at the sensor mounting location.

Pressure Sensor Installation

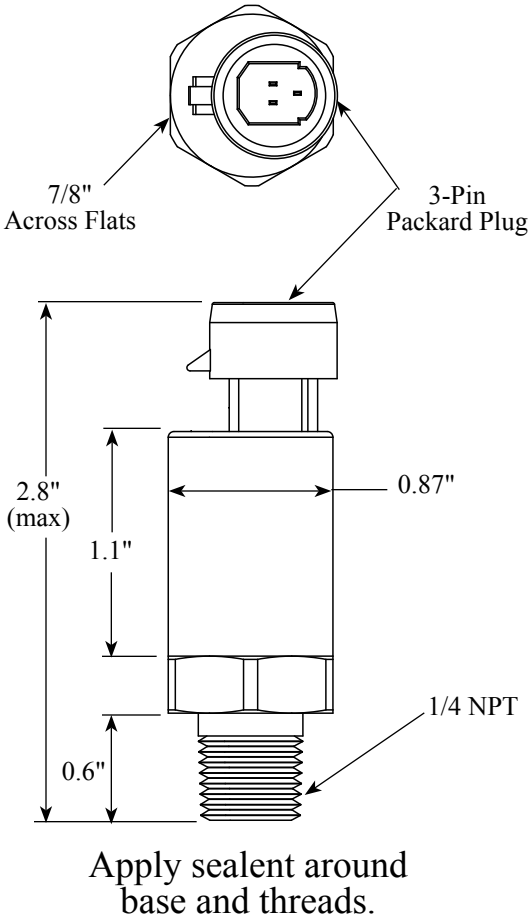
Note: Do not mount the sensor in the bottom of the tank. Sediment may collect in the port and cause sensor failure.

1. Measure and mark mounting location for sensor. (Mounting hole should be approximately 2" from bottom of tank.) Make sure there is clearance for sensor and cable before drilling hole. Refer to Figure 3 for dimensions.
2. Drill and tap a 1/4 NPT hole.
3. Apply sealant around base and threads of pressure sensor.
4. Screw sensor into hole.
5. Connect sensor cable. (Refer to Wiring Section.)

Thin Wall Adapter Installation

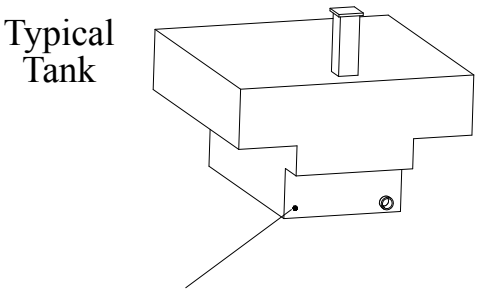
The thin wall adapter kit includes the adapter, two 10-24 x 5/8" screws, 5 minute epoxy, and a mixing stick.

1. Measure and mark mounting location for adapter. Make sure there is clearance for adapter, sensor, and cable before drilling hole. Refer to Figure 3 for dimensions.
2. Drill and tap a 1/2 NPS hole.
3. Screw the adapter into the hole.
4. Use the adapter as a template and drill and tap two 10-24 holes for two screws.
5. Back adapter out of hole and apply 5 minute epoxy to back of flange, on threads, and in two 10-32 through holes.
6. Screw adapter into hole and secure with two screws.
7. Allow the epoxy time to set.
8. Apply sealant around base and threads of pressure sensor and screw into adapter.
9. Connect sensor cable. (Refer to Wiring Section.)



Apply sealent around base and threads.

Mount sensor approximately 2" from bottom of tank.

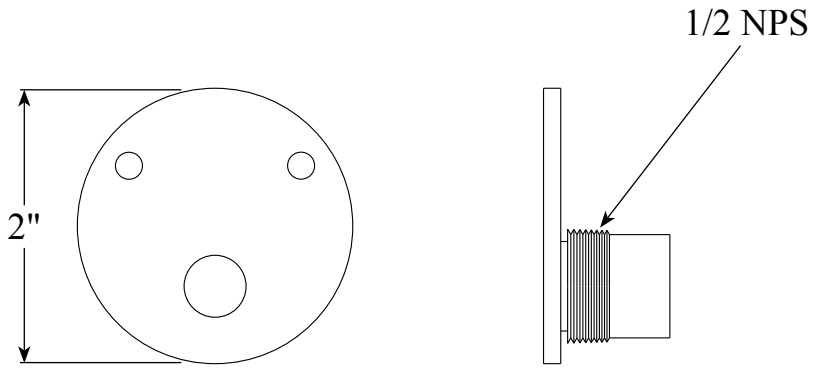


Typical Pressure Sensor Location

Note: Do not mount the sensor in the bottom of the tank. Sediment may collect in the port and cause sensor failure.

Note: The sensor can be mounted vertically on a 90° fitting in cold areas to help prevent water freezing in the sensor.

Thin Wall Adapter



Apply sealent around base and threads of sensor.

Apply epoxy around flange, threads, and screws.

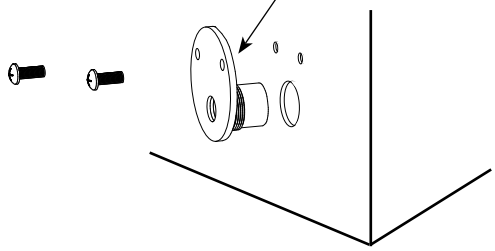


Figure 3. Pressure Sensor

Install Pressure/Vacuum Foam Tank Vent

A pressure/vacuum foam tank vent is supplied for use on sealed foam tanks. The recommended location to mount the vent is in the cover of the foam tank fill tower. If there is no fill tower, mount the vent at the highest point of the tank top so that it is not immersed in foam. For installations where clearance above the fill tower is limited, a 90° mounted vent is available.

Note: The vent can compensate for a maximum foam concentrate flow rate of 60 GPM. If the flow rate of foam concentrate from the tank will exceed 60 GPM, two (2) vents will be required.

Install Top Mounted Tank Vent

The top mounted tank vent is mounted in a vertical position through a 1 1/8-inch hole on the lid of the fill tower and is secured by a hand tightened nut.

Note: The tank vent must be in a vertical position and can not be immersed in foam.

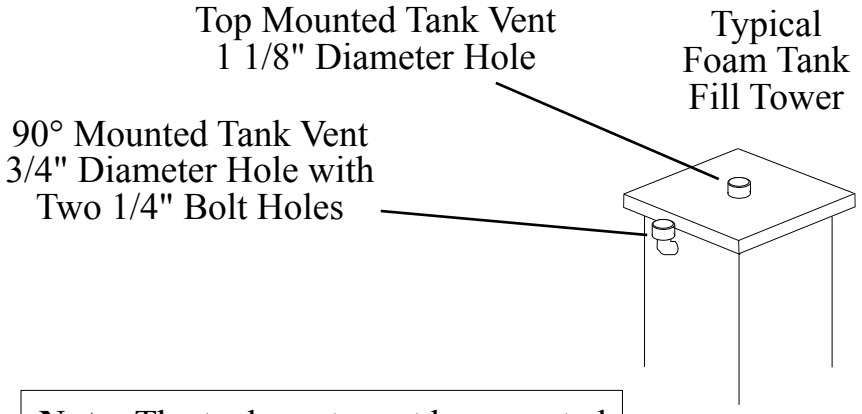
1. Measure and mark mounting location for vent. Make sure there is clearance for the valve before drilling hole. Refer to Figure 4 for dimensions.
2. Drill 1 1/8-inch diameter hole.
3. Insert vent into the hole with the gasket in place.
4. Screw on nut and hand tighten.

Install 90° Mounted Tank Vent

The 90° mounted tank vent is mounted on a vertical side of the fill tower. It must be located as close to the top of the fill tower as possible. The vent is held in place with two (2) 1/4-20 x 3-inch bolts, washers, and locknuts.

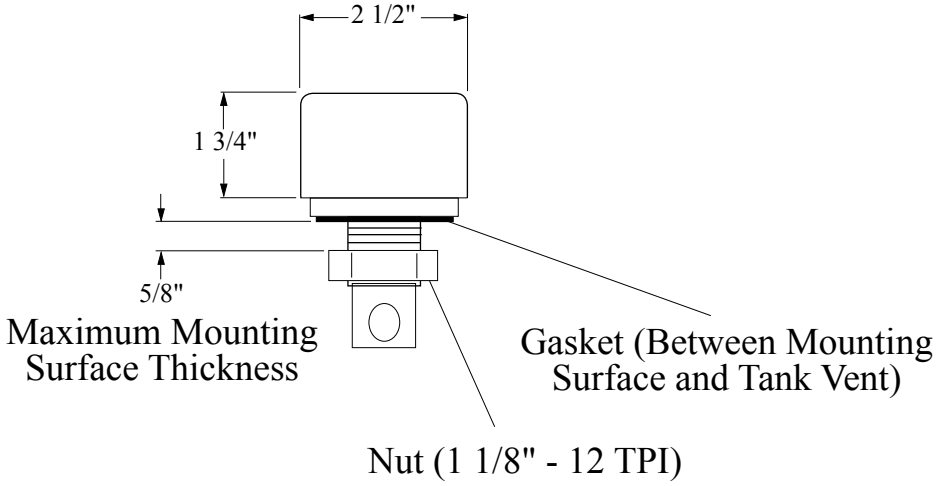
Note: The tank vent must be in a vertical position and can not be immersed in foam.

1. Measure and mark mounting location for vent. Make sure there is clearance for the valve before drilling holes. Refer to Figure 4 for dimensions.
2. Drill 3/4-inch diameter hole and two through holes for 1/4-20 bolts.
3. Apply sealant to mounting surfaces and bolt holes.
4. Secure vent in place with two bolts, washers, and locknuts.



Note: The tank vent must be mounted in a vertical position. The vent can not be immersed in foam. (If there is no fill tower, mount the vent at the highest point of the tank top so that it is not immersed in foam.)

Top Mounted Tank Vent



90° Mounted Tank Vent

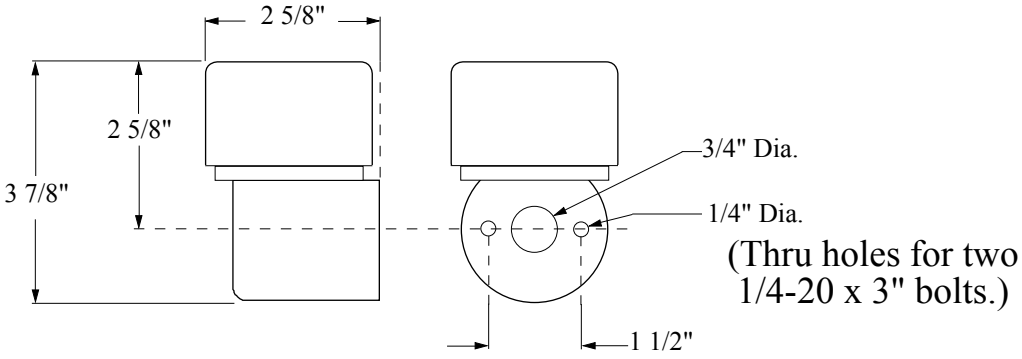


Figure 4. Pressure/Vacuum Foam Tank Vent

Install MaxVision LED Tank Display

The LED display is waterproof to allow for flexibility in the mounting location. Ensure that the light is mounted with the rear against a flat surface.

Mount the display so that the raised MaxVision logo on the lens and the drain notch on the rubber gasket are at the bottom and is mounted with the rear against a flat surface.

The wires can be run through any one of the three holes in the rubber gasket.

Note: Before drilling holes place the light in position to check for fit. Ensure that the display clears all obstructions.

1. Measure and mark the mounting hole locations and through hole for the wiring.
2. Drill the two (2) mounting holes for #10 screws and a wire feed thru hole. Any of the three locations (holes) in the rubber boot can be used for the wires.

Note: Ensure that the terminating resistor is installed on the datalink wires when required.

3. Connect the wiring and secure the light with two (2) screws. (Refer to Wiring Section.)

Terminating Resistor Notes

The datalink requires two terminating resistors, a TankVision display always has one.
One TankVision with one or two LED displays: Install resistor at farthest light.
Two TankVision displays: Do not install terminating resistor.
If the TankVision is used with a TurboFoam system: Do not install terminating resistor.

Program MaxVision LED Tank Display

The display can be programmed to have a solid color that changes at each 1/4 tank increment or to have four colors that show each 1/4 tank increment. It can also be programmed for day brightness and night brightness

Hold a magnet over the sensor for five seconds. Two middle rows of LEDs come on.

Swipe to select the program to be change, a row of LEDs come on with each swipe.

1 row on - change between solid color or multi color display.
2 rows on - set daytime brightness.
3 rows on - set nighttime brightness.

Wait 5 seconds to enter the program.

Swipe the magnet to change settings.

For #1 each swipe toggles between solid or multi color display.

For #2 and #3 each swipe changes the LEDs brightness;
Ten levels that are stepped through and then repeated.

Hold the magnet over the sensor for five seconds to load the new setting. The display blinks three times to confirm setting is loaded.

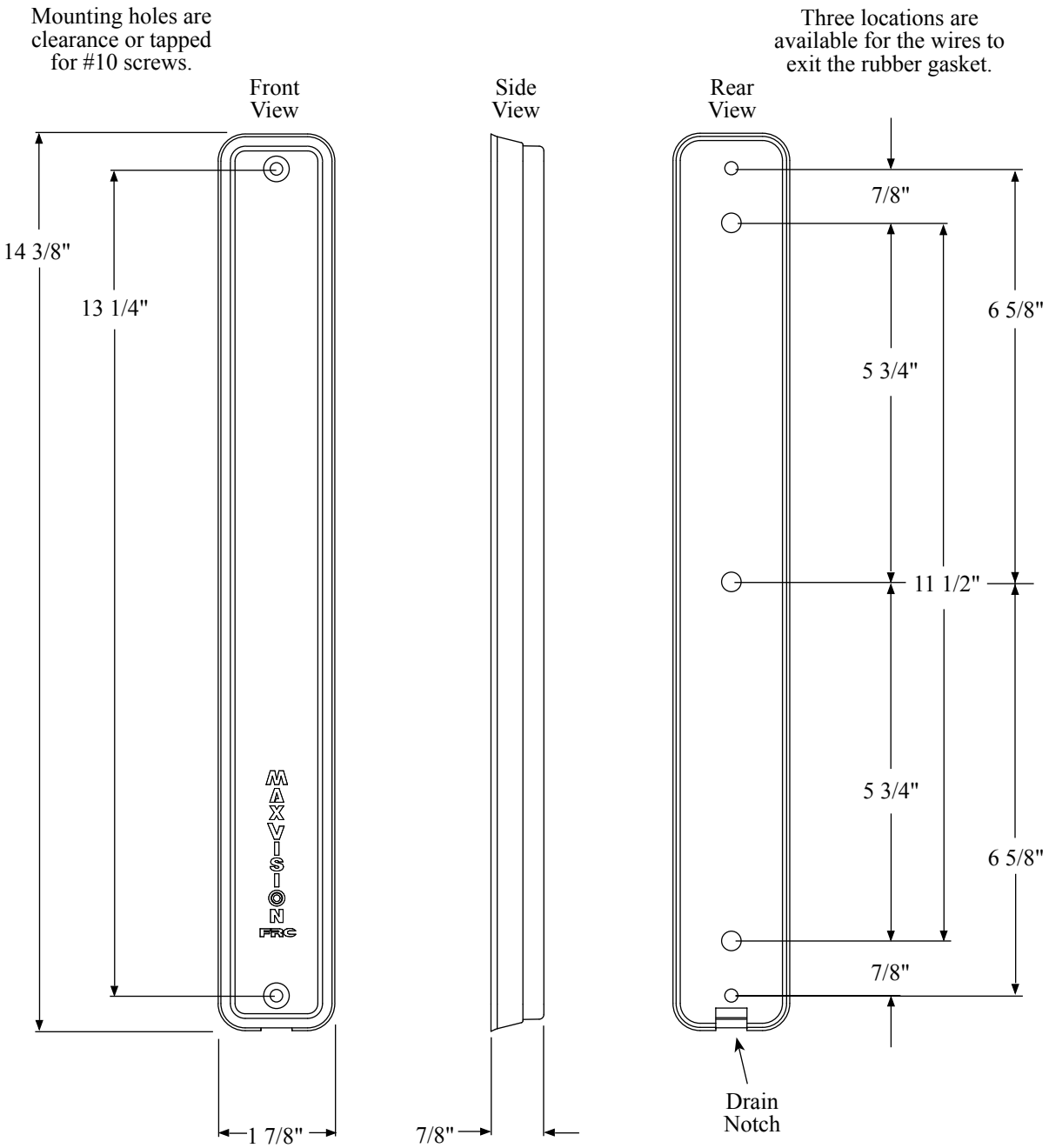


Figure 5. MaxVision LED Display Mounting Dimensions

Install Remote Light Driver

The remote light driver is water proof to allow for flexibility in the mounting location.

1. Measure and mark mounting location for light driver. Make sure there is clearance for driver and cable before drilling holes. Refer to Figure 5 for dimensions.
2. Drill and tap two 10-32 holes.
3. Secure remote light driver with two screws.
4. Connect cable and wires. (Refer to Wiring section.)

Install Buzzer

Install the buzzer close to the TankVision so the audible warning is easily associated with the TankVision. A cutout hole diameter of 1-1/4" is required. (Refer to the wiring section.)

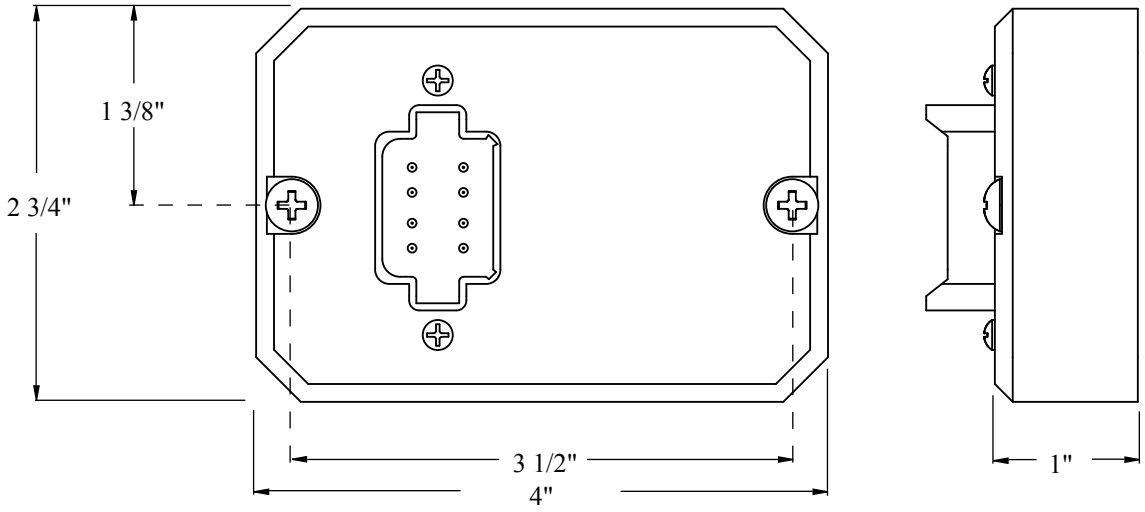


Figure 6. Remote Light Driver

No operator input is required for the TankVision to be operational. When power is on the display is operating. The signal from the pressure sensor is processed and the volume of liquid in the tank shows on the display.

Note: Calibrating the TankVision display to the tank is required before operations. (Refer to Calibration section.)

Primary Display Module

All 9 LEDs are on when the tank is full. Each LED goes off starting at the top and working down as the liquid in the tank decreases.

The bottom 2 LEDs flash when the tank is less than 1/4 full.

All 9 LEDs rapidly down-chase when the tank is almost empty.

Options

Remote Display Module

The remote display repeats exactly what is shown on the master display.

Cab Miniature Display

All 5 LEDs is on when the tank is full. The LEDs will show full, 3/4, 1/2, 1/4, and empty tank.

MaxVision LED Display

The LED display repeats exactly what is shown on the master display.

Remote Light Driver

When power is applied the remote light driver runs a lamp test function. The lamp test starts at the 1/4 light and cycles each remote light on and off. At the completion of the lamp test the remote light driver turns on the correct light(s) to show the tank water or foam volume.

All four lights are on when the tank is full. The top light goes off as the tank starts to empty (at 7/8 full the light is off). The three bottom lights are on to show that the tank is between less than full (approx. 7/8 tank) and 1/2 tank. The bottom two lights show 1/2 and 1/4 tank. The bottom light blinks when the tank volume goes less than 1/4 tank.

Buzzer

The buzzer sounds when the tank volume drops to 1/4 tank.

CALIBRATION

The TankVision has unique calibration programs that enable it to be used on tanks of all shapes and sizes.

Note: The standard pressure sensor is limited to a maximum tank height of ten feet.

Overview

Magnet Sensor

The calibration programs are accessed by activating the **CAL.** magnet sensor that is located at the bottom on the front of the display module. The sensor is activated by placing the north pole of a small magnet in close proximity of the sensor. (The sensor will not respond to the south pole of the magnet.) The magnet is then moved about 1-inch away, this will produce an electronic signal that is similar to a button being released. If the LEDs in the display do not change try moving the magnet further away from the sensor.

In these procedures the term 'swipe' will mean to move the magnet up to and then away from the magnetic sensor.

Non-Linear Calibration

The first program is a non-linear calibration procedure that can be used for any shape or size tank. This procedure must to be used for irregular shape tanks (e.g.: T-shape, oval, elliptical, tank with through hole, etc.). The program compares the pressure in the tank, as the tank fills at a steady rate, to time. This provides for very accurate displays.

Linear Calibration

The second program is a linear calibration procedure that can only be used when the tank volume is proportional to the height. This would include square or rectangular shape tanks with no irregularities. It is quick way of calibrating a tank but not as accurate as the non-linear procedure. The program compares a full tank to an empty tank, takes the difference and divides it into eight equal volume displays.

Full Tank Correction

This program is for use to fine tune the tank display after a non-linear or linear calibration procedure has been completed. It would only be needed in cases where one type of liquid is used for calibration when a different liquid would normally be in the tank. For example this would allow the basic calibration of a foam tank to be done using water and then the calibration would be fine tuned when the tank is filled with foam concentrate.

Non-Linear Calibration

This non-linear calibration procedure can be used for any shape or size tank. The calibration process requires that the tank be empty at the start of the procedure and then filled at a steady rate of flow.

The term 'swipe' means to move the magnet up to and then away from the **CAL.** sensor at the bottom of the display.

To exit the calibration mode swipe the magnet eight times. The top eight display LEDs go on, the calibration program terminates, no program data is changed.

1. Empty the tank.
2. Apply power to the display module.
3. Swipe the magnet three times to enter the calibration mode.

   Result: Top three display LEDs flash on and off.

Note: Once the calibration process is activated the flow rate of liquid into the tank must remain constant for the procedure to be accurate.

4. Fill the tank at a steady rate of flow.
5. When the tank is full stop the flow.

Note: The program only acts on three swipes to set the calibration into memory, or eight swipes to terminate the calibration program. If a wrong entry is made, wait six seconds and it will clear.

6. Swipe the magnet three times to set the calibration into memory.

   Result: Top three display LEDs go on.

7. After six seconds the calibration process terminates and all the LEDs are on to show that the tank is full.

Linear Calibration

This linear calibration procedure can only be used for square or rectangular shape tanks with no irregularities. The calibration process requires that the tank be full at the start of the procedure.

The term ‘swipe’ means to move the magnet up to and then away from the **CAL.** sensor at the bottom of the display.

To exit the calibration mode swipe the magnet eight times. The top eight display LEDs go on, the calibration program terminates, no program data is changed.

1. Fill the tank. (Do not fill up into the fill tower.)
2. Apply power to the display module.

Note: Once the calibration program is activated there is a six second time out. Do not wait more than six seconds to move from step 3 to step 4.

3. Swipe the magnet four times to enter the calibration mode.

   Result: Top four display LEDs flash on and off.

4. After three seconds swipe the magnet four times to set the calibration into memory.

   Result: Top four display LEDs go on.

5. After six seconds the calibration process will terminate and all the LEDs will go on to show that the tank is full.

Full Tank Correction

This fine calibration procedure is used to fine tune the tank display after a non-linear or linear calibration has been completed. The calibration process requires that the tank be full at the start of the procedure and the display shows 75% or more.

The term ‘swipe’ means to move the magnet up to and then away from the **CAL.** sensor at the bottom of the display.

To exit the calibration mode swipe the magnet eight times. The top eight display LEDs go on, the calibration program terminates, no program data is changed.

1. Fill the tank. (Do not fill up into the fill tower.)
2. Apply power to the display module.

Note: Once the calibration program is activated there is a six second time out. Do not wait more than six seconds to move from step 3 to step 4.

3. Swipe the magnet five times to enter the calibration mode.

   Result: Top five display LEDs flash on and off.

4. After three seconds swipe the magnet five times to set the calibration into memory.

   Result: Top five display LEDs go on.

5. After six seconds the calibration process will terminate and all the LEDs will go on to show that the tank is full.

DIAGNOSTICS

There are diagnostic codes built into the TANKVISION. These diagnostic codes can help in the troubleshooting process.

If there is no input on pin 2 of the remote light driver, the remote lights remain off.

The following **FAULTS** are displayed as long as the fault exists.

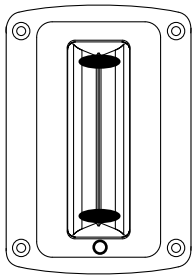
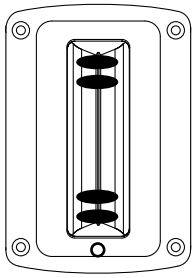
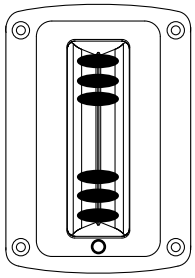
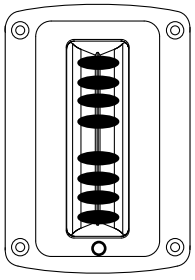
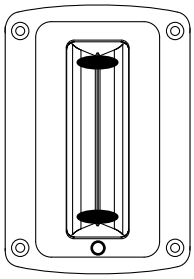
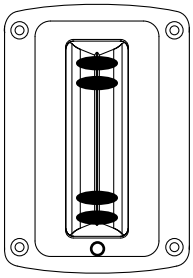
Display	Problem	Probable Cause
Top and Bottom LEDs Alternately Flash. 	Pressure Sensor not detected at Primary Display (voltage < 0.3V)	Sensor cable not connected Broken wire / bad connector on sensor cable Defective sensor
	Datalink not detected at Remote Display	Datalink cable not connected Broken wire / bad connector on datalink cable
Top 2/3 Bottom 2/3 LEDs Alternately Flash. 	Checksum Error	Primary Display Failure
	Memory Failure	Primary Display Failure
Top 4 and Bottom 4 LEDs Alternately Flash. 	Pressure Sensor high output voltage. (voltage > 4.6V)	Shorted wire on sensor cable Pressure Sensor or Primary Display Failure

Figure 7. Diagnostics - Faults

The display cycles between normal and the following **WARNINGS** when a warning condition exist.

Display	Problem	Probable Cause
Top and Bottom LEDs Blink ON and OFF 	The difference in voltage from the Pressure Sensor between tank empty and tank full is to small. (non-linear 3-swipes volt change less than 0.16V) (linear 4-swipes volt change less than 0.66V)	Illegal calibration procedure Sensor cable not connected Broken wire / bad connector on sensor cable Tank height less then 6” Defective sensor
Top 2 and Bottom 2 LEDs Blink ON and OFF 	Voltage from the Pressure Sensor is more than 0.5V above calibrated full tank voltage.	Apparatus at incline (parked on a hill) Not calibrated correctly Shorted wire / bad connector on sensor cable

This high voltage warning can be enabled or disabled by swiping the **CAL.** sensor six times. (Factory default setting: disabled.)

When **ENABLED** Top 2 and Bottom 2 LEDs Blink

When **DISABLED** Top 6 LEDs Blink

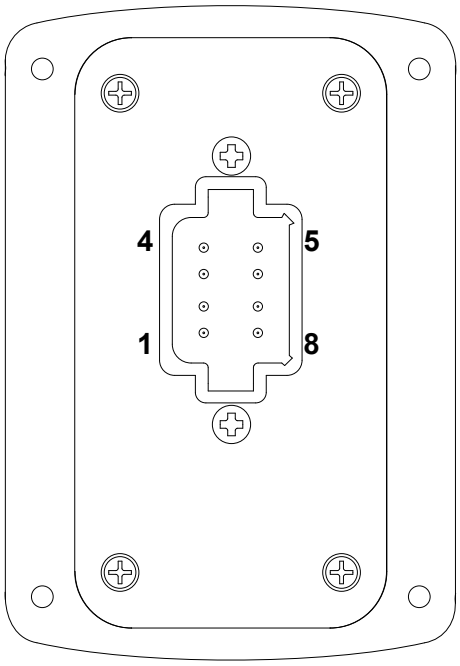
To change the setting swipe the **CAL.** sensor six times again.

To leave the setting as it is, let the processor time out and go back to normal display.

Figure 7. Diagnostics - Warnings

WIRING

Primary Display



Primary Display Connector	
Pin	Description
1	Power 9-30 VDC
2	Ground
3	Sensor 5 VDC
4	Sensor Signal
5*	Buzzer Ground (150mA)
6	Display Signal Out
7	Datalink (+)
8	Datalink (–)

***Note:** When the TankVision primary is used to control a remote valve, Foam Fill, or Auto Tank system, pin 5 does not provide a ground for a buzzer. The primary display is programmed from the factory with a control output on pin 5 for each of these special systems. These displays are not interchangeable.

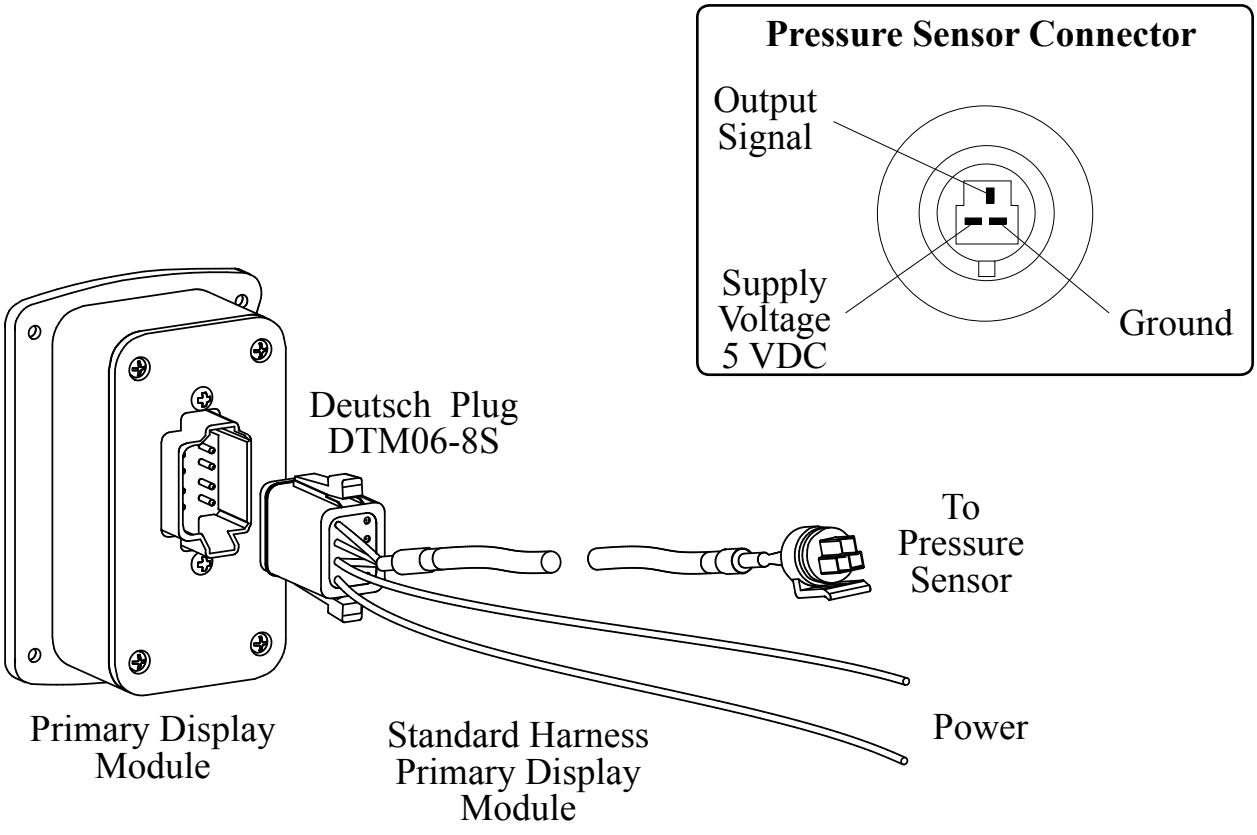
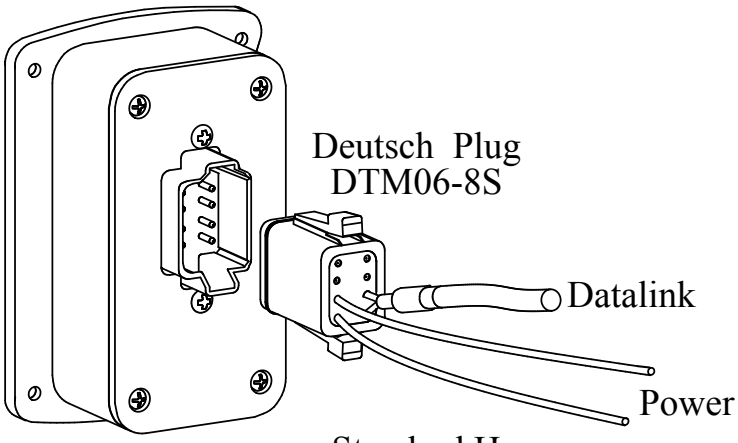


Figure 8. Primary Display Wiring

Remote, Cab Miniature, and LED Displays

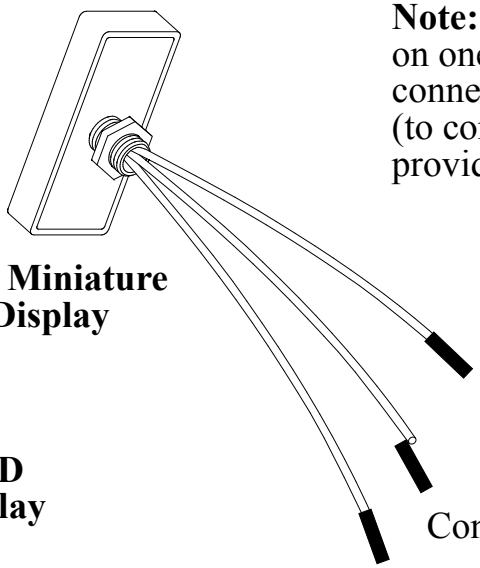


Remote Display Module

Standard Harness Remote Display Module

Remote Display Connector

Pin	Description
1	Power 9-30 VDC
2	Ground
3	N/A
4	N/A
5	Buzzer Ground (150mA)
6	Display Signal Out
7	Datalink (+)
8	Datalink (–)



Cab Miniature Display

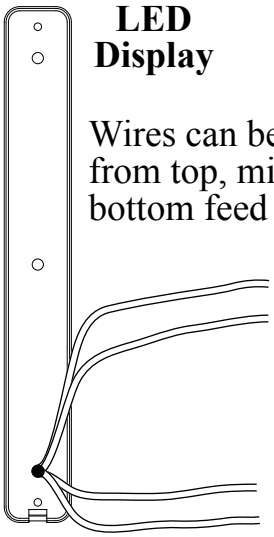
Butt Connectors

Note: A white wire with a Deutsch contact on one end (to plug into the standard harness connector) and a butt connector on the other (to connect to customer provided wire) is provided with the Cab Miniature Display.

White Wire

Cab Miniature Display Wiring

Wire	Description
Red	Power 9-30 VDC
Black	Ground
White	Display Signal



LED Display

Wires can be routed from top, middle, or bottom feed through.

Power

	TankVision Pin
Yellow	7
Green	8

LED Display Wiring

Wire	Description
Red	Power 9-30 VDC
Black	Ground
Yellow	Datalink (+)
Green	Datalink (–)

The datalink requires two terminating resistors.
One TankVision with one or two LED displays: Install resistor at farthest light.
Two TankVision displays: Do not install terminating resistor.
If used with a TurboFoam system: Do not install terminating resistor.

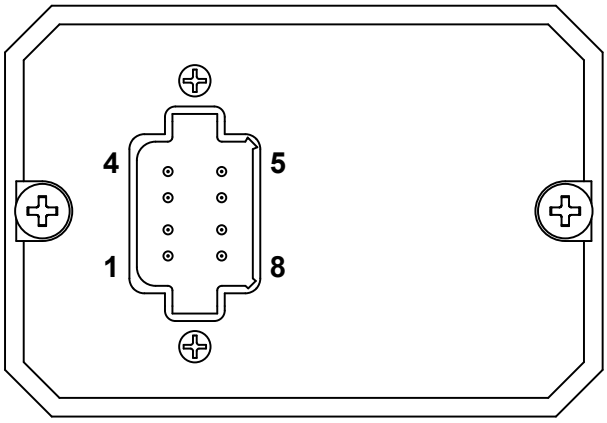
Figure 9. Remote, Cab Miniature, and LED Display Wiring

Remote Light Driver

Notes:

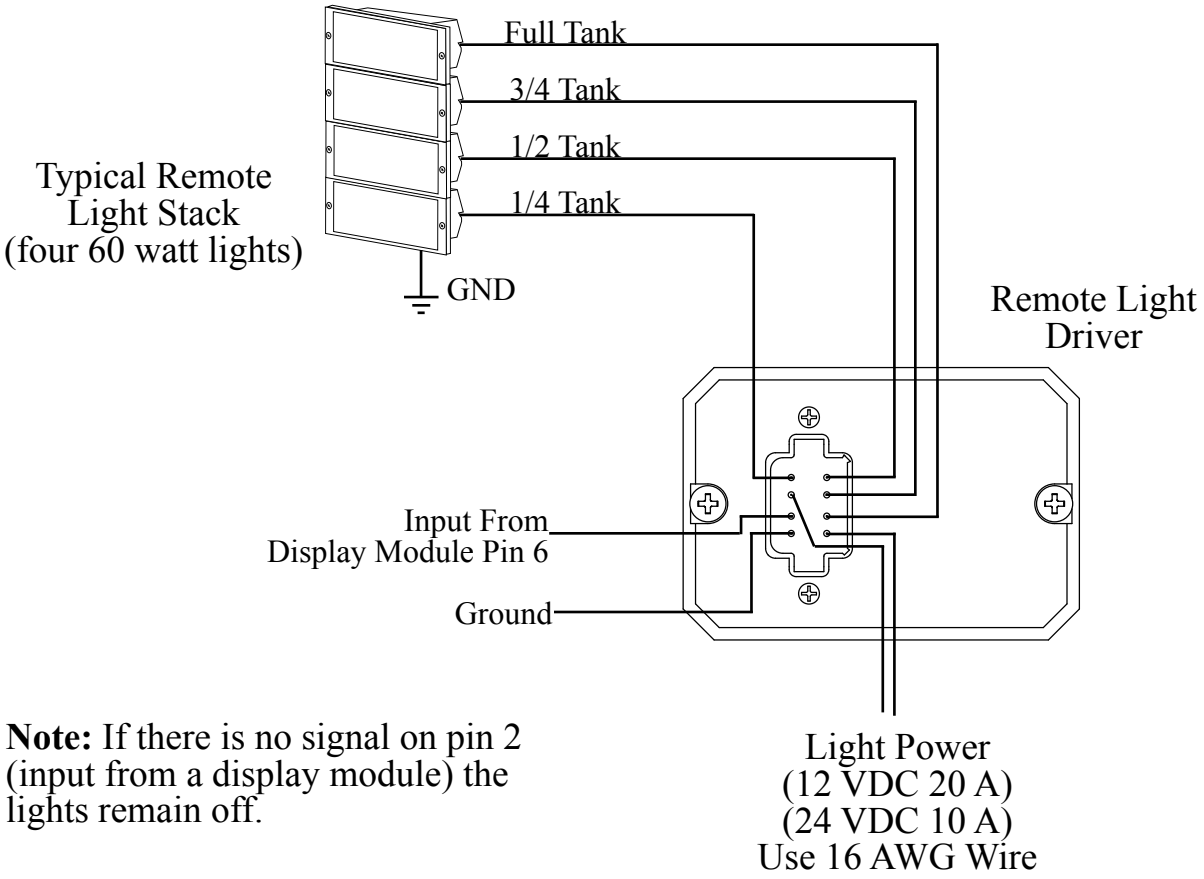
Connect a wire from the primary or a remote display module pin 6 to the remote light driver pin 2 (this is the input signal to the remote driver). If there is no signal on pin 2 the lights remain off.

Connect power to pin 3 and to pin 8, this is power for the remote driver and the remote lights. It is recommended that pin 3 and pin 8 be tied together. The maximum current is 20 AMPS @ 12VDC (10 AMPS @ 24 VDC).



Light Driver Connector

Pin	Signal Description
1	Ground
2	Signal Input
3*	Remote Light Power
4	1/4 Tank Output
5	1/2 Tank Output
6	3/4 Tank Output
7	Full Tank Output
8*	Remote Light Power

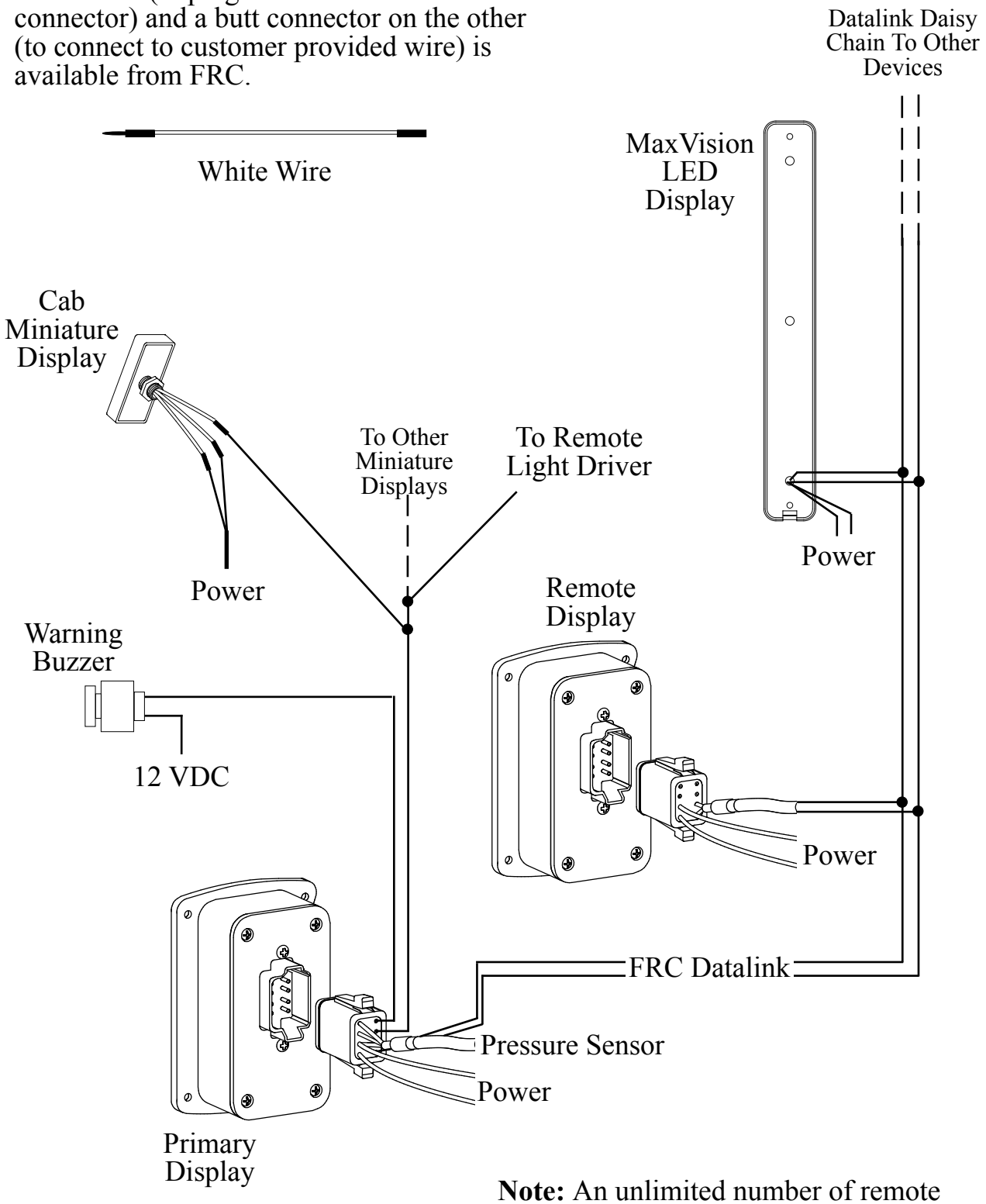


Note: If there is no signal on pin 2 (input from a display module) the lights remain off.

Figure 10. Remote Light Driver Wiring

Typical System Configuration

Note: A white wire with a Deutsch contact on one end (to plug into the standard harness connector) and a butt connector on the other (to connect to customer provided wire) is available from FRC.



Note: An unlimited number of remote displays can be connected. Any remote display can become a primary by disconnecting the sensor from the primary and connecting it to the remote.

Figure 11. Typical System Configuration

CLEAN/INSPECT PRESSURE/VACUUM FOAM TANK VENT

The pressure/vacuum foam tank valve is supplied for use on sealed foam tanks.

There are internal passageways that provide a path for air to move between the tank and a center cavity in the vent. These passageways are self-draining and designed to prevent splashing foam from entering the center cavity and clogging the pressure and vacuum valves.

The pressure and vacuum valves are easily accessed and disassembled for periodic cleaning or inspections. Unscrew the cap from the main body and lift the valves out of the center cavity. Clean all parts with warm water.

Note: The internal pressure and vacuum valves are different sizes. Make sure to reassemble these valves correctly.

Note: It is extremely important that the pressure and vacuum valves are assembled correctly.

Pressure Valve

Vacuum Valve

Vent Cutaway Diagram

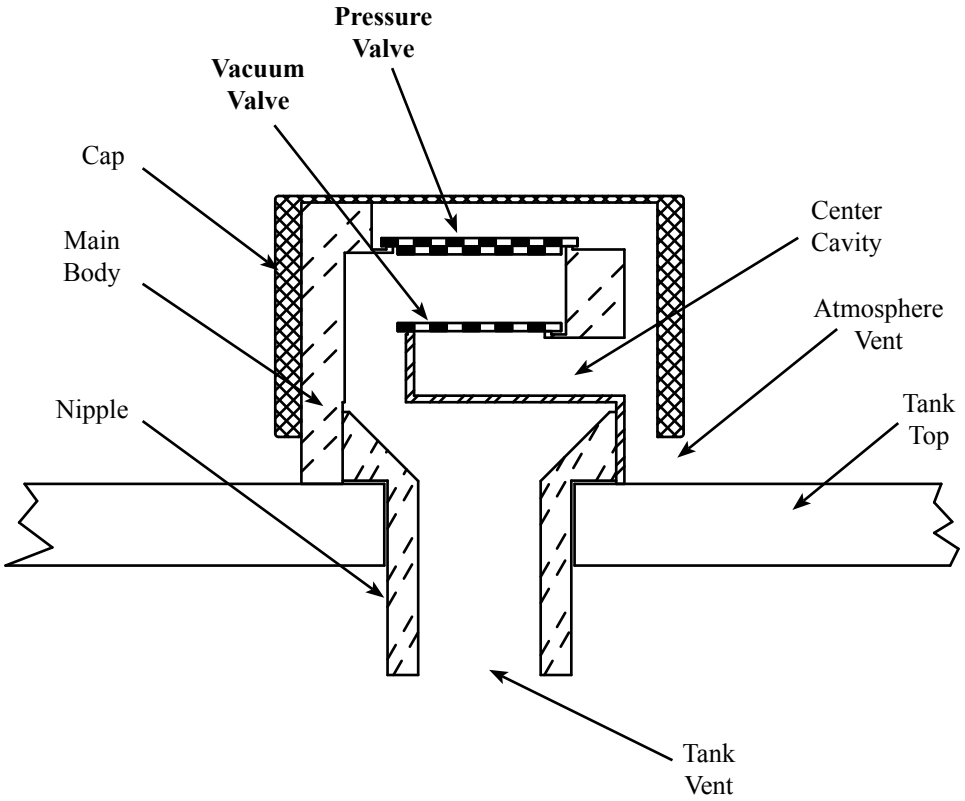


Figure 12. Clean and Inspect Pressure/Vacuum Foam Tank Vent

PARTS LIST

Index	FRC Part No.	Description
-	WLA200	TankVision Kit, Water
-	WLA260	TankVision Kit, Class A Foam
-	WLA270	TankVision Kit, Class B Foam
1	. XE-WL200-D	. Display Module, Water
	. XE-WL260-D	. Display Module, Class A Foam
	. XE-WL270-D	. Display Module, Class B Foam
2	. . XE-WL200S-CXXA	. . Primary Display Cable, XX=Length
3	. . XE-WL200R-CXXA	. . Remote Display Cable, XX=Length
4	. XE-WLPT4-S	. Pressure Sensor
5	. . XE-WL20A-A	. . Thin Wall Adapter Kit
6	. XE-WL400-A	Foam Vent, Vertical Mount
7	. XE-WL400H-A	Foam Vent, 90 Degree Mount
8	WLA205	Cab Miniature, Water
	WLA265	Cab Miniature, Class A Foam
	WLA275	Cab Miniature, Class B Foam
9	WLA290	Remote Light Driver
-	XE-WLE08-A	White Wire w/Deutsch Pin and Butt Connector
10	WLA280	MaxVision LED Tank Display

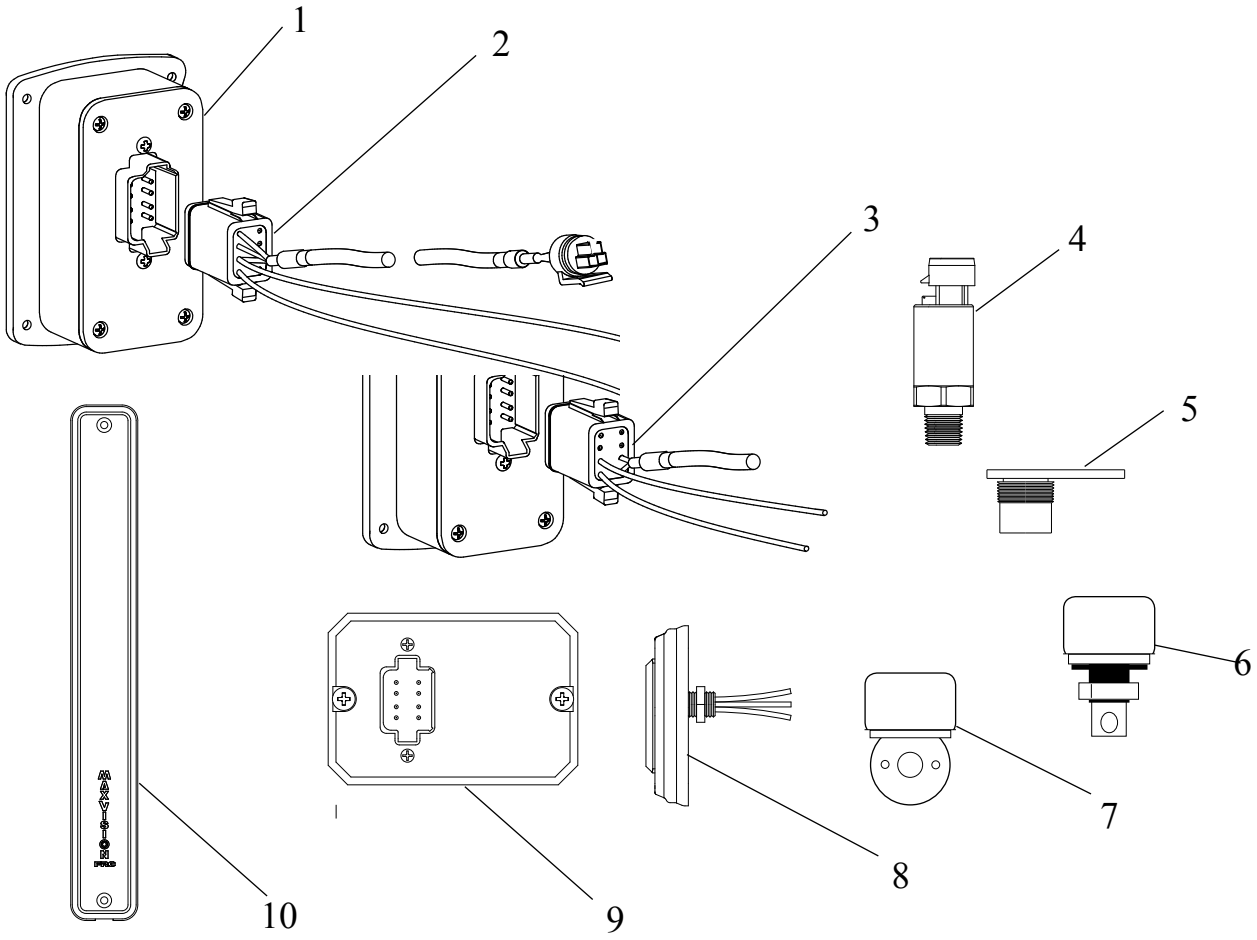


Figure 13. Parts List

NOTES

NOTES

DANGER

PERSONAL RESPONSIBILITY CODE

The member companies of FEMSA that provide emergency response equipment and services want responders to know and understand the following:

1. Firefighting and Emergency Response are inherently dangerous activities requiring proper training in their hazards and the use of extreme caution at all times.
2. It is your responsibility to read and understand any user's instructions, including purpose and limitations, provided with any piece of equipment you may be called upon to use.
3. It is your responsibility to know that you have been properly trained in Firefighting and/or Emergency Response and in the use, precautions, and care of any equipment you may be called upon to use.
4. It is your responsibility to be in proper physical condition and to maintain the personal skill level required to operate any equipment you may be called upon to use.
5. It is your responsibility to know that your equipment is in operable condition and has been maintained in accordance with the manufacturer's instructions.
6. Failure to follow these guidelines may result in death, burns or other severe injury.

FEMSA

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