Thoroughly read and understand this manual before installing, operating or servicing this equipment.
# CONTENTS

## INTRODUCTION
- System Overview .................................................. 3
- System Composition and Dataflow ................................. 4
- Specifications ......................................................... 6
- Certification ......................................................... 6
- Installation/Mounting ............................................... 7
- Keypad Description .................................................. 8
- Operation Modes ..................................................... 9

## MASTER KEYPAD ....................................................... 10
- System Version Screen .............................................. 10
- Settings Overview / Supervisor Menus .......................... 10
- Initialization (INI) Menu .......................................... 10
- Configuration (CNF) Menu ......................................... 11
- Test Communication (DK) Menu ................................... 13
- Reports (REP) Menu ................................................ 13
- Radio (RAD) Menu .................................................. 14

## DISPENSE KEYPAD ................................................... 16
- System Version Screen .............................................. 16
- Settings Overview / Supervisor Menus .......................... 16
- Configuration (CNF) Menu ......................................... 17
- Delete Prepared WOs (MET) Menu ................................. 20
- Reports (REP) Menu ................................................ 20
- 190 (Internal Ticket Printer) Menu ............................... 21
- RF Communication Test (LNK) Menu ............................... 21
- Radio (RAD) Menu .................................................. 22
- Network Connect (CON) Menu .................................... 23
- System Override (SYS) Menu ...................................... 24
- Dispense Keypad Menu Overview ................................ 25

## DISPENSE PROCESS .................................................. 26
- Starting a Work Order .............................................. 26

## FUSION RF METER .................................................. 28
- Key Description ...................................................... 29
- RF Mode (Standard Pre-Selection Mode) ......................... 29
- Changing the Battery ............................................... 30
- Programming the Fusion RF Meter ................................. 30

## INSTALLING AND LAUNCHING THE FMS SOFTWARE ............... 31
- System Requirements .............................................. 31
- FMS Software Description ......................................... 31
- Installing the FMS Server ........................................ 32
- Installing the FMS Client .......................................... 35
- Launching the FMS Software ..................................... 37
- FMS System Configuration ........................................ 37

## USING THE FMS SOFTWARE ....................................... 38
- Setting Up New Users ............................................... 38
- Setting Up Tanks and Fluids ..................................... 39
- System Settings ..................................................... 41
- Setting Up Keypads and Hoses ................................... 44
INTRODUCTION

The Fusion 2.4 Fluid Management System has been designed to control and monitor the consumption and inventory balances of automotive fluid products with minimal installation and programming costs.

The Distributed Control System (DCS) hardware consists of one Master Keypad and at least one Dispense Keypad as well as at least one radio frequency (RF) electronic preset meter. The Master Keypad manages serial communication to the PC and RF communication to the Dispense Keypads in the system. The system verifies the operator’s pin number and validates the work order number, fluid quantities and the valid hose/meter.

The Master Keypad can communicate with up to 36 Dispense Keypads that can be positioned to support the workflow of the facility the best way. Each Dispense Keypad can control up to 24 meters, with a maximum of 250 meters per system. The system supports up to 16 tanks and 16 fluids as a part of the system configuration. The system supports 250 unique operator IDs and pin numbers.

The system uses direct sequence spread spectrum RF technology to prevent communication problems with other equipment in the facility. The RF system will look for a clear channel for transmission to insure that there is reliable communications at all times. Communication distances are typically up to 300 feet with unobstructed line-of-sight. A remote antenna is available for situations where multiple buildings are involved in the installation or obstructions hinder RF transmission/reception.

The PC is used to configure the system, maintain system data and enter work orders. The service desk would use the PC to enter a work order selecting the fluid and quantity required. The PC can stack as many work orders as required, limited only by the disk storage space of the PC. There is no need to predetermine where the work is going to occur, this allows the flexibility to service a vehicle at any open bay and select a meter when the work is going to be performed. When the work order is going to be performed, the service personnel simply enters their pin number, work order and hose that is going to be used at the Dispense Keypad. Optionally, the system can be configured to allow service personnel to freely enter work orders, without them first being entered at the PC.

There are a number of system utilization reports by user, fluid type, tank or meters available for the system’s management.

A unique, patented feature of the system is that the RF meter’s dispense trigger is locked until an authorization from the keypad is received. After the dispense batch is completed, the user can top off if more fluid is required. The actual dispensed amount is sent back to the keypad and the meter returns to the locked status. Additionally, the meter can be installed on portable dolly systems offering control and monitoring of high-cost lubrication products.
System Overview
The main data streams:

1. The FMS software stores the configuration data in its database.

2. By using the Initialize System menu of the FMS software the configuration data is sent to the Master Keypad via the serial interface and finally via radio to all Dispense Keypads.

3. The FMS records all dispenses in the database.
Specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Requirements</td>
<td>120V AC 50/60 Hz</td>
</tr>
<tr>
<td>RF Communications</td>
<td>2-way, 2.4…2.5 GHz Direct Sequence Spread Spectrum</td>
</tr>
<tr>
<td>RF Network</td>
<td>Self-healing Mesh Network</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>14…140° F (–10…60° C)</td>
</tr>
</tbody>
</table>

Certification

• Contains FCC ID: S4GEM35XB
• Contains IC: 8735A-EM35XB
• FCC CERTIFIED, PART 15, SUB-PART C
• CE0681 EC-R&TTE Certified

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

⚠️ WARNING

To satisfy FCC RF exposure requirements for mobile transmitting devices, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during operation. To ensure compliance, operations at closer distances than this are not recommended.

⚠️ NOTE

It is highly recommended to use surge suppressors for AC power connections on all keypads. Warranty does not cover damage due to power surge.

⚠️ CAUTION

If there are any other wireless devices/networks in the facility, ensure that they are powered up and active before powering up the fusion keypad(s). This is so fusion can detect and avoid any other wireless devices/networks in the facility/area.
**Keypad Installation**

- Mount the keypad upright with the antenna pointing upward, near a 120V AC electrical outlet.

- Mount the keypad to a structurally sound wall through the two holes on the top of the keypad case and one hole on the bottom of the keypad.

- Height on the wall should be 5 feet to 6 feet.

- Avoid direct, significant, heat sources.

- Do not mount the keypad on or behind any steel objects (tool storage cabinets, metal walls, metal beams or metal chain link fences) that may interfere with or block the RF communication signals.

---

**Mounting Dimensions for Keypad**

(Holes on Keypad are Threaded for M6 x 1 Screw)

- 7-5/8”
- 7-3/8”
- 3-13/16”

---

Figure 1: Keypad Installation
**Keypad Keys**

The **Scroll** key selects options on the active display.

The **Home** key returns the display to the default screen.

The **Backspace** key deletes one character to the left of the cursor each time it is pressed.

The **Enter** key completes the current action then displays the next screen.

The **Space** key adds a blank space to the right of the data just entered.

The **Alphanumeric** keys enter numbers and alpha characters (letters).

- To enter a number, press and release a key.
- To enter a letter, press and hold the key until the letter you want displays, then release the key.
Operation Modes

The configuration of the system is generally done by using the PC-based FMS Software. Only some special functions like the operation modes are set at the Master Keypad.

RF System with PC Operation Mode

In this mode the PC is used to configure the system entities and install the network. The PC will be used to enter work orders for processing and provide the queuing for future processing. When an operator processes a work order the PC will validate the work order number and provide the fluid and amount to be dispensed. The results of the dispense will then be stored on the PC.

Standalone Mode

Work orders will not be validated; each entered work order will be accepted by the system. Data will be stored in the Master Keypad’s memory. This mode still requires a PC with the FMS software installed for initial setup.

---

**IMPORTANT**

The PC must be equipped with a physical 9-Pin Serial Interface, a USB to Serial Convertor will not work

**NOTE**

Each meter can only be associated with one Dispense Keypad. All system users can access each of the Dispense Keypads

**NOTE**

Maximum of 24 meters per dispense keypad
Master Keypad

The Master Keypad acts as the communications director for the RF communications. It handles all communications between the Dispense Keypads and the PC. There are no operator menus associated with the Master Keypad—only supervisor menus for setting up the system or creating reports.

The remainder of this document shows only the actual display, not the entire keypad.

To gain access to the supervisor menus, the supervisor PIN has to be entered. The default PIN is 0001 at initial power-up.

System Version

| 16aug2012 08:35 | V3.00 |

The standard screen shows the system date and software version number. The display will alternate between the standard screen and the Enter Pin Number screen. The Enter Pin Number screen is used to access the supervisor menus.

NOTE: An “N” displayed in the lower left-hand corner of the system version screen indicates a Radio Network error. See “Radio Status” on page 23 to check the source of the error.

Settings Overview / Supervisor Menus

The following changes can only be made at the Master Keypad in the setup mode. All other settings can be changed by using the FMS software.

Enter PIN Number

<table>
<thead>
<tr>
<th>Enter Pin No.</th>
</tr>
</thead>
</table>

To access the setup mode:
Enter the supervisor PIN number and press Enter.
The default PIN is 0001 at initial power-up.

INITIALIZATION (INI) MENU

| Select |
| INI CNF MET REP |

The INI menu is used to set the system’s date and time.

Time and Date Screens

<table>
<thead>
<tr>
<th>Enter time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enter date</td>
</tr>
</tbody>
</table>

To change or set the system time:
1. Select the INI menu and press Enter.
2. Use the numeric keys to set a 24-hour military time of day.
3. Press Enter to save the setting and advance.

To change or set the system date:
1. Use the numeric keys to enter the two-digit day
   The cursor automatically moves to the month.
2. Press the Scroll key to select a month.
3. Use the numeric keys to enter the four-digit year.
4. Press Enter to save the setting.
### CONFIGURATION (CNF) MENU

<table>
<thead>
<tr>
<th>Menu Item</th>
<th>Description</th>
<th>Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Select</strong></td>
<td>The CNF menu is used to set the system's operation modes and archiving methods.</td>
<td></td>
</tr>
<tr>
<td><strong>INI</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CNF</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MET</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>REP</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Order List</strong></td>
<td>If you see the message “Order List Not Empty,” you have to clear the transactions in the Master Keypad (CNF Menu).</td>
<td>Use the Scroll key to move the cursor to either YES or NO and press Enter.</td>
</tr>
<tr>
<td><strong>Not Empty</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Clear Transacts</strong></td>
<td>Use the Scroll key to move the cursor to either YES or NO and press Enter.</td>
<td></td>
</tr>
<tr>
<td><strong>YES / NO</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Confirm Clear</strong></td>
<td>Use the Scroll key to move the cursor to either YES or NO and press Enter.</td>
<td></td>
</tr>
<tr>
<td><strong>YES / NO</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### System Reset

The System Reset allows a supervisor to reset all configuration parameters to default values.

1. Use the Scroll key to move the cursor to either YES or NO.

   a. If you select YES, the keypad asks you to Confirm Reset.
   b. If you select NO, the keypad advances.

3. Press Enter.

### Keypad Timeout

- Timeout parameter corresponds to the time it takes to validate after all dispense order data has been entered. If the Enter button is not pressed within the time allocated, the keypad display goes back to initial menu and the input data is erased.
- The Keypad Timeout is between zero to 255 seconds (0 = no timeout) and the default for this feature is 10 seconds.

1. Press the Backspace key to erase the current setting.
2. Type in the new setting.
3. Press Enter to advance.

### Buzzer

This screen provides a user with the option to have a beep on every key entry. The default is YES.

1. Use the Scroll key to move the cursor to YES or NO.
2. Press Enter to advance.
Work Order Validation

WO validation is used to define if a work order shall be validated by the system before processing it.

Host Validation (Host Operation Mode)

This mode is not used and should always be set to NO.

1. Use the Scroll key to move the cursor to NO.
2. Press Enter.

PC Validation (PC Operation Mode)

In this mode the work order number will be sent to the PC (FMS Software). Only after validation from the PC will the order number is accepted.

1. Use the Scroll key to move the cursor to either YES or NO.
2. Press Enter.

WO Archive (Printout or Storing of the Work Order /Dispense Results)

1. This option is not used in fusion 2.4.
2. Set to None.
3. Press Enter.

Archive on PC (Archive of the Work Orders/Dispenses)

1. Use the Scroll key to move the cursor to either YES or NO.
2. Typically should be set to YES.
3. Press Enter.

All dispense results are stored on the PC (FMS Software). If the PC is currently not available, the data will be tagged as “not sent” in the memory of the master keypad. The data will be sent as soon as the PC is connected again.
Test Communication (DK) Menu

The DK menu is used to check the communication between all keypads.

Test All DKs
YES / NO

Use the Scroll key to move the cursor to either YES or NO and press Enter.

Three Dispense Keypads are set up in the following example. Each “–” (dash) stands for a Dispense Keypad.

Start DKpd Test
Press Enter

Press Enter to begin the test.

Results 1-16
OOK--------------

Keypad 3 - No Connection
Keypad 2 - Detected
Keypad 1 - Detected

NOTE: N=Network Error, T=Timeout

Three Dispense Keypads are set up in this example.

In the following examples, each “–” (dash) stands for a Dispense Keypad. Press Enter to display these results.

Results 17-32
--------------

Results 33-36

Reports (REP) Menu

This feature is not used in Fusion 2.4.
RADIO (RAD) MENU

The RAD menu screens are:

• Address (ADR) – toggles the display between the Radio Address and the Radio Prefix screens.
• Network (NWK) – allows you to select the Radio Network.
• Power (PWR) – displays the radio’s transmit (Tx) output power.
• Status (STA) – displays the Radio Network Status.
• Change Channel (CHA) – allows you to select a different RF channel.

Select RAD

1. Use the Scroll key to move the cursor to the RAD selection.
2. Press Enter to display the RAD screen.

Select ADR NWK PWR STA

1. Use the Scroll key to move the cursor to ADR.
2. Press Scroll again to display the Radio Prefix screen.
3. Press Enter to display the Radio Address screen.
4. Press Enter to return to the selection screen.

Radio Address/Radio Prefix

Once you select ADR, you can use the Scroll key to toggle between the Radio Address and the Radio Prefix screens.

Radio Network

The Radio Network default is zero. You need to change this setting only if you have multiple RF FMS systems. All RF Meter/Hose Radio Network settings must match the Master Keypad and Dispense Keypad settings.

1. Use the Scroll key to move the cursor to NWK.
2. Press Enter to display the Radio Network screen.
3. Press Enter to return to the selection screen.
Radio Power

Select
ADR NWK PWR STA

1. Use the **Scroll** key to move the cursor to **PWR**.
2. Press **Enter** to display the *Radio Power Level* screen.

3. Press **Enter** to return to the selection screen.

<table>
<thead>
<tr>
<th>RADIO PWR LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 dBm</td>
</tr>
</tbody>
</table>

Radio Status

The Radio Status options are:

- **NWK CONNECTED** – The network is connected and operational.
- **SERIAL ERROR** – There is a radio communication error on the serial bus between the keypad and the radio.

Select
ADR NWK PWR STA

1. Use the **Scroll** key to move the cursor to **STA**.
2. Press **Enter** to display the *Radio Status* screen.

3. Press **Enter** to return to the selection screen.

<table>
<thead>
<tr>
<th>RADIO STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>NWK CONNECTED</td>
</tr>
</tbody>
</table>

Change Channel

The Change Channel option is used to select a different RF channel if the current channel is noisy.

Select
CHA ... ... ...

1. Use the **Scroll** key to move the cursor to **CHA**.
2. Press **Enter** to display the *Radio Network* screen.

3. Press **Enter** to select a new channel.

<table>
<thead>
<tr>
<th>RADIO NETWORK</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHANNEL CHANGE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RADIO COMMAND</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUCCESS</td>
</tr>
</tbody>
</table>
**Dispense Keypad**

The Dispense Keypads are responsible for the communication with the RF meters. The user starts a work order from the keypad. After the dispense operation has been completed the keypad will receive the actual amount dispensed from the meter. The Dispense Keypad then sends the dispense results to the Master Keypad.

The system can handle up to 36 Dispense Keypads. Up to 24 meters can be assigned to each keypad but each meter can only be assigned to one Dispense Keypad.

**System Version**

The standard screen shows the system software version number. The display will alternate between the standard screen and the Enter Pin Number screen. The Enter Pin Number screen is used to access the supervisor menus.

- **N V3.00 2.4 GHz**: NOTE: An “N” displayed in the lower left-hand corner of the system version screen indicates a Radio Network error. See “Radio Status” on page 23 to check the source of the error.

- **M V3.00 2.4 GHz**: NOTE: An “M” displayed in the lower left-hand corner of the system version screen indicates that the Dispense Keypad has joined an RF network, but cannot currently contact the Master Keypad for WO authorization.

- **O V3.00 2.4 GHz**: NOTE: An “O” displayed in the lower left-hand corner of the system version screen indicates that the Dispense Keypad is in System Override mode. See “System Override (SYS) Menu” on page 24 for details.

Enter a user PIN to start a work order or the supervisor PIN to enter the supervisor menus (the default PIN is 0001).

**Settings Overview / Supervisor Menus**

The following configuration options are only available at the Dispense Keypad. The default value for the Supervisor PIN is 0001.
The CNF menu is used to set the system’s operation modes and archiving methods.

System Reset
Resets the system parameters to the original factory settings.

Mileage Type
Defines the unit for the Free Alphanumeric field (Defined in Global Keypad Settings)

Top Off Timer
Specifies the amount of time, how long user can make additional dispenses. Is the time allowed after a dispense is completed before the meter will automatically lockout and send the dispense results back. (Defined in Global Keypad Setting)

Internal Printer
Enables the internal ticket printer. (Defined in Global Keypad Settings)

External Printer
Enables the external report printer port. (Defined in Global Keypad Settings)

Barcode Scanner
This menu will define the external Printer port as a Barcode Reader Port (RS232), if the External Printer is enabled the Barcode Scanner menu will disappear.

Select YES to enable the Barcode Scanner.

OFF Data can be entered with Keypad & Barcode Scanner
PIN PIN has to entered by Barcode Scanner
All All data has to be entered with Barcode Scanner

When PIN or All is selected you can choose an additional prefix character. The prefix character will not be displayed and cannot be entered on the keypad.

Choose the desired prefix, available characters are:
#$%&’()*+,- Space / ; < = > @ [ ] ^ ‘ { } ! ” #

Defines the time, how long the scanned information will be shown on the display in units of 1/10 second. For example, 100 = 1 second.

The following barcode scanners are recommended:
• Wall mounted: Datalogic Magellan 1000i
• Handheld: Datalogic Gryphon 4100

The scanner has to be programmed according per the instructions on page 18. A null modem adapter has to be used between the keypads serial port and the barcode scanner.
Barcode Scanner

1. Use the Scroll key to move the cursor to either YES or NO.
2. Press Enter to accept the setting and advance to the next screen.
   • If you select YES, the display advances to the Scanner Lock screen.
   • If you select NO, the display advances to the Buzzer screen.

Hardware Requirements

The barcode scanner must support an RS-232 output interface for use in the RF FMS. The barcode scanner serial output must support standard RS-232 levels of ±3V DC to ±12V DC. Logic level or TTL output signals are not supported by the RF FMS. The barcode scanner is connected to the RF FMS Dispense Keypad via the external printer RS-232 port with DSUB9 connector on the bottom of the CCS Keypad. The RS-232 port on the CCS Keypad is configured for a Device Circuit-Terminating Equipment (DCE) pin out configuration. A null modem adapter is required for barcode scanners that are also terminated with a DCE pin out configuration. The required RS-232 port settings for the barcode scanner input are as follows:

<table>
<thead>
<tr>
<th>Baud Rate</th>
<th>9600 Baud</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Bits</td>
<td>8 Bits</td>
</tr>
<tr>
<td>Stop Bits</td>
<td>1 Bits</td>
</tr>
<tr>
<td>Parity</td>
<td>Odd</td>
</tr>
<tr>
<td>Hardware Flow Control</td>
<td>None</td>
</tr>
</tbody>
</table>

The data output of the barcode scanner is required to be a stream of ASCII characters representing the barcode. To identify the end of transmission, the stream of ASCII characters should be terminated by a carriage return and line feed ASCII characters.

• Barcode Scanner cannot be used with Remote Printer.
• External Printer setting must be set to NO.

Scanner Lock

The Scanner Lock screen has three selectable settings: OFF, PIN, and ALL. Depending on the setting chosen, different user input screens will allow input from the keypad or barcode scanner.

The table below outlines the screens where the keypad is active or disabled based on the three different settings for the Scanner Lock feature.

<table>
<thead>
<tr>
<th>Screen</th>
<th>OFF</th>
<th>PIN</th>
<th>ALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIN Entry User</td>
<td>Both</td>
<td>Scanner</td>
<td>Scanner</td>
</tr>
<tr>
<td>PIN Entry Supervisor</td>
<td>Both</td>
<td>Both</td>
<td>Both</td>
</tr>
<tr>
<td>WO Number</td>
<td>Both</td>
<td>Both</td>
<td>Scanner</td>
</tr>
<tr>
<td>Meter ID</td>
<td>Both</td>
<td>Both</td>
<td>Scanner</td>
</tr>
<tr>
<td>Quantity</td>
<td>Both</td>
<td>Both</td>
<td>Scanner</td>
</tr>
<tr>
<td>AN Field</td>
<td>Both</td>
<td>Both</td>
<td>Scanner</td>
</tr>
<tr>
<td>N Field</td>
<td>Both</td>
<td>Both</td>
<td>Scanner</td>
</tr>
</tbody>
</table>
Pin Number Prefix Code

When PIN or ALL is selected for the Scanner Lock, you can choose an additional prefix character. The prefix character will not be displayed and cannot be entered on the keypad.

1. Use the Scroll key to move the cursor to either YES or NO.
2. Press Enter to move to Encode Prefix screen.

3. Press the Scroll key until the desired prefix displays. Available characters are: # $ % & ' ( ) * + , - Space / : ; < = > ? @ [ ] ^ ` { | } _ ! #
4. Press Enter to advance to the Display Timeout screen.

The Display Timeout determines how long an entry will remain on the display before it automatically advances to the next entry screen. Each count provides a 1/100 of a second delay. A value of 100 is equal to 1 second.

1. Press the Backspace key to erase the current setting.
2. Type in the new setting.
3. Press Enter to advance to the Buzzer screen.

Buzzer

The buzzer beeps each time you press a button. You can turn off the sound. See Global Keypad Settings.

1. Use the Scroll key to move the cursor to YES or NO.

Auto Override

Activates the system Auto Override feature in all keypads so users can dispense WOs when the Master Keypad is not operational. No supervisor intervention is required. Available with v3.X firmware only. After five failed MK communication attempts, the Auto Override feature automatically puts the keypad in system override mode.

1. Use the Scroll key to move the cursor to either YES or NO.
2. Press Enter.

Batch Quantity Locked

With the Batch Quantity Locked, you cannot change the batch quantity that was entered on the work order. If the work order has a batch quantity of zero, you can change the batch quantity.

Batch Qty Locked

YES / NO

Hose ID First

Used for HOST communication option only. Selected product ID will be sent to the HOST.

Hose ID First

YES / NO
Delete Prepared WOs (MET) Menu

Work orders that have been entered at a keypad are stored until they are picked up by the appropriate meter (by pressing RESET at the meter). Meanwhile, the meter is locked for other dispenses.

The MET menu is used to delete prepared work orders and release the meter for new work orders.

1. Use the Scroll key to move the cursor to either YES or NO.
2. Press Enter.
3. Press Enter.

Reports (REP) Menu

This option is not used in fusion 2.4
190 (Internal Ticket Printer) Menu

Use this menu to print the configuration and status reports from the internal printer FT 190 (model 3120-029 only).

NOTE: To use this feature, you must have the optional internal ticket printer installed in the keypad and select Internal Printer option in the CNF menu.

The 190 menu is used to print reports from an internal printer.

Use the Scroll key to move the cursor to the report you want to print and press Enter.

The options are:

- INI - Initialization
- MET - Sort list by meter
- CNF - Configuration
- WO - Sort list by work order

RF Communication Test (LNK) Menu

The LNK Menu is used to check the quality of the RF communication between the Master and Dispense Keypads.

The test performs a number of test communications and measures the quantity of lost transmissions based on a scale from 0 to 10. The Link Quality 10 is the maximum (best) you can achieve.
Radio (RAD) Menu

The RAD menu screens are:
- Address (ADR) – toggles the display between the Radio Address and the Radio Prefix screens.
- Network (NWK) – allows you to select the Radio Network.
- Power (PWR) – displays the radio’s transmit (Tx) output power.
- Status (STA) – displays the Radio Network Status.
- Network Connect (CON) – connects the keypad to a new Master Keypad network.

1. Use the Scroll key to move the cursor to REP.

2. Press Scroll two more times to move the cursor to the RAD selection.
3. Press Enter to display the RAD screen.

4. Use the Scroll key to move the cursor to the information you want to display.
5. Press Home to go back to the default screens.

Radio Address/Radio Prefix

Once you select ADR, you can use the Scroll key to toggle between the Radio Address and the Radio Prefix screens.

1. Use the Scroll key to move the cursor to ADR.

2. Press Scroll again to display the Radio Prefix screen.
   NOTE: DO NOT CHANGE THE RADIO PREFIX!

3. Press Enter to display the Radio Address screen.
4. Press Enter to return to the selection screen.

Radio Network

The Radio Network default is zero. You need to change this setting only if you have multiple RF FMS systems. (see NOTE on page 24) All RF Meter/Hose Radio Network settings must match the Master Keypad and Dispense Keypad settings.

1. Use the Scroll key to move the cursor to NWK.
2. Press Enter to display the Radio Network screen.

3. To change the network setting type in the desired network number (e.g. 1, 2, 3...) and press enter.
4. Press Enter to return to the selection screen.
Radio Power

1. Use the Scroll key to move the cursor to PWR.
2. Press Enter to display the Radio Power Level screen.

3. Press Enter to return to the selection screen.

Radio Status

The Radio Status options are:

- NWK CONNECTED – The network is connected and operational.
- SERIAL ERROR – There is a radio communication error on the serial bus between the keypad and the radio.
- NWK DOWN – There is no network within the range of the Dispense Keypad.
- NWK LOST – The network connection is currently unavailable.

1. Use the Scroll key to move the cursor to STA.
2. Press Enter to display the Radio Status screen.

3. Press Enter to return to the selection screen.

Network Connect (CON) Menu

The Network Connect forces the keypad to connect to a new Master Keypad network. This option is used when:

- Replacing the Master Keypad.
- When relocating the Dispense Keypad it does not automatically find the new network.

1. Use the Scroll key to move the cursor to CON.
2. Press Enter to display the Radio Network screen.

3. Press Enter to display the Radio Status screen.

4. The screen displays the radio connection status (NWK CONNECTED or NWK DOWN).
System Override (SYS) Menu

The System Override Menu is used to override verification of the Master Keypad.

1. Use the Scroll key to move the cursor to YES.
2. Press Enter.

The screen verifies that System Override is On.

NOTE

If multiple fusion systems are used within the same facility, each system must be in its own network. In this situation, do not use network 0, (use network 1, 2, 3...etc). If one of the system components (keypad) is set back to factory default (network 0), this will create interference and erratic operation on the components (keypads and control handles) that are already using network 0.
Dispense Keypad Menu Overview

Enter PIN No. __________ Enter WO No. __________ Enter Hose __________ Quantity __________ Enter For Dispense __________

Fluid Product Name

Supervisor 0001

CNF MET REP 190 LNK RAD SYS

System Reset YES / NO Init All Hoses YES / NO Select Report -> Select INI CNF MET WO Start Link Test Press Enter

Select ADR NET PWR STA Select System Override YES / NO

Test in Progress

Test Complete Link Quality:

Barcode Scanner

Scanner Locked

Barcode menu not available if the External Printer is on YES

Buzzer

Auto Override YES / NO

Batch Qty Locked

Display Timeout

Hose ID First

Pin Encoded

Encode Prefix #

Available characters:

# $ % ' ( ) * + , - . Space / ; < = > ? @ [ \ ] ^ _ ! " 

Supervisor 0001

Mileage Type YES / NO Topoff Timer 0---

Internal Printer

Reset All Hoses Press Enter

Hose RESET
Dispense Process Overview

Starting a Work Order

1. Enter your PIN number and press **Enter**.

2. Enter an alphanumeric number (max. 16 characters) and press **Enter**.

To start a work order, the mechanics or users must enter their PIN to access the system.

In the operation modes WO Validation HOST or WO Validation PC (see “Work Order Validation” on page 13) the entered WO number will be compared with the numbers set in the system, which are defined in Global Keypad Settings.

**Alphanumeric Keypad**
To change from the numeric to the letter keypad, press the equivalent key for at least 3 seconds until the desired letter is shown.

**Additional Free Fields**
These optional fields are only shown if they have been enabled (defined in Global Keypad Settings).
3. Enter alphanumeric characters and press Enter.
   *Can be used, for example, for the licence plate number.*

4. Enter a numeric number (max. 16 characters) and press Enter.
   *Can be used, for example, for the actual mileage.*

**Meter Selection**
Enter a preset meter (hose) ID for the product.

5. Enter a preset meter (hose) ID for the fluid product you want and press Enter.

- Only meters that are assigned to the current keypad can be selected.
- In the operation modes WO Validation HOST or WO Validation PC the system will check if the product you entered is assigned to this work order.

**Display Fluid**

6. The chosen fluid type is displayed for three seconds.

**Product Quantity**

7. Enter the desired quantity and press Enter.
   Optionally, the quantity assigned to this WO is shown.

- The quantity can be chosen between 0.0…99.9 and 100…999 units of measure.
- The preselection can be made with one decimal place.
- For quantities more than 100 units of measure, the meter counts down toward zero.
- A quantity of 0.0 will deactivate the preselection on the RF meter. The RF meter will not latch and the user is required to hold the trigger in the open position to dispense fluid. The user must press RESET on the RF meter to complete the dispense operation and communicate the dispense order result to the keypad.

**Dispense Confirmation**

8. Press Enter to dispense the fluid.
   The work order is now ready for being picked up by the RF meter (see RF Mode, Standard Preselection Mode) .
**Fusion 2.4 RF METER**

The meter is equipped with RF communications to communicate dispense authorization and result information. Once a work order has been set up, the operator simply pulls the trigger and the authorized amount of fluid for that meter will dispense. The valve will automatically shut off when the full quantity has been dispensed. A Top Off feature allows additional quantities to be dispensed and tracked after the valve closes. Upon completion of the dispense effort, the valve locks, prohibiting any unauthorized dispense.

**Key Description**

The following keys (except for RESET and SHUT-OFF) are only active in the AUTO mode (or Manual mode).

- **10, 1, 0.1** Used to enter the dispense quantity to be used. In operational mode it shows the five latest dispensed amounts.
- **TOTAL** Used to display the accumulated total of fluid dispensed, as well as the resettable total when held for 3 seconds.
- **AUTO** Used to enter and exit the auto mode when RF communications are not available.
- **RESET** • Used to accept a dispense order from the keypad.
  • Used in normal operating mode (RF, manual or auto) to clear the previously programmed batch and to reset the meter.
  • Used to reset the resettable total dispensed while pressing the TOTAL button.
- **SHUTOFF** or **STOP** Used to stop the flow manually through an electrical override.

**Electrical Override**

In case of an emergency or to interrupt a batch, the meter is equipped with an electrical override. This option automatically closes the valve in the meter, stopping the flow immediately. The display will begin to flash because the meter does not sense any flow. Batching can be continued after an override, even if the meter is in the middle of a programmed batch.

1. Press the red **SHUTOFF** button to activate the electrical override. This button can only be used when the valve is open.
2. Press the **RESET** button to set the meter back to standby mode.
RF Mode (Standard Pre-Selection Mode)

Work Order Validation via the Dispense Keypad

When the batteries are installed in the meter, the meter will automatically enter the RF mode. The trigger is in a locked-out position and no oil can be dispensed until a dispense order is received by the meter.

1. Press the **RESET** button on the meter to enable it to receive a dispense order provided by the Dispense Keypad. The trigger will unlock.

2. Pull the trigger to begin the dispensing of fluid then release the trigger. The valve will automatically lock in place, even though the trigger will fall back to the closed position (**DO NOT CONTINUE TO HOLD THE TRIGGER**). The flow will automatically shut off when the programmed amount has been dispensed.

3. To top off, pull the trigger to dispense fluid and release when the desired amount has been reached.

4. Press the **RESET** button when finished. The total quantity will be transmitted to the keypad and the meter will return to a locked-out position. The meter is now ready to receive the next dispense order from the keypad.
Changing the Battery

When the batteries need changing, a progression of warnings appears on the meter screen.

First Warning
The Low Battery icon appears in the lower left corner of the display. That means the batteries are low and need to be changed when the icon appears.

Second Warning
The Battery icon flashes. The battery power is too low and meter functions are disabled.

The battery compartment is located in the lower case on the backside of the trigger guard.

1. Position the unit face down.
2. Unscrew the two screws. Remove the battery door to expose the batteries.
3. Replace the old batteries with 4 AA alkaline batteries.
   NOTE: Battery polarity markings are inside battery compartment.
4. Dispose of used batteries properly, according to local regulations.
   NOTE: Changing the batteries does not affect any of the programmed values or totals.

Programming the Fusion 2.4 RF Control Handle

The units of measurement and scale factor can be changed. For instructions, see Service Bulletin XXXX, (Fusion 2.4 RF Control Handle).

IMPORTANT
The PC must be equipped with a physical 9-Pin Serial Interface, a USB to Serial Convertor will not work

NOTE
Maximum of 24 meters per dispense keypad

NOTE
Each meter can only be associated with one Dispense Keypad. All system users can access each of the Dispense Keypads
INSTALLING AND LAUNCHING THE FMS SOFTWARE

The system configuration is done by using this FMS Software. Only some special functions like the operation modes are set at the Master Keypad.

The software provides the ability to set work orders, and assign a product and a quantity to it. All dispense results will be collected and saved in a work order list (W.O. Report). Several filters are available to select the desired information. The result can be exported to a comma-separated value (CSV) file format.

System Requirements

• P4 1.6 GHz or greater
• 1 GB RAM minimum
• XP, Vista, or Windows® 7, Server 2003, Server 2008 Required (will not run on Windows 2000 or earlier) 64 and 32-bit compatible

FMS Software Description

Before beginning the installation, please be sure your Windows user profile has the appropriate rights to install the software properly (particularly Windows XP).

Insert the setup CD ROM into your CD ROM drive.

If the Installer does not launch itself after a short period, open it manually by double clicking on your CD Drive in your My Computer folder. Select the AutoMenu file.

The installer menu will appear:

The installer menu provides several options:

• Server – installs the server and all server components. This will be the location where all the data is stored and where the client machine will go to access and update work orders, tank levels, etc.

• Client – installs the client and all client components. This will have to be installed on every machine you would like to run the software on

• Exit closes the installer
Installing the FMS Server

1. Select Install Server.
   If the .NET 4.0 Framework or SQL server 2008 express is already installed, they will be skipped. If the Net 4.0 Framework is not installed, the installer will appear.

2. Click Accept.
   If the SQL server 2008 express is not installed, the installer will appear.

3. Click Accept.
   The Framework and/or SQL server installation will take several minutes. The screens appear in the following order:
After the prerequisites are installed, the FMS Server Setup Wizard appears:

1. Click Next.

2. Under Install FMS Server for yourself, or for anyone who uses this computer, select Everyone.

3. Click Next.

3. Click Next to confirm the installation.
1. Select the installation folder you want the Server installed to. The default folder is HIGHLY recommended.

2. Under **Install FMS Server for yourself, or for anyone who uses this computer**, select Everyone.

3. Click Next.

**IMPORTANT**

After FMS Server installation, you **MUST** reboot the computer.
Installing the FMS Client

1. Select Install Client.
   The .NET 4.0 Framework installer will appear here if the Client is being installed on a machine without it. The Client will also install the SQL Compact Edition.

2. Click Accept.

After the prerequisites are installed, the FMS Client Setup Wizard screen appears:

1. Click Next.
2. Select the installation folder you want the Client installed to. The default folder is HIGHLY recommended.

3. Click Next.

4. Click Next to confirm the installation.

When the installation is complete, a screen similar to this one displays.

5. Click Close to exit the installer.
Launching the FMS Software

**IMPORTANT**

After Client or Server installation, you **MUST** reboot the computer before you can launch the software.

To launch the software, click on the FMS Client icon on your desktop

Before you can begin, you first need to tell the Client application the IP address where the server resides.

1. Enter the IP address of the FMS server.
   For the Client installed on the server, the IP address should be 127.0.0.1.

   If there will be one or more Client PCs that will need to connect to the Server PC, on the Client(s) enter the IP address assigned to the Server PC.

   Inbound and Outbound rules will also need to be created in the Windows Firewall on the Server PC to allow any Client PCs to connect to the server. The client(s) require access to the FMS Service.exe, located in C:\Balcrank\Balcrank FMS Server. Both inbound and outbound rules need to be set. Site IT personnel should be on hand to create these rules.

FMS System Configuration

2. Enter the 4-digit system password and click the OK button.
   The system admin password is initially set to 0000.
USING THE FMS SOFTWARE

Setting Up New Users

The default names and pins may be changed at any time by highlighting the text, deleting it, and entering the appropriate text. To save changes made, click the Save button.

1. To add a new user, click the Reset button. The information will clear from the text boxes.
2. Enter a user name, new pin (cannot duplicate any currently used pin number), and assign a role.

If you wish to set up a user having multiple roles, you will need to create a user and pin number for each role.

New User Roles

The choices for role selection are System Admin, Supervisor, Parts Dept, and Dispense. These choices will allow the user to do the following:

<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Admin</td>
<td>Make changes to all levels of the software, from the PC only.</td>
</tr>
<tr>
<td>Supervisor</td>
<td>Make changes at the keypad only.</td>
</tr>
<tr>
<td>Parts Dept</td>
<td>Enter work orders at the PC only.</td>
</tr>
<tr>
<td>Dispense</td>
<td>Enter a work order at a dispense keypad only.</td>
</tr>
</tbody>
</table>

Active or Inactive Users

Only users who have an Active status will be allowed to access their respective duties.

To make a user active or inactive:
1. Select the user's name.
2. Check the Active box.

**NOTE:** Users with multiple roles will require a unique password for each role.

Deleting a User

To delete a user:
1. Select the user’s name.
2. Click the Delete User button in the top left-hand corner.
3. Confirm your request to delete the user.
Setting Up Tanks and Fluids

Using the software, you can track and monitor tank levels based on work orders. To track this, you first need to add a tank and its corresponding fluid.

These are the fields of information required to add a tank:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tank ID</td>
<td>The Tank ID field automatically displays the next available sequential ID number. You can also select existing tank IDs from the drop-down menu.</td>
</tr>
<tr>
<td>Units</td>
<td>The Units field specifies the units of measurement that you use to track the tank level. The choices are Gallons, Liters, Pints and Quarts.</td>
</tr>
<tr>
<td>Fluid</td>
<td>The Fluid field specifies the type of fluid in the tank. You can also select existing fluids from the drop-down menu.</td>
</tr>
<tr>
<td>Capacity</td>
<td>The Capacity field specifies the total amount of fluid that may be stored in that tank. Enter a numeric value that corresponds to the capacity of the tank (the value will be in the units you previously identified).</td>
</tr>
<tr>
<td>Level</td>
<td>The Level field specifies the current level of fluid in the tank.</td>
</tr>
<tr>
<td>Warning Level</td>
<td>The Warning Level field specifies the fluid level at which you would like a warning message emailed to a particular person. A warning message will appear on the screen when a completed work order brings the tank level down to, or below, the warning level setpoint. To use this feature, click the check box and enter either a nominal value or percentage (the other value with self-propagate after you enter the first value).</td>
</tr>
<tr>
<td>Auto Email</td>
<td>Check the Auto Email checkbox to bring up a screen to specify email settings for the warning message. When the tank reaches the specified Warning Level, this email will be sent to the email recipient. Multiple recipients can be defined. Enter a semicolon (;) between each e-mail address. NOTE: This is not a required field.</td>
</tr>
</tbody>
</table>

To set up a tank:
1. Click on the Add Tank button.
2. In the Units field, select a unit of measure from the drop-down menu.
3. In the Fluid field, enter a fluid name in the text box or select a fluid from the drop-down menu.
4. In the Capacity field, enter the total number of units (gallons, liters, pints or quarts) of fluid that may be stored in the tank.
5. In the Warning Level field, enter the fluid level at which to trigger a warning message.
6. To specify the email setting for the warning message, check the box next to Auto Email, then select Email Options.
7. Enter the email address of the recipient.
8. Type a message.
9. Click Save to close this screen and return to the Add Tank screen.
10. Click Save again to save your changes and exit the Add Tank screen.

NOTE: If the fluid you entered was not in the drop-down list, you will be asked if you want to create a new fluid when you exit this screen.
Creating a New Fluid

After you set up a tank and fluid(s), the software displays graphical representation of the tank level, including:
• the percentage of fluid remaining in the tank.
• the tank information that was entered in the previous step.

To change the information, click on Edit.

To add a new tank, click on Add Tank and repeat the process explained in “Setting Up Tanks and Fluids” on page 43.

To track when fluid is added to the tank, click on Fluid Delivery.

You can edit the amount of fluid added and the units in which it was added (gallons, liters, pints, and quarts).

After entering the information, click Save to save your changes.

You will be asked to verify your changes.

When the verification screen appears, click OK.

11. If the fluid you entered during the Add Tank procedure was not in the drop-down list, click Yes if you want to create a new fluid.

The new fluid will now appear in the Fluid Type drop-down list.
System Settings

To change system settings, select the System Settings tab on the left-hand side. A screen similar to the one below appears.

![System Settings Screen]

1. Change any settings according to the tables below.
2. Click Save to save your changes or Cancel to discard the changes and return to the Main screen.

### System Settings Fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location</strong></td>
<td>Location is set as a factory default and cannot be changed by the user.</td>
</tr>
<tr>
<td><strong>Skip Failed DK in Init</strong></td>
<td>The system can be configured to skip a keypad that it cannot communicate with and continue with the initialization process. To activate this, check the box next to Skip Failed DK in Init.</td>
</tr>
<tr>
<td><strong>Decimal Point</strong></td>
<td>Select a period or comma as the decimal point.</td>
</tr>
<tr>
<td><strong>Firmware Version</strong></td>
<td>Select the firmware version the Master and Dispense Keypad are using. Version 1.x can support 99 meters, version 2.x and version 3.x can support up to 250 meters (version 3.x is the firmware version for fusion with 2.4 GHz radios). <strong>NOTE: Verify the firmware version of your Master and Dispense Keypad(s)</strong></td>
</tr>
<tr>
<td><strong>Auto Log Off</strong></td>
<td>If you would like the software to automatically log off the PC user after a specified period of time, check the box next to Auto Log Off and chose the time (in minutes) you would like the PC user to remain idle before being logged off.</td>
</tr>
<tr>
<td><strong>Email Completed WO</strong></td>
<td>Work Orders may be emailed or printed upon completion. To set this up, check the box next to the corresponding text. There are two buttons in the Functions section. Work Orders may be emailed or printed upon completion. To set this up, check the box next to the corresponding text. There are two buttons in the Functions section. Use the Printer Settings button to select a printer that is available on your network. Use the Page Setup to set up paper formatting information. Enter text that you want to appear on the printout in the work order message box. Make the appropriate changes, then click Save to save your changes and exit the printer settings. The Clear button will reset all of the information on the form.</td>
</tr>
<tr>
<td><strong>Print Completed WO</strong></td>
<td>Work Orders may be emailed or printed upon completion. To set this up, check the box next to the corresponding text. There are two buttons in the Functions section. Use the Printer Settings button to select a printer that is available on your network. Use the Page Setup to set up paper formatting information. Enter text that you want to appear on the printout in the work order message box. Make the appropriate changes, then click Save to save your changes and exit the printer settings. The Clear button will reset all of the information on the form.</td>
</tr>
<tr>
<td><strong>Allow Users to Delete WOs</strong></td>
<td>To allow dispense users to delete work orders, check the box next to the Allow Users to Delete WOs field.</td>
</tr>
<tr>
<td><strong>Allow Users Fluid Delivery</strong></td>
<td>To allow dispense users to enter a fluid delivery, check the box next to the Allow Users Fluid Delivery field.</td>
</tr>
</tbody>
</table>

* Available for v3.x firmware only.
System Settings – Functions Options

Log Viewer
Use the Log Viewer to display system activity logs based on the parameters you choose.

1. From the System Settings screen, select Log Viewer.

2. Check the boxes next to the options you want to display. The options are:
   - Server
   - Client
   - Details
   - INIT
   - Error
   - Date Range

3. Click Submit.

4. At this point, you can click the Export button to save the file.

Printer Settings

1. From the System Settings screen, select Printer Settings.

2. Click Select Printer and chose a printer.

3. Click Page Setup to set up paper formatting information.

4. Enter text that you want to appear on the printout into the Work Order Message box.

5. Repeat steps 2 and 3 for the Server Printer.

6. Click Save to save your changes and exit the printer settings.
Email Settings
To configure the software to send an email on the completion of a work order, enter the SMTP settings for your email server. Contact your local system administrator for information on your email server.

1. From the System Settings screen, select Email Settings.
2. Enter the SMTP Server, Port, User Name and Password.
3. Enter the email address of the recipient.
4. Enter your email address in the From line, the subject, and any header or footer text you would like.
5. Enter the work order message you would like to have in the email.
6. Click Save to save your settings.

Import File
This option is used to import a file such as a backup of the setup, pending work orders, completed work orders or database. For example, If the server PC failed (hard drive crash) once the FMS software is re-installed, a backup of the system setup or database (see Save to File below) could be imported to restore the system configuration.

System Settings – Save to File Options
The FMS Software allows you save setup, pending work orders, completed work orders, and everything in the database. To utilize these settings, click on the corresponding button under Save to File. Browse to the destination folder, and click OK. A description of each option is below.

- Setup
  - Creates a backup of the system configuration settings (tanks, users, keypads, hoses)

- Pending Work Orders
  - Creates a backup of any pending work orders

- Completed Work Orders
  - Creates a backup of any Completed work orders

- Database/Everything
  - Creates a backup of all data (setup, pending work orders, and completed work orders)

**IMPORTANT**
It is highly recommended that you save your system configuration (Setup button or Database/Everything button) using the Save to File function. This file should be stored on external media (CD, Flash Drive, or Network Drive).
Setting Up Keypads and Hoses

Adding keypads and hoses allows you to build out your entire system and send work orders to the appropriate stations.

Global Keypad Settings

Before starting, make sure your Global Keypad Settings are configured correctly.

1. Click the Settings button.
2. Change any settings according to the Dispense Keypad Settings and Master Keypad Settings tables below.
3. Click Save to save your changes or Cancel to discard the changes and return to the Main screen.

IMPORTANT

BEFORE entering any keypad or hose addresses, ensure the appropriate firmware version has been selected under System Settings (see page 41)

Dispense Keypad Settings

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance Units</td>
<td>Specifies the units (miles or kilometers) by which distance is measured for each WO.</td>
</tr>
<tr>
<td>Odometer</td>
<td>To request that mileage be tracked, check the Odometer checkbox.</td>
</tr>
<tr>
<td>Registration</td>
<td>To request that the car registration number be tracked, check the Registration checkbox. This allows the system users to enter the car registration number in the Pending WO and save it to the Completed WO.</td>
</tr>
<tr>
<td>Display Timeout</td>
<td>Sets how long (in minutes) a PIN will be able to sit idle before timing out and forcing the user to log back in.</td>
</tr>
<tr>
<td>Top off Timer</td>
<td>Sets the time that the user is allowed to keep the meter open after the allotted amount of fluid has been dispensed (timer is in seconds).</td>
</tr>
<tr>
<td>Barcode Timeout</td>
<td>The amount of time in increments of 10 ms to display the entered parameter on the screen after the barcode scanner input is entered. A value of 100 will equal 1000 ms or 1s of display time. This timeout is only used when the barcode scanner feature is selected on the keypad.</td>
</tr>
<tr>
<td>Int. Printer</td>
<td>If you have an optional internal printer connected to the keypad, select the checkbox next to the Int. Printer field.</td>
</tr>
<tr>
<td>Buzzer</td>
<td>To activate the key click buzzer, check the box next to the Buzzer field.</td>
</tr>
<tr>
<td>Keypad RF Timeout</td>
<td>Sets how long (in minutes) a PIN will be able to sit idle before timing out and forcing the user to log back in.</td>
</tr>
<tr>
<td>Miscellaneous WO</td>
<td>A configurable numeric input that allows the user to define what number a miscellaneous work order gets. This would be used in the event any fluid needs to be dispensed independent of a system work order. The miscellaneous work order number along with the user ID number will be in the work order report. To change, simply highlight the number, delete, and enter a new number.</td>
</tr>
<tr>
<td>Auto Override</td>
<td>Activates System Auto Override feature in all keypads so users can dispense WOs when the Master Keypad is not operational. No supervisor intervention is required. Available with v3.X firmware only.</td>
</tr>
</tbody>
</table>

Master Keypad Settings

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM Port</td>
<td>Select the COM port on the PC for the serial connection to the Master Keypad. To change, simply click on the drop down and select the appropriate COM port.</td>
</tr>
<tr>
<td>Buzzer</td>
<td>To activate the key click buzzer, check the box next to the Buzzer field.</td>
</tr>
</tbody>
</table>
Adding a Dispense Keypad

1. From the Keypad and Hoses screen, click Add Keypad.
2. Enter the Dispense Keypad address found on the back of the keypad. Use only the last 8 characters as shown here:

   ![Keypad Address]

3. The ID field automatically displays the next available sequential number.
4. Click Save.

Adding Hoses

Once you have added a keypad, you can begin adding hoses associated with it. You can also enter hoses not associated with any keypad. You can drag and drop hoses to a keypad or between keypads.

To add hoses, fill in the information at the bottom right-hand corner of the Keypad and Hoses screen:

1. Enter the hose ID found on a tag on the meter.
2. Enter the hose Address.
3. Enter the Tank the fluid will be dispensed from.
4. Enter the dispenser Units of measure of the meter.
5. Click Save.

After the hose is added, it will appear under the Unused Hoses section or under the selected keypad.

Associating an Unused Hose with a Keypad

To associate an unused hose with a keypad:

1. Drag and drop the hose from the Unused Hoses section to the keypad section.

   OR

2. Move it manually by selecting the hose(s) from the list on the right and assigning them to keypads using the drop-down next to the Move Hoses to: field.

To delete a hose, select it on the left and click the Delete Hose button.
INITIALIZE SYSTEM

Test Comm Option

The Test Comm option checks that the serial cable is connected to the Master Keypad and the correct communication port has been selected.

1. To test the serial communication between the Master Keypad and PC, click the Test Comm button.

2. Upon completion, a Request Completed screen displays.

After the system is configured you will need to initialize the system before using. The first time you select the Initialize System option, you will see a screen similar to the one this:

All items highlighted are color-coded to indicate their initialization status:

- Orange indicates an initialization is required.
- Green indicates the items have been initiated.
- Red indicates that the initialization process failed.
Initialize All Option

The Initialize All option initializes all parts of the system. This is the option to use for the first initialization.

Initialize Changes Option

The Initialize Changes option initializes only the changes made since the last initialization.

After clicking the appropriate button, you will be reminded that everything currently on the keypads will be erased. Click Yes to continue or No to go back. The initialization process may take several minutes. Upon completion, a Request Completed screen displays.

After the system is initialized, if changes are made to the system configuration it will be necessary to initialize those changes before the system can be used. You will not be allowed to make changes to the system if there are pending work orders.

To initialize only the changes, click the Initialize Changes button. Any items that are highlighted in red did not initialize properly and it will be necessary to determine what is wrong.

On the right-hand side is the log of all Master Keypad communications during an initialization or communications test. To clear this log, click the Clear Log button.
The parts department user can enter work orders, view work order reports, and enter a fluid delivery, if enabled.

Upon login, the screen to the left displays:

Creating a New Work Order

To enter a new work order:

1. Click on the Work Order option.
2. Enter a work order number in the Work Order ID field.
3. Enter a Quantity and type of Fluid to be dispensed in the respective fields.
4. Click Save.

Optionally, a zero quantity can be entered in the quantity and the dispense user can select the quantity at the keypad. Work Orders are stored on the PC until requested by a dispense user. Work orders can be deleted by selecting them and clicking the Delete key.

Work Order Reports

To see if a work order has been completed by other personnel, click on the W.O. Reports option. If no work orders have been completed, the screen to the left displays:
The default view shows all work orders that have been completed on that day. If you have a work order completed you will see it listed in the screen to the left:

The columns across the top show:

- the work order ID number assigned,
- date and time the fluid was dispensed,
- the quantity of fluid actually dispensed,
- the quantity that was preset on the work order,
- the user who dispensed the fluid,
- the type of fluid dispensed,
- the hose the fluid was dispensed from,
- the status of the work order, and
- whether the work order has been reviewed.

**Reviewing a Work Order**
To mark a work order as reviewed, check the box below Reviewed and press Enter.

**Locating a Work Order**
To locate a work order, you may search by user, work order ID, hose ID, fluid type, or date range.
To search, enter your criteria in the appropriate text boxes and click New Search. To clear the search criteria, click Reset.

**Changing the Unit of Measure**
At the bottom of the screen, there are total fluid numbers and records counts. This will sum the total amount of fluid that has been dispensed for the records currently appearing on the search. You may change the unit that the fluid is summed in by selecting the drop-down menu next to Unit and choosing from Liters, Gallons, Pints, and Quarts.
Deleting Old Work Orders

To delete old work orders:

1. Click the Delete button.

2. On the pop-up screen, select either the date you would like to keep work order from (everything on and after July 6th, 2010) or the number of days (everything from 3 days ago and after) and click OK.

3. When asked to confirm the deletion, click Yes. A Request Completed screen displays.

Exporting Work Orders to a CSV File

To export work orders to a comma-separated value (CSV) file:

1. Click the Export button.

2. Select the folder/location that you would like to save the file to and click OK.

3. When the Request Completed screen displays, click OK to return to the Work Order Reports screen.
To view the status of tanks in your system:

1. Click the Tanks & Fluids button.

2. View the current status and information.

To add fluid:

The information displayed includes:
- The tank ID
- Type of fluid in that tank
- Current level of the tank
- Total capacity of the tank

Adding Fluid to a Tank

If this feature is enabled, you can add fluid upon delivery.

To add fluid to a tank:

1. Double-click on the tank or select the tank and click on Fluid Delivery.

2. Select the unit of measure the fluid will be delivered in (gallons, quarts, liters, or pints).

3. Enter the amount (in the selected units) of fluid that is being delivered.

4. Click Save to save your changes or click Cancel to discard your changes.

5. Click OK on the verification screen to proceed, or click Cancel to edit.

If you enter an amount that brings the tank over the capacity amount, the tank will appear in a red “Warning” state until the proper amount of fluid is removed via work order or the administrator goes into the software and manually adjusts the level of the tank.

**NOTE:** Only the system administrator can correct a tank level.

To exit the software, click the Exit button.

When tank level warnings are enabled and a fluid dispense causes the tank level to hit the warning level, a message will appear on all part department users screen. Click OK to clear the message.

To exit the software, click the Exit button.
TROUBLESHOOTING

Dispense Keypad Error Messages

These error messages can be displayed by the Dispense Keypad. The associated action to reset the system is listed behind.

<table>
<thead>
<tr>
<th>Message</th>
<th>Messages at the Dispense Keypad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hose active hit hose reset</td>
<td>The selected meter currently has a dispense order in waiting to be processed, complete the active order. Press RESET.</td>
</tr>
<tr>
<td>WO refused</td>
<td>The entered work order number is not valid and has been refused by host or FMS software.</td>
</tr>
<tr>
<td>Master is down</td>
<td>The master does not respond to a request from the Dispense Keypad</td>
</tr>
<tr>
<td>PC is down</td>
<td>The FMS software (KPS) is not responding to the Master Keypad. Only if WO validation PC is activated.</td>
</tr>
<tr>
<td>HOST is down</td>
<td>The HOST (DMS) is not responding to the Master Keypad. Only if &quot;WO Validation HOST&quot; is activated. Press RESET.</td>
</tr>
<tr>
<td>Host or PC is occupied</td>
<td>Master keypad is occupied by another job. Press RESET.</td>
</tr>
<tr>
<td>Wrong hose for fluid</td>
<td>The meter selected is not a valid meter for the fluid assigned for this WO.</td>
</tr>
<tr>
<td>↑ ↓ (flashing arrows)</td>
<td>RF communication is in progress, please wait (10 sec).</td>
</tr>
</tbody>
</table>

Meter Error Codes

The meter has several Error Codes that may display. These provide indication, at the meter, that there is an error in communication between the meter and keypad.

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>F01</td>
<td>The meter radio is not working.</td>
<td>Press the RESET button.</td>
</tr>
<tr>
<td>F02</td>
<td>The meter is not configured to a keypad.</td>
<td>Press the RESET button.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verify that the meter radio address is configured properly in the system.</td>
</tr>
<tr>
<td>F03</td>
<td>System busy.</td>
<td>Press the RESET button.</td>
</tr>
<tr>
<td>F08</td>
<td>Meter lost connection to network.</td>
<td>Press and hold the 10 key, While holding down the 10 key, press and release the RESET button.</td>
</tr>
<tr>
<td></td>
<td>Out of range—network connection lost.</td>
<td>Move meter back in to range.</td>
</tr>
<tr>
<td></td>
<td>Keypad not powered.</td>
<td>Power up the keypad.</td>
</tr>
<tr>
<td></td>
<td>Meter moved out of range of keypad.</td>
<td>Move meter in to range of the keypad.</td>
</tr>
<tr>
<td>F09</td>
<td>Meter not connected to a network.</td>
<td>Press and hold the 10 key, While holding down the 10 key, press and release the RESET button.</td>
</tr>
<tr>
<td></td>
<td>First time being powered up.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Network selected is not available.</td>
<td>Ensure meter is set to the correct network</td>
</tr>
<tr>
<td>F10</td>
<td>Meter not connected to a network.</td>
<td>Press and hold the 10 key, While holding down the 10 key, press and release the RESET button.</td>
</tr>
<tr>
<td></td>
<td>First time being powered up.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Network connection lost.</td>
<td></td>
</tr>
<tr>
<td>SF0</td>
<td>The Scale Factor setting for the meter is set to 0.000.</td>
<td>To input a valid Scale Factor for the meter, follow the instructions in the Change Factory Settings section of this manual.</td>
</tr>
<tr>
<td>Battery Indicator</td>
<td>Low battery power.</td>
<td>Replace batteries.</td>
</tr>
<tr>
<td>All Other Error Codes</td>
<td>Are for factory purposes only.</td>
<td>To clear, press the RESET button.</td>
</tr>
</tbody>
</table>

SF0 (Scale Factor 0)
## WORKSHEETS

### Tank / Fluid

<table>
<thead>
<tr>
<th>Tank ID</th>
<th>Unit</th>
<th>Fluid</th>
<th>Capacity</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Maximum: 16 Tanks  
Tank volume format: 00000.000

### Keypads

<table>
<thead>
<tr>
<th>Keypad ID</th>
<th>Address xx.xx.xx.xx</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

Maximum: 36 Dispense Keypads  
RF-Keypad address is an 8-digit number.
## Meters / Hoses

<table>
<thead>
<tr>
<th>Hose/Meter ID</th>
<th>Address x . xxx . xxx . xxx</th>
<th>Tank</th>
<th>Unit</th>
<th>Keypad</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Maximum: 250 Meters/Hose
Meter/ Hose address is a 10-digit number.
Users

<table>
<thead>
<tr>
<th>User ID</th>
<th>Name</th>
<th>PIN</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>34</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The user field is alphanumeric with a maximum of 16 characters.

The user PIN ID is a 4-digit number.

Number of Users Allowed:

- Supervisor – 1
- Dispense Users – 249
- Parts Department – 250
- Admin – 100