O: 805-462-8849
Fueltech.us

Fuel Technologies International

Model FTI-20A

Single Tank
Automated Diesel Fuel Maintenance System

Controller Programming and Operating Instructions

Contents

1. Introduction

a. This manual assumes the system is installed and ready for operation. If the system has not yet been installed, please refer to the installation manual for instructions.

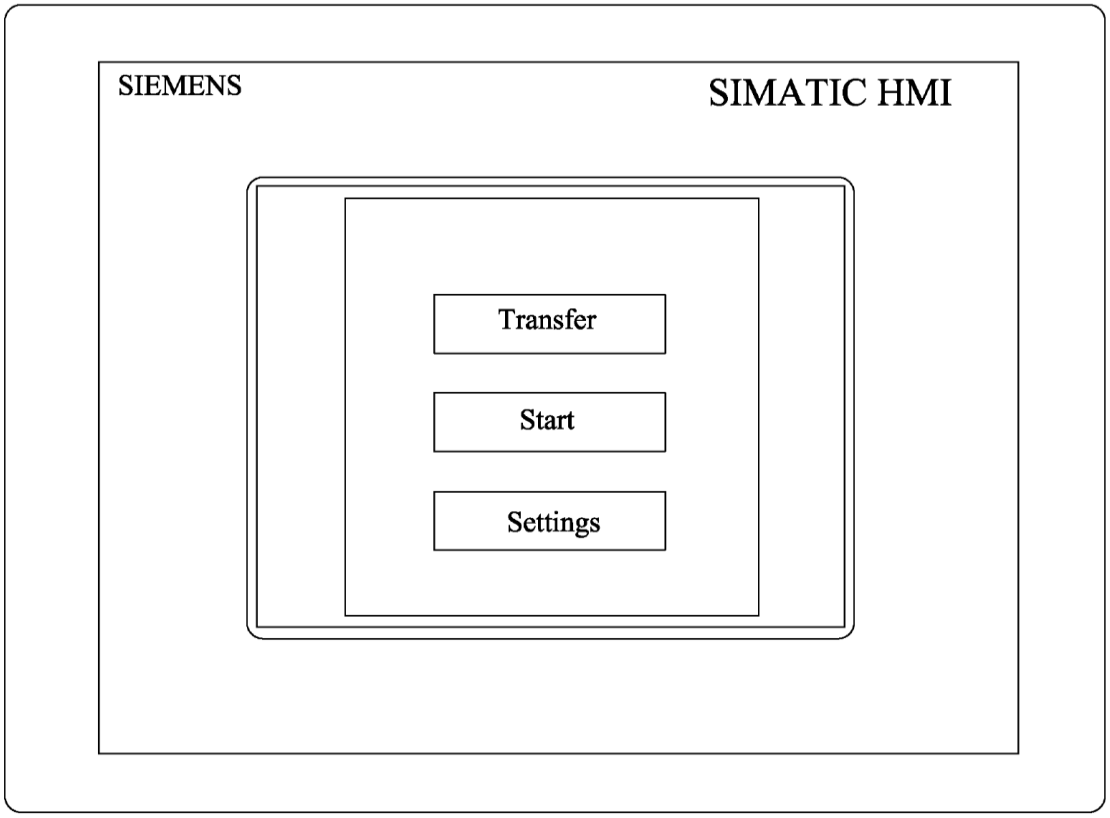
2. Overview

a. FTI Fuel Monitoring and Maintenance Systems are designed for ease of use. Once installed, the system will operate automatically to schedule you program into it. The schedule should be determined by your specific needs, fuel and tank conditions, weather, etc. and can be changed at any time. **It is recommended to filter approximately 20% of the tank per week**. (If you are not sure what your optimum schedule might be, your FTI representative can assist you)
b. Your FTI system will maintain all data input by you, such as the time, run time hours, etc. **This will last for up to 100 hours without power. After that, the data will have to be re-entered.**
c. If the system is in auto mode and stopped for any reason, it will resume schedule during the 1st hour, when the interruption is complete. You can also switch to manual mode at any time. The system will resume with the preprogrammed schedule when put back into auto mode during the 1st hour. **After the 1st hour re-program the start time.**
d. Depending on the condition of the fuel to be maintained, you may initially be changing filters more frequently than expected. Your FTI system will stop operation and signal you when filters are full. It will also let you know which particular filter should be changed, and will resume the program when restarted after the filer is replaced. As the fuel quality progressively increases, you will notice a dramatic drop in filer usage.
e. In cases of Serious Contamination, it is recommended that you have your Fuel Polished prior to initial use of your FTI system. Since the FTI system is proactive, continued use prevents the fuel from deteriorating again and maintains a healthier environment to protect both the fuel and the tank.

3. Installation Precautions:

a. Models FTI-20A Single Tank has no protection against thermal expansion for the fuel lines. If the fuel lines are installed without pressure relief, damage may occur to the pump, motor or filters.
b. Installer should prevent any closed loop with the FTI-20A system in the middle.
c. FTI will not be responsible for any damage due to excessive line pressure caused by thermal expansion.

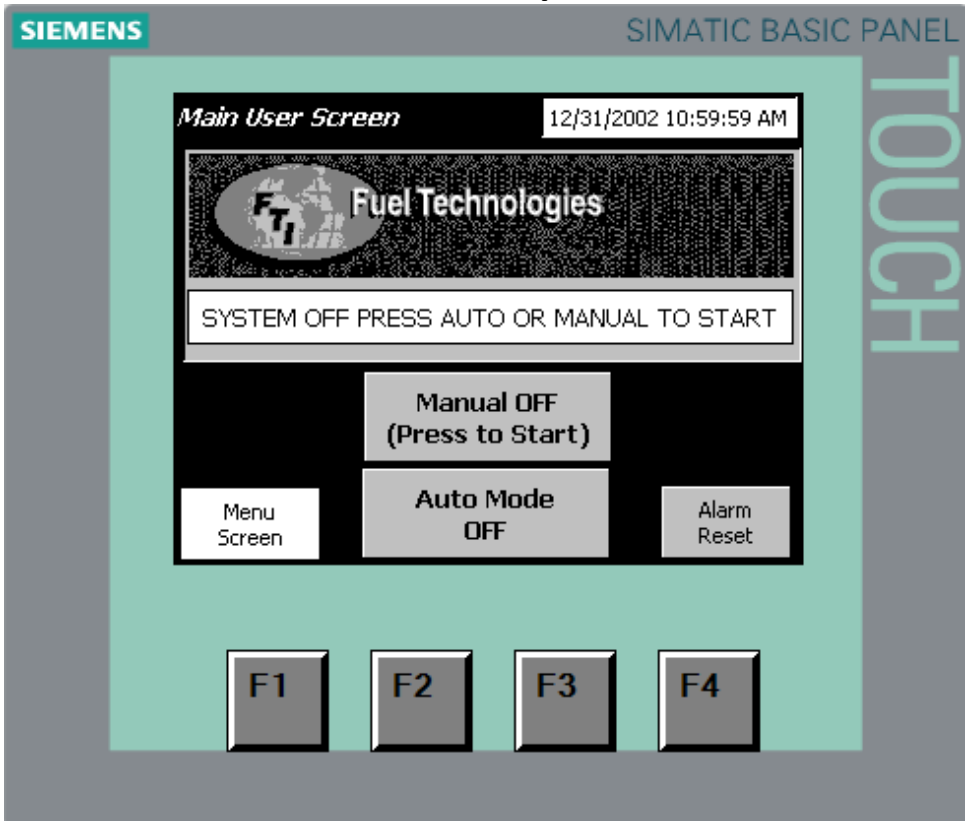
Controller Set-up with the Touch Screen



Once the Fuel Management system is installed, you're ready to program the controller.

1. **Programming the controller:**
   a. When you apply power to the system, the display will go through a boot-up sequence, and the screen above will appear for roughly 15 seconds. DO NOT PUSH ANY BUTTONS ON THIS SCREEN UNLESS:
      i. **The Auto Start function is not working then push START.**
      ii. **<u>To prolong the touch screens life, set the SCREEN SAVER to 2 hours, See line 3</u>**
      iii. **<u>To set screen saver, press the SETTINGS BUTTON, then scroll down to the bottom to SCREEN SAVER</u>**
   b. Wait until this screen above changes to the default **Main Operations Screen** (next page)

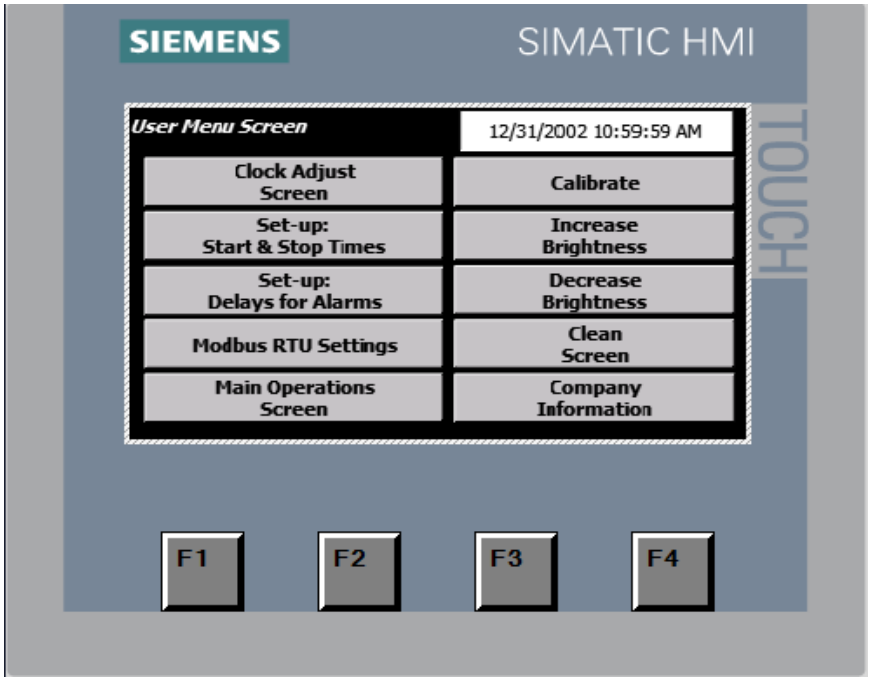
Default Start-up Screen



1. **Functions from this screen:**
   a. Go to the Menu Screen.
   b. Switch from Auto mode to Manual mode.
   c. Reset all alarms. (Alarm reset button only shows when system is in alarm mode)
   d. Turn system On & Off in Manual mode.
   e. Put system in Auto Mode.
   f. Buttons F1, F2, F3 and F4 are inactive at this time.

2. **Set-Up Controller:**
   a. Press the **MENU SCREEN** button
   b. Continue to page 5 for Menu Screen functions.

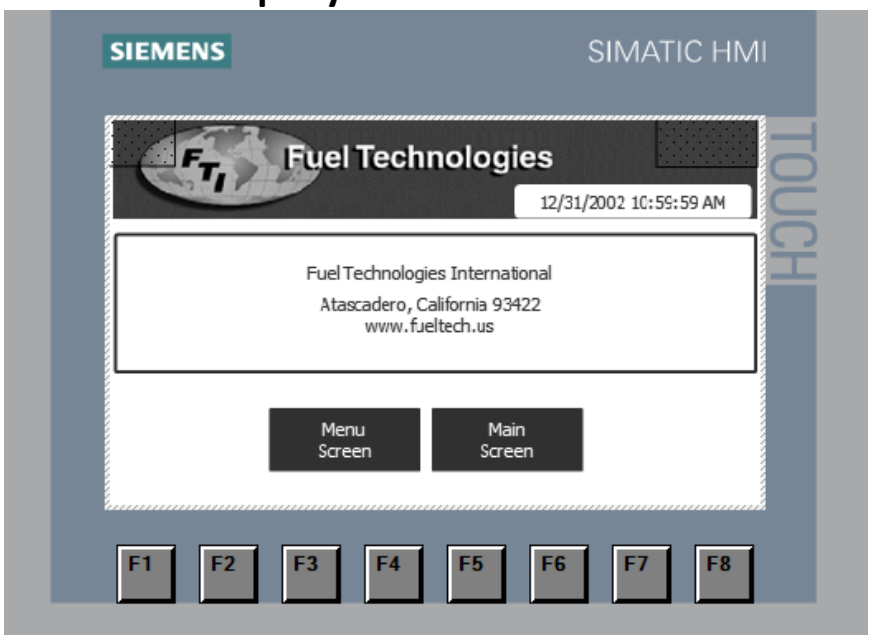
Menu Screen



1. **Functions (<u>Left</u> hand column):**
    a. **Clock Adjust Screen**: Adjust clock
    b. **Set-up: Start & Stop Times:** Set schedule for operation
    c. **Set-up: Delays for Alarms:** Set delays for alarms to trip.
    d. **Modbus RTU Settings:** Manually change Modbus functions
    e. **Main Operations Screen:** Manually turn system on or off.

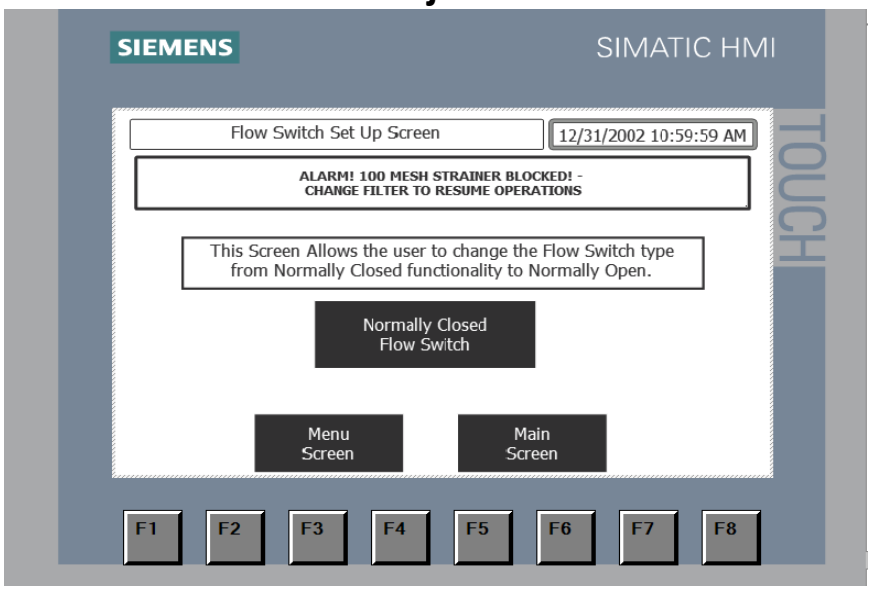
2. **Functions (<u>Right</u> hand column):**
    a. **Re-calibrate the screen:** Fixes troubles with touch calibration
    b. **Increase Brightness:** Brightness increased
    c. **Decrease Brightness:** Brightness decreased
    d. **Clean Screen:** Temporally disables the screen so you can wipe it off
    e. **Company Information:** Fuel Technologies International Information

Company Information Screen

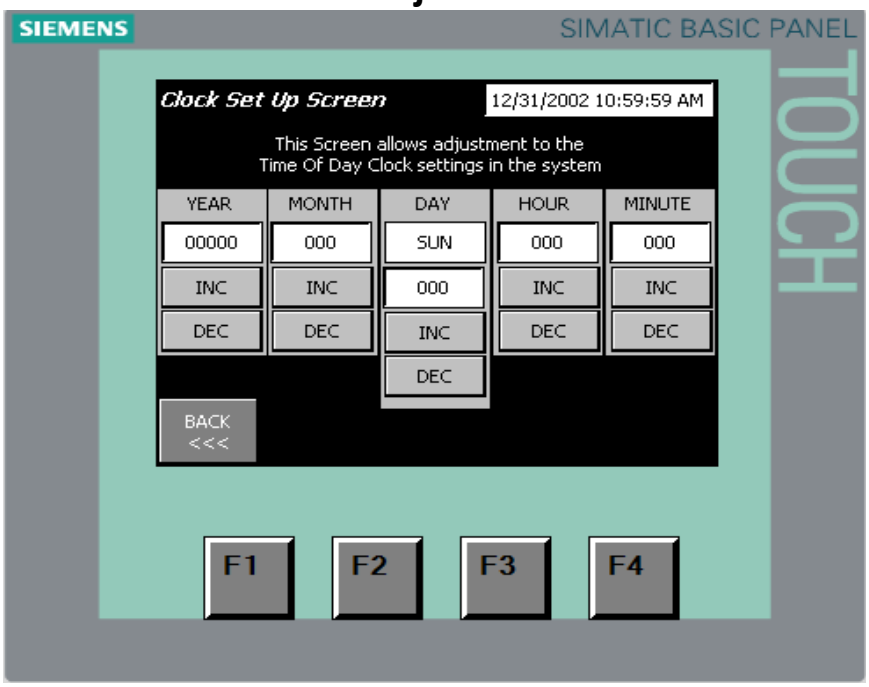


1. **Fuel Technologies International contact:**
   a. Address and Website information [fueltech.us]
2. **Flow Switch Adjustment Function**
   a. Here you can switch the Flow Switch between normally open and normally closed. There is a hidden button in the upper right corner. Touch the upper right corner in the black area. A dotted button will appear. (see dotted button) Hold the button for 5 seconds. The screen below will appear.

Flow Switch Adjustment Screen

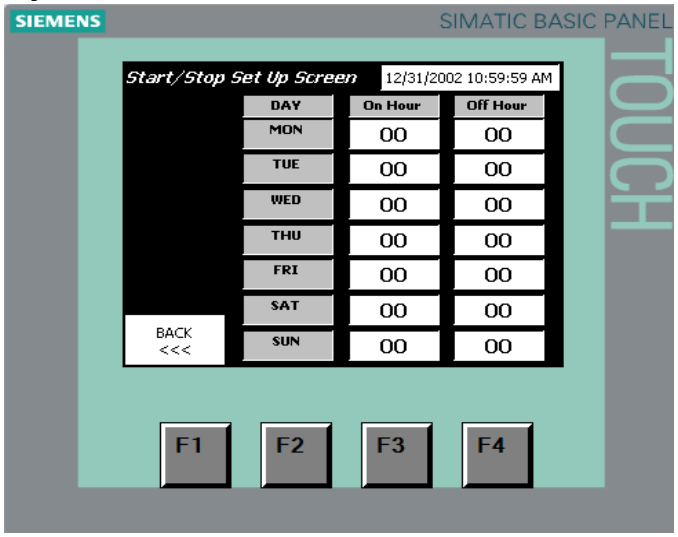


Clock Adjust Screen



1. **Clock Adjust Screen**
   a. Start on the left column under ***Year***; Press the ***(INC) Increase*** or ***(DEC) Decrease*** until the correct year appears.
   b. Do the same for ***Month, Day, Hour*** and the ***Minute.***
   c. When completed, press the **BACK** button

Select Day of the Week to Run with Start / Stop Times

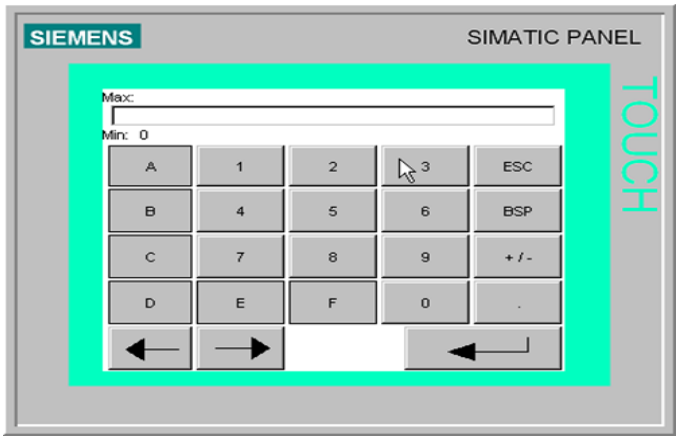


1. Start / Stop Set-up Screen

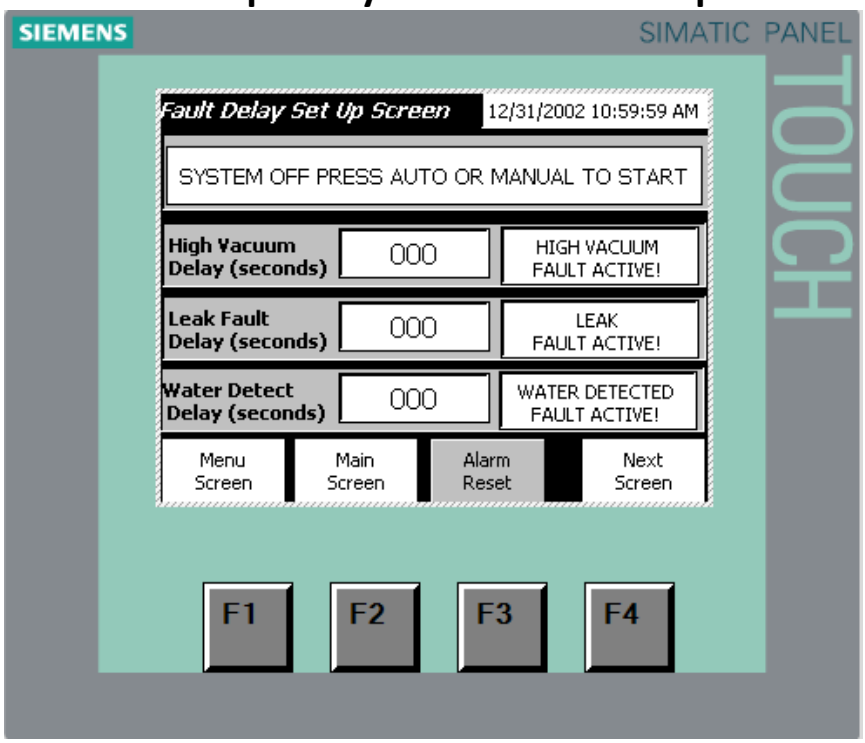
a. Locate a day of the week you want the system to run, touch the “00” white box in that row.
b. The keyboard screen (below) will appear.
c. Press the number/numbers for the ***On Hour*** you want the system to start. The clock setting numbers are military style (1-23 Hours). Ex: 9=9AM, 13=1PM
d. When pushing a keyboard button, the number will show in the upper right hand text box.
e. To enter your selection push the ***large arrow button*** located at the bottom right of keyboard.
f. If you select the wrong number, use the **BSP** button to back space (erases numbers selected)
g. Repeat the process for the ***Off Hour*** time.

2. How to estimate the Run Time Hours

a. The recommended amount of fuel to clean is 20-25% of the tank per week.
b. Example: 20% of 40,000 Gallon Tank = 8,000 gallons.
c. Then take the pump size: 20 GPM (gallons per minute) x 60 minutes = 1,200 gallons per hour.
d. Then divide 1,200 (gallons per hour) into 8,000 gallons (20% of tank) = 6.67 hours per week.
e. Round up to a whole number if you get a decimal per week.



Set-up Delays for Alarms to Trip

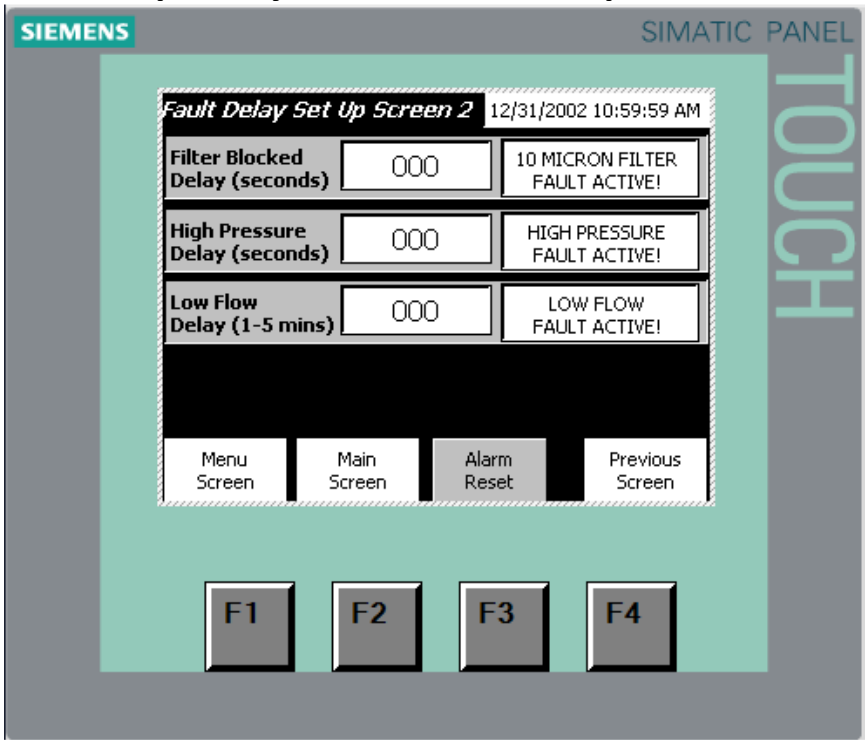


If you have special circumstances that require you to ***delay the alarms from going off*** then continue with this step, if not skip forward. **<u>All of the alarm descriptions will show up on the right hand window as shown, and also on the Main Operations Screen.</u>**

1. Fault Delay Set-up Screen

a. **High Vacuum Alarm Delay:** This signals the operator that the strainer is plugged or there is something plugged in the supply fuel line.
b. **Leak Fault Alarm Delay:** This signals the operator that there is a leak in the cabinet.
c. **Water Detect Alarm Delay:** This signals the operator that the collection bowl on the water separator is full.
d. To adjust the settings, touch or press the number in the box as described for the keyboard on page 8.

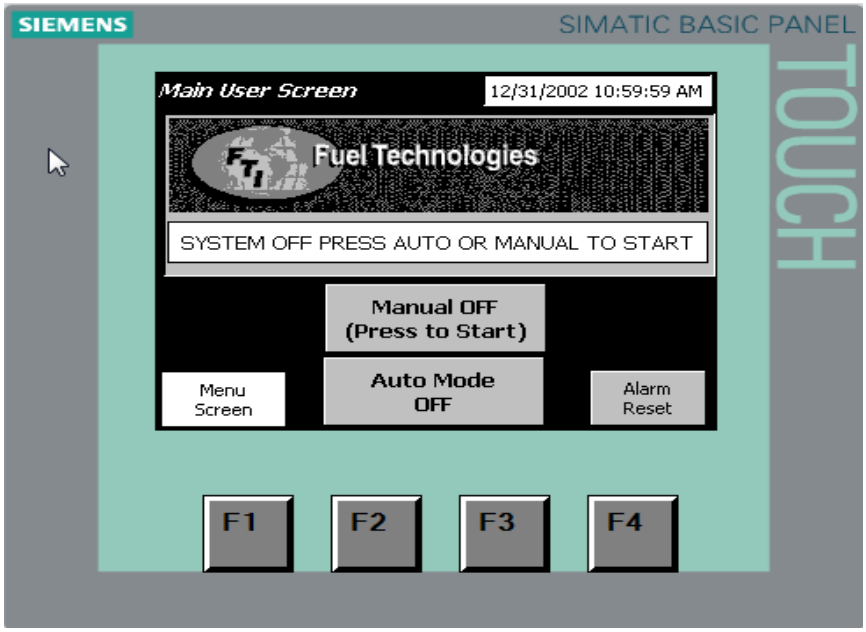
Set-up Delays for Alarms to Trip - Screen 2



If you have special circumstances that require you to ***delay the alarms from going off*** then continue with this step, if not skip forward.

1. **Fault Delay Set-up Screen 2**
    a. **1, 3 & 10 Micron Filter Blocked Alarm Delay:** This signals the operator that the 1-Micron, 3-Micron or 10-Micron filter is plugged. This will delay the alarms for both the 1-Micron, 3-Micron and 10-Micron filters. **(Go to this screen to see which of the 3 filters are in alarm)**
    b. **High Pressure Alarm Delay:** This signals the operator that there is high pressure within the cabinet or outside of the cabinet. Possible cause are: closed ball valve, broken solenoid or EBV.
    c. **Low Flow Alarm Delay:** This signals the operator that the fuel has stopped flowing and the pump is continuing to run. (Loss of Prime)
    d. To adjust the settings, touch or press the number in the box as described for the keyboard on page 8.

Main Operations Screen



1. **Main User Screen Functions:**
   a. **Menu Screen:** See page 5
   b. **Manual Mode:** Pressing ***Manual OFF*** button will turn the system **ON** and it will begin to pump fuel through the system. Pressing the same button now labeled ***Manual ON*** button will turn the system **OFF.**
   c. **Auto Mode:** Run system per the ***Start*** / ***Stop*** times set. If time has not yet been reached, it will sit idle.
      i. To stop ***Auto Mode*** while the system is running, press the ***Auto Mode Active*** button and the system will go into standby. Press ***Auto Mode*** again to resume schedule.
      ii. If the power is interrupted, the previous mode setting (Auto or Manual) will come back on. **Auto Mode** will resume with the pre-programmed schedule. If power is out longer than 1 hour, Re-programing **Start / Stop Times** is necessary. See page 8
   d. **Changing Filters:** Turn both ***Auto Mode*** and ***Manual Mode*** to **OFF** (See image above). System will sit idle for maintenance. When changing filters supply line and return line ball valves must be **closed** prior to opening system.
2. **How to cancel system alarms**
   a. First read the Alarm Description on the screen, then push the ***Alarm Reset Button*** to stop the alarm and reset the system. (Alarm description will appear in the text box above the ***Manual OFF*** button)
   b. There is also an Alarm Rest Button on the Set-up Delays for Alarms screen. (Page 9-10)
   c. Both ***Reset*** buttons show when the system is in alarm mode, otherwise they are **hidden**
   d. The system will switch to ***Manual OFF*** for safety reason when alarm status is reset. Be sure the system is in ***Manual OFF***, and is not running before attempting any maintenance operations. Once maintenance has been performed, turn the system to ***Manual ON*** to check for leaks. Then reset to ***Manual Mode*** or ***Auto Mode*** and resume the scheduled program.

Alarm Messages Descriptions

If a problem is detected in the following areas, the system will stop filtering, display the appropriate alarm message on the screen, and will sound an audible alarm to alert the operator. The alarm consists of a sequence of steady high-pitched beeping sounds that continue until the operator pushed the reset button and corrects the problem.

Touch-Screen Alarm Messages	Alarm Locations & Action required to fix the problem
HIGH VACUUM FAULT Replace Strainer & Reset	Vacuum Switch Gauge **Action:** Check strainer, or the supply line for blockage.
WATER DETECTED FAULT Drain and Reset	Water level sensor at Separator **Action:** Drain water from the water separator.
LEAK DETECTED FAULT Repair Leak & Reset	Leak Sensor: Leakage has occurred within the cabinet area. **Action:** Locate and repair leak in the cabinet.
MOTOR OVERLOAD FAULT Reset on touch screen Reset Motor Overload	This will occur if pump/motor is over heated or over-loaded. **Action:** Find cause and repair 1. Press the touch screen RESET button and then; 2. Pres the RESET button on the Motor Overload inside the control panel.
10 MICRON FILTER FAULT 10 Micron filter plugged	10 Micron Differential Switch Gauge **Action:** Replace 10 Micron filter
SYSTEM HIGH PRESSURE High set point reached (45 PSI)	System High Pressure Gauge, caused by blockage in the system or return line. **Action:** Locate reason for excessive pressure and repair.
1 MICRON FILTER FAULT 1 Micron filter plugged	1 Micron Differential Switch Gauge **Action:** Replace 1 Micron filter
LOW FLOW FAULT	Lost Prime. Fuel flow has stopped while pump is running. **Action:** Locate reason for fuel not flowing.
3 MICRON FILTER FAULT 3 Micron filter plugged	3 Micron Differential Switch Gauge **Action:** Replace 3 Micron filter