



# OEM QUICK START GUIDE SAM

## (GENERATION 2)



BY

HALE PRODUCTS, INC.

A Unit of IDEX Corporation

607 NW 27th Ave, Ocala, FL 34475

(800) 533.3569

(800) 520.3473 (FAX)

[www.haleproducts.com](http://www.haleproducts.com)

### NOTICES

THIS GUIDE IS INTENDED FOR QUICK REFERENCE ONLY. DO NOT USE IT TO REPLACE REQUIRED TRAINING, STANDARD OPERATING GUIDELINES REQUIRED BY THE AUTHORITY HAVING JURISDICTION, THE OPERATION INSTALLATION MAINTENANCE MANUAL, OR APPROPRIATE QUALIFICATIONS.



## 1. SAFETY

Firefighting is an inherently risky activity. Knowledge and training may manage that risk. This document is not a training manual and does not provide all detailed operation. This guide serves as a quick reference for SAM operation. AHJ (Authority Having Jurisdiction) shall provide training and guidelines for system operation.

### 1.1 DANGERS, WARNINGS, CAUTIONS, and NOTICES

DANGERS, WARNINGS, CAUTIONS, and NOTICES consist of two parts: a heading (that identifies possible result if disregarded) and a statement of the hazard (that provides the minimum precautions). The following warnings and cautions are used throughout the Hale SAM manuals.

#### ATTENTION ▲ DANGER

INDICATES A HAZARDOUS SITUATION, WHICH IF NOT AVOIDED WILL RESULT IN SERIOUS INJURY OR DEATH.

#### ATTENTION ▲ WARNING

INDICATES A HAZARDOUS SITUATION, WHICH IF NOT AVOIDED COULD RESULT IN SERIOUS INJURY OR DEATH.

#### ATTENTION ▲ CAUTION

INDICATES A POTENTIALLY HAZARDOUS SITUATION, WHICH IF NOT AVOIDED MAY RESULT IN MINOR OR MODERATE INJURY.

#### IMPORTANT ▲ NOTICE

ADDRESSES PRACTICES NOT RELATED TO PERSONAL INJURY.

### 1.2 SAM General WARNING And NOTICES

#### ATTENTION ▲ WARNING

ENSURE THE OK TO PUMP (GREEN LIGHT ON THE IN-CAB CONTROL PANEL) AND THROTTLE READY (GREEN LED ON THE TWISTER) INDICATORS AND THE PUMP CONTROLLER ARE ON BEFORE ATTEMPTING TO OPERATE THE PUMP. FOLLOW ALL SOG (STANDARD OPERATING GUIDELINES) FOR PARKING BRAKE, PUMP ENGAGEMENT, AND WHEEL CHOCKS.

#### IMPORTANT ▲ NOTICE

SAM PROVIDES AUTOMATED CONTROL OF EACH INDIVIDUAL DISCHARGE LINES PRESSURE. WHILE FLOWING, THE VALVES GATE TO MAINTAIN THE SET PRESSURE. ADDITIONAL FEATURES ASSIST THE OPERATOR WITH THE TRANSITION FROM TANK TO HYDRANT (OR DRAFTING). LOW INTAKE MONITORING FOR A HYDRANT AND LOW FLOW DETECTION FOR DISCHARGES (CAN HELP INFORM THE OPERATOR IF A NOZZLE IS CLOSED OR A HOSE LINE IS SEVERELY KINKED). ADVANCED FEATURES CALCULATE PUMP FLOW RATES ABOVE 600 GPM AND PROVIDE ADVANCED MAINTENANCE REMINDERS TO REDUCE LIFE CYCLE COSTS.

#### IMPORTANT ▲ NOTICE

WHILE SAM CAN REDUCE PUMP OPERATOR WORKLOAD, IT DOES NOT TAKE THE PLACE OF THE PUMP OPERATOR. THE PUMP OPERATOR STILL NEEDS TO CALCULATE THE REQUIRED LINE PRESSURE TO SUPPORT THE HOSE LAY AND NOZZLE IN USE. SAM WILL MAINTAIN THE SET PRESSURE IN AUTO MODE.

#### IMPORTANT ▲ NOTICE

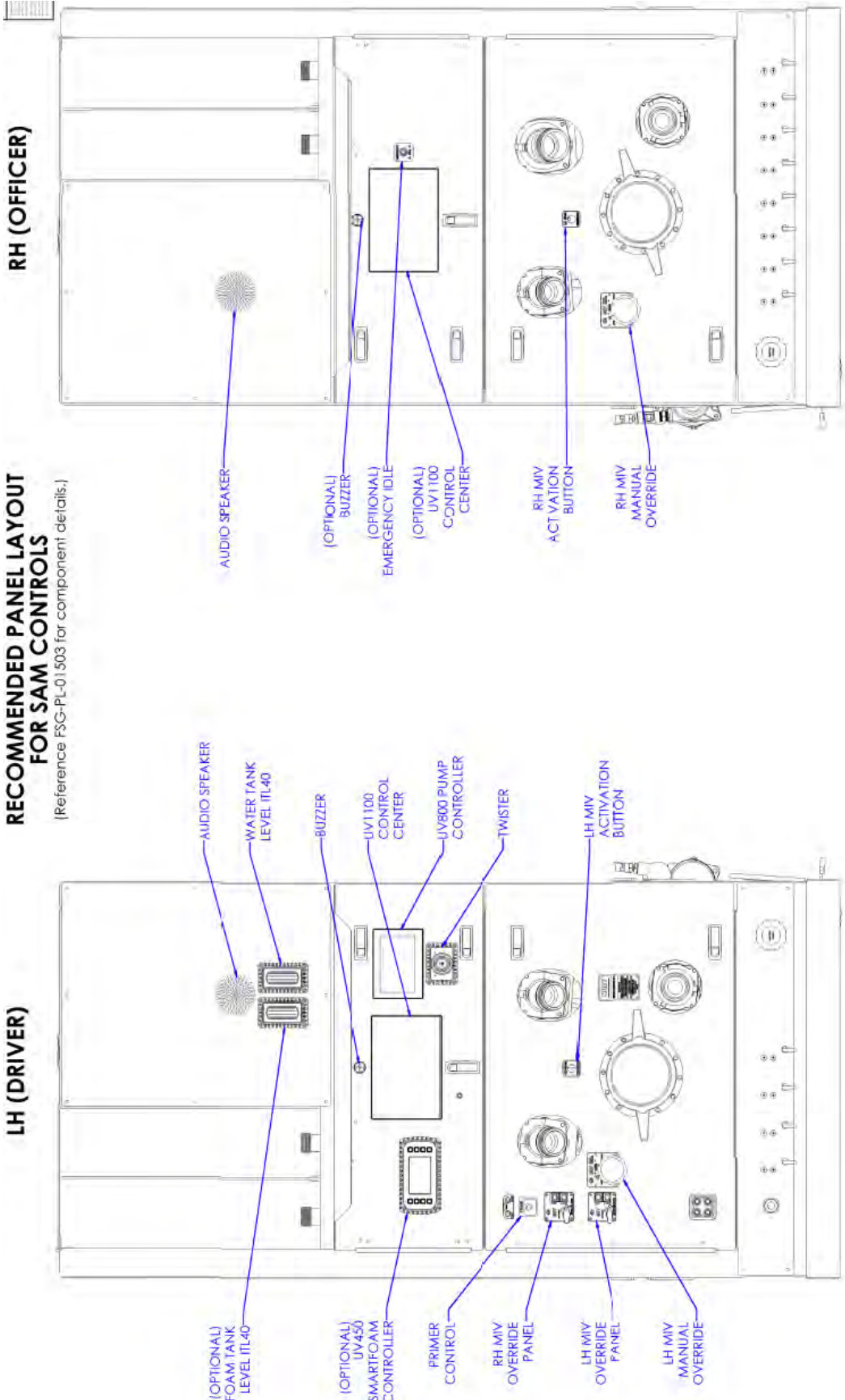
AHJ MUST INSURE PROPER TRAINING IS IN PLACE FOR ALL OPERATORS. THIS QUICK START GUIDE DOES NOT REPLACE OR SUPERSEDE THE OPERATION INSTALLATION MAINTENANCE MANUAL OR PROPER TRAINING.

#### IMPORTANT ▲ NOTICE

ONLY TOUCH THE SCREEN IN ONE PLACE AT A TIME. THE TOUCHSCREENS DO NOT SUPPORT MULTI-TOUCH.

2. Typical Panel layout





**RECOMMENDED PANEL LAYOUT FOR SAM CONTROLS**

(Reference FSG-PL-01 503 for component details.)

### 3. OEM Connections To SAM

3.1 Hale labels (and/or tags) SAM connection points (for OEM/apparatus builders) to aide in proper installation. The SAM installation on an apparatus should be verified prior to delivery of the apparatus



### 4. Electrical Connections

#### ✓ 4.1 Power Requirements

The OEM/apparatus builder shall supply two separate sources of +12 VDC power (ignition), one capable of 85 Amps and one capable of 300 Amps (one for SAM and one for the ESP primer system respectively).

**IMPORTANT ▲ NOTICE**

OTHER ELECTRICAL COMPONENTS MUST NOT BE SUPPLIED FROM THE SAM SYSTEM SUPPLY. DO NOT CONNECT THE PRIMER AND HALE SAM TO THE SAME POWER WIRE.

When an optional SmartFOAM system is selected a third +12 VDC power source capable of 40 Amps (for a 1.7 AHP or 2.1 A foam pump), 60 Amps (for a 3.3 or 5.0 foam pump), or 80 Amps (for a 6.5 foam system) is also required.

**IMPORTANT ▲ NOTICE**

DO NOT CONNECT THE SAM, ESP, OR FOAM SYSTEM TO A LOAD SHEDDING CIRCUIT.

When an optional SmartCAFS system is selected a third +12 VDC power source capable of 60 Amps for a 3.3 or 5.0 foam proportioning system is also required.

**IMPORTANT ▲ NOTICE**

DO NOT CONNECT THE SAM, ESP, OR CAFS SYSTEM TO A LOAD SHEDDING CIRCUIT.



Connect System Power Tag

✓ 4.2 CAN Bus Requirements

The SAM system utilizes three (3) separate CAN buses (see Figure 2, page 13): Blue (engine ECU), Green (intake valves), and Red (discharge valves). **The Blue bus connects the apparatus (ECU) and the SAM control modules and is labeled for connection by the OEM/builder.** All CAN bus wiring is provided by Hale for SAM system components.

**IMPORTANT NOTICE**

DO NOT ALTER THE CAN NETWORK COMMUNICATIONS (SAE J1939 CAN BUS) OR CONNECT OTHER DEVICES TO ANY OF THE CAFS, CAPTIUM, FOAM, OR SAM CAN BUS BACK-BONE(S).

✓ 4.3 Interlocks

OEM Pump Engaged, and Throttle Ready interlock inputs and auxiliary interlock “OK to Pump” may be provided but is not required). These are all positive polarity inputs.

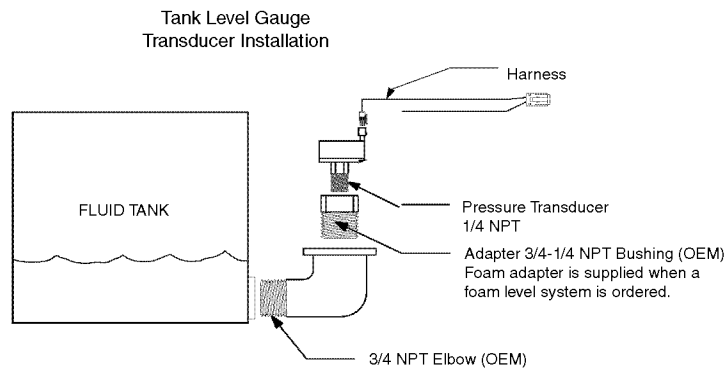
INTERLOCKS			
SHRINK TUBE ENDS OF CIRCUIT WIRES			
LABEL ENDPOINT: "INTERLOCKS"			
POS	CIRCUIT	COLOR	GA
1	PUMP ENGAGED	WHITE	16GXL
2	THROTTLE READY	WHITE	16GXL
3	OEM AUX	YELLOW	16GXL

Located by the Blue engine can bus connection on the left frame rail.

✓ 4.4 Tank level transducer(s)

Install tank level transducers as per ITL40 manual. Calibrate ITL40(s) per ITL40 manual or from 800 screen

Enter Password 7474 and follow on screen instructions.



Mount the pressure transducer (sensor) vertically to insure an accurate reading and to reduce the possibility of sensor port contamination.

✓ 4.5 Speaker and Amplifier

Mount the speakers behind the speaker cutouts on the right and left of the pump module with the wire facing down for proper drainage. Two (2) should be place on the left of the apparatus and two (2) should be on the right side of the apparatus. The amplifier should be place in a location behind to operators pump panel away from direct contact with moisture. Mount the ground loop isolator to the back of the 800 screen with the supplied clamp and connect the blue connector supplied in the harness.

## 5. Compressed Air Requirements

- ✓ 5.1 The OEM/apparatus builder shall supply dry compressed air with a minimum of 75 psi, a maximum of 150 psi. (Typically, from the vehicle air brake system which is typically capable of the 90 psi to 150 psi at approximately 13 cfm at 1250 rpm.) The pump kit or module provides a loose coil of hose to connect the OEM/apparatus builder supplied air. See Figure 53. The air supply should include a protection valve as required by DOT standards.



Connect to Truck Air Tag

## 6. Plumbing Connections

- ✓ 6.1 Water Column tubing.  
A Coil of 3/4-in tubing (loose or pre-connected at SAM end) SAM end connects to fitting on the SAM Drain Manifold Assy. Plumb to top of onboard water tank fill tower (above the overflow level—in atmosphere)  
Labeled as “PLUMB TO TOP OF TANK”  
Note: At the onboard water tank access/fill tower, route the 3/4-in flex line to prevent (to maximum extent possible) incidental items (bags of oil dry, spare supply containers, etc.) from being placed on the tubing and damaging/breaking it.
- ✓ 6.2 Tank Valves  
Connect tank-to-pump and tank fill valves to the apparatus on board tank.
- ✓ 6.3 Connect Drains as labeled. No connection needed on those labeled “to atmosphere”.

## 7. Tablet Mounting (If equipped)

- ✓ 7.1 Mount docking station in an easily accessed location near the operators' panel. (The docking station may NOT be in the cab unless it is mounted in a close compartment.)
- ✓ 7.2 Supply constant 12Vdc power and ground to provided power supply and connect to docking station. This should be always powered and protected on a 10amp circuit.

## 8. WIFI router/antenna (if equipped)

- ✓ 8.1 Mount above the Operators side of the apparatus. The rubber antennas should be above the body and/or cab but not the tallest item on the truck. The higher it is mounted the better the tablet range will be. Connect the power for the 12/24vdc converter to the supplied harness.







## 9. Commissioning

ALWAYS STOP THE ENGINE, SET THE PARKING BRAKE, AND CHOCK THE WHEELS BEFORE GOING UNDER THE TRUCK FOR ANY REASON.

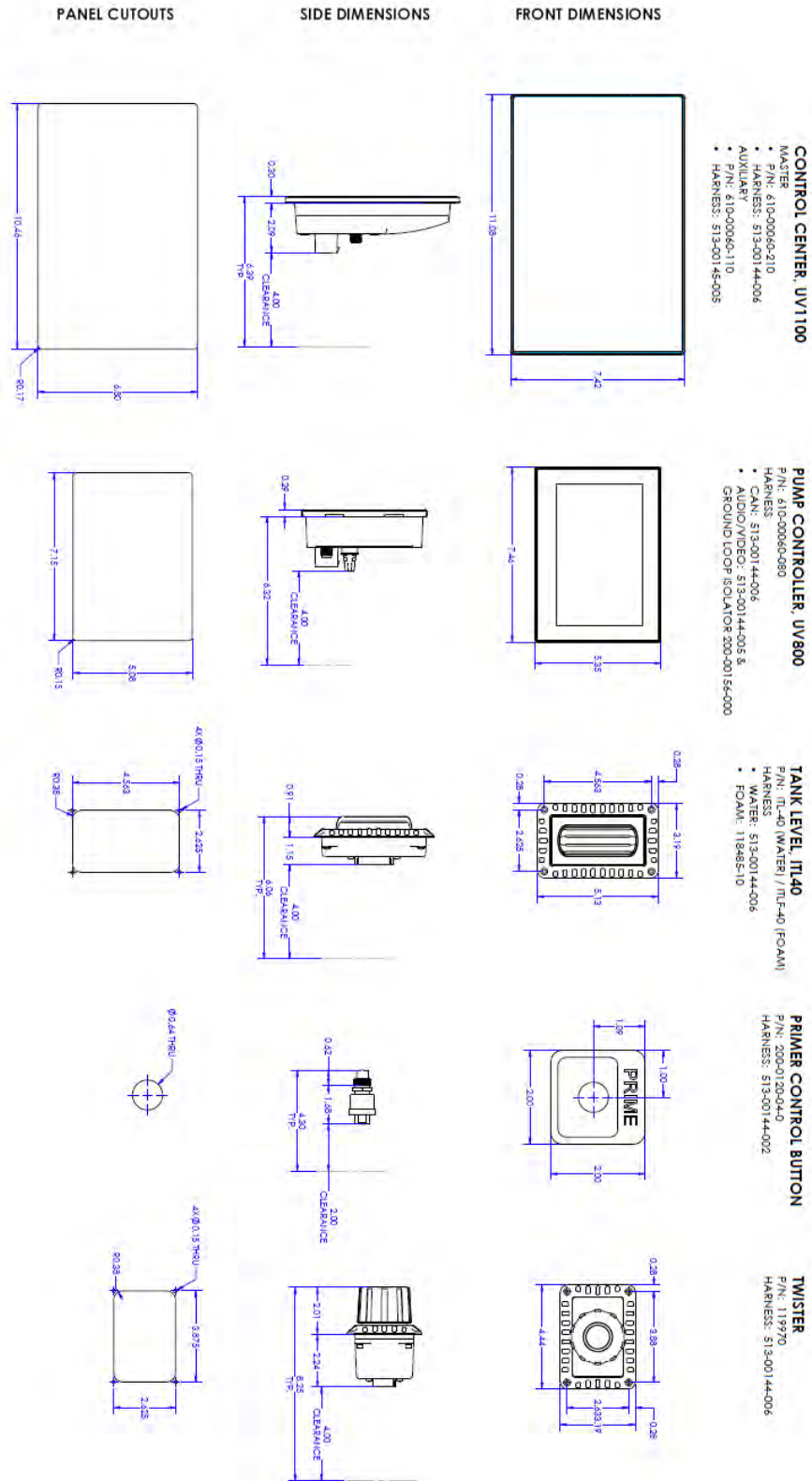
Verify required SAM equipment is present and correctly interconnected.

- Operate all intake valves from the manual valve control screen.
- Operate all discharge valves from the manual valve control
- Operate tank fill and tank to pump from SAM pump controller
- Verify no errors or missing information on the “pump info” screen on the SAM pump controller
- Verify the SAM Pump controller doesn’t cycle power (Baud rate check) when truck is on.
- Verify required ITL-40 (water tank level indicator) is present
- Verify SAM system (red tubing) is connected to vehicle air
- Verify SAM system water column sensor hose (10 feet of 3/4-in flex tubing provided) is connected to vehicle (Refer to Technical Manual [FSG-MNL-00211].)
- Verify SAM system interlock wiring is connected to vehicle.
- Shift into pump gear and 4<sup>th</sup> gear lockup. Verify no SIGNAL LOST/COMM LOSS messages are displayed (or popped up) on the SAM Control Center. Verify that the system goes into AUTO mode

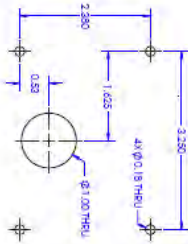
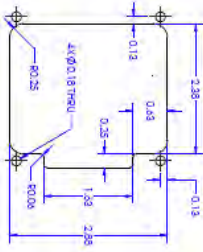
Verify optional SAM equipment, if specified, is present and correctly interconnected.

- Verify that if optional Navigator Pro(s) are specified, that they are present, labeled, are plugged into the Green CAN network, and operate the associated valve.
- Verify that if the optional wireless range extender and DC-to-DC converter (converts 12 VDC to 24 VDC) is specified, that they are present and connected to a 12 VDC SAM power source.
- Verify that if the optional ruggedized tablet is specified, that it is present and configured with a secured wi-fi connection.

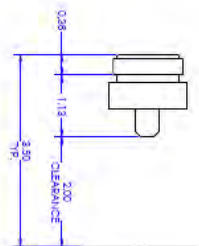
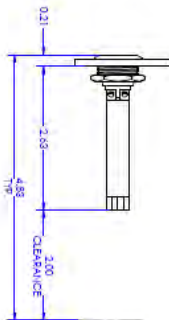
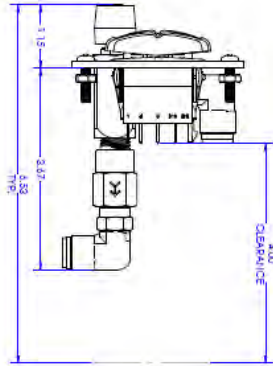
### 10. SAM panel components



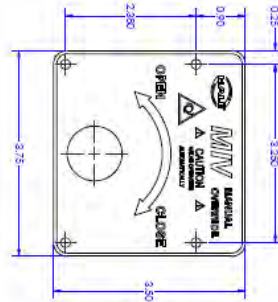
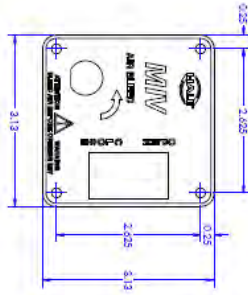
PANEL CUTOUTS



SIDE DIMENSIONS



FRONT DIMENSIONS



**MIV-E OVERRIDE PANEL ASSEMBLY**  
 (1 PER MIV)  
 P/N: 513-0273-5520  
 HARNESS: 513-00144-000

**MIV MANUAL OVERRIDE PANEL**  
 (1 PER MIV)  
 P/N: 101-1492-020  
 HARNESS: N/A

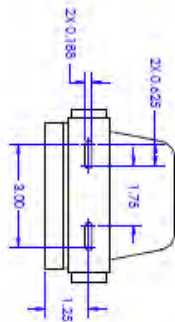
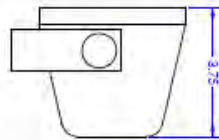
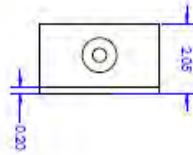
**MIV ACTIVATION BUTTON**  
 (1 PER MIV)  
 P/N: 422-00043-000  
 HARNESS: 513-00144-002  
 NOTE: LOCATE NEAR SUCTION CONNECTION OF MIV

**BUZZER**  
 (1 PER CONTROL CENTER)  
 P/N: 105503  
 HARNESS: 513-00144-006  
 NOTE: LOCATE NEAR CONTROL CENTER

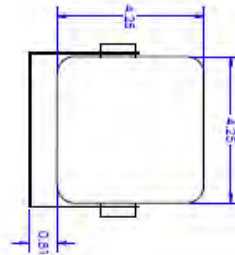
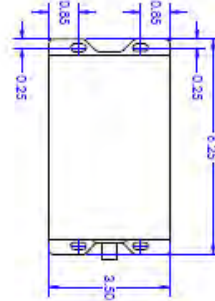
**PANEL CUTOUTS**



**SIDE DIMENSIONS**



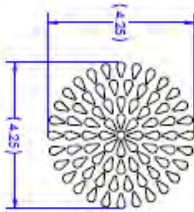
**FRONT DIMENSIONS**



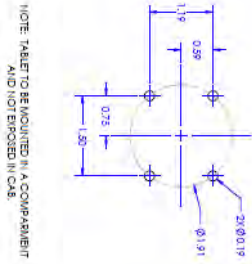
**AMPLIFIER**  
 P/N: 200-00158-000  
 HARNESS: 513-00145-006  
 NOTE: MOUNT INSIDE VEHICLE  
 OR PUMP HOUSE

**SPEAKER**  
 (4 SPEAKERS PROVIDED PER UNIT)  
 P/N: 200-00157-000  
 HARNESS: 513-00144-007

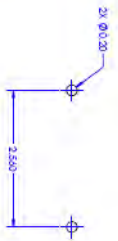
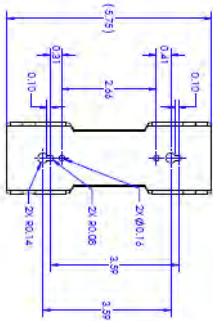
- SPEAKER MOUNTING NOTES:**
- LOCATION FOR HIGH SPEAKERS (LEFT AND RIGHT SIDE) SHOULD BE BEHIND AN UPPER PANEL.
  - LOCATION FOR LOW SPEAKERS (LEFT AND RIGHT SIDE) SHOULD BE LOWER IN THE MODULE COMPARTMENT.



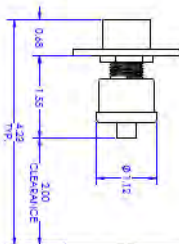
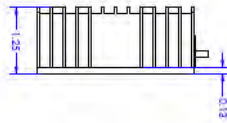
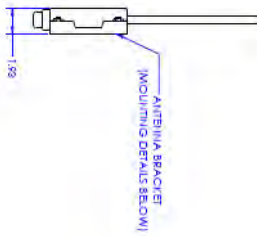
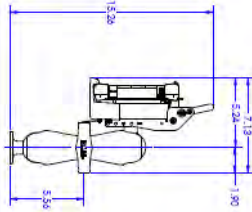
PANEL CUTOUTS



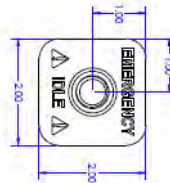
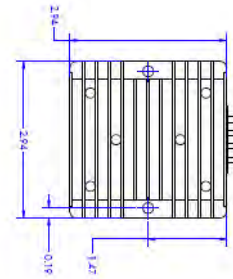
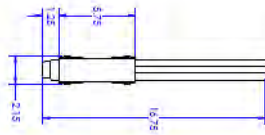
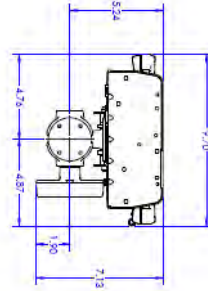
NOTE: TABLET TO BE MOUNTED IN A COMPARTMENT AND NOT EXPOSED IN CAB.



SIDE DIMENSIONS



FRONT DIMENSIONS



**TABLET MOUNTING**  
(REFER TO FSG-PL-1495 FOR MORE DETAILS)

**ROUTER / ANTENNA**  
(PROVIDED WITH TABLET)  
P/N: 625-90077  
HARNESS: 513-00144-004

**DC-DC CONVERTER (12V-24V)**  
(PROVIDED WITH TABLET)  
P/N: 200-00146-000  
HARNESS: 513-00144-004

**IDLE OVERRIDE SWITCH**  
(PROVIDED FOR ANY ADDITIONAL CONTROL CENTERS WITH 100 DISPLAYS)  
P/N: 622-00044-000  
HARNESS: 513-00145-005

**OPTIONAL MOUNTING COMPONENTS**

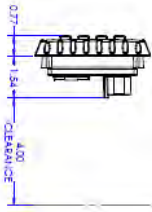
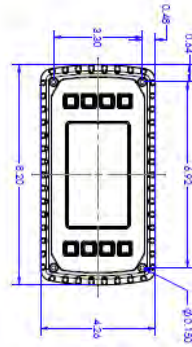
PANEL CUTOUTS

SIDE DIMENSIONS

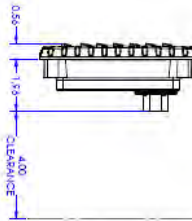
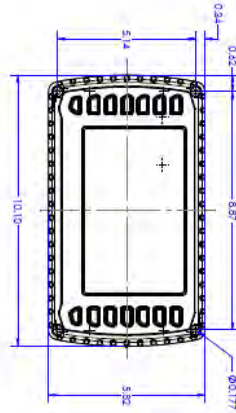
FRONT DIMENSIONS

**OPTIONAL MOUNTING COMPONENTS**

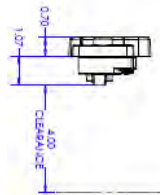
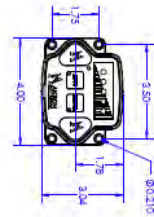
**SMARTFOAM, UV450**  
 P/N: 610-00038  
 HARNESS: TBD / 513-00101-200(201)



**SMARTCAPS, UV780**  
 P/N: 610-00038  
 HARNESS: 122888 / 513-00077-200



**NAVIGATOR, 9327**  
 P/N: A93270003  
 HARNESS: TBD



**NAVIGATOR, 9335**  
 P/N: A93350003  
 HARNESS: TBD

