



fusion 2.4 - DCS

Model 3110-027..... Master Keypad
Model 3110-028..... Dispense Keypad
Model 3110-029..... Dispense Keypad w/internal printer



3110-027



3110-028



3110-029

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

INSTALLATION AND CONFIGURATION GUIDE

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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.

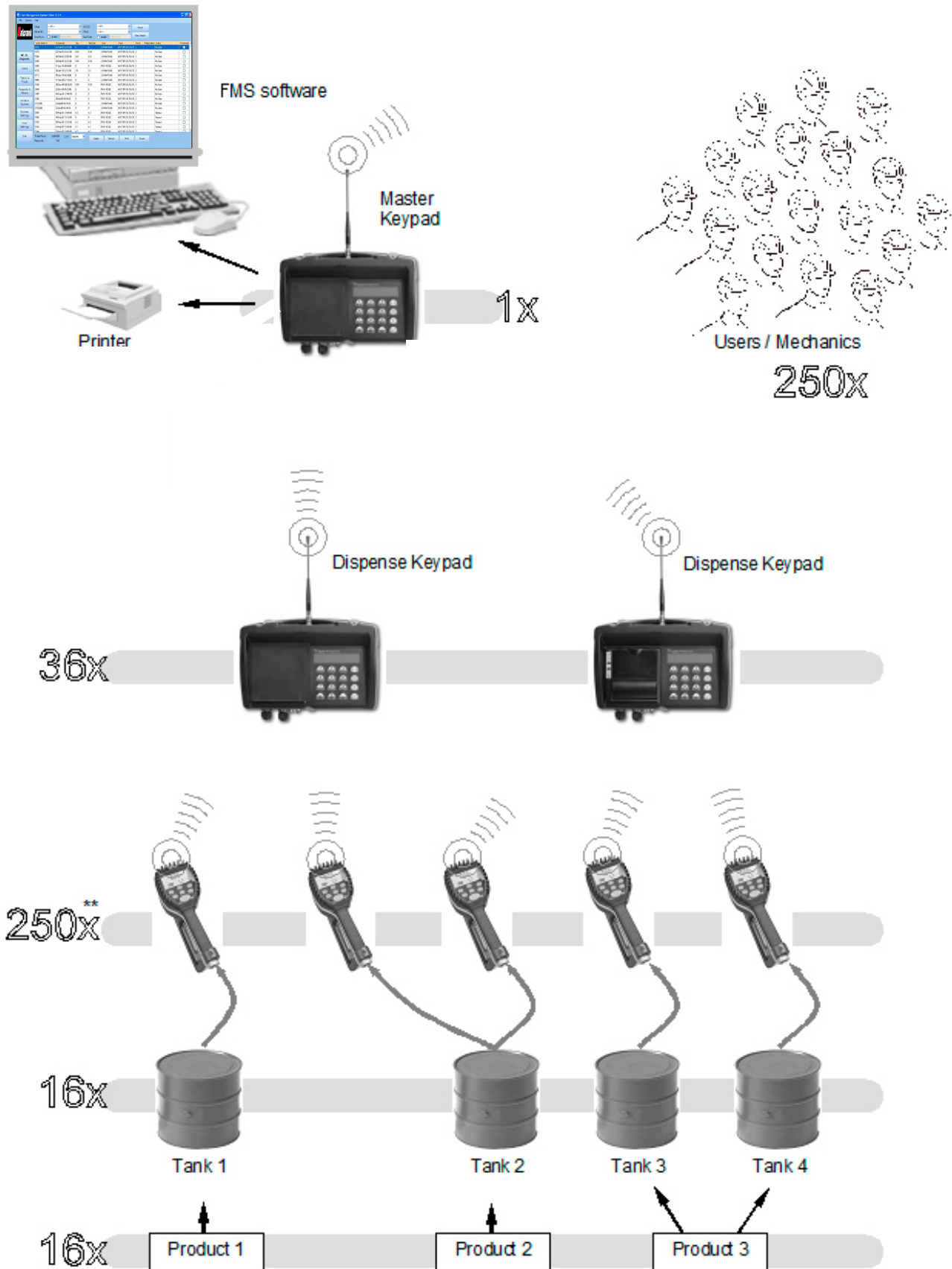
The system uses direct sequence spread spectrum RF technology to prevent communication problems with other equipment in the facility. The RF system will look for a clear channel for transmission to insure that there is reliable communications at all times. Communication distances are typically up to 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.

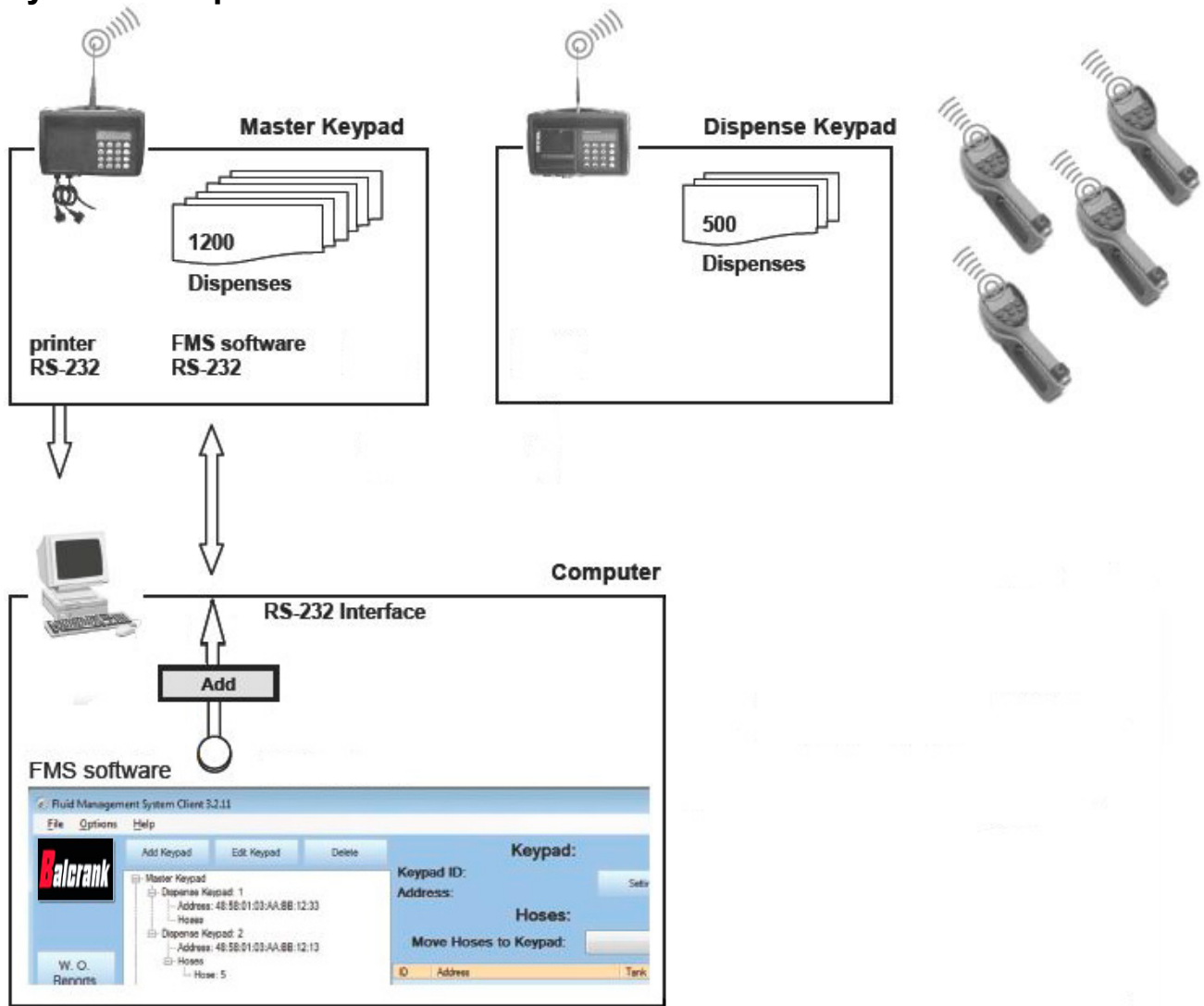
There are a number of system utilization reports by user, fluid type, tank or meters available for the system's management.

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



System Composition and Dataflow



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


Power Requirements	120V AC 50/60 Hz
RF Communications	2-way, 2.4...2.5 GHz Direct Sequence Spread Spectrum
RF Network	Self-healing Mesh Network
Operating Temperature	14...140° F (-10...60° C)


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.

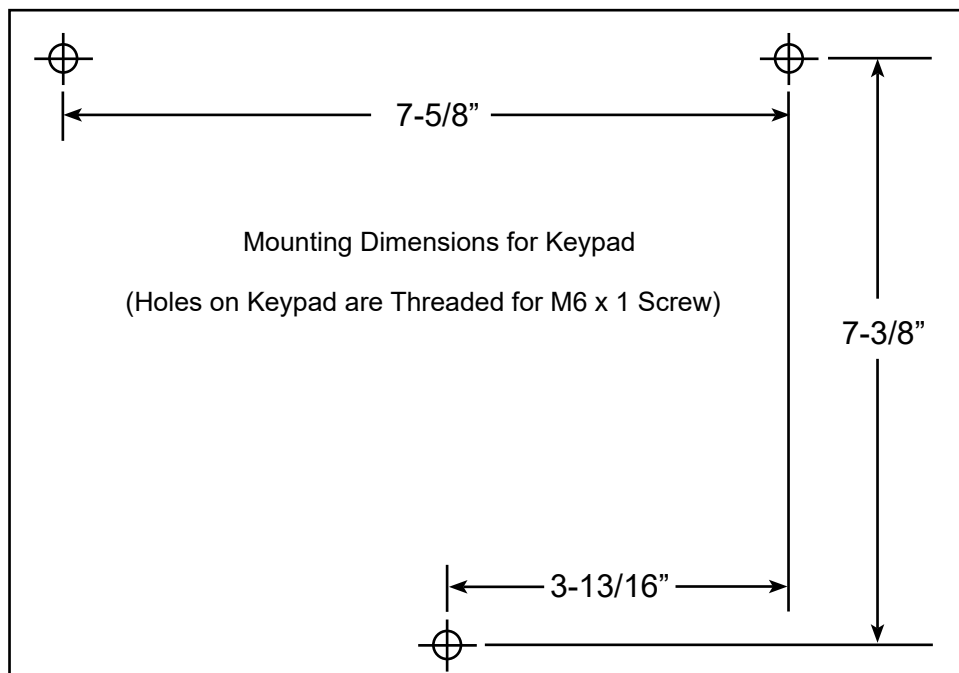


Figure 1: Keypad Installation

Keypad Description



	Function	Signal Name	PIN
Received Data	Carries data from DCE to DTE	RxD	2
Transmitted Data	Carries data from DTE to DCE	TxD	3
Common Ground	----	GND	5

- PC functions as DTE (Data Terminal Equipment)
- Keypad functions as DCE (Data Communications Equipment)
- PC to Keypad connection is made using standard 9-pin male to 9-pin female serial port cable

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.

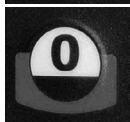


The **Space** key adds a blank space to the right of the data just entered.



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 Converter 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	

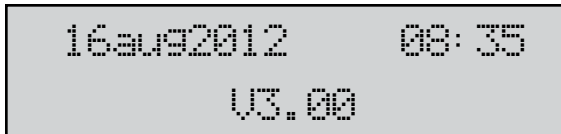
Master Keypad

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.

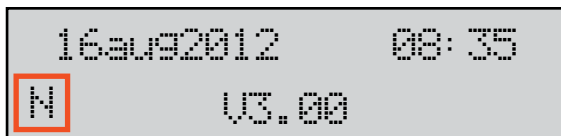
To gain access to the supervisor menus, the supervisor PIN has to be entered. The default PIN is 0001 at initial power-up.

System Version



A monochrome display showing the system date and time. The date is 16aug2012 and the time is 08:35. Below this, the software version is U3.00.

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.



A monochrome display showing the system date and time. The date is 16aug2012 and the time is 08:35. Below this, the software version is U3.00. In the lower-left corner, the letter 'N' is displayed inside a red square, indicating a Radio Network error.

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.

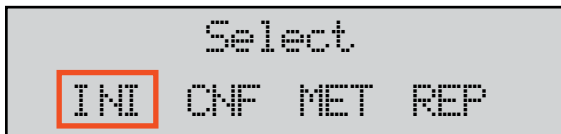
Enter PIN Number



A monochrome display with the text 'Enter Pin No.' at the top and four dashes '-' below it, indicating a four-digit PIN entry field.

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



A monochrome display with the word 'Select' at the top. Below it, four menu options are listed: INI, CNF, MET, and REP. The 'INI' option is highlighted with a red square.

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

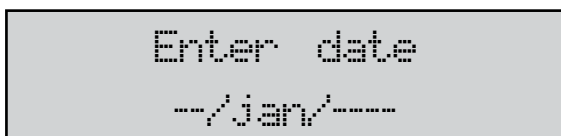
Time and Date Screens



A monochrome display with the text 'Enter time' at the top and two dashes '-' followed by a colon ':' and two more dashes '-', indicating a time entry field.

To change or set the system time:

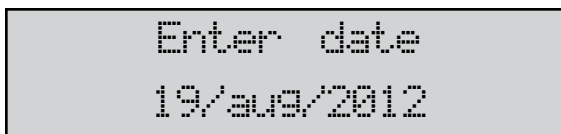
1. Select the INI menu and press Enter.
2. Use the numeric keys to set a 24-hour military time of day.
3. Press **Enter** to save the setting and advance.



A monochrome display with the text 'Enter date' at the top and a date entry field showing '--/jan/---'.

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.



A monochrome display with the text 'Enter date' at the top and a date entry field showing '19/aug/2012'.

CONFIGURATION (CNF) MENU

```
Select
INI  CNF  MET  REP
```

The CNF menu is used to set the system's operation modes and archiving methods.

```
Order List
Not Empty
```

If you see the message "Order List Not Empty," you have to clear the transactions in the Master Keypad (**CNF Menu**).

```
Clear Transacts
YES / NO
```

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

```
Confirm Clear
YES / NO
```

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

System Reset

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

```
System Reset
YES / NO
```

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

```
Confirm Clear
YES / 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.

```
Keypad Timeout
10-
```

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**.

```
Buzzer
YES / NO
```

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**.

```
WO Valid. HOST
      YES / 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.

```
WO Valid. PC
      YES / NO
```

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)

```
WO Archived
None Mem Print
```

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)

```
Archive on PC?
      YES / NO
```

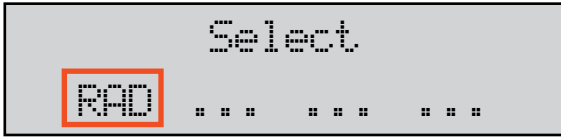
1. Use the **Scroll** key to move the cursor to either **YES** or **NO**.
2. Typically should be set to **YES**.
3. Press **Enter**.

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.

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.



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



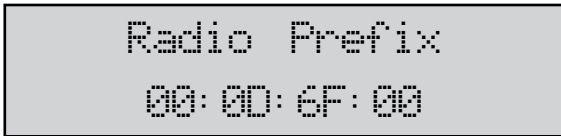
3. Use the **Scroll** key to move the cursor to the information you want to display.
4. Press **Home** to go back to the default screens.

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.



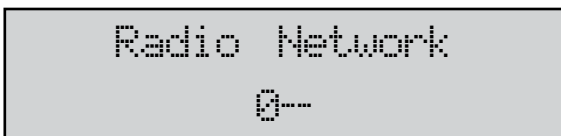
3. Press **Enter** to display the *Radio Address* screen.
4. Press **Enter** to return to the selection screen.

Radio Network

The Radio Network default is zero. You need to change this setting only if you have multiple RF FMS systems. 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  NUK  PWR  STA
```

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

```
RADIO PWR LEVEL
      20 dBm
```

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.

```
Select
ADR  NUK  PWR  STA
```

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

```
RADIO STATUS
NWK CONNECTED
```

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

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.

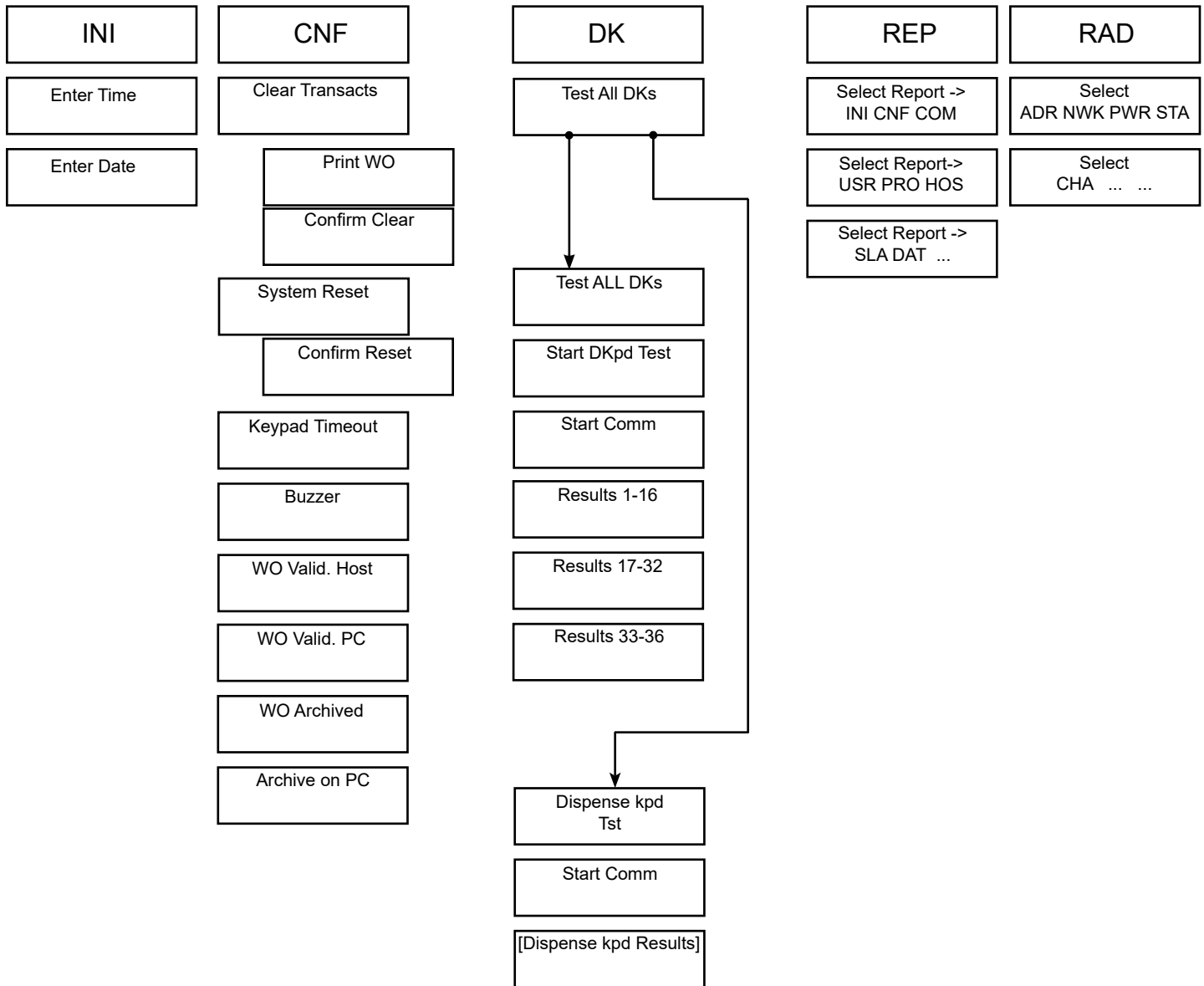
```
RADIO NETWORK
CHANNEL CHANGE
```

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

```
RADIO COMMAND
SUCCESS
```

4. The screen displays the radio command status.

Master Keypad Menu Overview

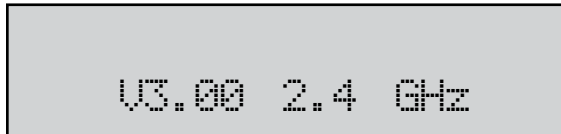


Dispense Keypad

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.



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.



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.



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.

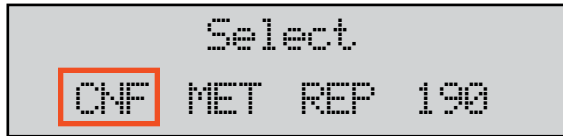


Enter a user PIN to start a work order or the supervisor PIN to enter the supervisor menus (the default PIN is 0001).

Settings Overview / Supervisor Menus

The following configuration options are only available at the Dispense Keypad. The default value for the Supervisor PIN is 0001.

Configuration (CNF) Menu



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

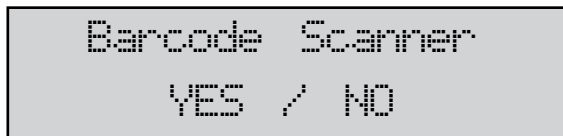
Enables the internal ticket printer. (Defined in Global Keypad Settings)

External Printer

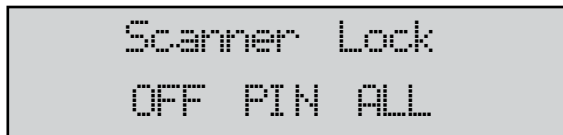
Enables the external report printer port. (Defined in Global Keypad Settings)

Barcode Scanner

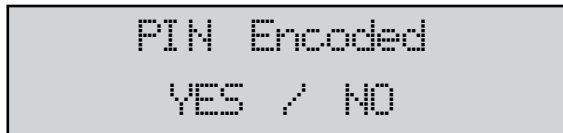
This menu will define the external Printer port as a Barcode Reader Port (RS232), if the External Printer is enabled the Barcode Scanner menu will disappear.



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 / : ; < = > ? @ [] ^ ` { | } ! "



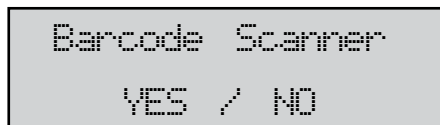
Defines the time, how long the scanned information will be shown on the display in units of 1/10 second. For example, 100 = 1 second.

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

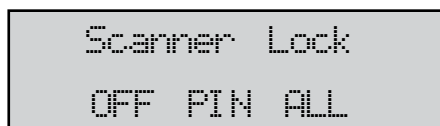
The barcode scanner must support an RS-232 output interface for use in the RF FMS. The barcode scanner serial output must support standard RS-232 levels of $\pm 3V$ DC to $\pm 12V$ DC. Logic level or TTL output signals are not supported by the RF FMS. The barcode scanner is connected to the RF FMS Dispense 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:

Baud Rate	9600 Baud
Data Bits	8 Bits
Stop Bits	1 Bits
Parity	Odd
Hardware Flow Control	None

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.

Screen	OFF	PIN	ALL
PIN Entry User	Both	Scanner	Scanner
PIN Entry Supervisor	Both	Both	Both
WO Number	Both	Both	Scanner
Meter ID	Both	Both	Scanner
Quantity	Both	Both	Scanner
AN Field	Both	Both	Scanner
N Field	Both	Both	Scanner

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.

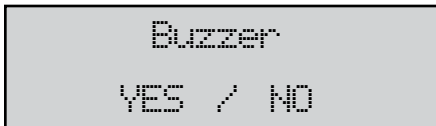


The Display Timeout determines how long an entry will remain on the display before it automatically advances to the next entry screen. Each count provides a 1/100 of a second delay. A value of 100 is equal to 1 second.

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

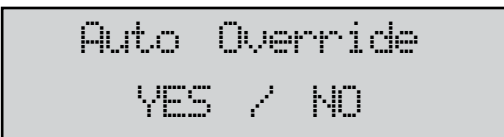
The buzzer beeps each time you press a button. You can turn off the sound. See Global Keypad Settings.



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.



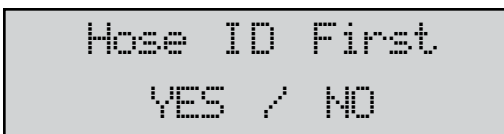
1. Use the **Scroll** key to move the cursor to either **YES** or **NO**.
2. Press **Enter**.

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.

Hose ID First



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

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.

```
Select
CNF MET REP 190
```

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

```
Init All Hoses
YES / NO
```

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

```
Reset All Hoses
Press Enter
```

3. Press **Enter**.

Reports (REP) Menu

This option is **not** used in fusion 2.4

```
Select
CNF MET REP 190
```

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).

```
Select
CNF MET REP 190
```

NOTE: To use this feature, you must have the keypad with the optional internal ticket printer installed (model 3110-029) and select Internal Printer option in the CNF menu.

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

```
Select Report->
INI CNF MET WO
```

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

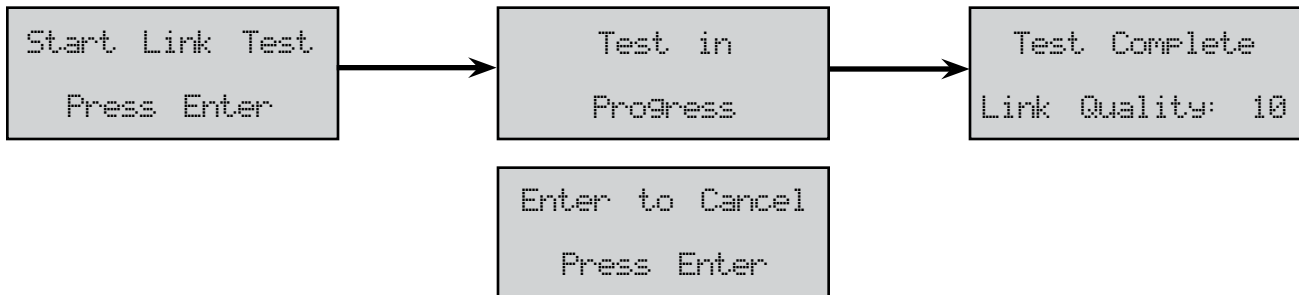
WO - Sort list by work order

RF Communication Test (LNK) Menu

```
Select
LNK RAD SYS ...
```

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

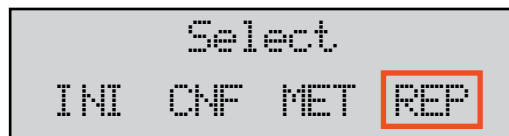
The test performs a number of test communications and measures the quantity of lost transmissions based on a scale from 0 to 10. The Link Quality 10 is the maximum (best) you can achieve.



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.

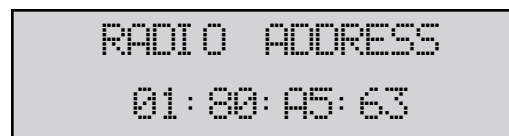


1. Use the **Scroll** key to move the cursor to **ADR**.



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.

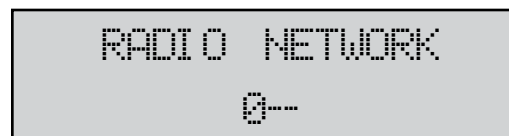
Radio Network

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

```
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.

```
RADIO PWR LEVEL
20 dBm
```

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.

```
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.

```
RADIO STATUS
NWK CONNECTED
```

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.

```
Select
ADR  NWK  PWR  STA
```

```
Select
CON  ...  ...  ...
```

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

```
RADIO NETWORK
CONNECTING
```

3. Press **Enter** to display the *Radio Status* screen.

```
RADIO STATUS
NWK CONNECTED
```

4. The screen displays the radio connection status (NWK CONNECTED or NWK DOWN).

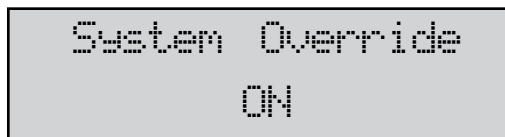
System Override (SYS) Menu




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



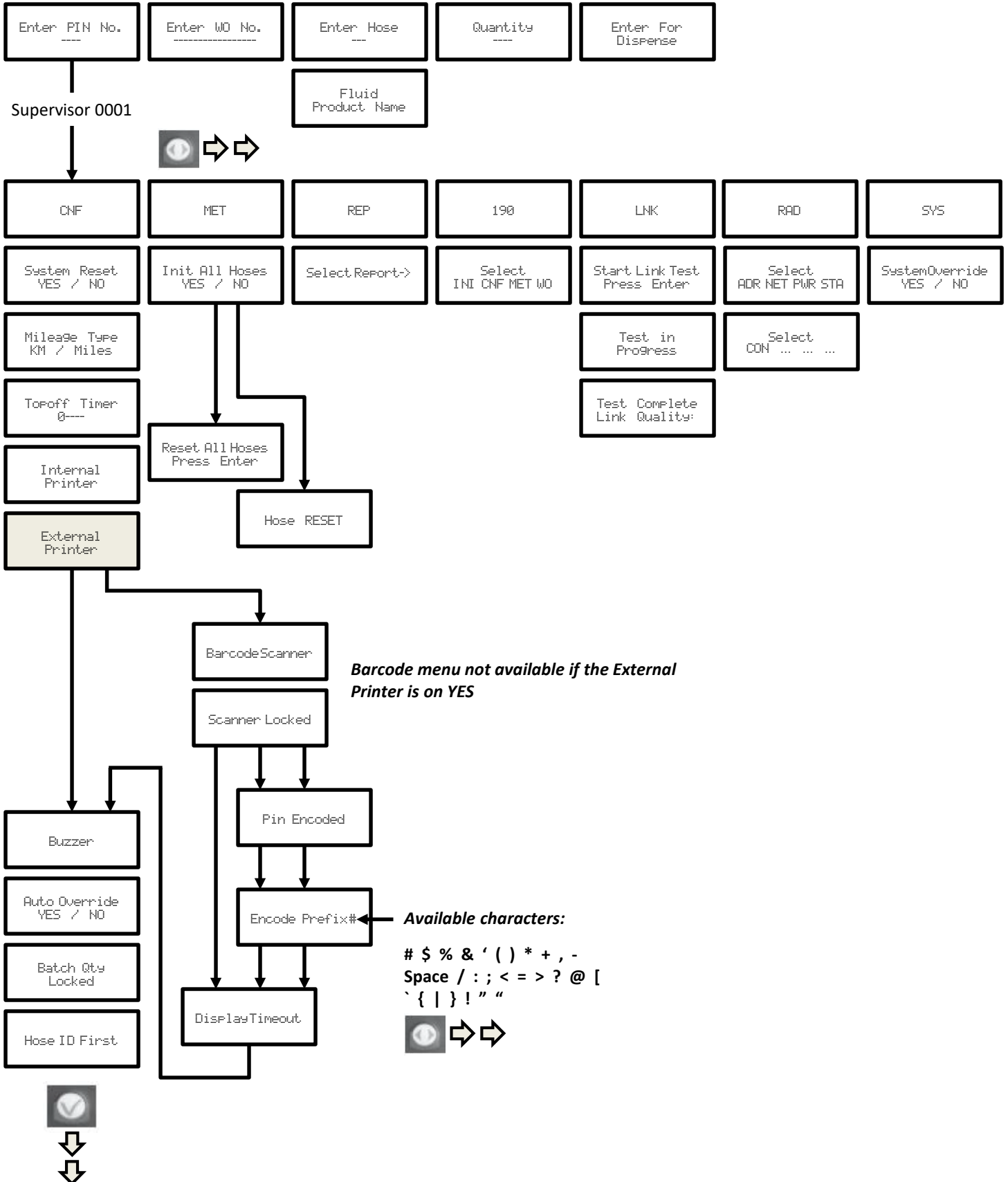
1. Use the **Scroll** key to move the cursor to **YES**.
2. Press **Enter**.



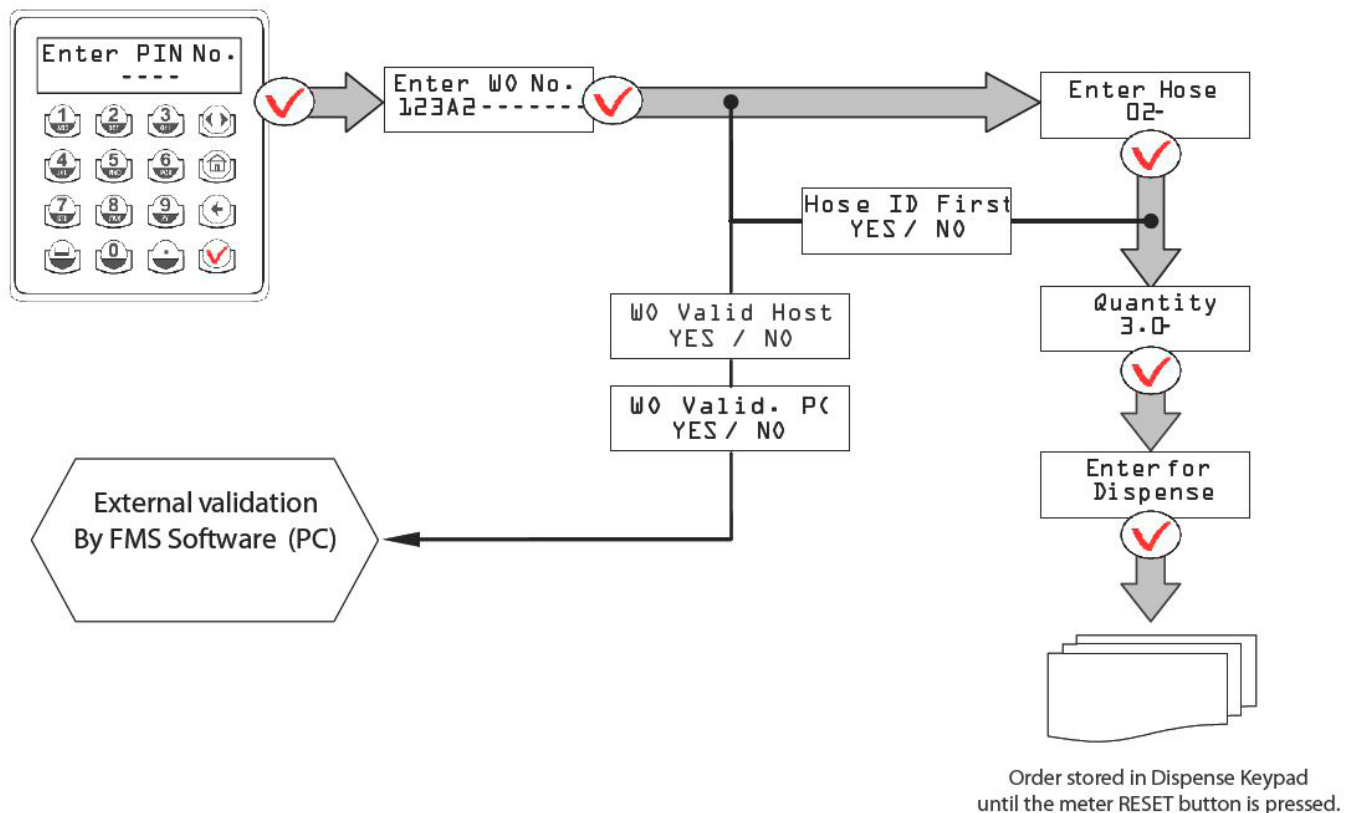
The screen verifies that System Override is **On**.

	NOTE
<p>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.</p>	

Dispense Keypad Menu Overview



Dispense Process Overview



Starting a Work Order

Enter Pin No.
- - - -

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

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

Enter WO No.
- - - -

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

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).

Free Alphanumeric
- - - -

3. Enter alphanumeric characters and press **Enter**.
Can be used, for example, for the licence plate number.

Free Numeric
- - - -

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.

Enter Hose
- - -

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

Fluid
Product Name

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

Product Quantity

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

Enter for
Dispense

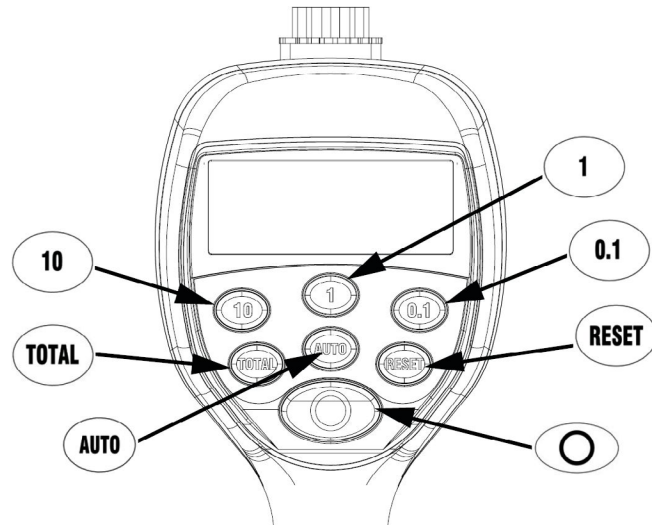
8. Press **Enter** to dispense the fluid.
The work order is now ready for being picked up by the RF meter (see RF Mode, Standard Preselection Mode) .

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.

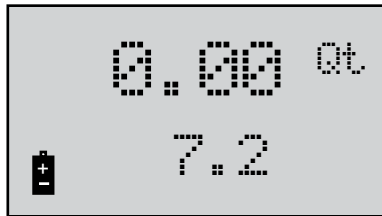
Electrical Override

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.

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.
NOTE: Battery polarity markings are inside battery compartment.
3. Replace the old batteries with 4 AA alkaline batteries.
NOTE: Changing the batteries does not affect any of the programmed values or totals.
4. Dispose of used batteries properly, according to local regulations.

Programming the Fusion 2.4 RF Control Handle

The units of measurement and scale factor can be changed. For instructions, see Service Bulletin 3088, (Fusion 2.4 RF Control Handle).

	IMPORTANT
The PC must be equipped with a physical 9-Pin Serial Interface, a USB to Serial Converter 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

Windows® 7, 8, 8.1, 10, Server 2012 or higher, 64 and 32 bit compatible

- 9-Pin RS-232 serial interface (COM) port

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:

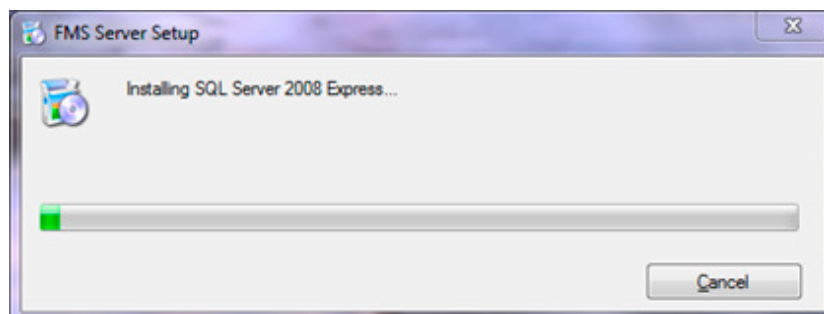
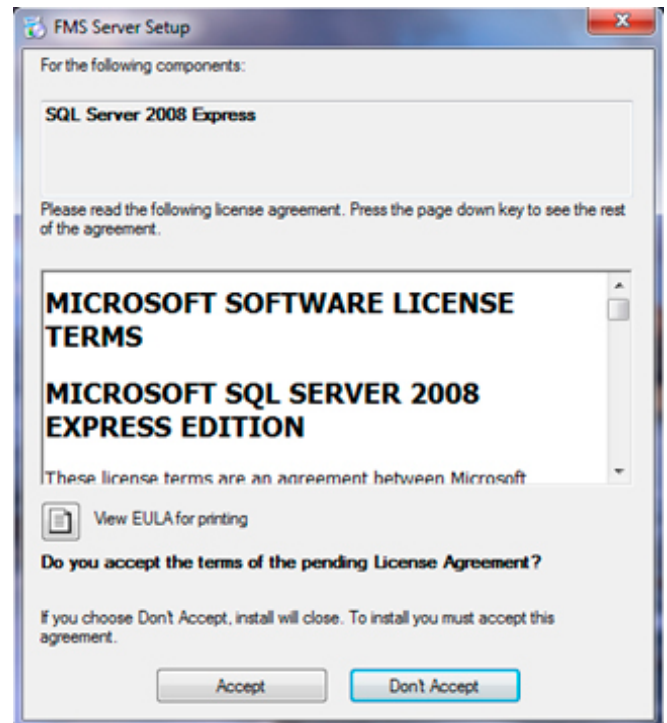
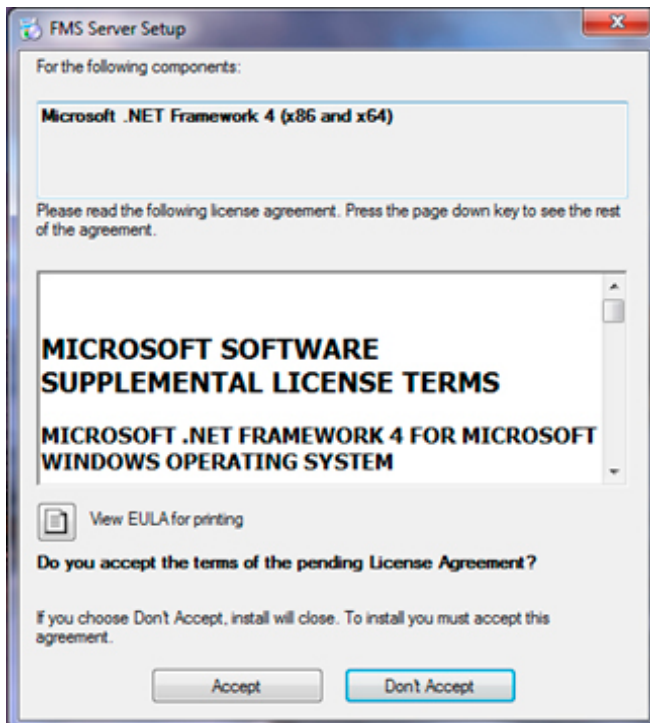


The installer menu provides several options:

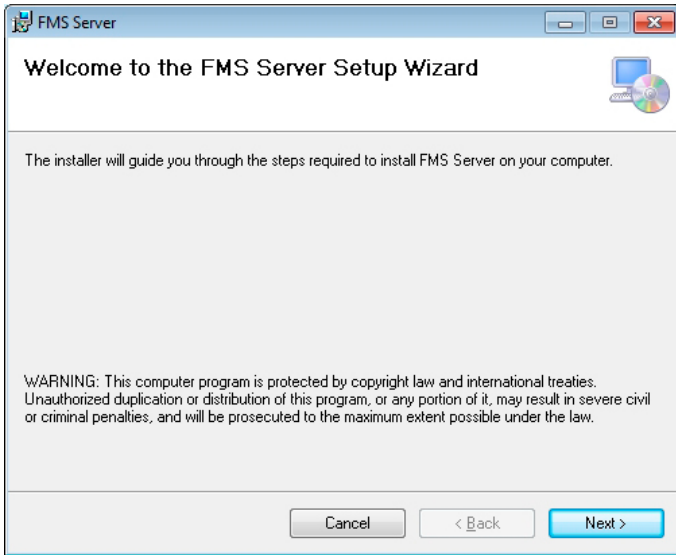
- Server – installs the server and all server components. This will be the location where all the data is stored and where the client machine will go to access and update work orders, tank levels, etc.
- Client – installs the client and all client components. This will have to be installed on every machine you would like to run the software on
- Exit closes the installer

Installing the FMS Server

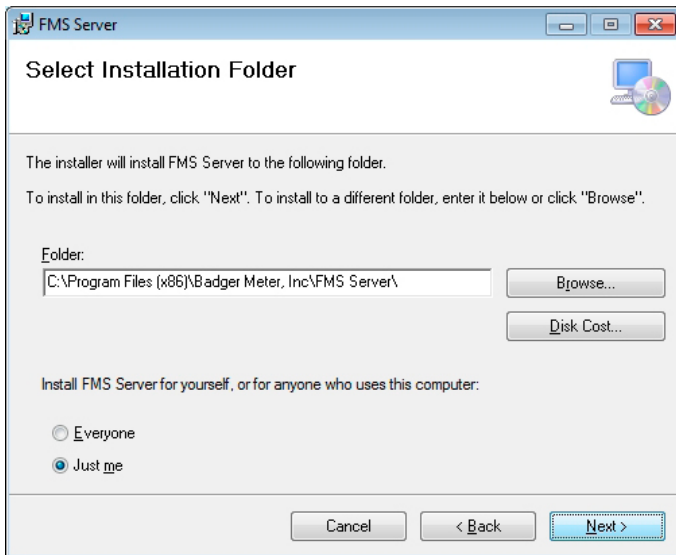
1. Select **Install Server**.
If the .NET 4.0 Framework or SQL server 2008 express is already installed, they will be skipped. If the Net 4.0 Framework is not installed, the installer will appear.
2. Click **Accept**.
If the SQL server 2008 express is not installed, the installer will appear.
3. Click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



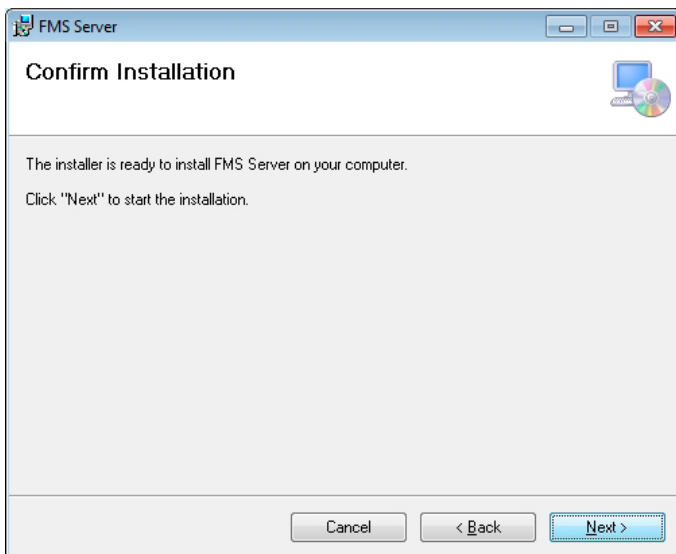
1. Click **Next**.



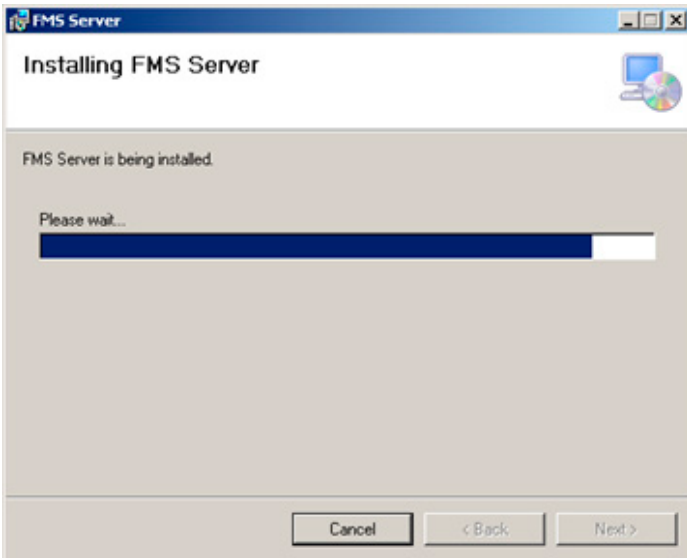
1. Select the installation folder you want the Server installed to. The default folder is **HIGHLY** recommended.

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

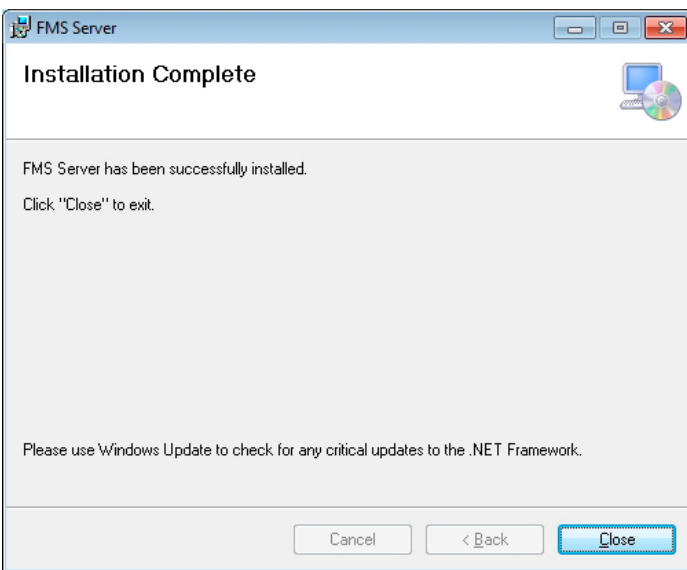
3. Click **Next**.



3. Click **Next** to confirm the installation.



1. Click **Next**.



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**.

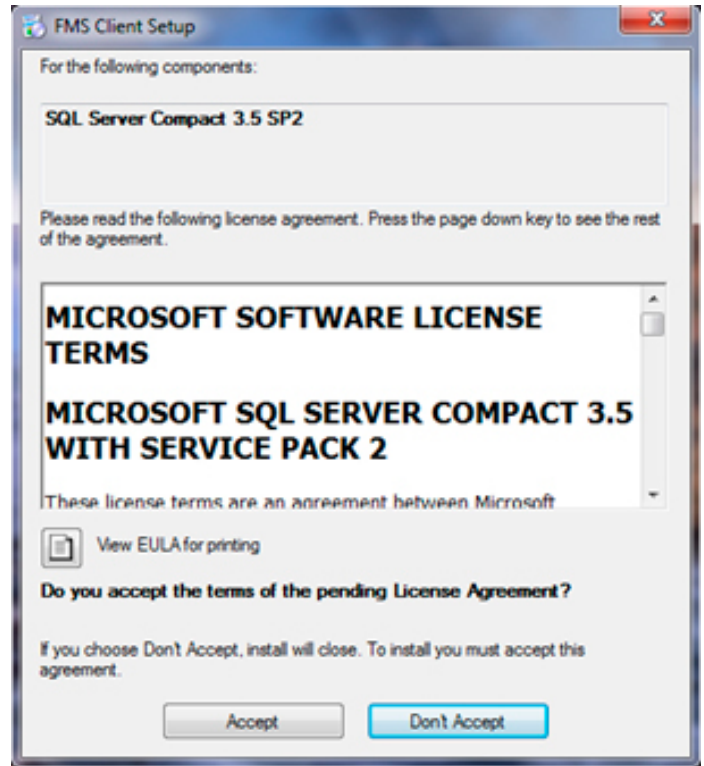
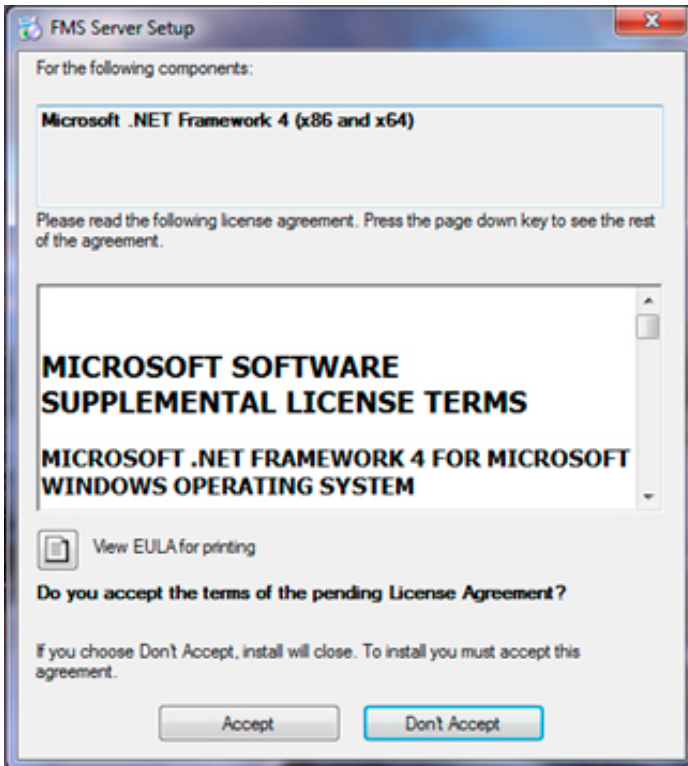
	IMPORTANT
After FMS Server installation, you <i>MUST</i> reboot the computer.	

Installing the FMS Client

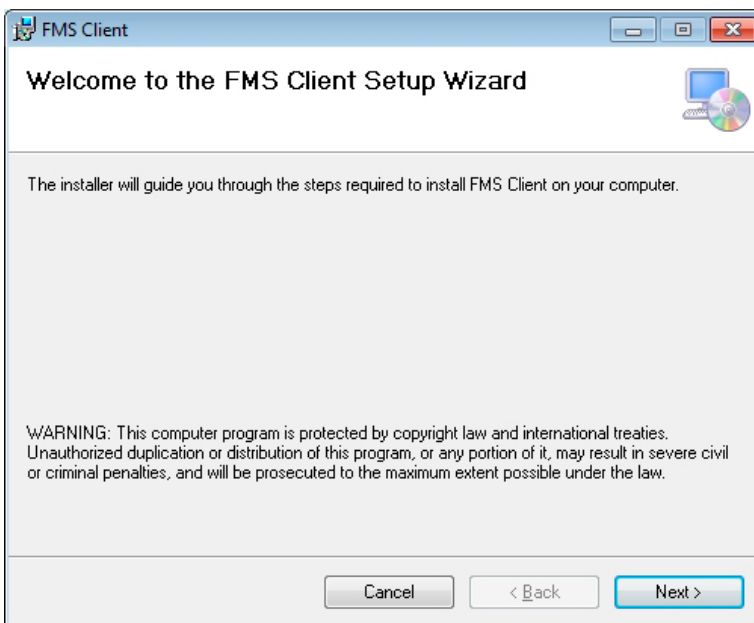
1. Select Install Client.

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.

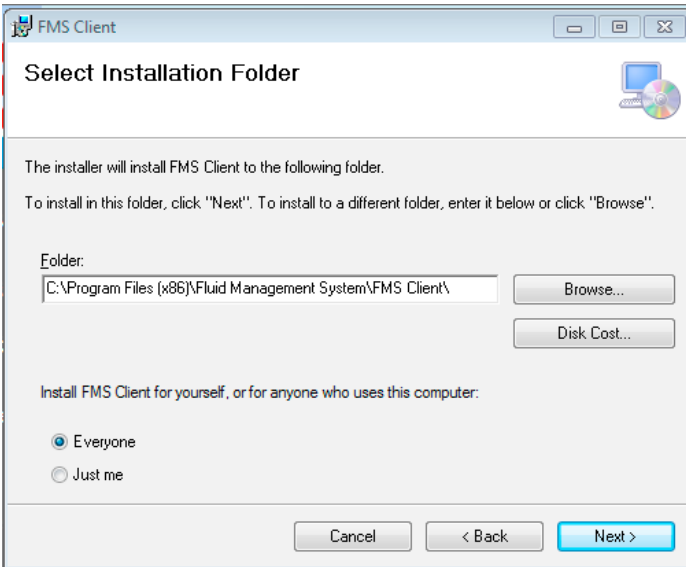
2. Click **Accept**.



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

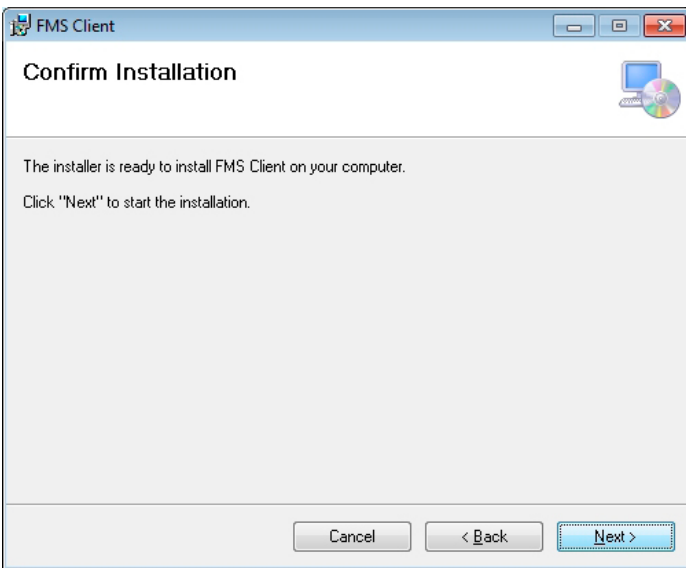


1. Click **Next**.

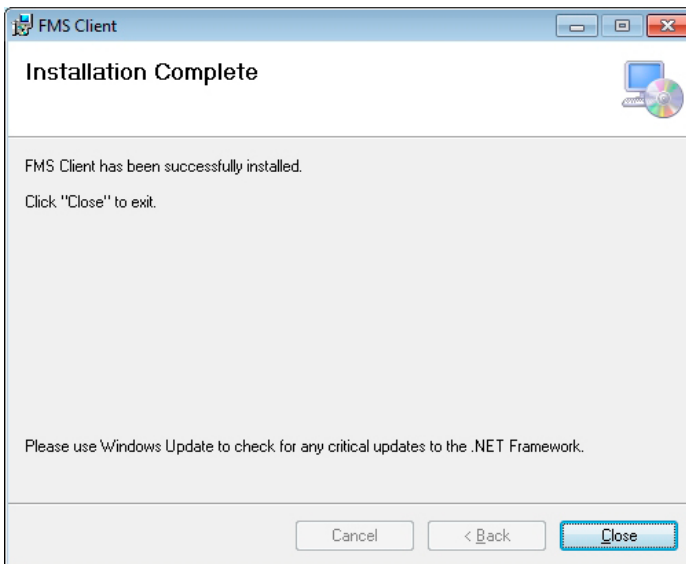


2. Select the installation folder you want the Client installed to. The default folder is **HIGHLY** recommended.

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.

A dialog box titled "Server IP Address or Host Name" with a "Port" field. The "Server IP Address or Host Name" field contains "127.0.0.1" and has a dropdown arrow. The "Port" field contains "8081". There are "OK" and "Cancel" buttons at the bottom right.

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.
For the Client not installed on the server, enter the IP address or host name assigned to the server. The IP addresses of the last successful connections are saved in the drop down menu.

2. Enter the Port. The Port is the TCP port to connect to. Make sure that the Port listed matches the port selected on the server. The default port is 8081. If another application is using the default port, change the port on this screen and the server to an open port. Make sure you have chosen the same port in both places.

3. Click **OK** to attempt a connection or click Cancel to close the application.

FMS System Configuration

The Fluid Management System configuration window. It features the Balerank logo on the left. The title is "Fluid Management System" with version "4.0.0" and "Copyright (R) 2015" below it. At the bottom, there is a "PIN:" label, an input field, "OK" and "Cancel" buttons, and a gear icon for settings.

If there are multiple servers that the system can connect to, click the **Gear Icon** and choose the correct IP address or type in the host name. The currently connected IP address displays in the window.

4. Enter the 4-digit system password and click **OK**. The system admin password is initially set to **0000**. Click the **gear icon** to open the Server IP Address or Host Name window.

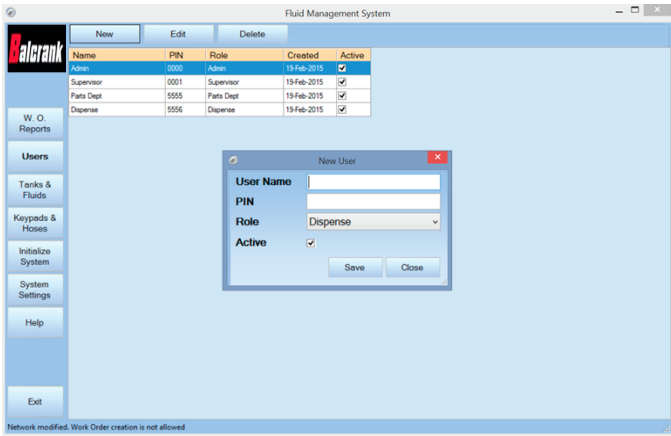
Status Bar

The bar across the bottom of the screen is the status bar that alerts you when the network is modified and work orders cannot be created, or that there are work orders open and the network cannot be modified. The status bar does not show network modification notices to users assigned as Parts Department.

USING THE FMS SOFTWARE

Setting Up New Users

To add a new user:



1. Click **New**. The screen displays the New User window.
2. Enter a user name, new PIN (cannot duplicate any currently used pin number) and assign a role.

PINs are four numeric digits and must be unique for each user.

To set up a user with multiple roles, create a user and pin number for each role.

3. Click **Save**.

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:

System Admin	Make changes to all levels of the software, from the PC only.
Supervisor	Make changes at the keypad only. This user may not be created, deleted or deactivated, only the PIN and name can be changed.
Parts Dept	Enter work orders at the PC only.
Dispense	Enter a work order id at a dispense keypad to complete dispense

Active or Inactive Users

Only users who have an Active status will be allowed to access their respective duties. At least one active Admin, Parts Department and Dispense user are required.

To make a user active or inactive:

1. Select the user's name.
2. Click **Edit**.
3. Check the **Active** box.
4. Click **Save**.

NOTE

To prevent unauthorized access to system configuration options, the Supervisor and System Admin passwords should be limited to qualified personnel

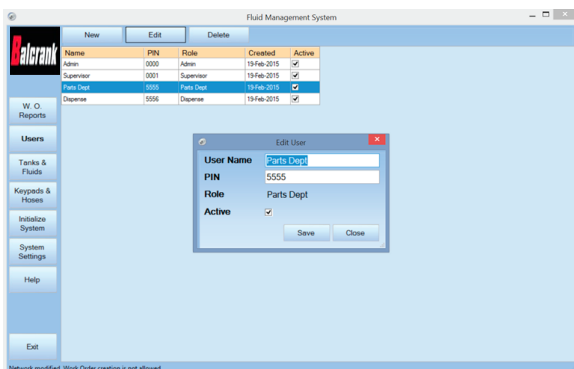
NOTE: Users with multiple roles will require a unique password for each role.

Deleting a User

To delete a user:

1. Select the user's name.
2. Click the **Delete** in the top left-hand corner.
3. Confirm your request to delete the user. If there was a problem deleting a user, an error message will display.

Edit a User

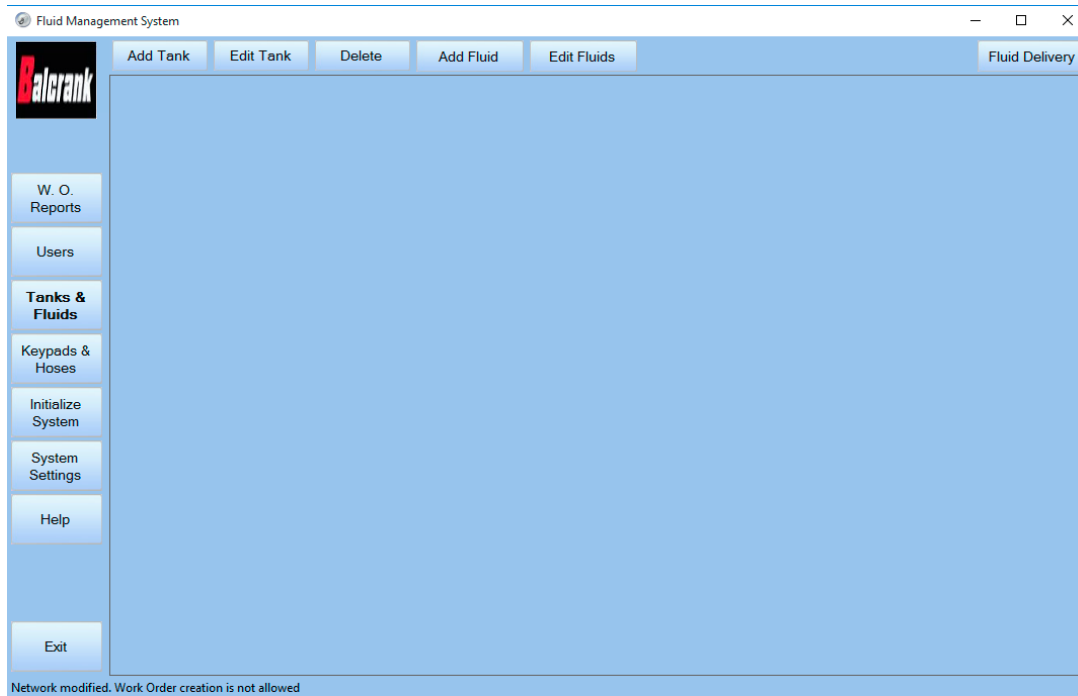


1. To edit user settings, select the user and click **Edit**.
2. In the Edit User window, make changes to the pin, name and active state. The role of the user cannot be changed.
3. Click **Save** to save changes.

When there are pending work orders, Admin and Parts Department users can be created and modified, but Supervisor and Dispense users cannot be changed or modified. Changes to the Supervisor or Dispense users or adding a Dispense user requires an INIT and will block the creation of any pending work orders.

Setting Up Tanks and Fluids

To set up tanks and fluids, click **Tanks & Fluids**.



NOTE: Add Tank, Edit and Delete buttons are disabled when there are pending work orders.

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

Creating a New Fluid

You must create the fluids before tanks can be created.

To create a fluid:

1. Click **Add Fluid**.
2. Enter the Fluid Name.
3. Adjust the ID if needed.
4. Click **Save** to save changes and close the Add Fluids window, or click **Close** to close the window without saving the changes.

The "New Fluid" dialog box is shown. It has a title bar that says "New Fluid". Inside, there is a text input field labeled "Fluid Name" which is currently empty. Below it is a dropdown menu labeled "ID:" with the number "1" selected. At the bottom right of the dialog, there are two buttons: "Save" and "Close".

Fluids must be assigned to a valid tank before they can be used in work orders.

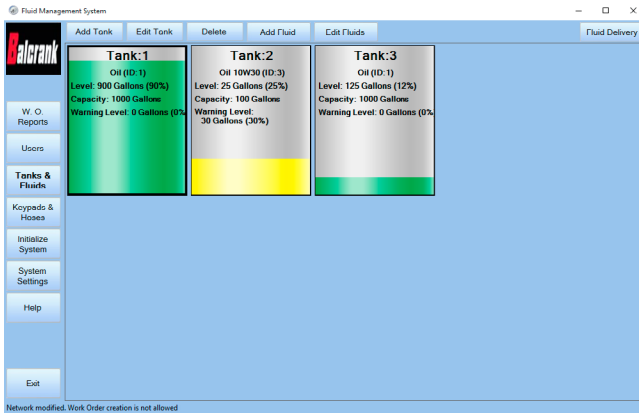
Adding a Tank

Tank ID	Automatically displays the next available sequential ID number. You can also select available tank IDs from the drop-down menu.
Units	Sets the units of measurement that you use to track the tank level. The choices are US Gallons, Liters, Pints and Quarts.
Fluid	Sets the type of fluid in the tank. Select fluids from the drop-down menu.
Capacity	Sets 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 is in the units you previously identified).
Level	Sets the current level of fluid in the tank.
Warning Level	Sets the fluid level at which you would like a warning message emailed to a particular person. A warning message appears on any running client 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).
Auto Email	Brings up a screen to specify email settings for the warning message. When the tank reaches the specified Warning Level, this email is sent to the email recipient. Multiple recipients can be defined. Enter a semicolon (;) between each email address. NOTE: This is not a required field. This option will not run if email settings are not activated. See "Email Settings" on page XX.

To add a tank:

1. Click on the **Add Tank** button.
2. Chose the tank ID from the drop down menu.
3. In the Units field, select a unit of measure from the drop-down menu. These are the units that are displayed in the fluid levels and capacity.
4. In the Fluid field, select a fluid from the drop-down menu.
5. In the Capacity field, enter the total number of units (gallons, liters, pints or quarts) of fluid that may be stored in the tank.
6. In the Warning Level field, enter the fluid level at which to trigger a low fluid warning message.
7. To specify the email setting for the warning message when the fluid reaches the low level point, check the box next to Auto Email.
8. Enter the email address of the recipient in the Email Address line. Separate multiple addresses with a semicolon.
9. Enter the email address that will appear as the sender in the From line.
10. Enter a subject in the Subject line.
11. Type a message that will appear with the tank information in the Message box. (This is optional)
12. Click **Save** to close this screen and return to the Add Tank screen.

Tanks and Fluid Delivery



After the tank and fluid(s) are set up, the software displays a graphical representation of the tank level, including:

- The Tank ID
- The fluid type and ID
- The fluid level in units and percentage

To change the information, click **Edit**. Change the appropriate settings, then click **Save**.

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

Fluid Delivered to Tank

Tank ID: 1
 Fluid: Gallons
 Current Level: 45 Gallons
 Capacity: 55 Gallons
 Units: Gallons
 Amount:

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.

Fluid Delivered To Tank

Are You Sure?

When the verification screen appears, click **OK**.

Edit a Tank

Edit Tank 1

Tank ID: 1
 Units: Gallons
 Fluid: Oil ID: 1
 Capacity: 100
 Level: 50
 Warning Level: 25 25 %
 Auto Email:
 Email Address:
 From:
 Subject:
 Message:

To edit a tank, select the tank and click **Edit**. Then make changes following the steps listed in "Setting Up Tanks and Fluids" on page 40

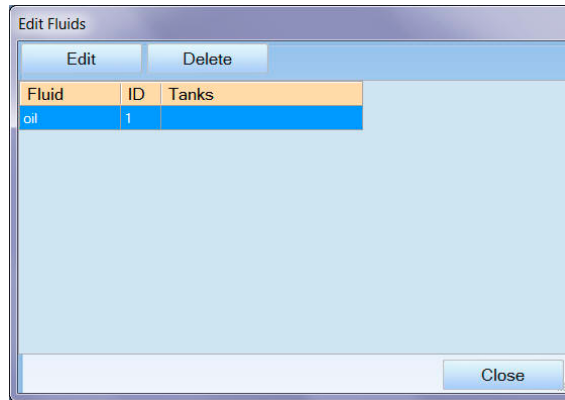
Delete a Tank

To delete a tank, select the tank you would like to delete and click **Delete**. The hoses that are attached to that tank change the Tank ID to 0 in the network tree. **Hoses with a Tank ID of 0 do not appear on the Initialization screen until they are configured with a valid Tank ID.**

Edit a Fluid

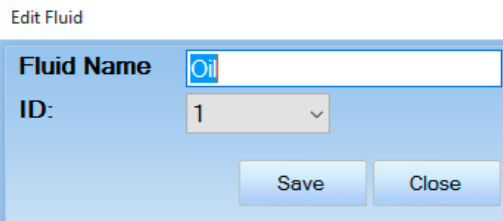
Use this feature to edit names and ID numbers of fluids or to delete a fluid. This feature is used with the host settings to match fluid IDs to the Host Protocol Configuration product IDs. To edit a fluid:

1. Click **Edit Fluid**. The window below opens.



2. Select the fluid you would like to edit, then click **Edit**. The window below opens.

a. To delete a fluid, select the fluid you would like to delete, then click **Delete**.



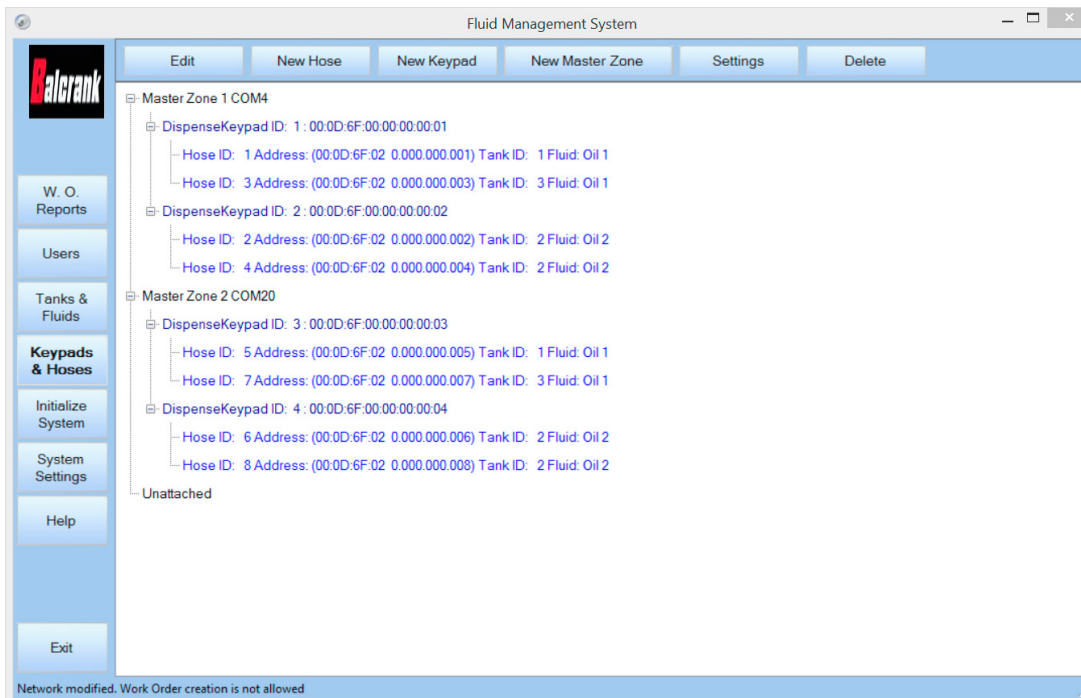
3. Update the Fluid Name and ID.

4. Click **Save** to save changes, or **Close** to exit without saving.

5. Click Close to exit the Edit Fluids window and return to the Tanks screen.

Setting Up Keypads and Hoses

Adding keypads and hoses builds out your entire system and sends work orders to the appropriate stations. Click Keypads & Hoses to display the screen below. The screen shows the current system tree set up.

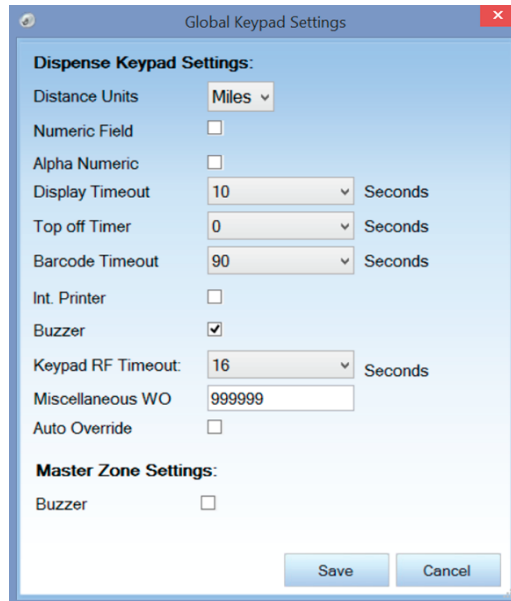


Global Keypad Settings

Make sure your Global Keypad Settings are configured correctly.

To change the Global Keypad Settings:

1. Click the **Settings**.

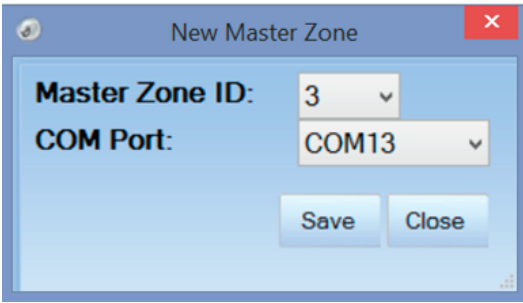


Dispense Keypad	
Distance Units	Specifies the units (miles or kilometers) of odometer readings for each WO.
Numeric	Requests that mileage be tracked.
Alpha Numeric	Requests that the car registration number be tracked. This enables the system users to enter the car registration number in the Pending WO and save it to the Completed WO.
Display Timeout	Sets the amount of time (in seconds) a PIN will be able to sit idle before timing out and forcing the user to log back in.
Top off Timer	Sets the time that the user is allowed to keep the meter open after the allotted amount of fluid has been dispensed (in seconds).
Barcode Timeout	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.
Int. Printer	If you have an optional internal printer connected to the keypad, select the checkbox next to the Int. Printer field.
Buzzer	Activates the key click buzzer.
Keypad RF Timeout	Sets the amount of time (in seconds) the keypad will wait for a work order validation response from the software.
Miscellaneous WO	A configurable numeric input that allows the user to define what number a miscellaneous work order gets. This is 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 the number, highlight the number, press delete, and enter a new number.
Auto Override	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 and v4.X firmware only.
Master Zone Settings	
Buzzer	Activates the key click buzzer.

2. Change the appropriate settings.

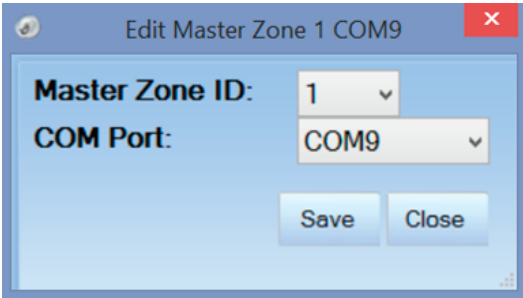
3. Click **Save** to save your changes or **Cancel** to discard the changes and return to the Main screen. **Any saved changes take immediate effect.**

Adding a Master Zone



1. From the Keypad and Hoses screen, click **New Master Zone**.
2. Select the Master Zone ID from the drop-down menu. The options are 1...8.
3. Select the serial port that the master is plugged into from the COM Port from the drop-down menu.
4. Click **Save** to save changes, or **Close** to exit and discard the changes.

Edit a Master Zone

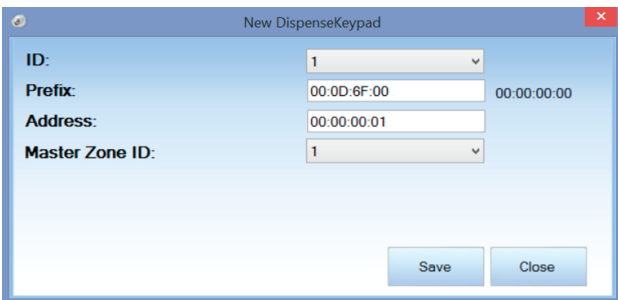


1. Select the Master Zone you would like to edit in the Keypads and Hoses screen.
2. Click **Edit**.
3. In the Edit Master Zone screen, select the new Master Zone ID and COM Port from the drop-down menus.
4. Click **Save** to save changes, or **Close** to exit and discard the changes.

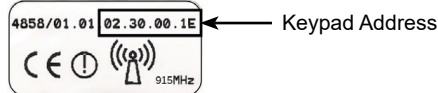
! IMPORTANT

BEFORE entering any keypad or hose addresses, ensure the appropriate firmware version has been selected (see page 47 System Settings)

Adding a Dispense Keypad



1. From the Keypad and Hoses screen, click New Keypad.
2. The prefix is pre-filled with the number to the right of the box, if the numbers do not match, double click the text box to reset the number to the default
3. Enter the Dispense Keypad address found on the back of the keypad. Use only the last 8 characters as shown here:

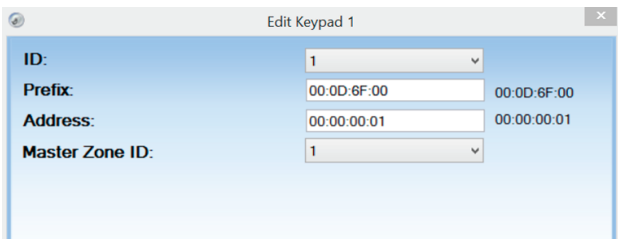


NOTE: The keypad address can also be viewed via the keypad **RAD** menu (see page 23 **Radio Address/Radio Prefix**)

4. Select the Master Zone ID that the new keypad will be added to from the drop-down menu.
5. Click **Save**. The new keypad appears on the Keypad and Hoses screen, and the New Keypad screen resets for another new keypad.
6. When you have finished adding keypads, click **Close**.

NOTE: Dispense keypads that are not associated to a master zone do not appear on the Initialization screen.

Edit a Dispense Keypad



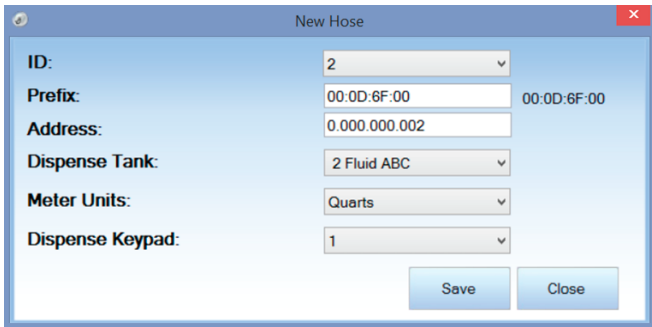
1. Select the keypad you would like to edit.
2. Click **Edit**.
3. In the Edit Keypad screen, make any changes necessary following the steps listed in "Adding a Dispense Keypad".
4. Click **Save** to save changes or click **Close** to exit the screen without saving changes.

To delete a keypad, select the keypad you would like to delete, then click **Delete**.

Adding Hoses

After adding a keypad, you can add 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 in the system tree.

To add hoses:



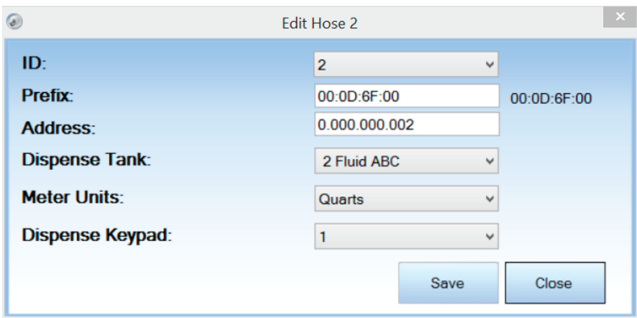
1. Click **New Hose**.
2. Enter the hose ID.

NOTE: Do NOT change the Prefix!

3. Enter the hose Address. This is found on the label on the meter.
4. Enter the Tank the fluid will be dispensed from.
5. Enter the dispenser Units of measure of the meter.
6. Enter the dispense keypad the hose is attached to. To leave the hose unassigned, select the empty entry in the drop down list. The hose must be assigned before it can be used.
7. Click **Save**. The new hose will appear on the Keypad and Hoses system tree under the assigned keypad, and the New Hose screen will reset for another new hose.
8. Once all hoses have been added, click **Close**.

NOTE: If a hose is added without an assigned dispense keypad, it appears under Unattached Hoses. Hoses not assigned to a dispense keypad do not appear on the Initialization screen.

Edit a Hose

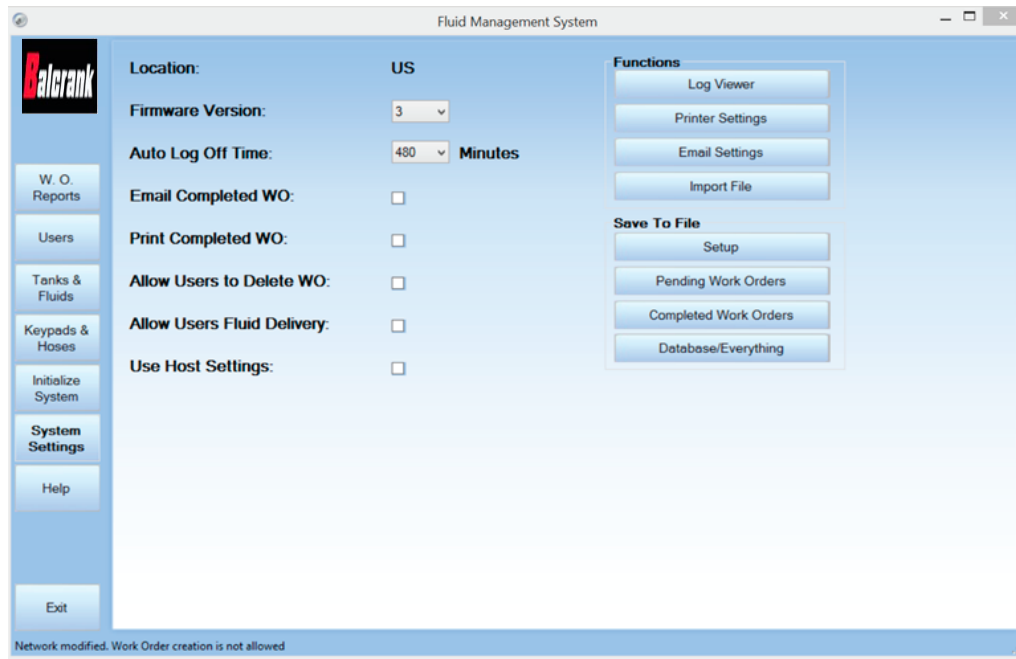


1. Select the hose you would like to edit.
 2. Click **Edit**.
 3. In the Edit Hose screen, make any changes following the same steps listed in "Adding Hoses".
 4. Click **Save** to save changes or click **Close** to exit the screen without saving changes.
- Use these steps to assign unattached hoses to a keypad as well.

To delete a hose, select it on the left and click **Delete**.

System Settings

To change system settings, click System Settings on the left-hand side.

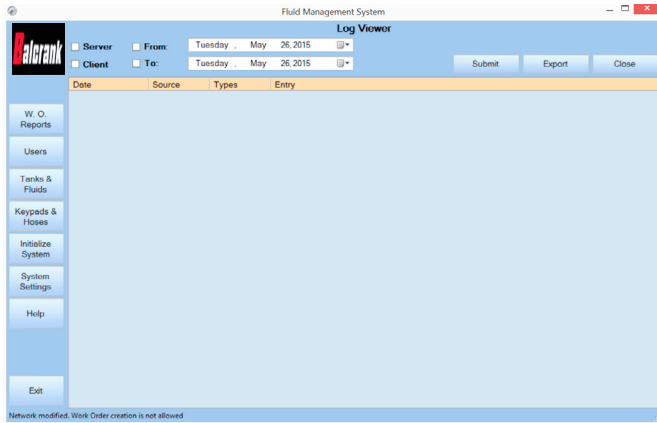


Location	Location is set as a factory default and cannot be changed by the user.
Firmware Version	Select the firmware version your master and Dispense Keypad is using. Version 1x can support 99 meters, version 2x and version 3x for 2.4 GHz radios can support up to 250 meters.
Auto Log Off	Sets how long (in minutes) the PC user will be able to sit idle before timing out and forcing the user to log back in.
Email Completed WO	Emails Work Orders upon completion. See "Email Settings" on page 48 to change settings.
Print Completed WO	Prints Work Orders upon completion.
Allow Users to Delete Wos	Allows dispense users to delete work orders.
Allow Users Fluid Delivery	Allows dispense users to enter a fluid delivery.
Use Host Settings	Enables host settings (Not Used / Do not check).

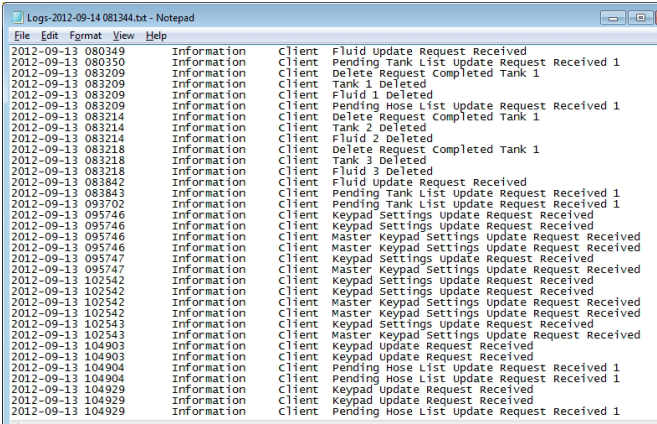
Functions Options

Log Viewer

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

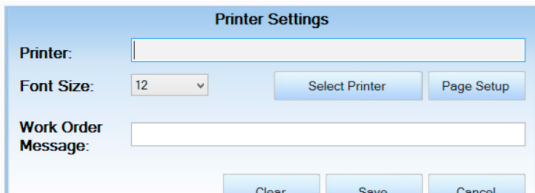


1. From the System Settings screen, click **Log Viewer**.
2. Check the boxes next to the options you want to display. The options are:
 - Server
 - Client
 - Date Range
3. Click **Submit**.



4. Click **Export** to save the file.

Printer Settings



1. From the System Settings screen, click **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. 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 or when the fluid level of a tank has reached its warning level, enter the SMTP settings for your email server. Contact your local system administrator for information on your email server.

The screenshot shows the 'Email Settings' window in the Fluid Management System. It features a sidebar on the left with navigation buttons: 'W. O. Reports', 'Users', 'Tanks & Fluids', 'Keypads & Hoses', 'Initialize System', 'System Settings', 'Help', and 'Exit'. The main area is titled 'Email Settings' and contains the following fields and options:

- SMTP Server Details:**
 - SMTP Server: [Text Field]
 - Port: 25 [Text Field]
 - User Name: [Text Field]
 - Password: [Text Field]
 - SSL:
- Completed Work Order Email:**
 - To Email: [Text Field]
 - From Email: [Text Field]
 - Subject: [Text Field]
 - Message: [Text Area]
- Buttons: 'Clear', 'Save', and 'Cancel'.

At the bottom of the window, a status bar reads: 'Network modified. Work Order creation is not allowed.'

1. From the System Settings screen, click **Email Settings**.
2. Enter the SMTP Server, Port, User Name and Password.
 - a. To send emails over SSL, click the checkbox. The email server must be configured to use the SSL function. Contact your local system administrator for information.
3. Enter the email address of the recipient.
4. Enter your email address in the From line.
5. Enter the subject in the Subject line.
6. Enter the work order message you would like to have in the email in the WO Message line.
7. Click **Save** to save your settings.

Save to File Options

The FMS Software lets you set up and save pending work orders, completed work orders, and everything in the database. To use this option, click on the corresponding buttons under **Save to File**. Browse to the destination folder or file, and click **OK**.

It is highly recommended that you save your system configuration using the Save to File function.

View Host File

When the Use Host Settings feature is enabled (Not Used in Fusion 2.4)

The screenshot shows the 'System Settings' window in the Fluid Management System. It features a sidebar on the left with navigation buttons: 'W. O. Reports', 'Users', 'Tanks & Fluids', 'Keypads & Hoses', 'Initialize System', 'System Settings', 'Help', and 'Exit'. The main area is titled 'System Settings' and contains the following fields and options:

- Location:** US
- Firmware Version:** 3 [Dropdown]
- Auto Log Off Time:** 480 [Dropdown] Minutes
- Email Completed WO:**
- Print Completed WO:**
- Allow Users to Delete WO:**
- Allow Users Fluid Delivery:**
- Use Host Settings:**

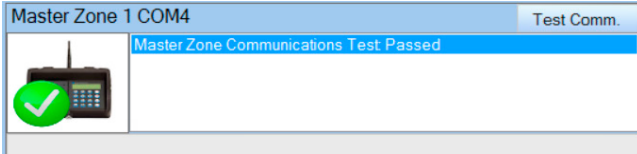
On the right side, there are two sections of buttons:

- Functions:** Log Viewer, Printer Settings, Email Settings, Import File.
- Save To File:** Setup, Pending Work Orders, Completed Work Orders, Database/Everything, View Host File.

At the bottom of the window, a status bar reads: 'Network modified. Work Order creation is not allowed.'

INITIALIZE SYSTEM

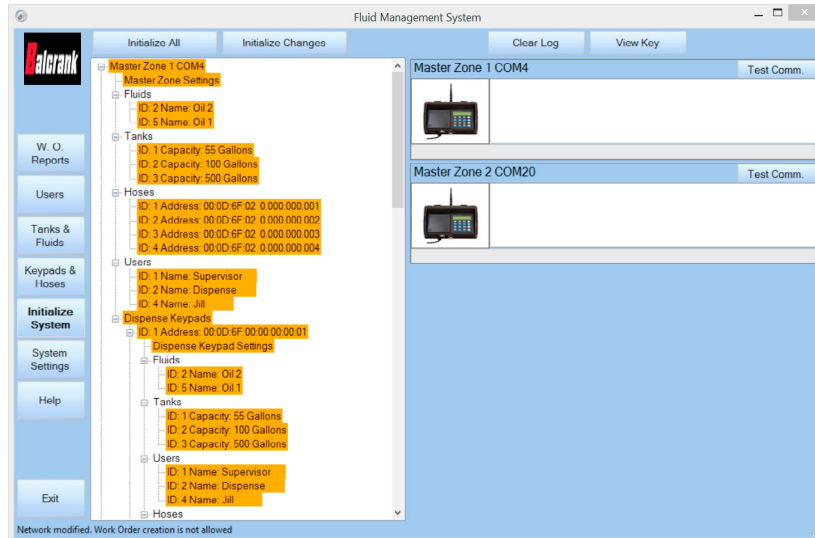
Test Comm Option



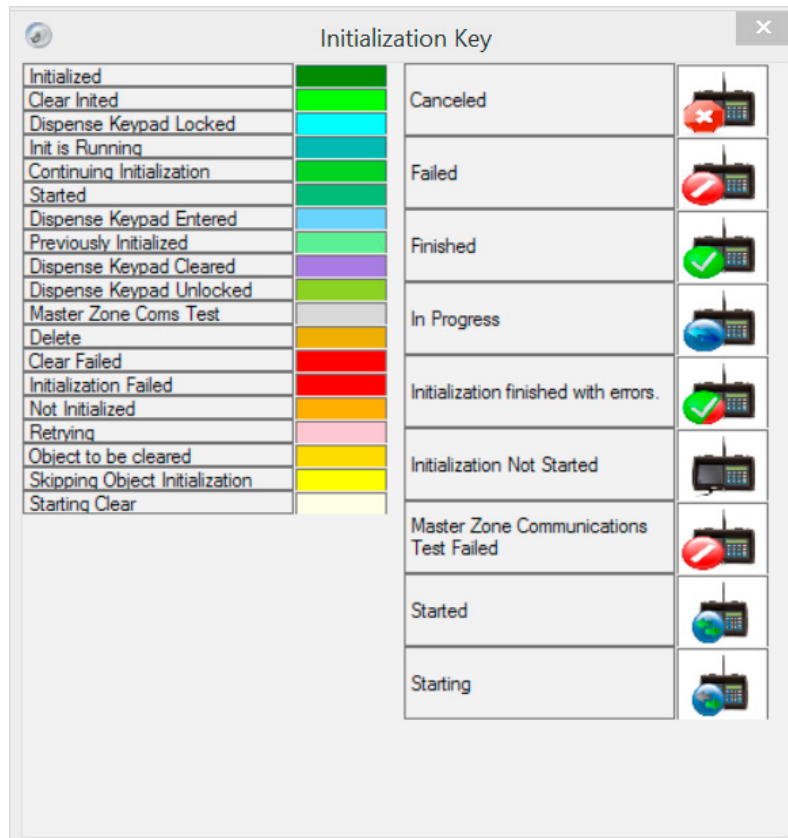
The Test Comm option checks that the serial cable is connected to the Master Keypad and the correct communication port has been selected.

1. To test the serial communication between the Master Keypad and PC, click **Test Comm**.
2. Upon completion, a Test Passed screen displays.

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

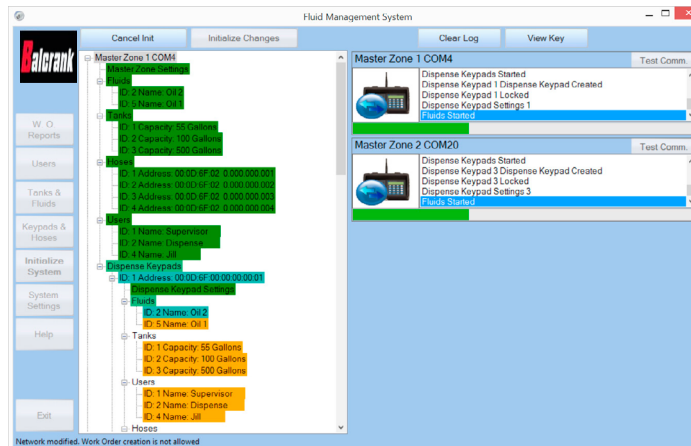


All items highlighted are color-coded to indicate their initiation status. To view the meaning of the colors and symbols, click View Key. The key opens in a new window.

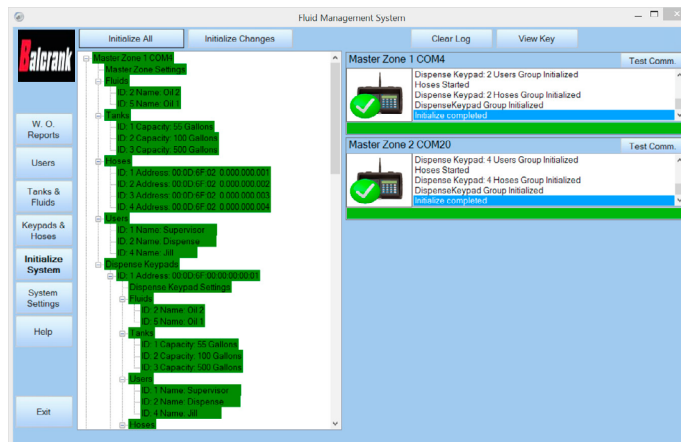


Initialize All

1. Click **Initialize All** to initialize all parts of the system. Use this option for the first initialization. You are reminded that information currently saved on the keypads will be erased.
2. Click **OK** to continue, or **Cancel** to exit the window and return to the previous screen. **The initialization process may take several minutes.**

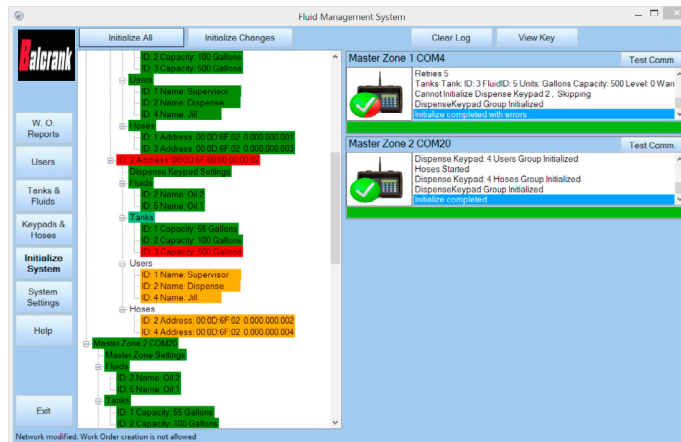


3. During initialization, a status bar for each Master Zone advances showing the initialization progress, and the highlighted items change colors in the tree indicating the status of the initialization.
4. Upon completion, a Request Completed screen displays. After the system is initialized once, any new changes made to the system configuration need to be initialized before the system can be used. **Changes cannot be made to the system if there are pending work orders.**



Initialize Changes

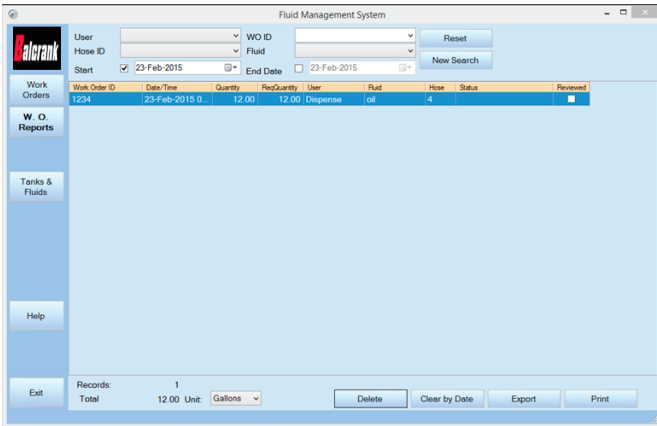
Click **Initialize Changes** to initialize only the changes made since the last initialization.



Any items highlighted in red after the initialization process is completed **did not initialize properly**. All custom settings initiated by the supervisor user are erased.

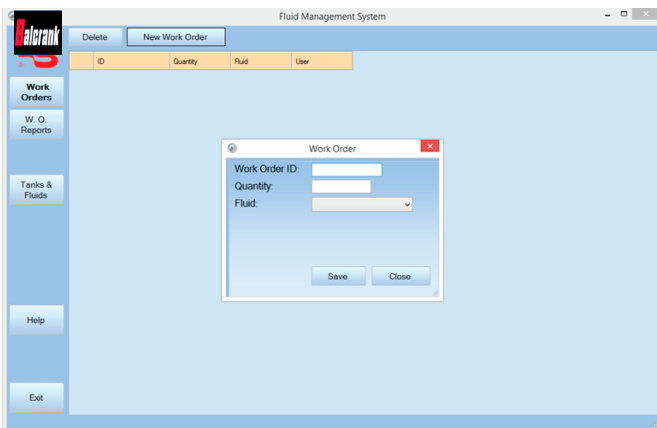
The log of all Master Keypad communications during an initialization or communications test is on the right-hand side of the screen. Click **Clear Log** to clear this log.

PARTS DEPARTMENT USER MENU



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 Pending Work Order



To enter a new work order:

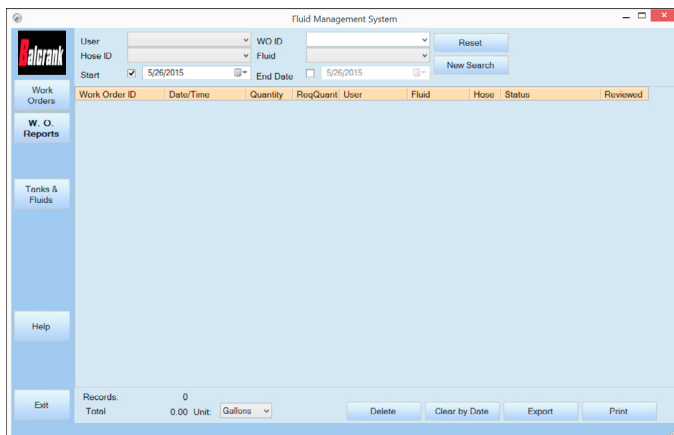
1. Click **Work Orders**. The Work Order window appears.
2. Enter a work order number in the Work Order ID field.
3. Enter a Quantity and type of Fluid to be dispensed in the respective fields. The fluid must be assigned to a valid tank.
4. Click **Save**. The screen resets for a new work order entry. An invalid work order message appears if the order is not valid.
5. Click **Close**.

NOTE: A zero quantity can be entered and the dispense user can select the quantity at the keypad.

Work Orders are stored on the PC until requested by a dispense user.

To delete a work order, select the work order you wish to delete, then click **Delete**.

Work Order Reports



To see if a work order has been completed by another user, click **W.O. REPORTS**. 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 there are no records for today's date, a no records found message displays.

The columns across the top show:

- The work order ID number assigned
- The date and time the fluid was dispensed
- The quantity of fluid actually dispensed
- The quantity that was preset on the work order
- The user that dispensed the fluid
- The type of fluid dispensed
- The hose the fluid was dispensed from
- The status of the hardware used during the dispense
- If the work order has been reviewed

All columns are resizable and sortable. The column that the report is sorted by will display a triangle. A triangle pointing up shows the records in ascending order, and a triangle pointing down shows the records in descending order.

The bar across the bottom of the screen displays RECORDS. The total displayed is the total number of records in that report.

Locating a Work Order

To locate a specific work order, you may search by user, work order ID, hose ID, fluid type and date range.

The user, work ID, hose ID, fluid type and date range search options are drop down menu boxes that list unique values in the database. The work order ID box also allows you to type in an ID. If you are using the date range in your search, you must enable the start date, the end date, or both by clicking Enable. The default date range is today's date. To change the date, click the appropriate date in the drop down menu. Neither date may be in the future, and if you are using both date options, the start date must be before the end date. After choosing your search criteria from the drop down menus, click New Search. The screen will display all results that match your search criteria.

If no records are found that match your criteria, a no records found message displays

To clear the search criteria, click Reset. Clicking Reset only clears the search criteria, it does not clear the report.

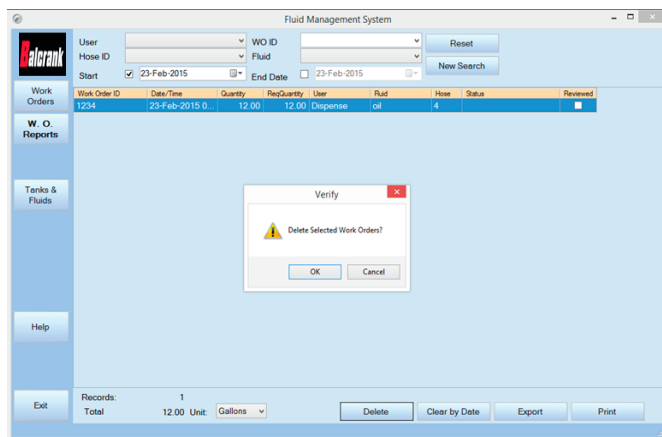
Reviewing a Work Order

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

Changing the Unit of Measure

At the bottom of the screen, there are total fluid numbers and records counts. This will sum the total volume of fluid that has been dispensed for the records currently appearing on the search in the units specified. 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. The total that is displayed will change to match the unit measurement. Each additional work order will be added to the total, and the volume will be converted to the specified unit measurement.

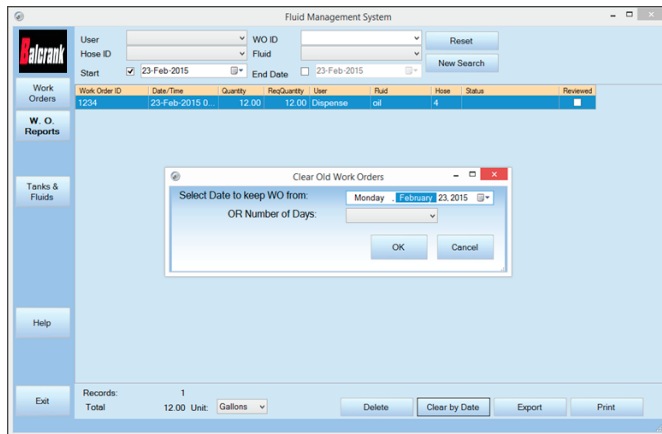
Deleting Old Work Orders



To delete old work orders:

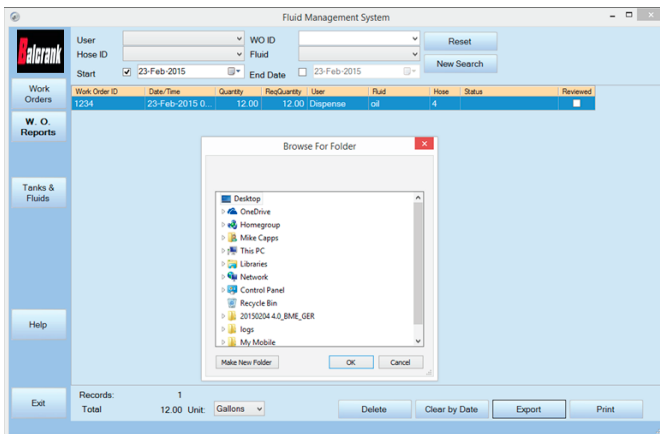
1. Select work orders to delete.
2. Click **Delete**.
3. On the pop-up screen, click OK to confirm.

OR



1. Click **Clear By Date**.
2. On the pop-up screen, select either the date you would like to keep work orders from (everything on and after February 23rd, 2015) or the number of days (everything from 3 days ago and after) and click **OK**.
3. When asked to confirm the deletion, click **OK**. A Request Completed screen displays.

Exporting Work Orders to a CSV File



To export the data in the current report to a semicolon-separated value (CSV) file:

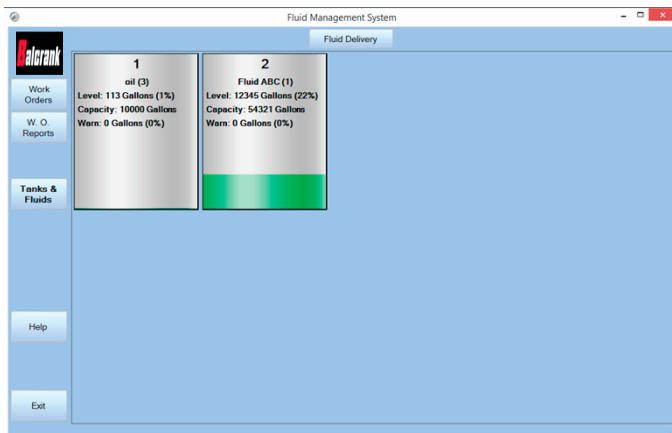
1. Click **Export**.
2. Select the folder/location that you would like to save the file to and click **OK**.
3. When the Request Completed screen displays, click **OK** to return to the Work Order Reports screen.

Print a Report

To print the displayed report, click Print. The widths of the columns will be printed as they appear on the screen and the report will be printed with the same headers. The report will not print if the printer is not configured. **Microsoft XPS document writer is not recommended.**

Tanks and Fluids

Viewing Tank Status



To view the status of tanks in your system:

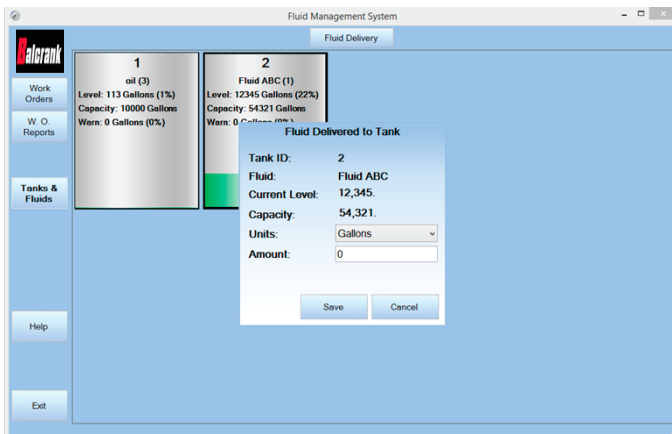
1. Click **Tanks & Fluids**.
2. View the current status and information.

The information displayed on the tank icons includes:

- The tank ID on line one
- Type of fluid in that tank and ID on the second line
- Current level of the tank, capacity, and warn
- Tank levels are shown in colors; gray is the empty portion, green is the current level, and yellow indicates the level when it is below the set warning level
- Percent values indicate the percentage of the tank that is filled at that fluid level

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.

TROUBLESHOOTING

Dispense Keypad Error Messages

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

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

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.

Message	Messages at the Meter
F01	The meter radio is not working.
	To clear the error, press the Reset button on the meter.
F02	The meter is not configured to a keypad.
	To clear the error code, press the Reset button on the meter.
	Verify that the meter radio address is configured properly.
F03	System busy.
	To clear the error, press the Reset button on the meter.
F08	Meter lost connection to network.
	Out of range—network connection lost.
	Keypad not powered.
	Meter moved out of range of keypad.
F09	Meter not connected to a network.
	First time being powered up.
	Network selected is not available.
SF0 (Scale Factor 0)	The Scale Factor setting for the meter is set to 0.000.
	To input a valid Scale Factor for the meter follow the instructions in the Change Factory Settings section of this manual.
Battery Indicator	Replace the batteries (2x "AA")
All other Error Codes	Are for factory purposes only.
	To clear the meter, press Reset.

Press **Reset** once more at the meter.

WORKSHEETS

Tank / Fluid

Tank ID	Unit	Fluid	Capacity	Level
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				

Maximum: 16 Tanks

Tank volume format: 00000.000

Keypads

Keypad ID	Address xx . xx . xx . xx			
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

Maximum: 36 Dispense Keypads

RF-Keypad address is an 8-digit number.

Meters / Hoses

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

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

Users

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

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

**For Warranty Information Visit:
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Revision Log:

Rev. A - New release
Rev. B - Added important note to pages 41, 44,
& 45 regarding firmware versions
Rev. C - Updated to reflect new software (v4.x)

SERVICE BULLETIN SB 3092
Revision C 9/17