TANK FILLING SYSTEM MANUAL

Full-Size Fuelport

Compact Fuelport

Automatic Fuel Port

Compact Automatic Fuelport

Smartpump

Mini-Smartpump

Enclosed Smartpump

Ship Loose Controller

SIMPLEX Insight Onsite

TABLE OF CONTENTS

I. WARNINGS AND CAUTIONS

I-A Safety Information Symbols

The following images indicate important safety information:

This General warning symbol points out important information that, if not followed, could endanger personal safety and/or property.

This Explosion warning symbol points out potential explosion hazards.

This Fire warning symbol points out potential fire hazards.

This Electrical warning symbol points out potential electrical shock hazards.

I-B Warnings

Improper operation of this equipment such as neglecting its maintenance or being careless can cause possible injury or death. Permit only responsible and capable persons to install, operate, and/or maintain this equipment.

NOTE: Any unit subjected to a fall or impact is no longer considered UL approved.

Potentially lethal voltages and amperages are present in these machines. Ensure all steps are taken to render the machine safe before attempting to work on the equipment.

All hardware covered by this manual have dangerous electrical voltages and can cause fatal electrical shock. Avoid contact with bare wires, terminals, connections, etc., on the hardware, if applicable. Ensure all appropriate covers, guards, grounds, and barriers are in place before operating the equipment. If work must be done around an operating unit, stand on an insulated dry surface to reduce shock hazard.

Do not handle any kind of electrical device while standing in water, while barefoot, or while hands or feet are wet. DANGEROUS ELECTRICAL SHOCK MAY RESULT.

If trained personnel must stand on metal or concrete while installing, servicing, adjusting, or repairing this equipment, place insulative mats over a dry wooden platform. Work on the equipment only while standing on such insulative mats.

Never wear jewelry when working on this equipment. Jewelry can conduct electricity resulting in electric shock or may get caught in moving components causing injury.

Keep a fire extinguisher near the hardware at all times. Do NOT use any carbon tetra-chloride type extinguisher. Its fumes are toxic, and the liquid can deteriorate wiring insulation. Keep the extinguisher properly charged and be familiar with its use. If there are any questions pertaining to fire extinguishers, please consult the local fire department.

The National Electrical Code (NEC), Article 250 requires the frame of the equipment to be connected to an approved earth ground and/or grounding rod. This grounding will help prevent dangerous electrical shock that might be caused by a ground fault condition or by static electricity. Never disconnect the ground wire.

Wire gauge sizes of electrical wiring, cables, and cord sets must be adequate to handle the maximum electrical current (ampacity) to which they will be subjected.

Before installing or servicing this (and related) equipment, make sure that all power voltage supplies are completely turned off at their source. Failure to do so will result in hazardous and possibly fatal electrical shock.

In case of accident caused by electric shock, immediately shut down the source of electrical power. If this is not possible, attempt to free the victim from the live conductor. AVOID DIRECT CONTACT WITH THE VICTIM. Use a nonconducting implement, such as a dry rope or board, to free the victim from the live conductor. If the victim is unconscious, apply first aid and seek immediate medical attention.

The illustrations in this manual are examples only and may differ from your unit.

II. COMPACT / FULL SIZED FUELPORT

II-A. INSTALLATION

The FuelPort can be installed in five ways:

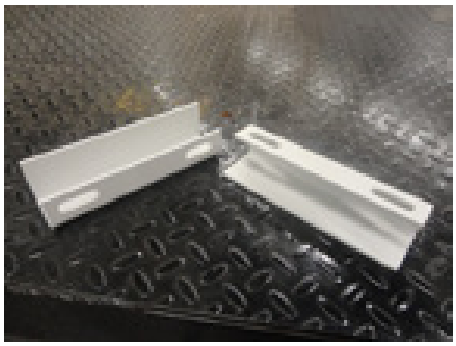
1. Welded to a tank (Compact)
2. Attached to a post (Compact)
3. Placed on a stand (Compact)
4. Flush mounted into a wall
5. Bolted to the floor

Welding FuelPort to Tank:

You can mount the FuelPort directly on a storage tank by welding two mounting brackets to the tank and bolting the FuelPort to them. (See ***Weld Brackets***)

Follow all necessary safety procedures when welding the brackets to your tank. Simplex is not responsible for damages or injuries sustained due to improper safety precautions.

Weld Brackets



Attaching FuelPort to Post:

With the post mounting option, the FuelPort can be attached to a free-standing post.
(See ***Post***)
To do so, attach the post to a concrete pad and use the supplied U-bolt post bracket to attach the FuelPort to it.

Post

Attaching FuelPort to Stand:

To affix the FuelPort to a stand, simply attach the stand to a concrete pad using the pre-drilled holes in the base's feet, then affix the FuelPort to the base via the mounting holes on the front. (See ***Stand***)

Stand

Flush Mounting:

To install the FuelPort into a wall, prepare an opening matching the dimensions of the FuelPort and attach it via the pre drilled mounting flange. Verify that the wall and mounting hardware are sufficient to support the FuelPort's weight. Simplex is not responsible for damage occurring as a result of insufficient support.

Mounting Full-Sized FuelPort to Floor:

The Full-Sized FuelPort can be secured to a wall, a floor or both using the pre drilled mounting flanges running the height and length of the cabinet.

Verify that the surface you are mounting the Full-Sized FuelPort to and the mounting hardware are sufficient to support the FuelPort's weight. Simplex is not responsible for damages occurring as a result of insufficient support.

II-B. OPERATING INSTRUCTIONS

1. Connect ground cable
2. Unlock FuelPort and open door
3. Connect delivery hose to hose coupling
4. Open valve on truck and valve in FuelPort
5. Start fill pump
6. Stop fill pump when tank is full or as needed
7. Close truck valve and valve in FuelPort
8. Disconnect delivery hose from hose coupling
9. Close and lock FuelPort door
10. Disconnect ground cable

III. COMPACT AUTOMATIC FUELPORT

III-A. INSTALLATION

The Compact Automatic Fuelport can be installed in four ways:

1. Welded to a fuel tank
2. Attached to a post
3. Placed in a stand
4. Flush mounted into a wall - See AFC Controller

Welding FuelPort to Tank:

You can mount the FuelPort directly on a storage tank by welding two mounting brackets to the tank and bolting the FuelPort to them. (See ***Weld Brackets***)

Follow all necessary safety procedures when welding the brackets to your tank. Simplex is not responsible for damages or injuries sustained due to improper safety precautions.

Attaching CAFP to Post:

With the post mounting option, the CAFP can be attached to a free-standing post. (See ***Post***)

To do so, attach the post to a concrete pad and use the supplied U-bolt post brackets to attach the CAFP to it.

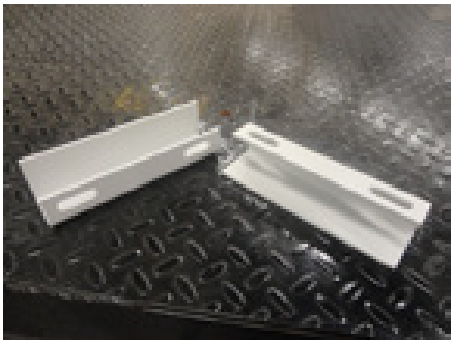
Attaching CAFP to Stand:

To affix the CAFP to a stand, simply attach the stand to a concrete pad using the pre drilled holes in the stand's feet, then affix the CAFP to the stand via the mounting holes on the front. (See ***Stand***)

Installing Cable Access:

To bring cabling into the CAFP, remove one of the six knock outs located along the right and left vertical sides of the back of the controller housing and install a 1/2" 3R-rated conduit connector for access.

Weld Brackets



Post

Stand

Installing Control Power:

Please see wiring diagram in the drawing packet shipped with the unit.

Installing Float Assembly:

To install the float assembly, push the latch handles on the assembly down and slide the coupler off.

Apply an appropriate thread-lock to the threads on the coupler and screw it into the appropriate tank port.

Slide the assembly into the coupler and lift the latching arms until the assembly is locked into place.

Please see wiring diagram in the drawing packet shipped with the unit.**:**

Float Assembly

Meter

III-B. SETTING UP THE METER

Entering the Setup Menu:

There are a number of option for configuring the meter, but only two concern us: ***dSP 2,*** which allows you to see approximately how many gallons remain in your tank, rather than a percentage; and ***OFSEt***, which calibrates the meter for greater accuracy.

To enter the meter's setup menu, press and hold the ***SEL*** button for one second. The screen will begin alternating between ***Pro*** and ***NO***. Press ***RST*** while it shows Pro and you will be in the setup menu.

From here, pressing ***RST*** will cycle through five options, but all the setting you will need to change are in the first, ***1-INP***. Press ***SEL*** to enter the category, and the meter will display ***rANGE***.

Changing the Display From Percentage to Gallons:

When the meter display ***rANGE***, press ***SEL*** nine times. The meter should now read ***dSP 2***. Press ***RST*** to change the value, which should initially be 100. Press ***RST*** to increase the flashing digit and ***RST*** to move one digit left. Change the value to the maximum capacity of your tank, measure in gallons. Press and hold ***SEL*** to return to the menu, then press ***SEL*** three more times until ***NO*** is displayed. The meter should exit the menu on its own after about a second.

Calibrating the Meter:

Once the tank is filled to a known quantity of fuel, it may be necessary to calibrate the meter by changing the meters offset value.

Enter the setup menu as described above. When the meter displays ***rANGE,*** press ***SEL*** twice until it displays ***OFSet***. Press ***RST*** to change the setting to the value that will adjust the reading to match the amount of fuel in your tank. If you need to enter a negative value, press ***SEL*** until the left-most digit is flashing, then press ***RST*** until a negative sign appears.

When you have entered a value, press and hold ***SEL*** to return to the menu, then press ***SEL*** ten more times until ***NO*** is displayed. The meter should exit the menu on it's own after about a second.

If the meter does not display the correct value, repeat the process to enter a new offset until the meter is accurate.

III-C. OPERATING INSTRUCTIONS

If 95% level is reached, audible and visual alarms are activated. The Compact Automatic Fuel Port valve closes completely and cannot be reopened until the level falls below 95% level.

1. Connect the truck ground cable to the stud provided on the CAFP.
2. Unlock the fill box.
3. Connect the delivery hose to the coupling in the CAFP.(See ***Control Power***)
4. Open the valve on the truck.
5. Turn the Control Power Switch on and press the Fill Valve Open pushbutton.(See ***Open Fill Valve***)
6. The valve opens.
7. Start the delivery pump on the truck.
8. Fuel is delivered to the tank.
9. The delivery may be stopped at anytime by pressing the Close Fill Valve button and proceeding to step #13.
10. At the 90%(typical) fuel level, audible and visual alarms are activated and the valve will close partially to restrict flow.
11. Stop the delivery pump on the truck.
12. Close the valve on the truck.
13. Drain the delivery hose.
14. Disconnect the delivery hose from the CAFP.
15. Turn Control Power off.
16. Close and Lock the Fill Box.
17. Fuel Delivery is completed
18. Disconnect the ground cable from the ground stud.

Control Power

Open Fill Valve

III-D. MAINTENANCE/TROUBLESHOOTING

General Maintenance:

All electrical connections should be tightened every 6 months.

Remove all power before servicing the CAFP. Never operate or service a CAFP that is not grounded.

Troubleshooting:

Although the Compact Automatic FuelPorts are designed with trouble-free operation in mind, some problem can arise. Please consult the following table for solutions to the most common issues before contacting a Simplex service representative.

Problem	Solution
Controller reporting wrong fuel level	Verify float assembly is wired correctly. Verify float assembly is fully installed in tank receptacle. Adjust offset. If your tank is rectangular, check setting for tank capacity.
Ball valve not opening and/ or closing correctly	Check FuelPort piping for obstructions. Checking drawing package to verify valve is wired correctly.
Controller not operating	Verify controller is supplied with power. Remove controller cover and verify relays are seated securely. Check tightness of electrical connections.

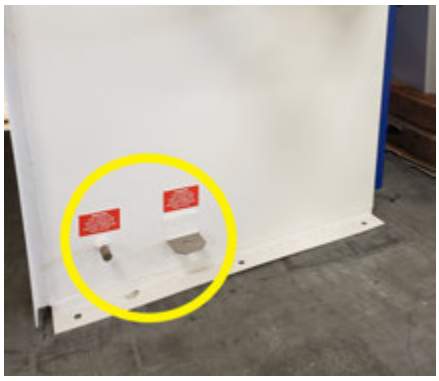
IV. AUTOMATIC FUELPORT, MINI SMARTPUMP AND SMARTPUMP

IV-A. AUTOMATIC FUELPORT INSTALLATION

1. Mount the Automatic FuelPort to wall, floor or concrete pad via the mounting flanges.
2. Connect the Automatic FuelPot to an earth ground via the 1/2" ground stud or bracket on the left-hand side of the assembly (*See **Ground Connections***).
3. Connect the outlet of the Automatic FuelPort to the storage tank(s) using steel or black iron pipe.

NOTE: Please see section ***V. Automatic Fill Controller*** for operating instructions.

Ground Connections



IV-B. MINI SMARTPUMP INSTALLATION

1. Mount the Mini SmartPump to wall via the mounting flanges
2. Connect the Mini SmartPump to an earth ground via the 1/2" ground stud or bracket on the left-hand side of the assembly (*See **Ground Connections***).
3. Connect the outlet of the Mini SmartPump to the storage tank(s) using steel or black iron pipe.

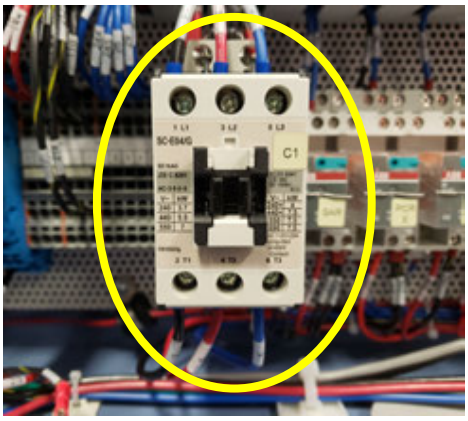
NOTE: Please see section ***V. Automatic Fill Controller*** for operating instructions.

IV-B.1 CHECKING PUMP ROTATION

1. Turn off the control power circuit breaker.
2. Remove the shaft coupler guard (if present) from the pump (see ***Rotation Sticker***).
3. Turn on the control power circuit breaker.
4. Press the Start Fill button. The pump should start and run.
5. The shaft should rotate in the direction indicated on the sticker
   on the motor (*See* ***Rotation Sticker***).
6. If rotation is incorrect:
   a. Press the Stop Fill button.
   b. Turn off the control power circuit breaker.
   c. Open the Control Panel door to access the control compartment.
   d. Locate the overload relay (*See* ***Overload Relay***).
   e. On either side of the relay, reverse the black and red wires.
   Connect the red wire to line one and the black wire to line two.
   f. Close the Control Panel door and repeat steps 3 through 5.
7. Turn the control power circuit breaker off.
8. Reinstall the shaft guard.

Rotation Sticker

Overload Relay



IV-B-2. DRAINING THE SPILL BASIN

1. Start the pump by pressing the Start Fill button
2. Open the basin drain valve (*See* ***Basin Drain Valve***).
3. The pump will start to empty the basin.
4. Stop the pump when the basin is empty by pressing the Stop Fill button.
5. Close the basin drain valve.

Basin Drain Valve

IV-C. SMARTPUMP INSTALLATION

1. Anchor the SmartPump to a concrete pad using the mounting holesin the base of the unit.
2. Connect the SmartPump to earth ground via the 1/2" ground stud on the left-hand side of the assembly (*See **Ground Stud***).
3. Connect the outlet of the SmartPump to the storage tank(s) using steel or black iron pipe.

NOTE: Please see section ***V. Automatic Fill Controller*** for operating instructions.

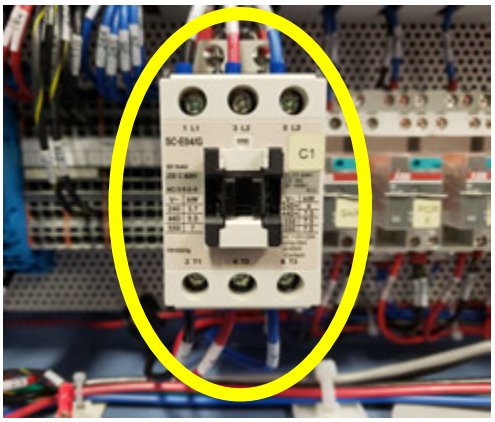
Ground Stud

IV-C.1. CHECK ROTATION

1.Turn off the control power circuit breaker.
2.Remove the shaft coupler guard (if present) from the pump (see Rotation Sticker).
3.Turn on the control power circuit breaker.
4.Press the Start Fill button. The pump should start and run.
5.The shaft should rotate in the direction indicated on the sticker on the motor (See Rotation Sticker).
6.If rotation is incorrect:
  a. Press the Stop Fill button.
  b. Turn off the control power circuit breaker.
  c. Open the Control Panel door to access the control compartment.
  d. Locate the overload relay (*See **Overload Relay***).
  e. On either side of the relay, reverse the black and the black wires.
  Connect the red wire to line one and the black wire to line two.
  f. Close the Control Panel door and repeat steps 3 through 5.
7. Turn the control power circuit breaker off.
8. Reinstall the shaft guard

Rotation Sticker

Overload Relay



IV-C.2 DRAINING THE SPILL BASIN

1. Start the pump by pressing the Start Fill button.
2. Open the basin drain valve (*See **Basin Drain Valve***).
3. The pump will start the empty the spill basin. A full basin should take about 20 seconds to empty.
4. Close the basin drain valve.
5. Stop the pump when the basin is empty by pressing the Stop Fill button.

Basin Drain Valve

IV-C.3 PURGING THE PUMP

You must purge the pump of air on initial startup or whenever as has entered the pump system.

1. Open the Smartpump inlet and outlet valve to flood the system.
(See ***Pump Inlet Valve*** and ***Pump Outlet Valve***)

2. Open the air purge valve located at the pump discharge, then close valve.(See ***Air Purge Valve***)

The pump should now be purged of air.

Pump Inlet Valve

Pump Outlet Valve

Air Purge Valve

V. AUTOMATIC FILL CONTROLLER

The following information applies to the Automatic Fill Controller (AFC), Automatic FuelPorts, Smartpumps and Mini-Smartpumps. This does not apply to the 6" Compact Automatic Controller.

V-A. INSTALLATION OVERVIEW

The Automatic Fill Controller should be mounted at the filling station, then wired to the power source, float assemblies, valves, and any other sensors or system integration connections. Once mounted and properly wired, the AFC panel must be set up/programmed.

Installing Wiring

The AFC panel must be completely wired prior to applying power. Failure to follow the wiring information and guide may result in product damage and loss of warranty coverage. If requested, startup services can be provided by Simplex to check field wiring prior to applying power, as well as assuring proper operation. See job-specific wiring diagrams for details.

Installing Cable Access

To bring cabling into the fill controller, pull or drill a hole into the enclosure at a location of your choosing and install a comparably rated conduit connector for access to the controller.

Installing Control Power

To install control power, see job-specific wiring diagrams for details.

Installing Motorized Ball Valves

If you have a single-tank system, the ball valve is likely already mechanically and electrically installed. If you have a multi-tank system, you will have to install the ball valves in your fuel pipes and connect them to the fill controller.

Verify that the Manual Override Switches on each Motorized Ball Valve (**MBV**) is set to "**Auto**."

See job specific drawings for valve information.

Installing Pressure Relief Valves

In a multi-tank system, you must install a pressure relief valve between the automatic fill controller and the MBVs. The PRV is included in your order.

Installing Float Assemblies

To install the float assemblies, push the latch handles on the assembly down and slide the coupler off. See job specific drawings for float wiring information.

If there are any questions about wiring the AFC, please contact Simplex directly. Simplex is not responsible for damage due to incorrect wiring installation.

V-B. SETUP

Controller Setup

After the AFC panel has been wired completely and all connections confirmed, flip the **Control Power** switch to **ON** to apply power to the panel. On first power up the touch screen will be mostly blank as seen on ***Startup Screen***. Below the screen are 5 function keys used in conjunction with the information on the screen. On the ***Startup Screen,*** the screen shows **SETUP** above the "F1" function key. In this instance, the "F1" function key would take you to the setup menu.

From the setup screen you may choose to configure the **MODBUS** setting, **SYSTEM** settings, or enter the **TANK SETUP** by pressing the soft keys on the touch screen. (See ***Setup Menu***)

Please refer to Appendix B for 7 inch touch screen examples.

System Setup

If **MBV**s are installed, you may enter the delay time in seconds for the valve fail timer. You may also select to display the tank level in either **GALLONS** or **LITERS**. Tank level in percent will always be displayed regardless if gallons or liters is selected.
(See ***System Setup***)

Modbus Setup

Each unit is capable of modbus communication via **RS485**. You may choose the **PARITY**, **BAUD RATE**, and **NODE** address for the unit. The following information is preset from the factory and may NOT be changed via the touch screen.

PROTOCOL: Modbus
HEX ECHO: 2-Wire
STOP BITS: 1

Please refer to the Wiring Diagram in the provided drawing packet for field communication connections.

For **TCP/IP** or **Bacnet** communication settings, please see the **MODBUS POINTS LIST** in the drawing packet shipped with the unit.

Startup Screen

Setup Menu

System Setup

Modbus Settings

Tank Setup

The controller must be configured for your tanks.

Select tank 1-4 buttons to access each tank setup screen by pressing the respective tank soft key button on the touch screen. (See ***Tank Setup***)

To activate the selected tank, press the "**DISABLED**" button to select "**DISABLED**", "**ROUND**" or "**RECTANGULAR**" depending on the type of tank. (See ***Tank Type Setup)***

You will now need to enter the tank data used to calibrate the level transducer. All data will be entered via a pop up numeric entry key pad accessed by pressing the data entry field. (See ***Tank Transducer***)

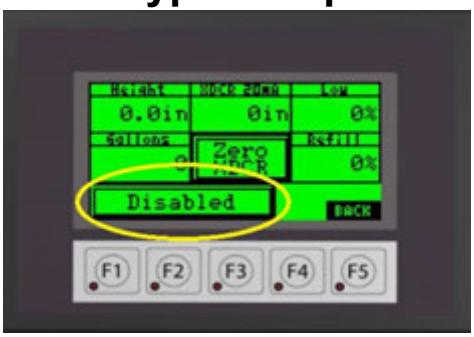
Next, enter the tank interior depth/height in inches in the "**Height**" field. Enter the maximum tank capacity in gallons in the "**Gallons**" field. (See ***Tank Transducer)***

You must also enter the transducer length at 20mA in inches. For system using a **0-5 PSI** pressure transducer, the length will be **170 In**. For systems using continuous level transducers, you will enter the "**Measuring Rang**e" dimension found on the "**Continuous Level Sensor**" drawing of the provided drawing packet. (See ***Tank Transducer 2)***

Once the tank shape, height and volume have been set, the level transducer for the tank must be calibrated (zeroed. To do so, remove the probe from the tank or hold it above the fluid level and press and release the "**Zero XDCR**" button several times to verify the measurement is accurate. When finished, install/return the probe to the tank. (See ***Zero Transducer)***

Tank Setup

Tank Type Setup



Tank Transducer 1

Tank Transducer 2

Once the tank shape, height and volume have been set, the level transducer for the tank must be calibrated (zeroed. To do so, remove the probe from the tank or hold it above the fluid level and press and release the **"Zero XDCR"** button several times to verify the measurement is accurate. When finished, install/return the probe to the tank. (See ***Zero Transducer***)

Zero Transducer

Enter the level in percent to trigger a low fuel alarm by the level probe. This alarm is in addition to and separate from any low-level floats installed in the tanks. Entering "0" disables this feature.
(See ***Low Fuel Set point/Refill Warning)***

Low Fuel Set point / Refill Warning

Enter the level in percent the system should generate a Refill Reminder Warning. Should a tank reach this level, a warning will be generated to inform the site personnel that a fuel delivery should be scheduled. Entering "0" disables this feature. (See ***Low Fuel Set point/Refill Warning***)

Main Screen

Repeat the process for each tank in the system. The main screen will now show the active tank information. The current percent and gallons/liters will be displayed for each tank.
(See ***Main Screen***)

System Check

Before filling the tank, check to see if any alarms or warnings are active. Most alarms and warnings will clear when resolved, but some require a hard reset (toggling the **Control Power** Off and On) to be cleared.

Silence Horn

All alarms and warnings are indicated by an audible horn and red light on the panel below the touch screen and by a red back light on the touch screen. To silence the horn, push the Silence Horn button on the pop-up window on the screen or the push button on the front of the unit. (See ***Silence Horn)***

V-C. OPERATING INSTRUCTIONS

Order of Operation

To fill a tank in the system, you must place the "**Control Power**" switch below the screen in the ON position. This will allow certain option to appear on the screen and powers the motorized ball valves.

Select the appropriate tank by pressing the level indicator for the required tank. This will take you to the individual tank detail screen (*See **Tank Select***).

On this screen you will find the current tank status and fill controls.

1. Current tank status
2. **Start Fill** HMI soft key
3. **Stop Fill** HMI soft key
4. Tank valve status. If used with a Smart Pump, the on-board pump status will be displayed here as well.
5. Current tank level in percent and gallons/liters
6. **Start Fill** Function Key F1
7. **Stop Fill** Function Key F2

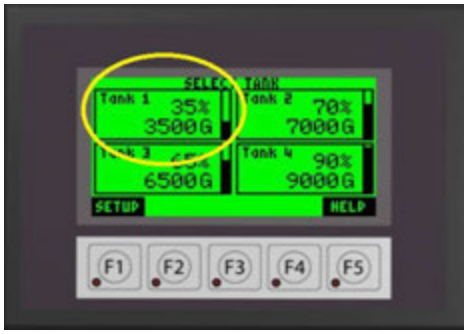
(See ***Tank Detail Screen***).

NOTE: Function keys are not used with the 7 inch touch screen option.

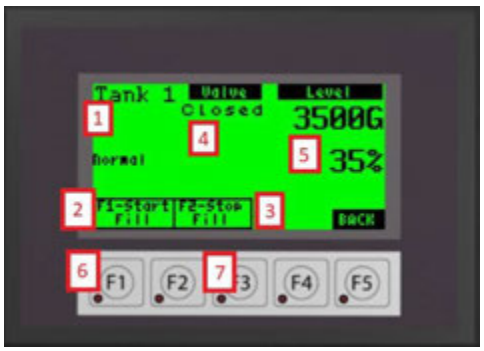
On the selected tank detail screen, you will see that the tank status is normal and the valve is "Closed" (***Start Fill***).

To start the fill process, first connect the truck ground cable to the ground stud. Unlock the fill box and connect the truck hose to the hose coupling. If used with a Smart Pump, open the valve on the truck at this time. Press the "**Start Fill**" button or **F1**. The fill valve will open for the selected tank. The valve status will change from "**Closed**" to "**Travel**" to "**Opened**". If used used with a Smart Pump.

Tank Select



Tank Detail Screen



Start Fill

The delivery may be stopped at any time by pressing the "**Stop Fill**" button or F2.

As the tank fills, the level is continuously updated. If you wish to stop filling before the tank reaches "**Full**" (90% typical), stop the truck delivery pump, and press "**Stop Fill**" (or F2).

Once the tank reaches the "**Full**" level (See ***Tank Full***), the alarm horn will sound to alert the driver and the tank valve will close. The fill process may be started again for 30-second intervals by pressing the "**Fill Start/Override**" again to drain the delivery hose, if required. If the selected Tank reaches the "**High**" (95% typical) level, the alarm will sound, the valve will close, and all filling operations for the selected tank will be prohibited (See ***Tank High***). Another tank may be selected for fill, if applicable.

Repeat the fill process for all tanks in the system. Once filling is completed, close any manual valves, remove the delivery hose, and replace the fill cap. Remove the ground cable and turn the control power off.

Tank Full

Tank High

V-D. ALARMS AND WARNINGS

Alarms

The AFC has several states which cause alarms. Alarms are indicated by a red light on the main panel below the touch screen, an audible horn and indicators on the touch screen. The horn may be silenced by pressing the pop up "**Silence**" button. The specific alarm will be displayed above the silence button.
(See ***Alarm***)
Tank specific alarms are also displayed on the applicable tank detail screen.

On 7 inch screen (optional upgrade) the alarms maybe viewed by pressing the "**Alarm History**" button on the Main Screen. (See **Appendix B**)

Alarm

Actions and Components are Job Specific
See Drawing Package for Details

Alarm	Triggered By	Action Taken By AFC
Low Fuel	Level Transducer	Audio/Visual Alarm Only
Refill Warning	Level Transducer	Audio/Visual Warning Only
Full level	Float Switch	90% (typical) tank level Typical Audio/Visual Alarm Closes valve for selected tank Stop on-board Pump
High	Float Switch	95% (typical) tank level Audio/ Visual Alarm Closes valve for selected tank Stops on-board pump Prohibits fill of selected tank
Critical High	Float Switch or Level Transducer	98% (typical) tank level typical Audio/Visual Alarm Closes valve for selected tank Stops on-board pump Prohibits fill of all tank
Tank Leak	Float Switch	Audio/Visual Warning Closes all valves Stops on-board pump Prohibits fill of selected tank
Loss of Flow	Flow Sensor	Audio/Visual Alarm Closes all valves Stops on-board pump Prohibits fill of all tanks
MBV Failure	Loss of signal from the valve or incorrect position signal from valve	Audio/Visual Alarm Closes all valves Stops on-board pump Prohibits fill of all tanks
Overload	Motor Starter tripped	Audio/Visual Alarm Closes all valves Stops on-board pump Prohibits fill of all tanks

V-E. TROUBLESHOOTING

Problem	Cause	Solution
Screen is blank	1. Control Power isn't available	1. Verify the control power switch is in the ON position. If so, contact the facilities manager for power issues
	2. The fuses are blown	2. Replace the fuses
Tank level indication reads "0%" and "0 Gal"	1. Level transducer not calibrated properly	1. Recalibrate the level transducer.
	2. The level transducer is disconnected.	2. Reconnect the level transducer.
	3. The tank wiring has not been properly connected	3. Check all tank field wiring.
	4. The tank is empty.	4. Schedule a fuel delivery
Tank indicates "Full", "High" and "Critical High"	1. The float stem has been disconnected.	1. Reconnect float stem.
	2. The float stem is not receiving power.	2 . Check float stem wiring.
	3. The fuses are blown.	3. Replace fuses.
	4. The tank is at a critical high state.	4. Cease filling operations.
Tank indicates a valve failure	1. Fuses are blown.	1. Replace fuses.
	2. Valve mode selector switch is not in AUTO	2. Place selector switch in AUTO
	3. The valve wiring was wired incorrectly.	3. Check all valve field wiring.

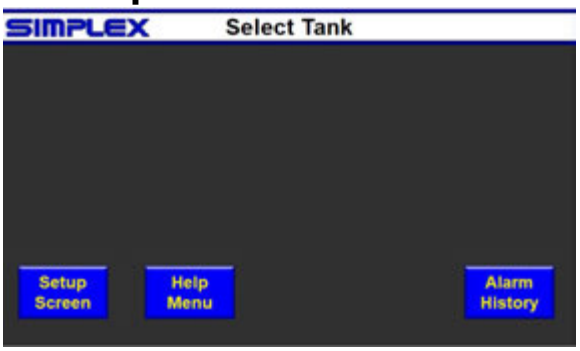
V-F. OPERATING INSTRUCTIONS - AFC Controller

These are abstracted instructions. Please refer to your fill controller section for details.

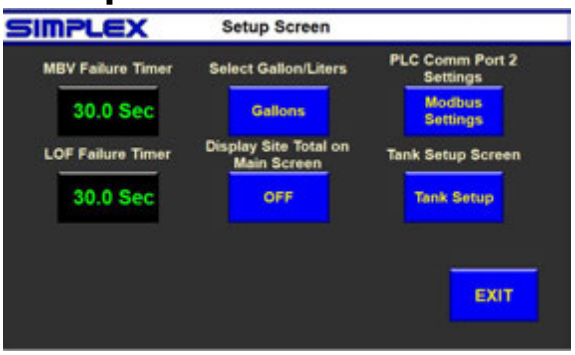
1. Connect a truck ground cable from the truck to the provided ground stud.
2. Connect the delivery hose from the truck to the hose coupling at the unit.
3. On Smartpump/Mini-Smartpump units, open both inlet/outlet isolation valves.
   3-a. On multi-tank Fuelports, verify the manual ball valve is open.3-b.
   3-b. **Smartpump ONLY**, open air purge valve until air has been purged from system and then close valve.
4. Turn the Fill Controller power switch to the **ON** position.
5. Select the appropriate tank to be filled on the touch screen.
6. If equipped with a Bypass feature, verify the switch is in the proper position. Use "By-pass" for trucks equipped WITH a pump or "On-Board" for trucks WITHOUT a pump.
7. Open valve on truck.
8. Press "Start Fill" button on the touch screen or F1 if applicable.
9. Wait for fill valve to completely open, if applicable.
10. On Smartpump/Mini-Smartpump units, the on-board pump will start automatically.
    10a. FuelPort units, start the truck pump
11. Delivery may be stopped at any time by pressing the "Stop Fill" button on the touch screen or F2 if applicable.
12. When the "Tank Full" level is reached, an indication will be displayed, the alarm horn will sound, the fill valve will close, and/or the on-board pump will stop, if applicable.
13. Filling may continue in 30 second increments by pressing the "Hose Drain" button, or F1 if applicable.
14. Stop the pump on the truck, if applicable.
15. If filling more than 1 tank, return to step 5.
16. If the "Tank High" level is reached, an indication will be displayed, the horn will sound, the valve will close, and/or the on-board pump will stop, if applicable. The selected tank will be locked out from any further filling operation until the level drops below the high level.
17. If any tank in the system should reach the "Critical High" level, all valves and any pumps will be locked out until the critical high has cleared. (**Multi-tank system only**)
18. When filling operations are complete, return to the Main Screen.
19. On Smartpump/Mini-Smartpump units, close both inlet/outlet isolation valves.
20. Disconnect the delivery hose.
21. Turn the Fill Controller power switch to the **OFF** position.
22. Close and lock the fill unit.
23. Disconnect the truck ground cable.

APPENDIX A - 7 INCH SCREEN REFERENCE

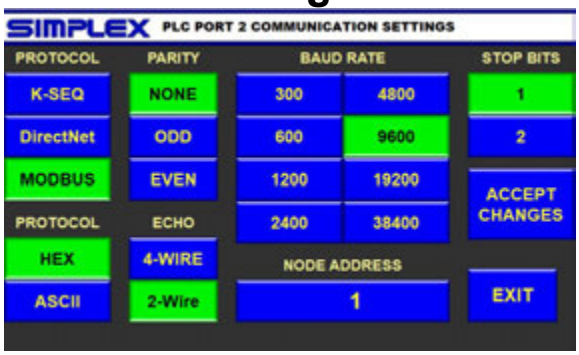
Startup Screen



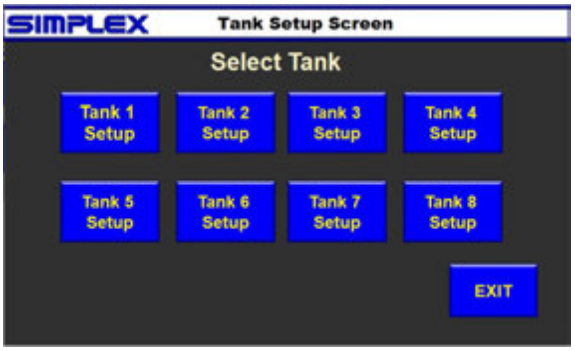
Setup



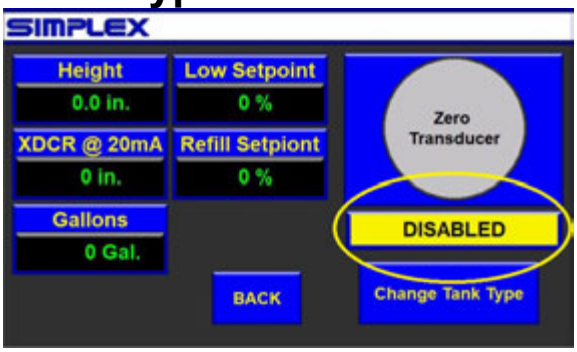
Modbus Settings



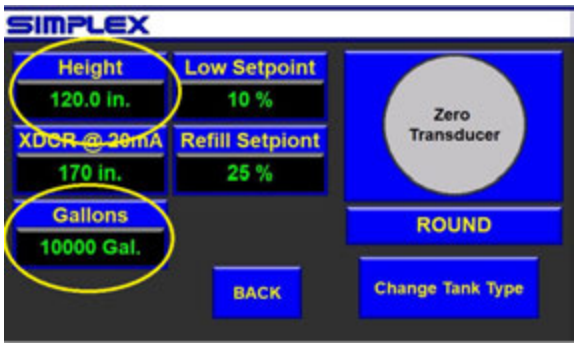
Tank Setup



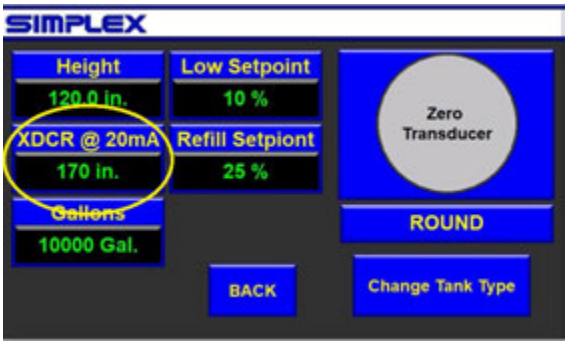
Tank Type



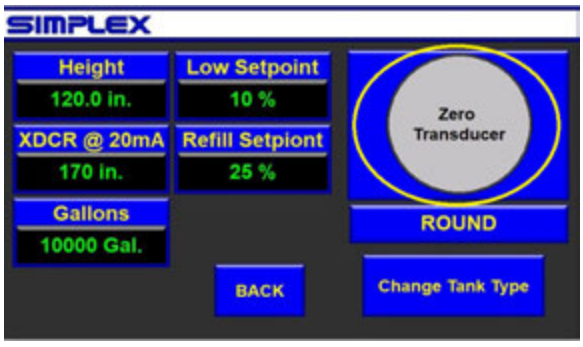
Tank Transducer 1



Tank Transducer 2

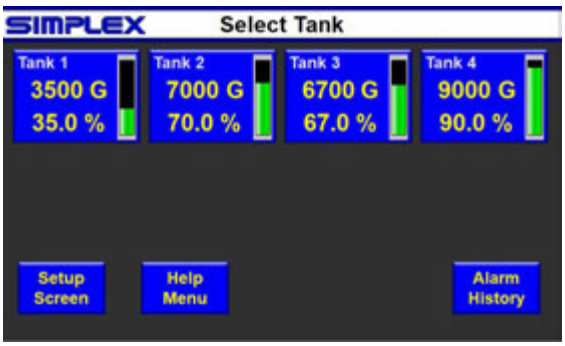


Zero Transducer

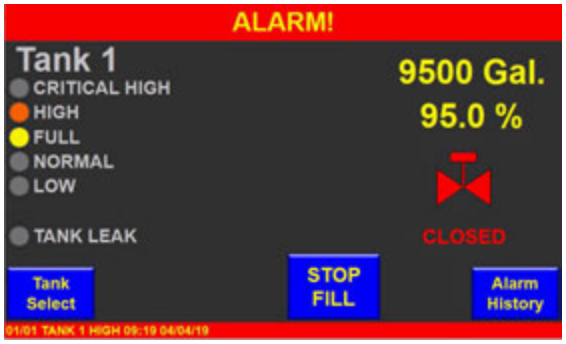


APPENDIX A - 7 INCH SCREEN REFERENCE

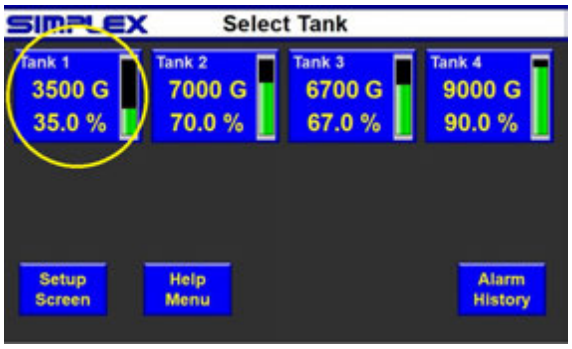
Main Screen



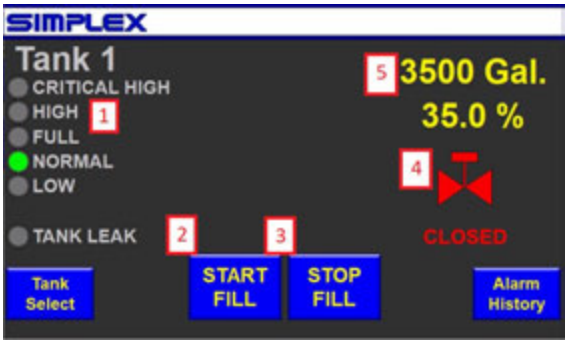
Silence Horn



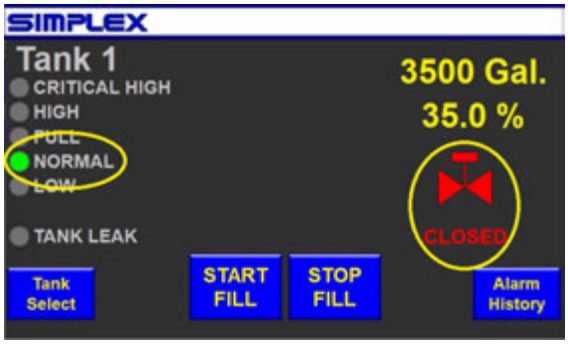
Tank Select



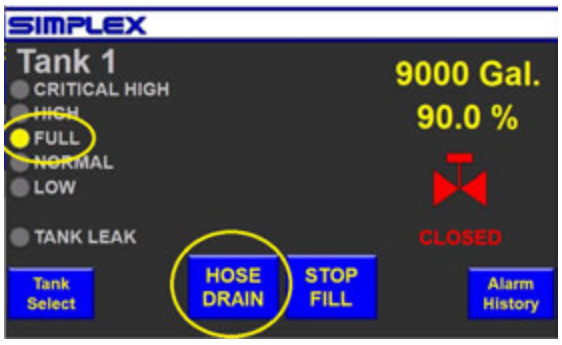
Tank Detail Screen



Start Fill

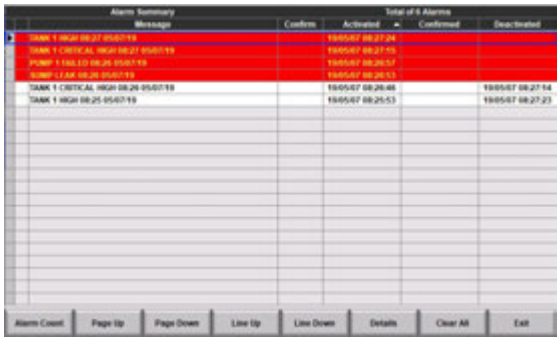


Tank Full



Tank High

Alarm



APPENDIX B - CAFP SLIM MODEL

II-A. INSTALLATION

The FuelPort Slim can be installed:

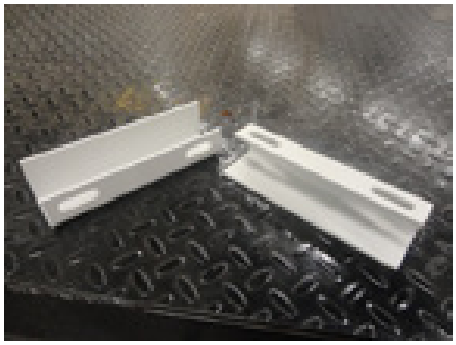
1. Welded to a tank
2. Surface mounted

Welding FuelPort to Tank:

You can mount the FuelPort directly on a storage tank by welding two mounting brackets to the tank and bolting the FuelPort to them. (See ***Weld Brackets***)

Follow all necessary safety procedures when welding the brackets to your tank. Simplex is not responsible for damages or injuries sustained due to improper safety precautions.

Weld Brackets



Surface Mounting:

The FuelPort may be mounted to a wall using the pre drilled mounting flanges on the top and bottom of the unit

Verify that the surface and hardware are sufficient to support the FuelPort's weight. Simplex is not responsible damages occurring as a result of insufficient support.

Sequence of Operation:

Control Panel

1. Fuel delivery is initiated by palcing the mode switch in the **FILL** position.
2. Fuel from the delivery truck is directed to the storage tank. When the fuel level in the tank reaches 90%(FULL), the solenoid valve (shipped loose) will close, the **FULL LEVEL** indicator will light (*See **Control Panel***), and an alarm will sound.
3. Inorder to drain the delivery hose, place the mode switch in the **HOSE DRAIN**. The full float will be bypassed and the solenoid will open.
4. If the fuel level in the tank reaches 95%(HIGH) a high fuel float close the solenoid valve, the **HIGH LEVEL** indicator will light, and an alarm will sound.
5. The alarm horn can be silenced by placing the mode switch in the OFF position.
6. Remote annunciation is provided via dry contacts for the following points
   A. TANK FULL
   B. HIGH FUEL

Contact Simplex

for all your Load Bank and Fuel Supply needs.

Simplex, Inc.
5300 Rising Moon Road
Springfield, IL 62711

800-637-8603
www.simplexdirect.com

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