SIMPLEX®
Insight Onsite

MTSP

MAIN TANK SELECTOR PANEL

Last Revision Date: June 8, 2021

For the most up-to-date information for this product and others, please contact Simplex, Inc. at (800) 637-8603 or visit us on the web at http://www.simplexdirect.com.

Many of the illustrations and instructions in this manual refer to the standard configuration for this product. If you have requested customizations, the drawings provided with your order take precedence; please refer to them for details specific to your order.

If you have any questions,
please contact Simplex at 800-637-8603.

Table of Contents

1 WARNINGS AND CAUTIONS

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.

Cautions

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.

- 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.
- The National Electrical Code (NEC), Article 250 requires the frame of the equipment to be connected to an approved earth ground and/or grounding rods. 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.
- 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 illustrations in this manual are examples only and may differ from your unit.
- Main Disconnect to be provided by installer, rated 600V maximum, sized 150% maximum of rated current.
- The system shall be for use with fuel oil as described by NFPA321, "Basic Classification of Flammable and Combustible Liquids." As defined by this standard, the fuel supply system shall be for use with "combustible liquids," those having a flash point at or above 100°F and further defined as Class II or Class III liquids. In no case shall a liquid having a flash point less than 100°F be used. In every case, the system shall not be used or applied at a temperature in excess of the flash point of the contents. Electrical equipment used in the system shall be in accordance with NFPA30, section 5-7, wherein it states "For areas where Class II or Class III liquids only are stored or handled at a temperature below their flash points, the electrical equipment may be installed in accordance with provisions of NFPA70, National Electrical Code, for ordinary locations..."

2 DESCRIPTION AND SPECIFICATION

Overview of use

The Main Tank Selector Panel provides intelligent control and monitoring of fuel delivery and storage.

The MTSP fills multiple day tanks from main storage tanks. The MTSP can monitor the fuel levels in the main tanks to ensure there is sufficient fuel for filling operations.

A touch screen provides monitoring, while communication options allow for central monitoring from a building management system (BMS/BAS).

Capabilities

The MTSP is capable of monitoring and controlling round or rectangular tanks. The MTSP controls a pair of valves per tank and also monitors the position of each valve to ensure accurate filling of the desired tank. If the position of any tank's valve is not verified, further operation is prohibited for the entire system. This verification prevents the wrong tank from being filled.

Safety

The MTSP can also alert the user when the tank reaches adjustable refill and low fuel levels.

The MTSP also monitors a leak sensor for each tank. When a leak is detected, filling of that tank is prohibited.

The motorized ball valves are fitted with manual overrides to allow filling in emergency situations.

3 UNPACKING

Included Components and Parts

The following items are included with your Main Tank Selector Panel. If any of the following are not included, please contact your Simplex representative or call Simplex Direct, Inc., at 800-637-8603.

1. Main Tank Selector Panel
2. Valve(s)
3. Manual
4. Drawings package

Primary Inspection

Preventative visual inspection of the ship-ping crate and the Main Tank Selector Panel is advised. Never apply power to a Main Tank Selector Panel before performing this procedure. The following four-point inspection is recommended before installation and as part of a 6-month maintenance schedule:

If any problems are observed during Primary Inspection, call Simplex 24 hours a day at 800-637-8603

1. If the crate shows any signs of damage, examine the Main Tank Selector Panel in the corresponding areas for signs of initial problems.
2. Check the entire outside of the cabinet for any visual damage, which could cause internal electrical or mechanical problems due to reduced clearance.
3. Check electrical connections for tightness.
4. Examine all accessible internal electrical components.

4 INSTALLATION

The Main Tank Selector Panel should be mounted at the desired location, then wired to the power source, float assemblies, valves, and any other sensors or system integration connections.

INSTALLING WIRING

The Main Tank Selector Panel must be com-pletely wired prior to ap-plying power. Failure to follow the wiring information and guide may result in product dam-age and loss of warranty coverage. If requested, startup services can be provided by Simplex Onsite, Inc. or Simplex, Inc. to check field wiring before applying power as well as assuring prop-er operation.

To bring cabling into the MTSP, pull a hole into the cabinet at a lo-cation of your choosing and install a 3R-rated conduit connector for access.

INSTALLING CONTROL POWER

To install control power, connect a 115VAC, 60Hz, 15 amp power source to the MTSP's Main Disconnect Switch.

INSTALLING BALL VALVES

Install the valves at a location of your choice between the junction and the tanks.

Connect each ball valve to the MTSP as follows:

Table 1 Ball valve connections

Storage Tank 1 Return Valve	
Common	TB-MBV1-6
Valve Closed	TB-MBV1-5
Valve Opened	TB-MBV1-4
Ground	TB-MBV1-G
Open Valve	TB-MBV1-3
Close Valve	TB-MBV1-2
Neutral	TB-MBV1-1

Storage Tank 1 Supply Valve	
Common	TB-MBV2-6
Valve Closed	TB-MBV2-5
Valve Opened	TB-MBV2-4
Ground	TB-MBV2-G
Open Valve	TB-MBV2-3
Close Valve	TB-MBV2-2
Neutral	TB-MBV2-1

Storage Tank 2 Return Valve	
Common	TB-MBV3-6
Valve Closed	TB-MBV3-5
Valve Opened	TB-MBV3-4
Ground	TB-MBV3-G
Open Valve	TB-MBV3-3
Close Valve	TB-MBV3-2
Neutral	TB-MBV3-1

Storage Tank 2 Supply Valve	
Common	TB-MBV4-6
Valve Closed	TB-MBV4-5
Valve Opened	TB-MBV4-4
Ground	TB-MBV4-G
Open Valve	TB-MBV4-3
Close Valve	TB-MBV4-2
Neutral	TB-MBV4-1

Storage Tank 3 Return Valve	
Common	TB-MBV5-6
Valve Closed	TB-MBV5-5
Valve Opened	TB-MBV5-4
Ground	TB-MBV5-G
Open Valve	TB-MBV5-3
Close Valve	TB-MBV5-2
Neutral	TB-MBV5-1

Storage Tank 3 Supply Valve	
Common	TB-MBV6-6
Valve Closed	TB-MBV6-5
Valve Opened	TB-MBV6-4
Ground	TB-MBV6-G
Open Valve	TB-MBV6-3
Close Valve	TB-MBV6-2
Neutral	TB-MBV6-1

Installing BMS monitoring

If Lonworks monitoring is desired, connect Lonworks cable to Lonworks gateway.

Installing dry contact alarms

To connect the controller to external alarms, connect TB-R to your system as follows:

Table 2 Dry contact alarm connections

Summary Alarm

TB-R-1 - Common

TB-R-2 - Normally Open

TB-R-3 - Normally Closed

Connecting sensors

To connect the controller to external sensors, connect TB-B to your system as follows:

Storage Tank 1 High

TB-B-1

TB-B-7

Storage Tank 1 Low

TB-B-1

TB-B-6

Storage Tank 2 High

TB-B-2

TB-B-9

Storage Tank 2 Low

TB-B-2

TB-B-8

Storage Tank 3 High

TB-B-3

TB-B-11

Storage Tank 3 Low

TB-B-3

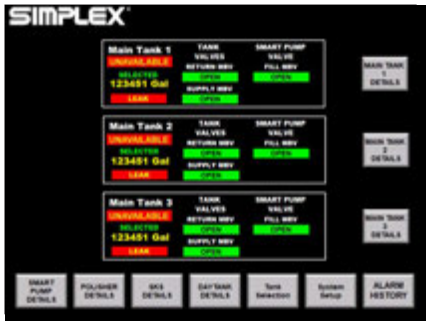
TB-B-10

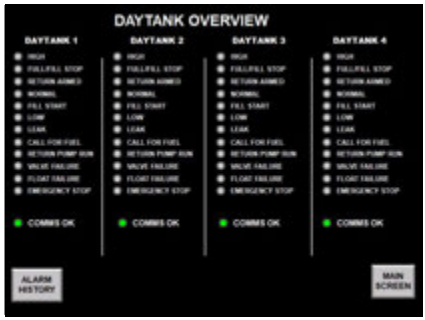
Installing Simplex Network

In order for the MTSP to function correctly, connect:

1. RS485+ to TB-C-2
2. RS485- to TB-C-3
3. Wire Shielding to TB-C-1

5 OPERATING INSTRUCTIONS





The Main Tank Selector Panel provides selection from multiple main tanks to fill day tanks. When a main tank is selected, valves align to provide fuel to only the requesting day tank; all other tanks are blocked from transferring fuel.

The touchscreen interface indicates which main tank is selected and the status of the day tanks.

When a day tank is in need of fuel, the Main Tank Selector Panel will open the supply valve from the selected main tank and open the fill v alves t o t he d ay tank. The valves will continue to distribute fuel until all requests are met, at which time the valves will close to stop fuel transfer.

If the fuel level in the selected main tank reaches a pre-set low level condition, that main tank is placed in the offline mode. If the other tank is in Online mode and has fuel, that tank will become the selected tank, the return valve will open, and once the return valve on the newly selected tank is fully open the outgoing tank return valve will close.

Pressing either Day Tank or SmartPump will bring up the status screens for other portions of the Simplex Fuel Network. Here you can verify that the equipment is working properly and mon-itor the system for any errors or alarms .

6 ALARMS AND WARNINGS

The Main Tank Selector Panel can report 115 points to the BMS via Lonwork; see points list for details.

Simplex, Inc.
5300 Rising Moon Road
Springfield, IL 62711-6228

(800) 637-8603
www.simplexdirect.com