



Overview

Integration of tank/fuel management into a single system:

- Tank gauging
- Leak protection
- Level alarms
- Fuel heating/temperature control
- Fuel filtration
- Tank filling/overflow protection
- Day tank automation, overflow protection
- Remote communication

Ideal for data center generator sets

Description

The Simplex Triton is an integrated fuel and tank management system which combines critical functions into a single, factory packaged system including:

1. Tank level gauging
2. Tank leak detection
3. Fuel level alarms
4. Fuel heating and temperature control
5. Fuel filtration including water separation
6. Tank filling/ overflow protection when combined with a Simplex Automatic FuelPort, Mini-SmartPump or SmartPump
7. Conversion of base tank to an automatic day tank when combined with Simplex Packaged Pump Sets or Simplex Pump Controllers
8. Communication with building management or SCADA systems, event logging

The Triton is ideal for use with generator sets equipped with base mounted fuel tanks, typical of data center applications

The critical functions listed above are integrated into an onboard PLC with touchscreen operator interface running proprietary software. The PLC communicates with the BMS or SCADA system via MODBUS (RS485 standard, Ethernet optional).



The Triton is a robust, turnkey system which provides essential fuel reliability functions while eliminating the need to procure and assimilate diverse, unrelated and potentially incompatible sub-systems. With the Triton, these essential functions run and communicate seamlessly and are supported by a single source: Simplex.

The Simplex Triton is packaged for interior or exterior (with optional weatherproof enclosure) installation, single fuel inlet/outlet connections and simplified power connections. All required level, leak and temperature sensors along with integration software are included.

Essential Systems

Tank Gauging

The Triton is supplied with either a 0.25-inch resolution electro-mechanical continuous level sensor (standard) or a 0.10 inch resolution, high accuracy magnetostrictive continuous level sensor (optional). Both sensors provide a 4-20mA input to the onboard PLC for level display on the touchscreen, generation of programmable level alarms and communication of same to the BMS or SCADA system

Leak Detection

The Triton includes:

- Primary tank leak sensor, unit leak sensor; input, display and alarm register
- Four (4) user configurable inputs for remote leak sensors, configurable display and alarm register suitable for interstitial, sump, double-wall pipe sensing

Fuel Temperature Control

The Triton includes a circulation type fuel heater in-line with the filtration system and fed by the onboard circulation pump. Features include:

- 4.5 – 9.0 kw heater
- 120, 208, 240v; single-phase
- Thermostatic control via supplied tank mounting temperature sensor
- High temperature limit switch
- Loss of flow cutout
- Pump run enabling
- Integration with level gauging for low level cutout

Fuel Filtration

The Triton includes 3-stage filtration and water separation:

- Spin-on 30-micron pre-filter
- Cartridge type combination 5-Micron final filter, 15 PPM water coalescor/separator, with pressure differential sensors
- Water detection (optional)

Heater Performance, Temperature Rise, °F

Pump Size	Heater, KW/240V Amps			
GPM	2.25/9.4	4.5/1.9	7.0/29	9.0/38
2	8.27	16.5	25.7	33
4	4.1	8.3	12.9	16.5
7	2.4	4.7	7.35	9.5
10	1.7	3.3	5.1	6.6

Pump Selection

GPM	HP	240V FLA
2	0.33	3.2
4	0.33	3.2
7	0.5	4.3
10	0.75	5.5

System Power Requirements

240V, Single-phase, 60Hz

Select pump and heater, add respective FLA plus 2.0A control load.

Time To Circulate 100% of Fuel, Hours

Pump Size		Tank Size, Gallons								
GPM	GPH	1000	2000	3000	4000	5000	6000	7000	8000	9000
2	120	8.3	16.7	25	33.3	42	50	58.3	66.6	75
4	240	4.2	8.4	11.5	16.7	21	25	29	33.4	37.5
7	420	2.4	4.8	7.1	9.5	12	14.2	16.7	19	21.4
10	600	1.7	3.4	5	6.7	8.3	10	11.7	13.4	15

Triton Selection Guide

Triton, 2GPM, 2.25kw heater, options: weatherproof, 3 leak sensors, particle counter

T	2	A	ZX3W
Triton Fuel Management System	Pump	Heater	Options
	2 GPM	A - 2.25kw	Z Weatherproof
	4 GPM	B - 4.5kw	Y Magnetostrictive Level Sensor, in lieu of Mechanical Type
	7 GPM	C - 7.0kw	X (1-4) Additional Leak Sensor, up to 4
	10 GPM	D - 9.0kw	W Particle Counter
			V Magnetic Fluid Channel
			U Ethernet Communication Module
			T 4-20ma input, in addition to digital
			S Water Sensor

Circulation Pump

The Triton includes an onboard circulation pump for filter and heater operation:

- 2-4-7-10 GPM.
- 1/3, 1/2, 3/4HP, 120/240v, single-phase motor
- Includes shutoff valves, check valve, flow switch

Enclosure and Mounting

The Triton is factory packaged:

- Wall / floor mountable
- Indoor (standard) or outdoor (optional, includes weatherproof enclosure and interior heater)
- Single-point power connection (dedicated heater connection for large heaters)
- Fuel inlet, fuel outlet pipe connections
- Leak containment basin with leak sensor
- Control panel with access door
- Removable equipment covers
- Powder coated

TOTAL-FILTER Design

The Triton Filtration System features the Simplex Exclusive TOTAL-FILTER design.

WITH TOTAL-FILTER, 100% OF THE FUEL IS CIRCULATED AND FILTERED. All settled water and particulates are swept into the filter and removed.

The Triton is supplied with special suction and return drop tubes and tank top fittings suitable for standard 2-inch NPT ports.

TOTAL-FILTER assures the filtration performance that users expect.

Options

- Magnetostrictive level sensor, 4-20ma output, in lieu of standard electro-mechanical level sensor .01 inch resolution, 0.5% accuracy.
- Ethernet communication module
- 4-20mA level output (in addition to digital output)
- Outdoor weatherproof construction, including weatherproof enclosure and interior heater
- Additional leak sensors, up to 4 total. Float switch type.
- Magnetic fluid channel
- Particle counter and optional software
- Water sensor

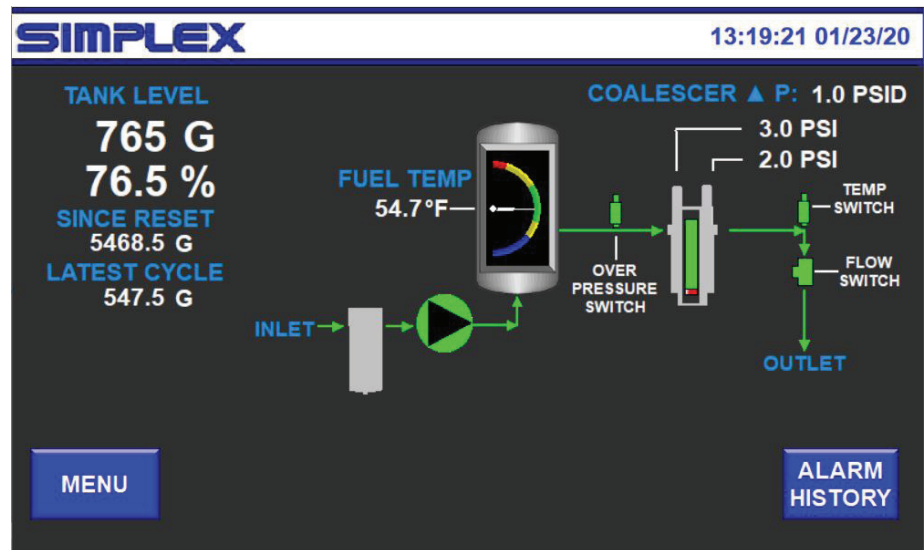
Digital Control System

The Triton is equipped with a digital control system as follows:

1. PLC with discrete inputs and outputs as required, RS232/485 (standard) and Ethernet (optional) ports, 4-20mA inputs, thermocouple inputs, SD program card for easy upgrade or modification of resident program.
2. Touchscreen operator interface, 7-inch color TFT LCD widescreen with LED backlight

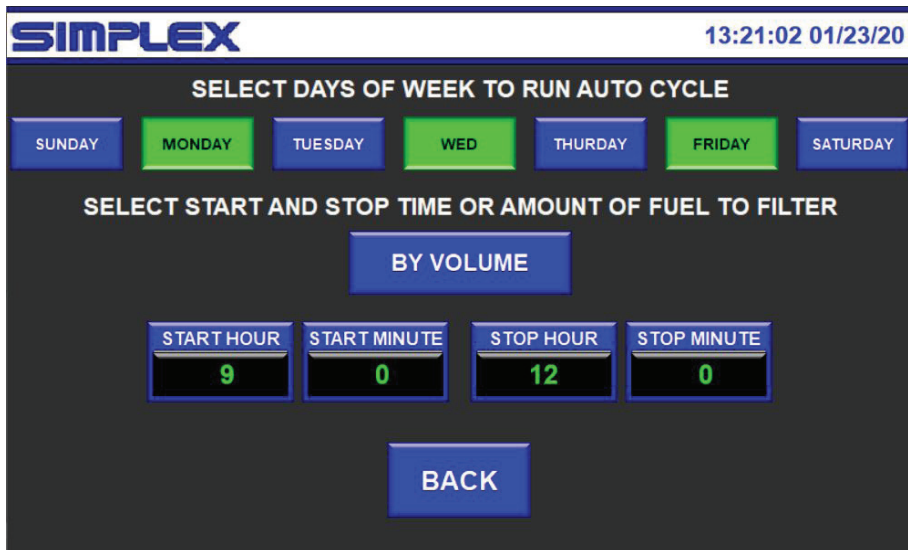
The following functions are provided by the Triton proprietary software:

1. Tank gauging
 - a. 0.25-inch (standard) or 0.10 inch (optional) resolution fuel level measurement.
 - b. 4-20mA level sensor input
 - c. Display of level on touchscreen. Analog and digital display. Gallons, liters or percent.
 - d. Programmable for rectangular or cylindrical tanks
 - e. Pre-programmed level alarms (Low-25%, High-95%, Critical High-98%)
 - f. Four (4) user programmable set points for level alarms or pump control
 - g. Integrated with tank heater and fuel filter for low level cutout
 - h. Registers for remote reading of level and level alarms
 - i. 4-20mA level output (optional)
 - j. Can be integrated with Simplex Filling Systems including Simplex Automatic FuelPort, Simplex Mini-SmartPump or Simplex SmartPump
2. Fuel temperature control
 - a. Circulation heater utilizing on-board pump
 - b. 2.25-9.0 kw
 - c. 208-240v, single-phase
 - d. PLC monitors tank installed temperature sensor
 - e. PLC provides thermostatic control of fuel temperature, with programmable low temp-high temp-temp-differential setpoints

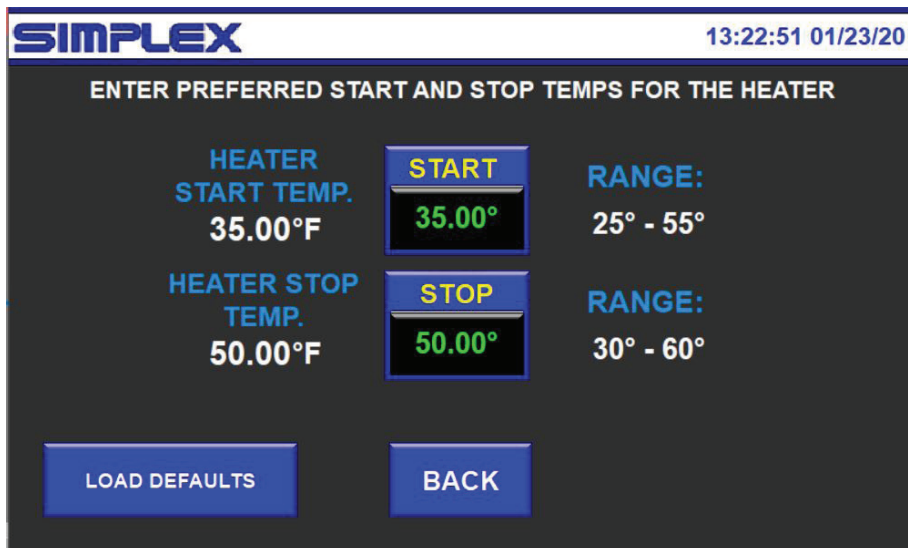


MAIN SCREEN

- f. Separate overtemperature limit switch for high temperature cutout
- g. Loss of flow cutout
- h. Low level cutout (integrated with tank gauge above)
- i. Pump running interlock
- j. Continuous fuel temperature display
- k. Fuel temperature register for remote reading
- l. Fuel temperature alarms and status, local display and remote registers
- m. Auto-Off switch with not-auto alarm
3. Fuel filtration
 - a. Automation of filtration, programmable by day, start time and duration
 - b. Monitoring of pressure differential sensors to determine filter element condition
 - c. Monitoring of optional water sensor
 - d. Flow and pump run interlocks
 - e. Auto-Off-Run mode switch
 - f. Display of filter condition on touchscreen
 - g. Remote alarm registers
4. Tank leak detection
 - a. Monitoring of up to 6 discrete leak sensors
 - b. Primary tank leak and unit leak supplied standard
 - c. Four (4) configurable leak inputs/registers
 - d. Local alarms on touchscreen
 - e. Remote alarm registers
5. Tank filling control (optional)
 - a. For use with optional Simplex Filling Systems: Automatic FuelPort, Mini-SmartPump, SmartPump
 - b. Integration of tank level and programmable discrete level detection, leak detection, to enable and control remote tank filling system
 - c. Output relay for fill valve
 - d. Inputs for 3 discrete point sensing level float switches
 - e. Status display on touchscreen
 - f. Remote alarm registers
6. Automation of fuel tank as a day tank (optional)
 - a. For use with optional Simplex Pump Sets or pump controllers
 - b. Integration of tank level and programmable discrete level detection, leak detection, to enable and control remote tank filling system
 - c. Output for tank fill control valve



AUTOMATIC OPERATION SCREEN



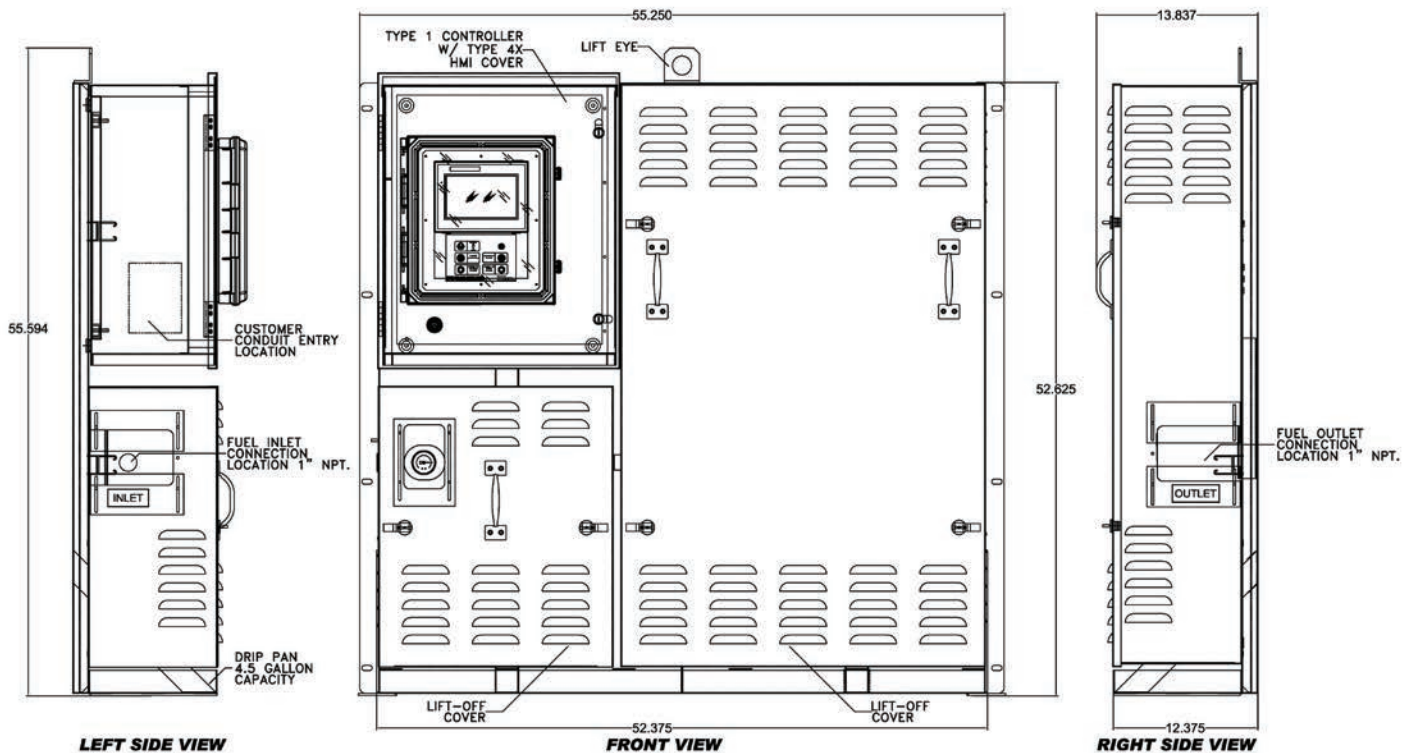
TEMPERATURE SETPOINTS SCREEN

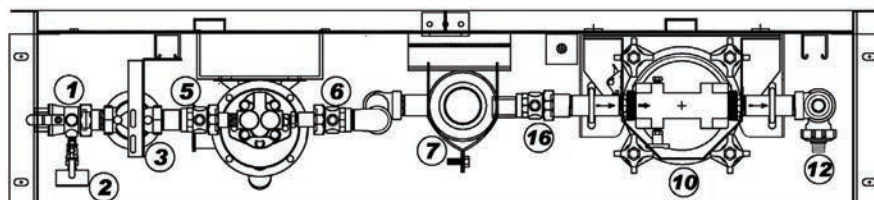


7. Communication

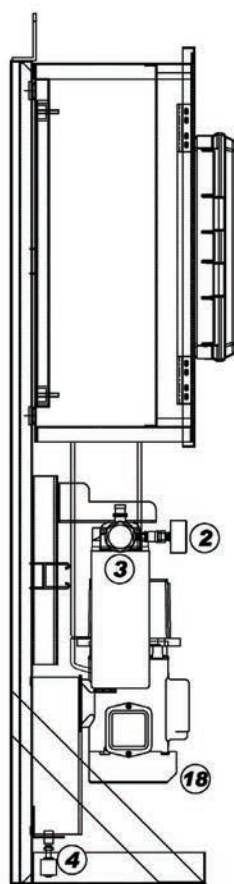
- a. Communicates with remote BMS or SCADA via Modbus (RS485 standard, Ethernet optional)
- b. Tank level (digital register)
- c. Tank level (4-20mA analog output) (optional)
- d. Each of preset discrete level setpoints, low (25%), high (95%), critical high (98%)
- e. Each of four (4) user configurable level setpoints
- f. Each of up to 6 leak sensors, including standard primary tank leak sensor and standard unit leak sensor
- g. Fuel temperature
- h. Low temperature alarm
- i. Heater running
- j. High temperature limit alarm
- k. Heater not-auto
- l. Pump running
- m. Service final-filter
- n. Water detection (optional)
- o. Filter not-auto

Dimensions and Key Features

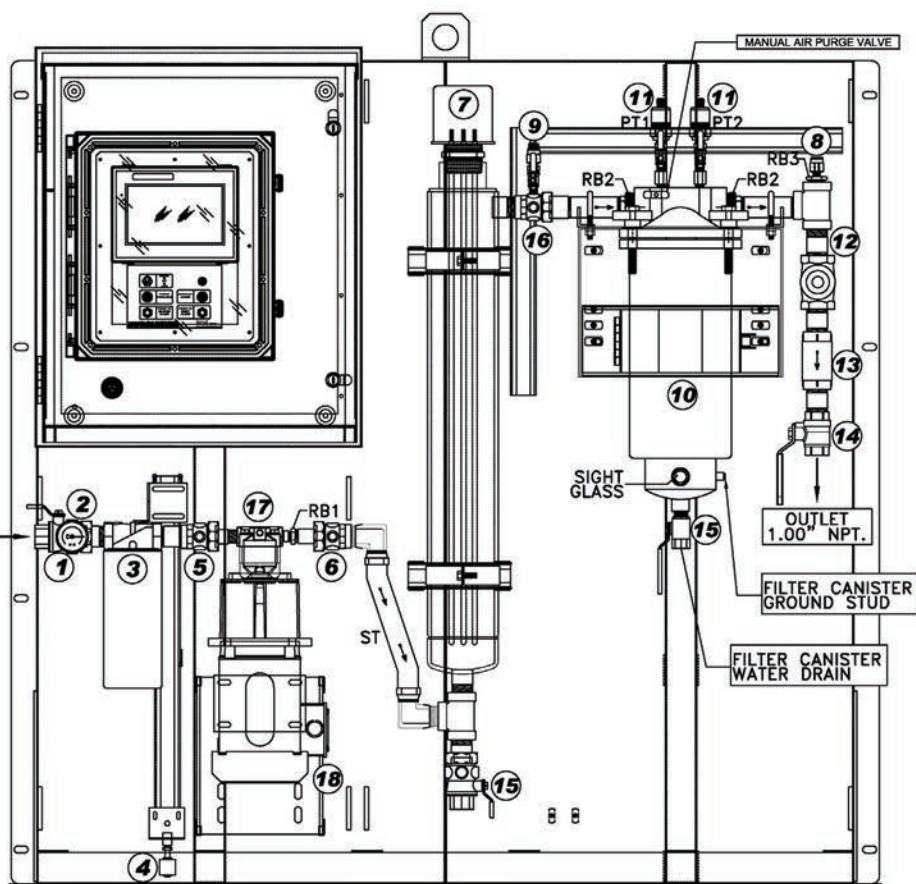




TOP VIEW LESS CONTROLLER



LEFT SIDE VIEW



FRONT VIEW

- | | |
|-------------------------------|----------------------------------|
| 1. Manual Ball Valve | 10. Final Filter Water Coalescer |
| 2. Vacuum Gauge | 11. Pressure Transducer |
| 3. Pre-Filter | 12. Flowswitch |
| 4. Sump Fuel Line Leak Sensor | 13. Check Valve |
| 5. Pump Inlet Union | 14. Manual Ball Valve |
| 6. Pump Outlet Union | 15. Manual Ball Valve |
| 7. Circulation Heater | 16. Heater Outlet Union |
| 8. Over Temperature Switch | 17. Circulation Pump |
| 9. Pressure Switch | 18. Pump Motor |

