

Veeder-Root TLS2 Console Gilbarco EMC2 Console

Setup and Operation Manual

Notice

Veeder-Root makes no warranty of any kind with regard to this publication, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

Veeder-Root shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this publication.

Veeder-Root reserves the right to change system options or features, or the information contained in this publication.

This publication contains proprietary information which is protected by copyright. All rights reserved. No part of this publication may be photocopied, reproduced, or translated to another language without the prior written consent of Veeder-Root.

Contact TLS Systems Technical Support for additional troubleshooting information at 800-323-1799.

DAMAGE CLAIMS / LOST EQUIPMENT

Thoroughly examine all components and units as soon as they are received. If any cartons are damaged or missing, write a complete and detailed description of the damage or shortage on the face of the freight bill. The carrier's agent must verify the inspection and sign the description. Refuse only the damaged product, not the entire shipment.

Veeder-Root must be notified of any damages and/or shortages within 30 days of receipt of the shipment, as stated in our Terms and Conditions.

VEEDER-ROOT'S PREFERRED CARRIER

1. Contact Veeder-Root Customer Service at 800-873-3313 with the specific part numbers and quantities that were missing or received damaged.
2. Fax signed Bill of Lading (BOL) to Veeder-Root Customer Service at 800-234-5350.
3. Veeder-Root will file the claim with the carrier and replace the damaged/missing product at no charge to the customer. Customer Service will work with production facility to have the replacement product shipped as soon as possible.

CUSTOMER'S PREFERRED CARRIER

1. It is the customer's responsibility to file a claim with their carrier.
2. Customer may submit a replacement purchase order. Customer is responsible for all charges and freight associated with replacement order. Customer Service will work with production facility to have the replacement product shipped as soon as possible.
3. If "lost" equipment is delivered at a later date and is not needed, Veeder-Root will allow a Return to Stock without a restocking fee.
4. Veeder-Root will NOT be responsible for any compensation when a customer chooses their own carrier.

RETURN SHIPPING

For the parts return procedure, please follow the appropriate instructions in the "General Returned Goods Policy" pages in the "Policies and Literature" section of the Veeder-Root **North American Environmental Products** price list. Veeder-Root will not accept any return product without a Return Goods Authorization (RGA) number clearly printed on the outside of the package.

Introduction

Contractor Certification Requirements	1
Related Manuals	1
Safety Symbols	1
Safety Warnings	2
Regulatory Compliance and Approvals	2
Console	2
Monitoring Functions	3
Output Relay.....	3
Communications Functions	3
Alarm Message Quick Reference Index	4

System Setup Screens

System Status (Home) Screen	5
Main Menu Screen	6
[266] System Setup - Enter Password Screen	7
System Setup Screen	8
[201-203, 240] System Language and Units Setup Screen	9
[204 - 207] Station Header Setup Screen	10
Alpha Keypad Screen	11
Numeric Keypad Screen	12
[208-211] System Security Setup Screen	13
[263-265] System Setup Security - Setup Password Screen	14
[263-265] System Setup Security – Density Password Screen	15
[212-214] System Time/Date Setup Screen	16
Current Date Entry Screen	17
Current Time Entry Screen	18
[500-503] System Setup Close Times Screen	19
[215-218] Shift Times Setup Screen	20
[219-223] Daylight Savings Time Setup Screen	21
[224-226, 321] Auto-Dialout Setup Screen	22
[227-230] Autodial Alarm Setup Screen 1	23
[231-234] Autodial Alarm Setup Screen 2	24
[235-237, 320] Autodial Alarm Setup Screen 3	25
[550-551] Autodial Alarm Setup Screen 4	26
[238-239] Comm Port 1 and 2 Serial Setup Screen 1	27
[241] Comm Port 1 Printer Setup Screen	28
[244-246] Comm Port 1 Modem Setup Screen 1	29
[249-252] Comm Port Setup Screen 2	30
[247-248] Advanced Communications Setup Screen	31
Data Entry Screen	32
Parallel Port Setup Screen	33
[256] Alarm Relay Setup Screen	34
[254, 257-258] Temperature Setup Screen	35
[259-262] EuroProtocol and Stick Offset Setup Screen	36
About TLS2 Screen	37

Tank Setup Screens

[267] Tank Setup - Enter Password Screen	38
Tank Setup Screen	39
[119-121] Tank Setup Screen 1	40
[122-124] Tank Setup Screen 2	41
Tank Setup Screen 2 (Multipoint Tank Profile Selected)	42
[125-128] Tank Setup Screen 3	43
Calculating Tank Tilt.....	45
[131-133] Tank Setup Screen 4	46

[101-104] Tank Alarm Limits Setup Screen 1	47
[105-108] Tank Alarm Limits Setup Screen 2	48
[109-111, 552] Tank Alarm Limits Setup Screen 3	49
[553] Tank Alarm Limits Setup Screen 4	50
[112-114] Tank Leak Test Setup Screen 1	51
[115] Same All Tanks Screen	52
[116-118] Tank Leak Test Setup Screen 2	53

Manually Closing a Shift

Manual Shift Close Screen	54
---------------------------------	----

Manually Starting/Stopping Tank Leak Tests

Manual Test Start/Stop Screen	55
-------------------------------------	----

Reports

System Reports	56
Inventory Report (US Units and Non-Density Probe)	58
Example Report Printout - Inventory Report with TC volume	58
Example Report Printout - Shift Inventory Report with TC volume.....	58
.....	58
Inventory Report Notes.....	58
Example Report Printout - Snapshot Shift Inventory Report	59
Example Report Printout - Inventory Log Report.....	59
Inventory Log Report Notes.....	59
Full Inventory Report (US Units and Non-Density Probe)	59
Example Report Printout - Full Inventory Report.....	60
Inventory Report (Metric Units and Density Probe)	60
Example Report Printout - Inventory Report with Density Probe.....	60
Example Report Printout - Full Inventory Report with Density Probe.....	61
Delivery Report (US Units and Non-Density Probe)	61
Example Printout - Delivery Report with Non-density Probe	61
Delivery Report (Metric Units and Density Probe)	62
Example Printout - Delivery Report with Density Probe	62
Active Alarm Status Screen	63
Alarm Reports	63
Important Alarm Notes.....	64
Information on Alarm States	64
Active Alarm	64
Acknowledging an Active Alarm	64
Returning to Normal State	64
In-Tank Alarm Information	65
Max Product Alarm	65
Overfill Alarm.....	65
Low Product Alarm	65
High Water Alarm	65
Probe Out Alarm.....	65
Invalid Fuel Height.....	65
Probe Low Temperature Warning	65
Delivery Needed Alarm.....	65
Leak Test Alarm	65

Diagnostic Screens

Function Test Menu Screen	66
LCD Touch Test Screen	67
Probe Diagnostic Screen	67
Example Report Printout - Probe Diagnostic Report.....	68

Availability of Probe Data	68
Density Offset Menu Screen	69
[267] Density Offset - Enter Password Screen	70
Density Offset Screen 1	71
[290, 291] Density Offset Screen 2	72
Density Offset History Screen	73
Label Code Index	74

Tables

Table 1:	Alarm Message Table	4
Table 2:	U.S. and Metric Thermal Coefficients	44
Table 4:	System Reports	56
Table 5:	Alarm Reports	63
Table 6:	Tank Setup Label Codes	74
Table 7:	System Setup Label Codes	75

Introduction

This manual describes setup and operating procedures for the following Touch-Screen consoles:

- Veeder-Root TLS2
- Gilbarco EMC2

This manual assumes that the console is installed and has successfully completed the Cold Boot procedure. You should begin the setup procedure with the System Setup Screens and finish with the Tank Setup Screens.

After entering the System and Tank Setup parameters the console should be operational. Consult the Reports Section for instructions on viewing system and alarm reports. The Diagnostic Section contains some simple console test procedures and access to Probe Diagnostic data.

Contractor Certification Requirements

Veeder-Root requires the following minimum training certifications for contractors who will install and setup the equipment discussed in this manual:

Installer (Level 1) Certification: Contractors holding valid Installer Certification are approved to perform wiring and conduit routing; equipment mounting; probe, sensor and carbon canister vapor polisher installation; wireless equipment installation; tank and line preparation; and line leak detector installation.

ATG Technician (Level 2/3 or 4) Certification: Contractors holding valid ATG Technician Certifications are approved to perform installation checkout, startup, programming and operations training, system tests, troubleshooting and servicing for all Veeder-Root Series Tank Monitoring Systems, including Line Leak Detection.

Warranty Registrations may only be submitted by selected Distributors.






Related Manuals

577013-756 TLS2/EMC2 Site Prep Manual





577013-767 Veeder-Root Serial Interface Manual for TLS2 Monitoring Systems

Safety Symbols

The following safety symbols are used in this manual to alert you to important safety hazards and precautions.

	EXPLOSIVE Fuels and their vapors are extremely explosive if ignited.		FLAMMABLE Fuels and their vapors are extremely flammable.
	ELECTRICITY High voltage exists in, and is supplied to, the device. A potential shock hazard exists.		READ ALL RELATED MANUALS Knowledge of all related procedures before you begin work is important. Read and understand all manuals thoroughly. If you do not understand a procedure, ask someone who does.
	WARNING Heed the adjacent instructions to avoid damage to equipment, property, environment or personal injury.		

Safety Warnings

 WARNING	
 	<p>This system operates near highly combustible fuel storage tanks.</p> <p>FAILURE TO COMPLY WITH THE FOLLOWING WARNINGS AND SAFETY PRECAUTIONS COULD CAUSE DAMAGE TO PROPERTY, ENVIRONMENT, RESULTING IN SERIOUS INJURY OR DEATH.</p> <p>Leaking tanks can create serious environmental and health hazards. Improper programming and operation may also result in equipment self-test failures and submersible pump shutdowns.</p> <p>To ensure proper installation, operation, and continued safe use of this product:</p> <ol style="list-style-type: none">1. Read and follow all instructions in this manual, including all safety warnings.2. Have equipment installed by a contractor trained in its proper installation and in compliance with all applicable codes including: the National Electrical Code; federal, state, and local codes; and other applicable safety codes.3. Ensure that this equipment is properly programmed.4. Operate this equipment in accordance with the instructions in this manual.5. Promptly investigate any alarm conditions.6. Do not modify or use service parts other than those provided by Veeder-Root.
	

Regulatory Compliance and Approvals

Plan your leak detection program to comply with local, state, and federal regulations governing underground storage tanks. Save all inventory and leak test records provided by the system as part of a regulatory compliance program.

The system, when equipped with Magnetostrictive 0.2 gallon-per-hour (gph) (0.76 lph) (Mag 2) probes, is classified as an Automatic Tank Gauge System and has been third-party tested by Midwest Research Institute. This system can detect a 0.2 gph leak exceeding a 95% probability of detection [P(D)] and less than a 5% probability of false alarm [P(FA)]. It meets federal U.S. E.P.A. performance standards (0.2 gph at [P(D)] of 95% and [P(FA)] of 5%) and the federal performance standard of measuring water in the bottom of a tank to the nearest 1/8 inch (3.2 mm).

The system, when equipped with Magnetostrictive 0.1 gph (0.38 lph) (Mag 1) probes, meets Volumetric Tank Tightness Testing Method standards and has been third-party tested by Midwest Research Institute. This system can detect a 0.1 gph leak exceeding a 95% probability of detection [P(D)] and less than a 1% probability of false alarm [P(FA)]. This system meet U.S. E.P.A. federal performance standards (0.1 gph at [P(D)] of 95% and [P(FA)] of 5%).

Console

The TLS2 Console features a front panel touch screen display, a dual-purpose Alarm/Normal LED, and an audible beeper for alarm and warning notification. Serial and parallel printer ports are available for connection to a remote printer. The TLS2 Console can monitor up to six magnetostrictive probes.

Monitoring Functions

Depending on installed equipment, the console can provide:

- Inventory status for up to six tanks
- In-tank leak detection.

Output Relay

An output relay is provided that can trigger external alarm devices when an alarm condition is sensed by the system.

Communications Functions

Several communications options are available for the TLS2 Console:

- RS-232
- RS-422
- RS-485 2-wire or 4-wire
- External modem support
- Serial or parallel remote printer interface

Alarm Message Quick Reference Index

Table 1: Alarm Message Table

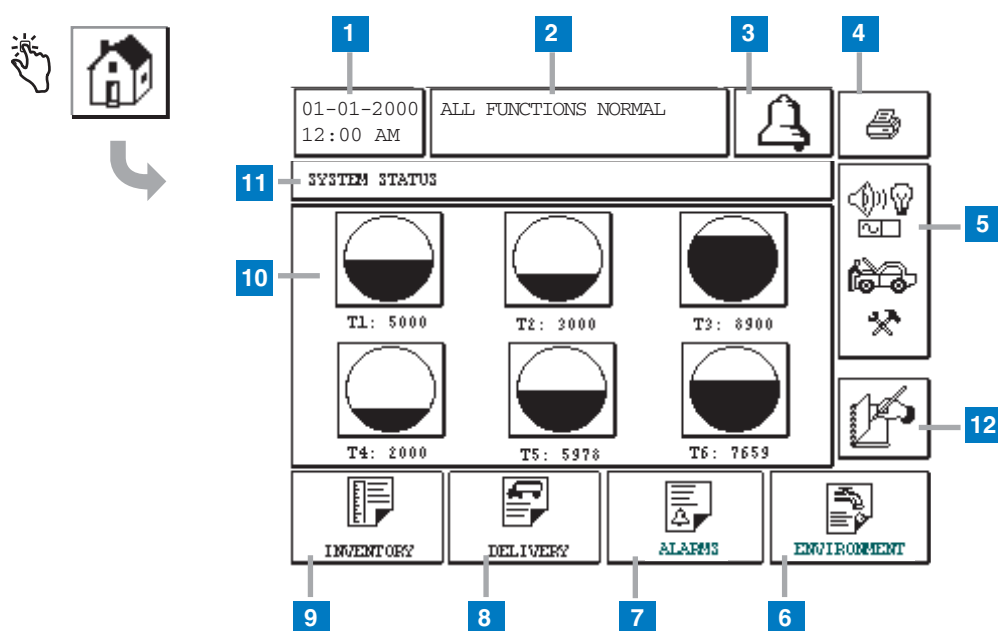
Alarm	Type	Cause	Action
Annual Test Fail	Tank	In-tank annual leak test failed	Rerun in-tank leak test. If second test fails, call for service.
Autodial Fail	Comm	System failed to connect to a remote receiver after programmed number of tries.	Check remote receiver.
Delivery Needed	Tank	Product level dropped below preset limit.	Call for delivery.
Gross Test Fail	Tank	In-tank leak test failed.	Rerun in-tank leak test. If second test fails, call for service.
High Water	Tank	Water detected in tank exceeds pre-set limit.	Remove water from the tank.
Invalid Fuel Height	Tank	Fuel level dropped to a point below the minimum detectable level or only one float is present.	Call for delivery.
Low Product	Tank	Tank level dropped below preset limit.	Call for delivery.
Low Temperature	Tank	Probe temperature dropped below -4°F (-20°C). For Low Temperature probes, below -40°F (-40°C).	Probe returns to normal operation after probe temperature rises above 0°F (-17.7°C). For Low Temperature probes, above -36°F (-38°C)
Max Product	Tank	Product level rose above preset limit.	Stop delivery.
Overfill	Tank	Potential overflow of tank may occur.	Stop delivery. Check for spillage.
Periodic Test Fail	Tank	In-tank leak test failed.	Rerun in-tank leak test. If second test fails, call for service.
Probe Out	Tank	Hardware failure - probe or interconnecting wiring to console.	Call for service.

System Setup Screens

This section describes all of the TLS2 System Setup Screens along with setup choices and explanations that you will need for data entry. Because the TLS2 Setup Displays have only English labels, Screen Label codes have been placed in brackets beneath every English label to let you quickly find a translation of the label and the page number(s) of the Screen in which the label is used. Tank Setup Screens are covered in a separate section.

Entering data, confirming selections, etc. is done through one of several Data Entry Screens which display when you touch any button to the right of a data entry window. These screens are described where they are first discussed in this section.

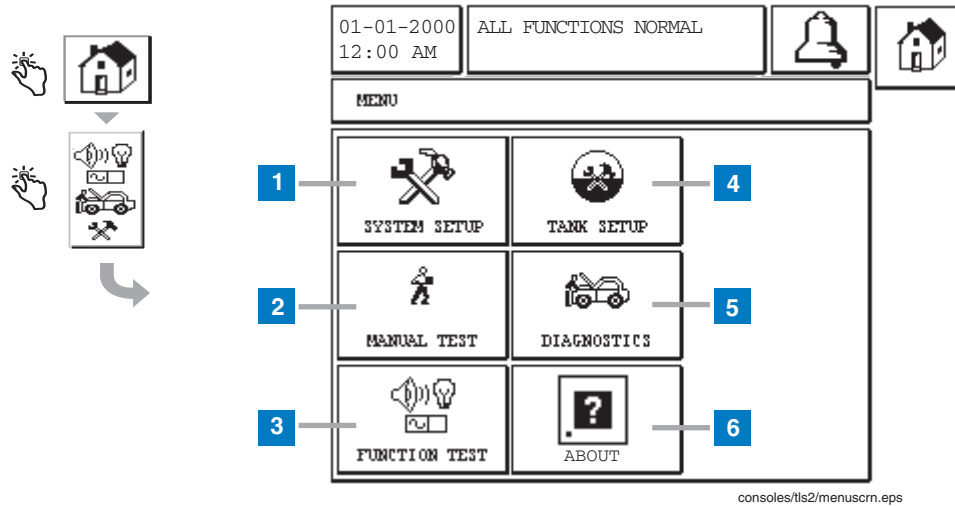
System Status (Home) Screen



Legend for numbered boxes

- 1 Date/time window - displays current date and time
- 2 Message window - displays All Functions Normal or active alarms.
- 3 Alarm button - touch to acknowledge alarm and silence alarm beeper. Note: touching this button does not clear the alarm - the problem that caused the alarm must be repaired.
- 4 Print button - For menu screens, touch this button and all items available through the menu are printed to a connected printer. For non-menu screens only, a print dialog box appears when the print button is touched. The user also has the option to cancel the print.
- 5 Main Menu button - touch to display the Main Menu Screen (page 6) for access to system/tank setup and manual tank testing.
- 6 Environmental Report button - touch to display tank leak test results (page 56).
- 7 Alarm Report button - touch to display the Active Alarm Status (and History) Screen (page 63).
- 8 Delivery Report button - touch to display the Delivery Report Screen (page 56).
- 9 Inventory Report button - touch to display the Inventory Report Screen (page 58).
- 10 Tank buttons - touch any tank button to display the current inventory report for that tank.
- 11 Screen title window.
- 12 Manual Shift Close button - touch to manually close the shift. (visible only if Snapshot is selected in Shift Time (System Setup) as the Shift Close Method.

Main Menu Screen

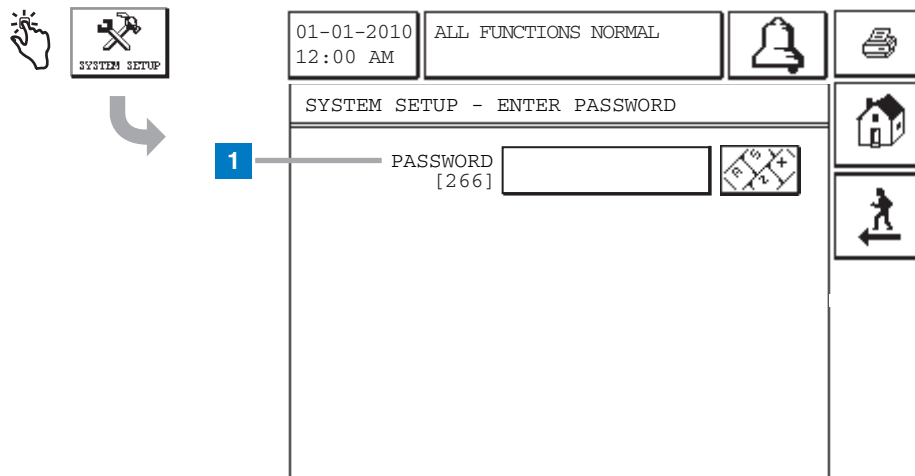


Legend for numbered boxes

- 1 System Setup button - touch to display the System Setup Screen (page 8). If a System Security Setup - Setup Password has been entered, the System Setup - Enter Password screen will display (page 8).
- 2 Tank Setup button - touch to display the Tank Setup Menu Screen (page 39).
- 3 Diagnostics button - touch to display the Probe Diagnostic Screen (page 67).
- 4 About button - touch to display the About Screen (page 37) for information about the TLS2 Console's software and installed features.
- 5 Function Test button - touch to display the Function Test Menu Screen (page 66).
- 6 Manual Test button - touch to display the Manual Tank Test Start/Stop Screen (page 55).

[266] System Setup - Enter Password Screen

If the System Security Setup - Setup Password (page 14) is enabled, you will be required to enter that password before accessing the System Setup Screen (page 8). If the Setup Password is disabled, the System Setup - Enter Password screen will not display.



Legend for numbered boxes

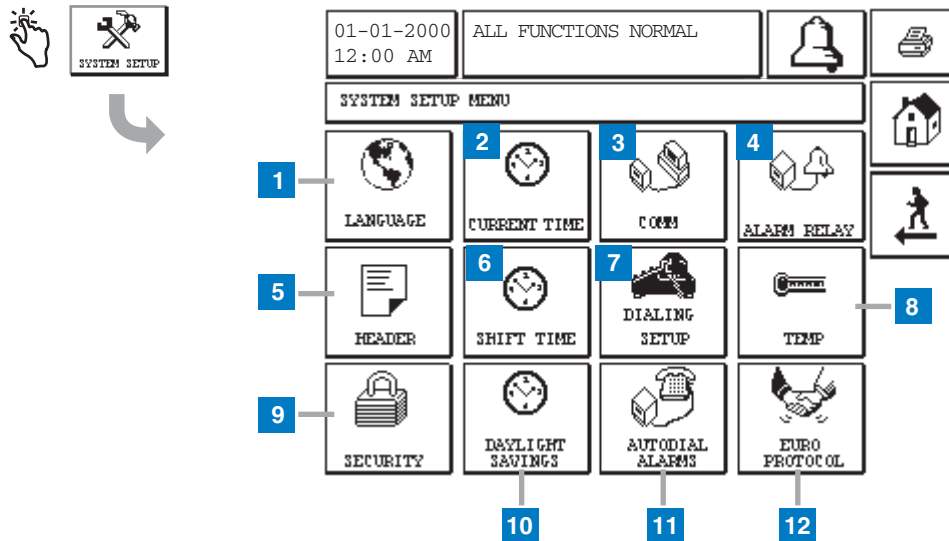
- 1 Password [266] - To access the System Setup Screen (page 8), you must enter the 6 to 16 character alphanumeric System Security Setup - Setup Password.

As you enter the password, asterisks (*) will display in place of the entered characters.

If the entered password is correct, the System Setup Screen will display.

If the entered password is incorrect, you will be asked to re-enter the password.


System Setup Screen



Legend for numbered boxes

- | | |
|---|---|
| <p>1 Language button - touch to display the System Language and Units Setup Screen (page 9)</p> <p>2 Current Time button - touch to display the System Time/Date Setup Screen (page 16).</p> <p>3 Comm button - touch to display the Comm Setup Screen (page 27).</p> <p>4 Alarm Relay button - touch to display the Alarm Relay Setup Screen (page 34).</p> <p>5 Header button - touch to display the Station Header Setup Screen (page 10).</p> <p>6 Shift Time button - touch to select the Setup Shift Times Screen (page 20) or Manual Shift Close.</p> <p>7 Dialing Setup button - touch to display the Auto Dialout Setup Screen (page 22).</p> | <p>8 Temp button - touch to display the Temperature Setup Screen (page 35).</p> <p>9 Security button - touch to display the System Security Setup Screen (page 13).</p> <p>10 Daylight Savings button - touch to display the Daylight Savings Setup Screen (page 21).</p> <p>11 Autodial Alarms button - touch to display the Autodial Alarms Setup Screen (page 23).</p> <p>12 EuroProtocol button - touch to display the EuroProtocol and Stick Offset Setup Screen (page 36). This screen also lets you select a leak test report format.</p> |
|---|---|

[201-203, 240] System Language and Units Setup Screen



01-01-2000 12:00 AM	ALL FUNCTIONS NORMAL			
SYSTEM SETUP LANGUAGE AND UNITS				
1	SYSTEM LANGUAGE [201]	ENGLISH		
2	UNITS [202]	US		
3	SERIAL LANGUAGE [203]	ENGLISH		
4	ISO 3166 COUNTRY [240]			

Legend for numbered boxes

- 1 System Language [201] - Choose from English (default), Chinese (Mandarin), Finnish, French, German, Italian, Polish, Portuguese, Russian, Spanish and Swedish.
- 2 Units [202] - Choose Metric (default) or U.S.
- 3 Serial Language [203] - Choose from English (default), Finnish, French, German, Italian, Polish, Portuguese, Russian, Spanish and Swedish.
- 4 ISO Country Code [240] - This feature is an international option. Enter the three alpha-character country code. Default is blank.

[204 - 207] Station Header Setup Screen

01-01-2000
12:00 AM

ALL FUNCTIONS NORMAL

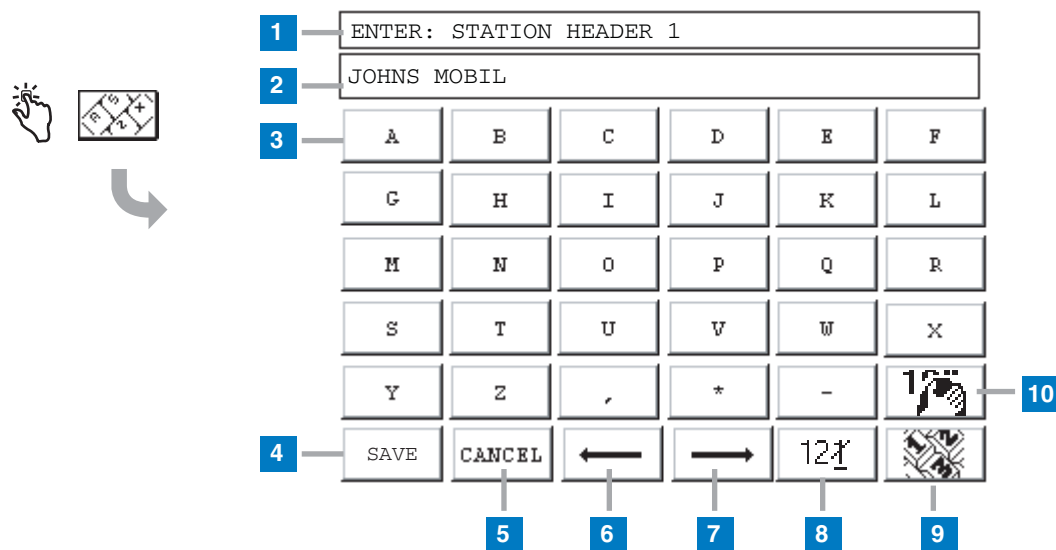
SYSTEM SETUP STATION HEADER

1	HEADER 1 [204]	12345678901234567890	[Keypad Icon]
2	HEADER 2 [205]	12345678901234567890	[Keypad Icon]
3	HEADER 3 [206]	12345678901234567890	[Keypad Icon]
4	HEADER 4 [207]	12345678901234567890	[Keypad Icon]

Legend for numbered boxes

- 1 Header Line 1 [204] - Enter first line of Report header. The entry can be alphanumeric and up to 20 characters. Only numbers and the Roman alphabet are supported.
- 2 Header Line 2 [205] - Enter second line of Report header. The entry can be alphanumeric and up to 20 characters. Only numbers and the Roman alphabet are supported.
- 3 Header Line 3 [206] - Enter third line of Report header. The entry can be alphanumeric and up to 20 characters. Only numbers and the Roman alphabet are supported.
- 4 Header Line 4 [207] - Enter fourth line of Report header. The entry can be alphanumeric and up to 20 characters. Only numbers and the Roman alphabet are supported.

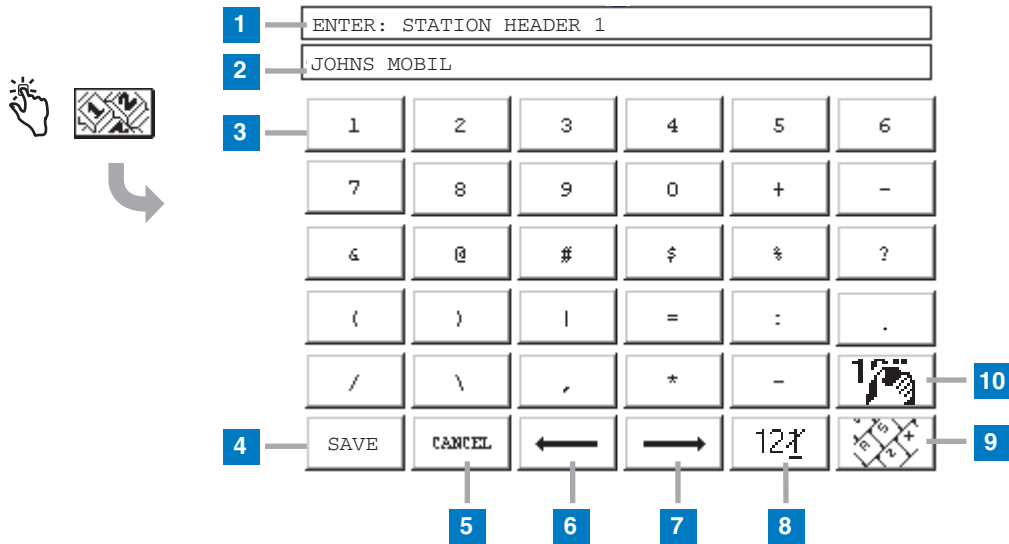
Alpha Keypad Screen



Legend for numbered boxes

- | | |
|---|---|
| <p>1 Displays Title of data to be entered.</p> <p>2 Data Entered Window displays data entered.</p> <p>3 Alpha keypad buttons - touch a character button to place that character in the data entered window (2).</p> <p>4 Save button - touch to accept entered data and close Screen.</p> <p>5 Cancel button - touch to cancel any entry and close Screen.</p> | <p>6 Cursor left button - touch to move the cursor one position left in the Data Entered Window (2).</p> <p>7 Cursor right button - touch to move the cursor one position right in the Data Entered Window (2).</p> <p>8 Backspace delete button - touch to delete character in cursor.</p> <p>9 Number keypad button - touch to display the Numeric Keypad Screen.</p> <p>10 Clear button - touch to clear contents of Data Entered Window (2).</p> |
|---|---|

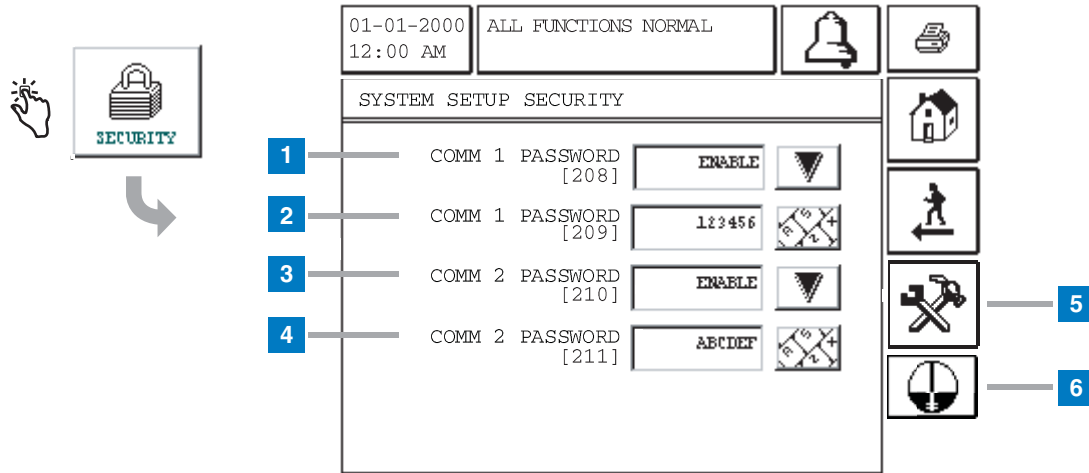
Numeric Keypad Screen



Legend for numbered boxes

- | | |
|---|---|
| <p>1 Displays title of data to be entered.</p> <p>2 Data Entered Window displays data entered.</p> <p>3 Numeric Keypad buttons - touch a character button to place that character in the Data Entered Window (2).</p> <p>4 Save button - touch to accept entered data entered and close Screen.</p> <p>5 Cancel button - touch to cancel any entry and close Screen.</p> <p>6 Cursor left button - touch to move the cursor one position left in the Data Entered Window (2).</p> | <p>7 Cursor right button - touch to move the cursor one position right in the Data Entered Window (2).</p> <p>8 Backspace delete button - touch to delete character above cursor.</p> <p>9 Alpha keypad button - touch to display the Alpha Keypad Screen.</p> <p>10 Clear button - touch to clear contents of Data Entered Window (2).</p> |
|---|---|

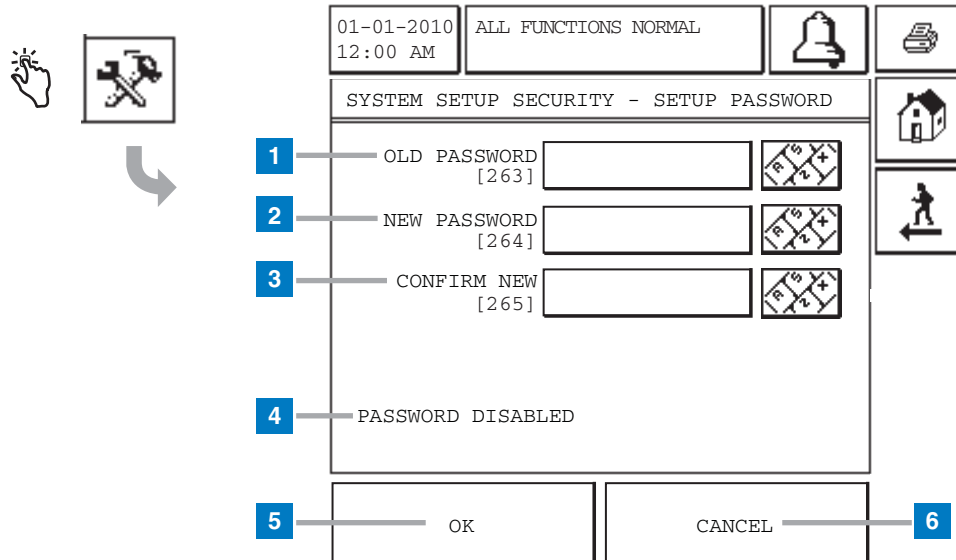
[208-211] System Security Setup Screen



Legend for numbered boxes

- 1** Comm 1 Password [208] - Select Enable or Disabled for Comm 1 port password (default is Disabled). If this port is setup for a printer, the security code requirement is ignored.
- 2** Comm 1 Password [209] - Enter a six-digit alphanumeric password for Comm 1 port (default is 000000).
- 3** Comm 2 Password [210] - Select Enable or Disabled for Comm 2 port password (default is Disabled).
- 4** Comm 2 Password [211] - Enter a six-digit alphanumeric password for Comm 2 port (default is 000000).
- 5** Touch to open the System Setup Security - Setup Password Screen (see page 14). Entering a Setup Password will require that you enter this password prior to accessing System Setup (page 7) and Tank Setup (page 38) screens .
- 6** Touch to open the System Setup Security – Density Password screen (see page 15). Entering a Density Password will require that you enter this password prior to accessing Probe Diagnostic Density Offset screen (see page 71).

[263-265] System Setup Security - Setup Password Screen



Legend for numbered boxes

When the console is shipped from the factory, the default setup password is blank, which the console interprets as being disabled. To enable the Setup Password, you would change the password to a non-blank password.

As you enter the password, each character will be displayed as an asterisk on the keypad screen. If the entered password is incorrect then the message "PASSWORD IS INCORRECT, RE-ENTER" will be displayed.

Once you OK the Setup Password, you will be required to enter this password before accessing System Setups (page 7) and Tank Setups (page 38).

- 1 Old Password [263] - If you want to change the current password, enter the 6 to 16 character alphanumeric password.
- 2 New Password [264] - Enter your new 6 to 16 character alphanumeric password.
- 3 Confirm New [265] - You must re-enter the new 6 to 16 character alphanumeric password.
- 4 PASSWORD DISABLED - This message displays when the system setup password is disabled.

5 OK button - touch the OK button to accept the new password and close the screen

6 Cancel button - touch the Cancel button to abort and close the screen.



CAUTION! If you forget the Setup Password you will have to do a cold boot to reset it. You would then need to reprogram the entire console for the site.

[263-265] System Setup Security – Density Password Screen

The diagram shows the 'SYSTEM SETUP SECURITY - DENSITY PASSWORD' screen. At the top, there is a status bar with the date '01-01-2010', time '12:00 AM', and the text 'ALL FUNCTIONS NORMAL'. To the right of the status bar are icons for a bell and a printer. Below the status bar is the title 'SYSTEM SETUP SECURITY - DENSITY PASSWORD'. The main area contains three password input fields: 'OLD PASSWORD [263]', 'NEW PASSWORD [264]', and 'CONFIRM NEW [265]'. Each field has a keypad icon to its right. Below these fields is a message 'PASSWORD DISABLED'. At the bottom are two buttons: 'OK' and 'CANCEL'. Numbered callouts point to the following elements: 1 points to the 'OLD PASSWORD' field; 2 points to the 'NEW PASSWORD' field; 3 points to the 'CONFIRM NEW' field; 4 points to the 'PASSWORD DISABLED' message; 5 points to the 'OK' button; and 6 points to the 'CANCEL' button. To the left of the screen, there is a hand icon and a keypad icon, with a curved arrow pointing from the keypad icon to the screen.

Legend for numbered boxes

When the console is shipped from the factory, the default Density Password is blank, which the console interprets as being disabled. To enable the Density Password, you would change the password to a non-blank password.

As you enter the password on this screen, each character will be displayed as an asterisk on the keypad screen. Once you OK the Density Password, you will be required to enter this password before accessing Density Offset.



CAUTION! Once the Density Password has been set up (enabled) it can't be disabled. You will have to do a cold boot to reset the Density Password and then reprogram the entire System Setup for the site.

- 1 Old Password [263] - If you want to change the current password, enter the 6 to 16 character alphanumeric password.
- 2 New Password [264] - Enter your new 6 to 16 character alphanumeric password.
- 3 Confirm New [265] - You must re-enter the new 6 to 16 character alphanumeric password.
- 4 PASSWORD DISABLED - This message displays when the system setup password is disabled.
- 5 OK button - Touch the OK button to accept the new password and close the screen
- 6 Cancel button - Touch the Cancel button to abort and close the screen.

[212-214] System Time/Date Setup Screen

10-04-01
13:54

ALL FUNCTIONS NORMAL

SYSTEM SETUP TIME/DATE

1 DATE [212] 10-04-01

2 TIME [213] 13-54

3 TM/DATE FORMAT [214] DD-MM-YY-HH-MM

Legend for numbered boxes

- 1 Date [212] - Enter current date.
- 2 Time [213] - Enter current time.
- 3 TM/Date Format [214] - Select one of 3 formats:
 DD-MM-YY-HH¹-MM (default)
 YY-MM-DD-HH¹-MM
 MM-DD-YY-HH²-MM-xM
 where:
 DD = 01 - 31,
 MM = 01 - 12,
 YY = last 2 digits of year, i.e., 01,
 HH¹ = 01 - 24
 HH² = 01 - 12,
 MM = 00 - 59, and
 xM = AM or PM (used only with 3rd format choice above).

Current Date Entry Screen

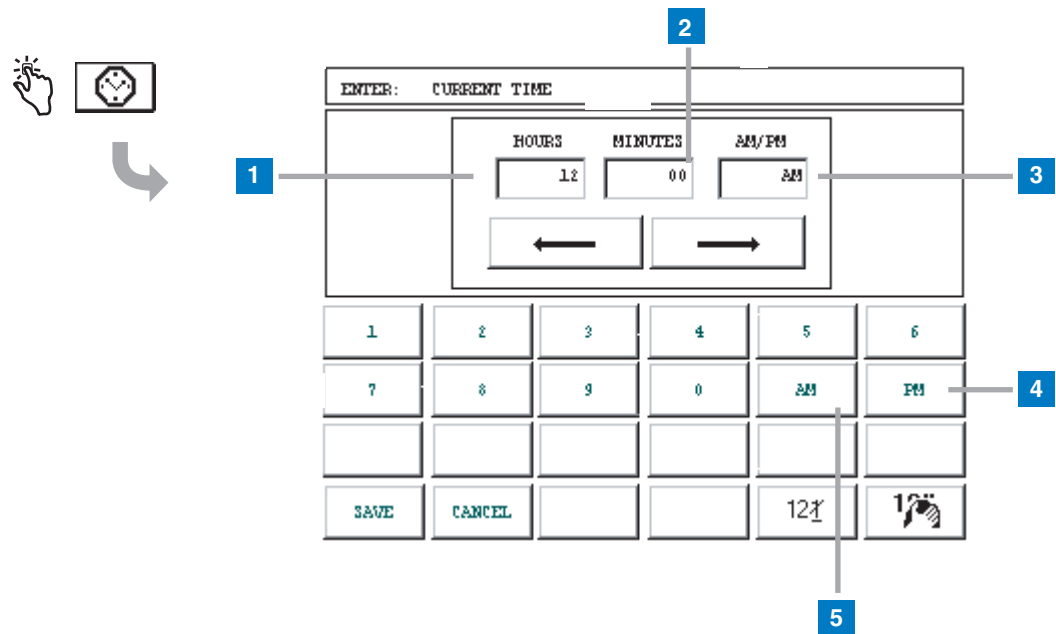
The diagram illustrates the 'Current Date Entry Screen'. At the top, a title bar reads 'ENTER: CURRENT DATE'. Below this, there are three entry windows: 'MONTH' (containing '10'), 'DAY' (containing '1'), and 'YEAR' (containing '2001'). Below these windows are two arrows, one pointing left and one pointing right. At the bottom of the screen is a numeric keypad with digits 1-9, 0, and a '12' button. Below the keypad are two buttons labeled 'SAVE' and 'CANCEL', followed by two empty buttons, and then a '12' button and a button with a hand icon. Numbered callouts point to specific fields: '1' points to the 'MONTH' window, '2' points to the 'DAY' window, and '3' points to the 'YEAR' window.

Legend for numbered boxes

- 1 Month entry window - enter 01 - 12
- 2 Day entry window - enter 01 - 31
- 3 Year entry window - enter year, e.g. 2001.

The remaining buttons function as described on page 12.

Current Time Entry Screen



Legend for numbered boxes

- 1 Hours entry window - enter 00 - 23, or 01 - 12¹
- 2 Minutes entry window - enter 01 - 59
- 3 AM/PM entry window¹ - enter AM or PM
- 4 Touch PM if after noon¹.
- 5 Touch AM if before noon¹.

The remaining buttons function as described on page 12.

¹(select only if the MM-DD-YY-HH-MM-xM time/date format was selected in the System Time/Date Setup Screen (page 16).

[500-503] System Setup Close Times Screen

Legend for numbered boxes

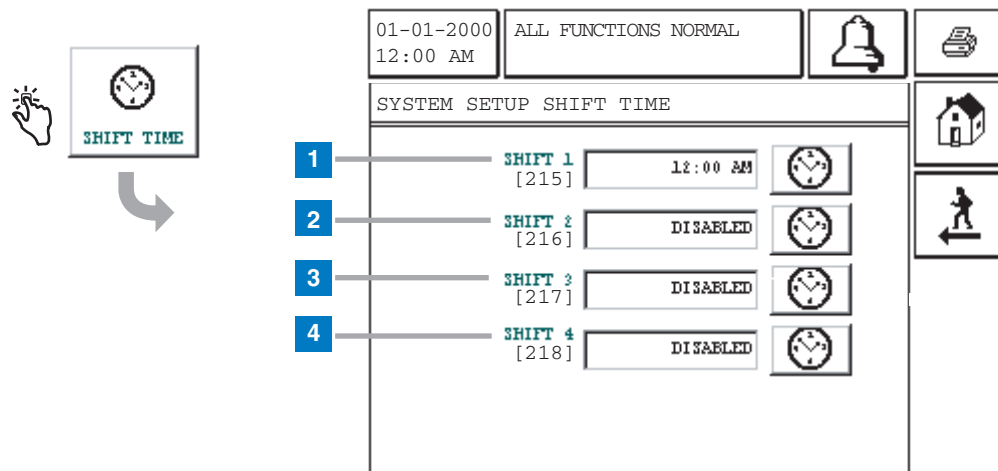
This screen allows you to select Auto (Timed) or Manual (Snapshot) Shift Close times. The default setting is Timed (close by time).

- 1** Shift Close Method [500] - touch the Select button to the right of the window and select Timed (Auto) or Snapshot (Manual) shift close method. Default is Timed.
- 2** Shift Close Timeout [501] - Enabled only if the Snapshot shift close method is chosen. Touch the number button to the right of the window and enter the Timeout.
When the timeout period starting from the last closed tank shift expires, any unopened tank shifts will automatically be closed.
For example, Shift Close Timeout is set to 30. You select manual shift close on tank 3. 30 minutes later the shift is closed for the remaining tanks, the shift number increments and a shift report is created. If the system is setup to autodial on Shift Close Event, the autodial assigned receiver will be sent the notification.
Allowable Timeout selections: 30 to 60 minutes.
Default is 30 minutes.
- 3** Inventory Log Time [502] - Touch the clock button to select the start time in a 24-hour period you want to record the first inventory that will be placed in the Inventory Log.
Default is 00:00 (midnight).

- 4** Inventory Log Interval [503] - Inventory Log records will be recorded by the system automatically at the intervals you select in this field. Touch the down arrow button to the right of the window and select the interval.
Allowable intervals: 1 hour, 2 hours, 3 hours, 4 hours, 6 hours, 8 hours, 12 hours, 24 hours, 5 minutes, 10 minutes, 15 minutes, 20 minutes or 30 minutes.
Default is 1 hour.

For example, you select an Inventory Log Time (item 3) of 00:00 (midnight) and you select a 30 minute Inventory log interval (item 4), then the system will record inventory snapshots at 00:00 (midnight), 12:30 am, 1:00 am, 1:30 am, etc.. The maximum number of records in the Inventory Log is 72. The Inventory Log is a rolling (first in, first out) log of 72 maximum records.

[215-218] Shift Times Setup Screen



Legend for numbered boxes

Shift Times Setup Screen is only visible if Timed is selected as the Shift Close Method in the System Setup Close Times screen (page 19). At each shift start time selected below, the system automatically saves a complete inventory report in memory. The default setting is disabled for all shifts.

NOTE: At least one shift start time must be entered to activate the "Last Shift Inventory" feature.

- 1 Shift 1 [215] - touch the time button to the right of the window and enter the Shift 1 start time and AM or PM.
- 2 Shift 2 [216] - touch the time button to the right of the window and enter the Shift 2 start time and AM or PM.
- 3 Shift 3 [217] - touch the time button to the right of the window and enter the Shift 3 start time and AM or PM.

- 4 Shift 4 [218] - touch the time button to the right of the window and enter the Shift 4 start time and AM or PM.

[219-223] Daylight Savings Time Setup Screen

01-01-2000
12:00 AM

ALL FUNCTIONS NORMAL

SYSTEM SETUP DAYLIGHT SAVINGS

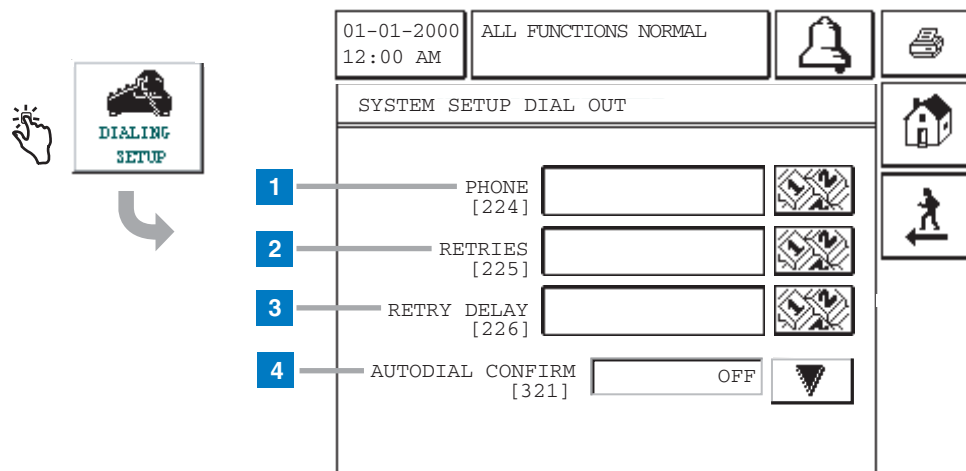
- DAYLIGHT SAVINGS** [219] ENABLE
- START DATE** [220] MAR WEEK 2 SUN
- START TIME** [221] 2:00 AM
- END DATE** [222] NOV WEEK 1 SUN
- END TIME** [223] 2:00 AM

Legend for numbered boxes

This feature allows you to enter Daylight Savings Start and End Dates/Times. Once enabled, the system will automatically adjust for daylight savings time at the dates and times you enter.

- 1** Daylight Savings [219] - touch the Arrow button to the right of the window and select Enable or Disable (default is Disable).
- 2** Start Date [220] - touch the Date button to the right of the window and enter the start date (default is APR WEEK 1 SUN).
- 3** Start Time [221] - touch the Time button to the right of the window and enter the start time [and AM or PM] (default is 02:00 AM).
- 4** End Date [222] - touch the Date button to the right of the window and enter the end date (default is OCT WEEK 6 SUN).
- 5** End Time [223] - touch the Time button to the right of the window and enter the end time [and AM or PM] (default is 02:00 AM).

[224-226, 321] Auto-Dialout Setup Screen



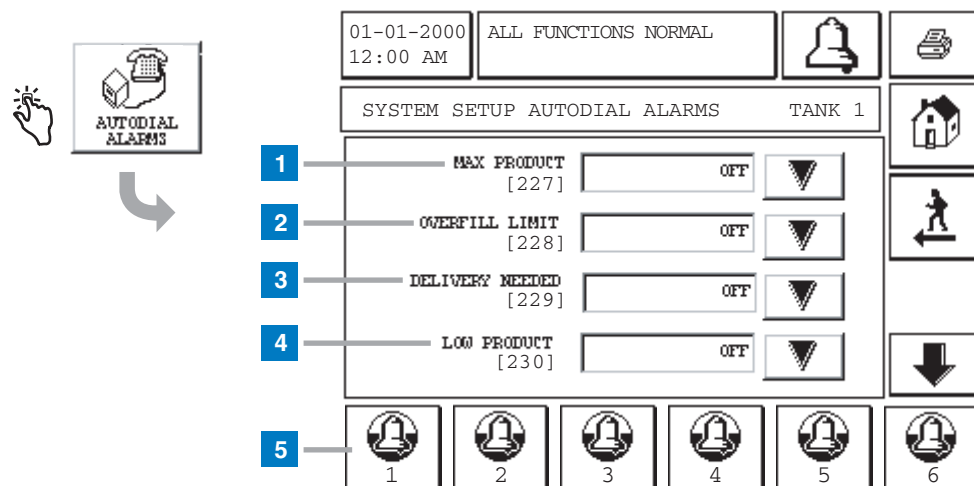
Legend for numbered boxes

This feature requires that Modem be selected as the Comm Type.

- 1** Phone [224] - touch the Numeric button to the right of the window and enter one phone number to which you want the system to dial.
- 2** Retries [225] - touch the Numeric button to the right of the window and enter the number of times (1-99) you want the system to redial the phone number if there is a busy signal, no answer, or an incomplete connection (default is 3 retries).
- 3** Retry Delay [226] - touch the Numeric button to the right of the window and enter the number of minutes (1-99) you want the computer to delay before redialing the phone number if there is a busy signal, no answer, or an incomplete connection (default is 3 minutes).

- 4** Autodial Confirm [321] - touch the Down Arrow button to select On or Off.

[227-230] Autodial Alarm Setup Screen 1



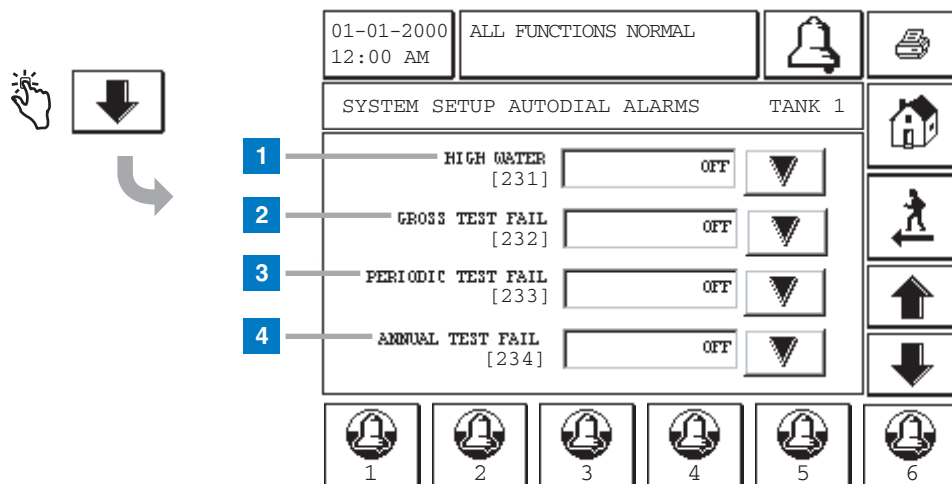
Legend for numbered boxes

This feature lets you program the system to dial out on the following alarm conditions.

Note: Autodial alarms continue on next two pages.

- 1 Max Product [227] - touch the Down Arrow button to select On (dial out) or Off (do not dial out).
- 2 Overfill Limit [228] - touch the Down Arrow button to select On or Off.
- 3 Delivery Needed [229] - touch the Down Arrow button to select On or Off.
- 4 Low Product [230] - touch the Down Arrow button to select On or Off.
- 5 Touch the Autodial Alarm button for the tank you wish to setup and select the desired alarms in Autodial Alarms screens 1-3. You must repeat this process for each tank.

[231-234] Autodial Alarm Setup Screen 2



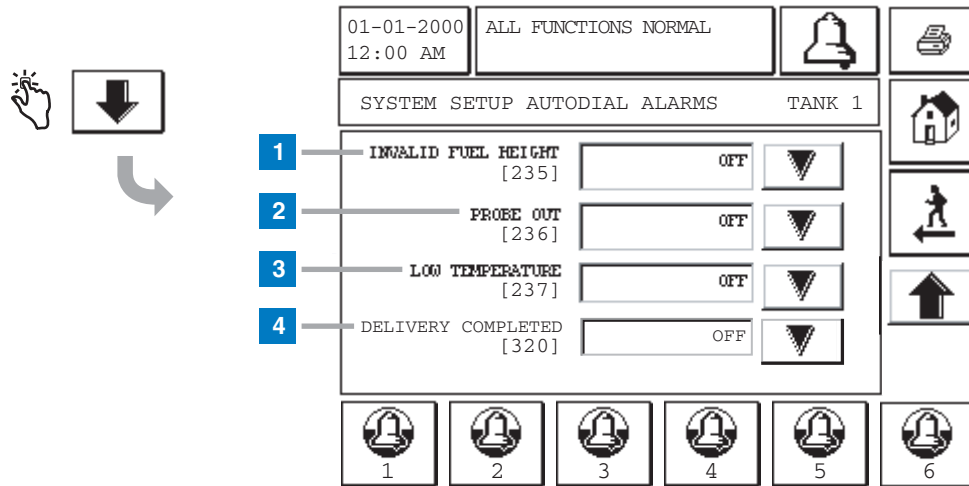
Legend for numbered boxes

This screen continues Autodial Alarms setup.

Note: Autodial alarms continue on next page.

- 1** High Water [231] - touch the Down Arrow button to select On (dial out) or Off (do not dial out).
- 2** Gross Test Fail [232] - touch the Down Arrow button to select On or Off.
- 3** Periodic Test Fail [233] - touch the Down Arrow button to select On or Off.
- 4** Annual Test Fail [234] - touch the Down Arrow button to select On or Off.

[235-237, 320] Autodial Alarm Setup Screen 3



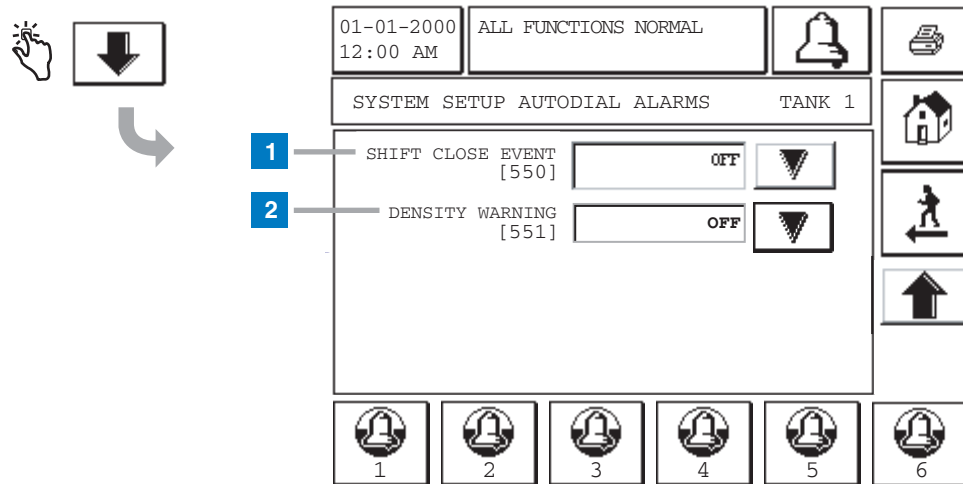
Legend for numbered boxes

This screen continues Autodial Alarms setup.

Note: Autodial alarms continue on next page.

- 1 Invalid Fuel Height [235] - touch the Down Arrow button to select On (dial out) or Off (do not dial out).
- 2 Probe Out [236] - touch the Down Arrow button to select On or Off.
- 3 Low Temperature [237] - touch the Down Arrow button to select On or Off.
- 4 Delivery Completed [320] - touch the Down Arrow button to select On or Off. Note, this event will only be used to dial out on the completion of a delivery. This event is not an alarm and will not display or go into alarm histories.

[550-551] Autodial Alarm Setup Screen 4

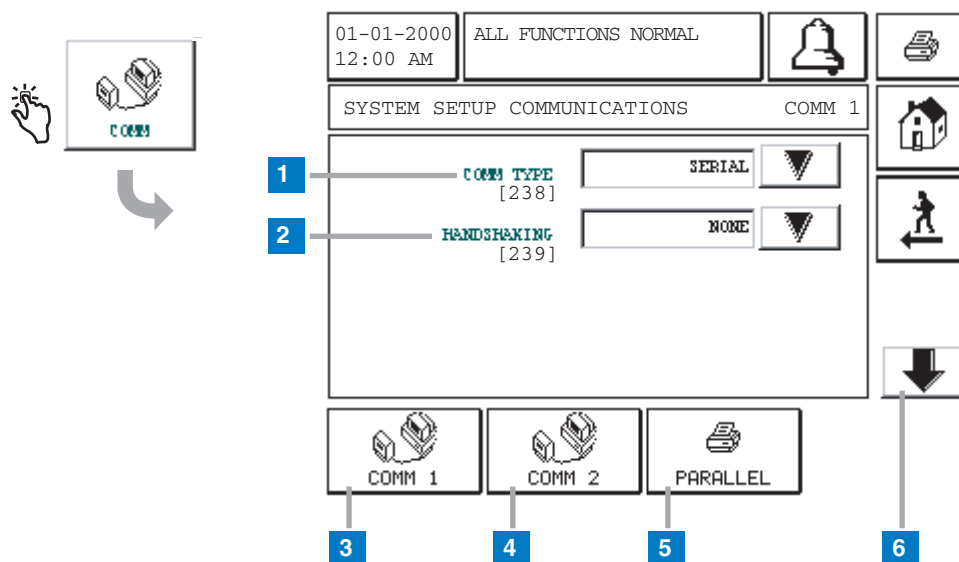


Legend for numbered boxes

This screen concludes Autodial Alarms Setup.

- 1 Shift Close Event [550] - touch the Down Arrow button to select On or Off.
- 2 Density Warning [551] - touch the Down Arrow button to select On or Off. When set to On, you will be able set up a tank density low limit and tank density high limit from the touch panel as well as from RS-232 commands. If the tank density is less than the tank density low limit or greater than the tank density high limit then a DENSITY WARNING will be posted for that tank

[238-239] Comm Port 1 and 2 Serial Setup Screen 1



Legend for numbered boxes

This screen is similar for Comm 1 and Comm 2 port setup.

- 1** Comm Type [238] - touch the Down Arrow button to the right of the window and select:
If Comm 1 -
Serial, Modem, Printer, or None (default)
If Comm 2 -
Serial or None (default)
- 2** Handshaking [239] - touch the Down Arrow button to the right of the window and select None, XON/XOFF, or Hardware (default). This parameter is identical for Comm 1 and Comm 2.
- 3** COMM 1 button - touch to display the Comm 1 Setup Screen (shown above).
- 4** COMM 2 button - touch to display the Comm 2 Setup Screen.

- 5** PARALLEL button - touch to display the Parallel Port Setup Screen (page 33).
- 6** Down button - touch to display Comm Port Setup Screen 2 (page 30).

[241] Comm Port 1 Printer Setup Screen

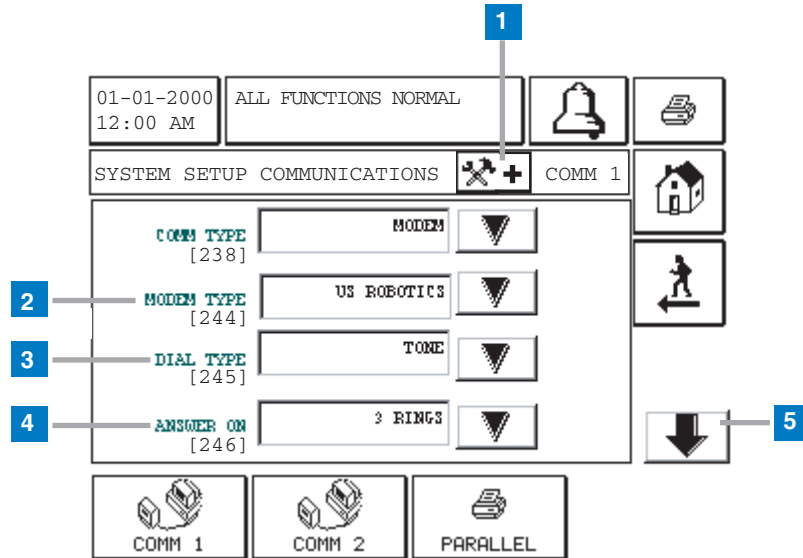
01-01-2000 12:00 AM	ALL FUNCTIONS NORMAL		
SYSTEM SETUP COMMUNICATIONS		COMM 1	
COMM TYPE [238]	PRINTER		
PAGE EJECT [241]	NO		
HANDSHAKING [239]	NONE		
PRINTER LANG [253]	EPSON ESC/P		
COMM 1		COMM 2	PARALLEL

Legend for numbered boxes

This screen displays if you selected Printer as the Comm Type in the Comm Port 1 Serial Setup Screen (page 27).

- 1** Page Eject [241] - touch the Down Arrow button to the right of the window and select Yes or No (default). If the page eject is set to Yes, a page feed command will be sent to the printer at the conclusion of the report, or when a report exceeds the length of the current page. A page length is defined as 50 lines for languages that have single height characters and 25 lines for languages that have double height characters.
- 2** Printer Lang [253] - touch to select one of three printer language options: Epson ESC/P (default), IBM Emulation, and DPU-414.
- 3** Down button - touch to display Comm Port Setup Screen 2 (page 30).

[244-246] Comm Port 1 Modem Setup Screen 1

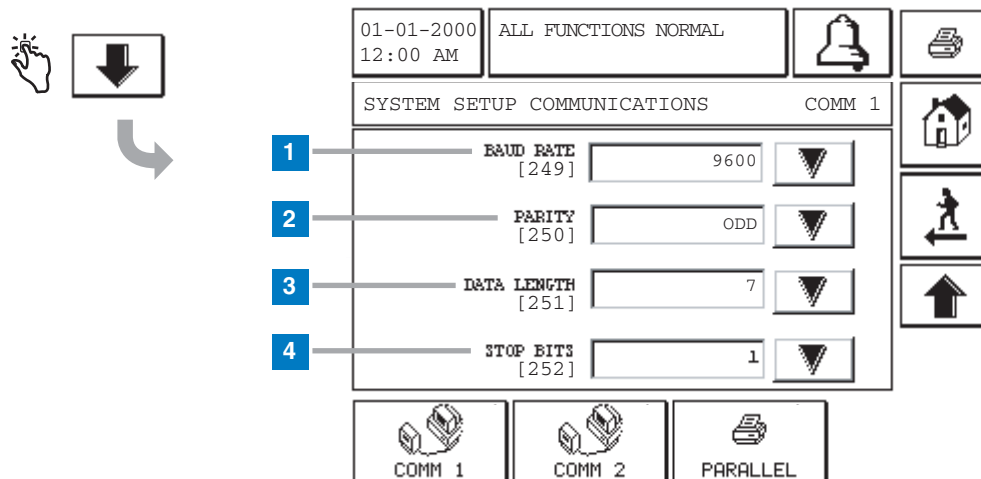


Legend for numbered boxes

This screen displays if you selected Modem as the Comm Type in the Comm Port 1 Serial Setup Screen (page 27).

- 1** Advanced Setup button - touch the Advanced Setup button and go to the Advanced Communications Setup Screen (page 31)
- 2** Modem Type [244] - touch the Down Arrow button to the right of the window and select your external modem type or serial TCPIP.
- 3** Dial Type [245] - touch the Down Arrow button to the right of the window and select dial type: Pulse or Tone (default).
- 4** Answer On [246] - touch the Down Arrow button to the right of the window and select number of rings to wait before answering: 0-9 (default 1).
- 5** Down button - touch to display Comm Port Setup Screen 2 (page 30).

[249-252] Comm Port Setup Screen 2

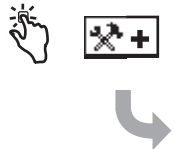


Legend for numbered boxes

This screen concludes the Comm Port setup.

- 1** Baud Rate [249]- touch the Down Arrow button to the right of the window and select a desired baud rate: 300, 600, 1200, 2400, 4800, or 9600 (default).
- 2** Parity [250] - touch the Down Arrow button to the right of the window and select a parity: None, Odd (default), or Even.
- 3** Data Length [251] - touch the Down Arrow button to the right of the window and select a data length: 7 (default) or 8.
- 4** Stop Bits [252] - touch the Down Arrow button to the right of the window and select the number of stop bits: 1 (default) or 2.

[247-248] Advanced Communications Setup Screen



01-01-2000
12:00 AM

ALL FUNCTIONS NORMAL

SYSTEM SETUP COMMUNICATIONS COMM 1

1 DIAL IN [247] AT&B1

2 DIAL OUT [248] AT&B1

Legend for numbered boxes



CAUTION!

Entering the wrong number strings in this screen may disable the modem.

- 1 Dial In [247] - touch the Numeric Keypad button and enter the auto-answer user configuration string (default is empty).
- 2 Dial Out [248] - touch the Down Arrow button to the right of the window and enter the autodial user configuration string (default is empty).

Data Entry Screen

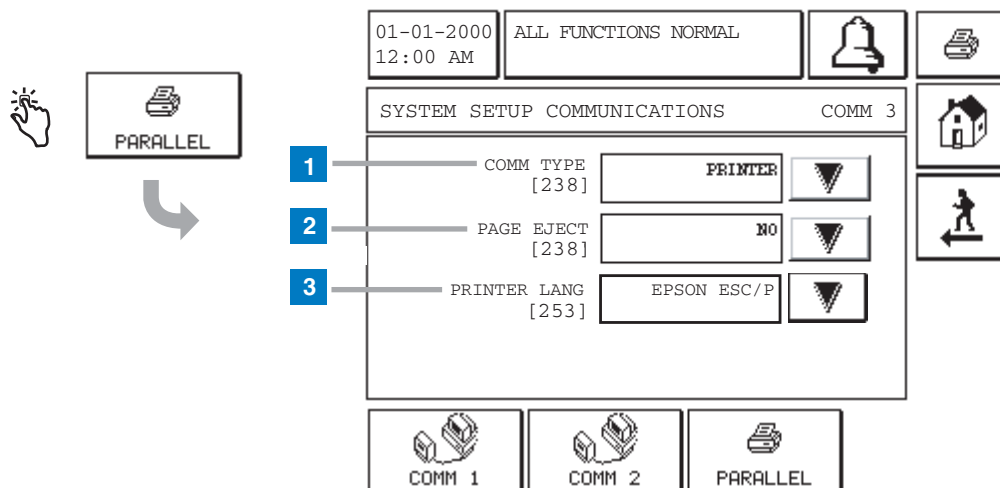
The diagram illustrates the 'Data Entry Screen' for selecting a baud rate. At the top, a title bar reads 'SELECT ENTRY'. Below it, a large rectangular area contains the text 'BAUD RATE' followed by '[249]' and a numeric input field displaying '9600'. To the right of the input field is a downward-pointing arrow button. A blue box with the number '1' is connected by a line to the arrow button. Below the main input area are two buttons: 'SAVE' on the left and 'CANCEL' on the right. A blue box with the number '2' is connected by a line to the 'SAVE' button, and a blue box with the number '3' is connected by a line to the 'CANCEL' button.

Legend for numbered boxes

The Data Entry screens are similar and display when you touch the arrow next to a setup parameter. In this example, Baud Rate offers multiple choices, so you touch the arrow button to choose one of the options.

- 1** Baud Rate [249]- touch the Down Arrow button to the right of the window and select a desired baud rate: 300, 600, 1200, 2400, 4800, or 9600 (default).
- 2** Save button - touch the Save button to accept the choice shown and close the screen
- 3** Cancel button - touch the Cancel button to abort and close the screen.

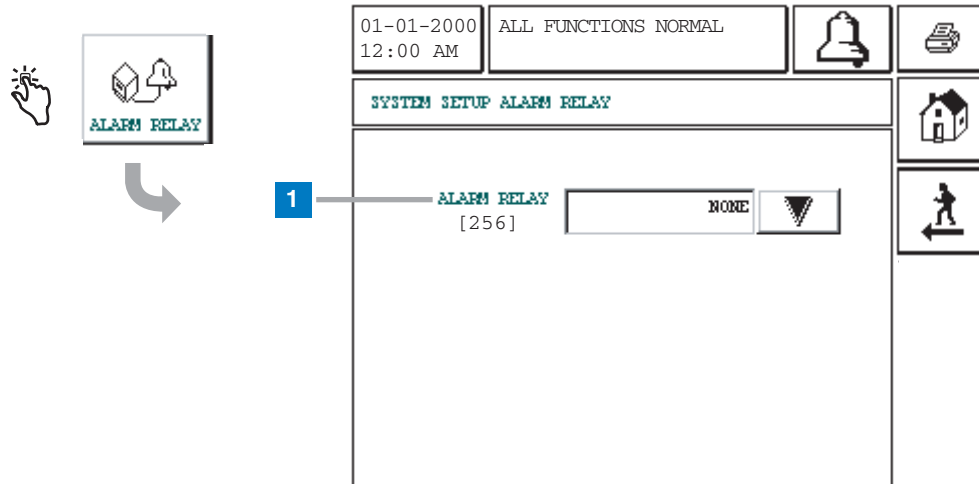
Parallel Port Setup Screen



Legend for numbered boxes

- 1 Comm Type [238] - touch the Down Arrow button to the right of the window and select Printer or None (default).
- 2 Page Eject [241] - touch the Down Arrow button to the right of the window and Yes or No (default). If the page eject is set to Yes, a page feed command will be sent to the printer at the conclusion of the report, or when a report exceeds the length of the current page. A page length is defined as 50 lines for languages that have single height characters and 25 lines for languages that have double height characters.
- 3 Printer Lang [253] - touch to select one of three printer language options: Epson ESC/P (default), IBM Emulation, and DPU-414.

[256] Alarm Relay Setup Screen

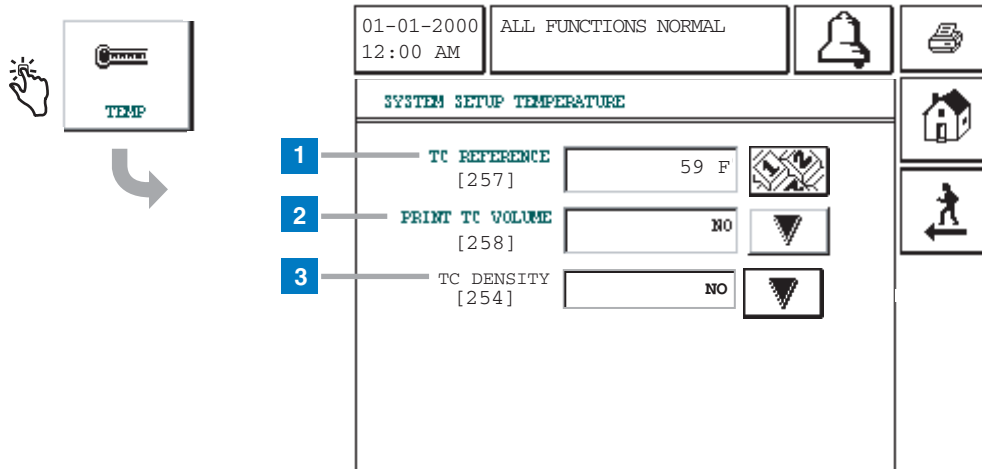


Legend for numbered boxes

This screen allows you to select the mode of activation for the remote beeper relay.

- 1 Alarm Relay [256] - touch the Down Arrow button to the right of the window and select: None (default), Overfill, or All Alarms.
 - If Overfill is selected, an overfill condition on any tank will activate the Alarm Relay.
 - If All Alarms is selected, any alarm going active will activate the Alarm Relay.
 - If None is selected, the relay will not be activated.
 - Touching the Alarm Acknowledgement button will deenergize the Alarm Relay.

[254, 257-258] Temperature Setup Screen



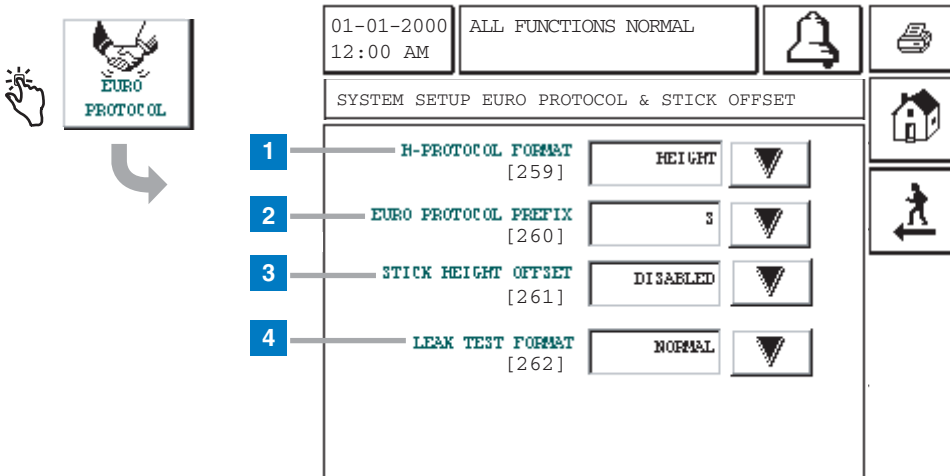
Legend for numbered boxes

This screen displays the Temperature Compensation Setup Screen.

- 1** TC Reference [257]- touch the Down Arrow button to the right of the window and enter a desired Temperature Compensation reference temperature. The allowable range is -49 to +120°F (-45 to +48.9°C). The default is 59°F (15°C).
- 2** Print TC Volume [258] - touch the Down Arrow button to the right of the window and select: Yes or No (default).
When set to NO, TC Volumes are not reported in displays, printouts, and serial reports.

- 3** TC Density [254] - touch the Down Arrow button to the right of the window and select: Yes or No (default). When set to Yes, all the inventory/delivery screens, printout and RS-232 commands will display density values as temperature compensated and this will be indicated by "TC".

[259-262] EuroProtocol and Stick Offset Setup Screen

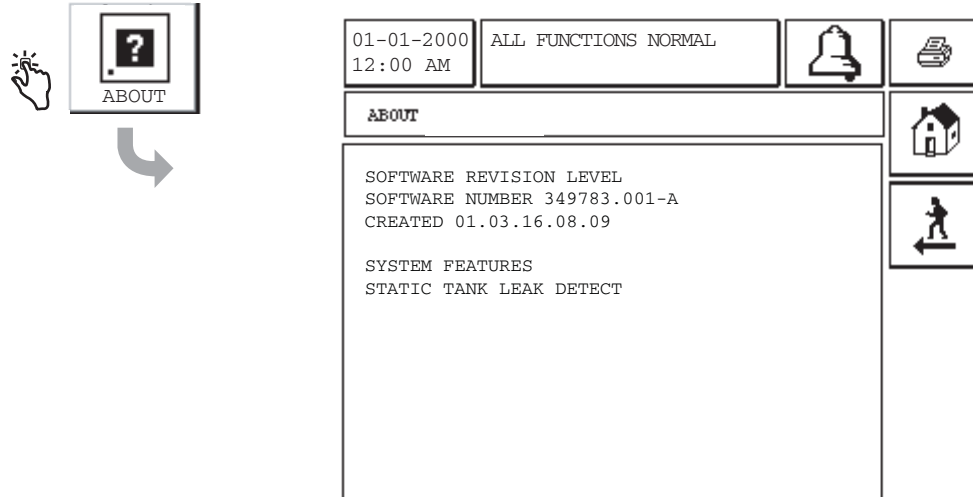


Legend for numbered boxes

This screen contains international format options and leak test format setup.

- 1** H-Protocol Format [259] - Touch the Down Arrow button to the right of the window and select: Height (default) or Volume for H-Protocol.
- 2** Euro Protocol Prefix [260] - Touch the Down Arrow button to the right of the window and select: S (default) or 'd'.
- 3** Stick Height Offset [261] - Touch the Down Arrow button to the right of the window and select: Enabled or Disabled (default).
- 4** Leak Test Format [262] - The leak test report format can be set to Enhanced to comply with the California Code of Regulations. The enhanced report will have height, water, temperature, percent volume, rate and threshold values in addition to the normal report format. Touch the Down Arrow button to the right of the window and select: Normal (default) or Enhanced.

About TLS2 Screen



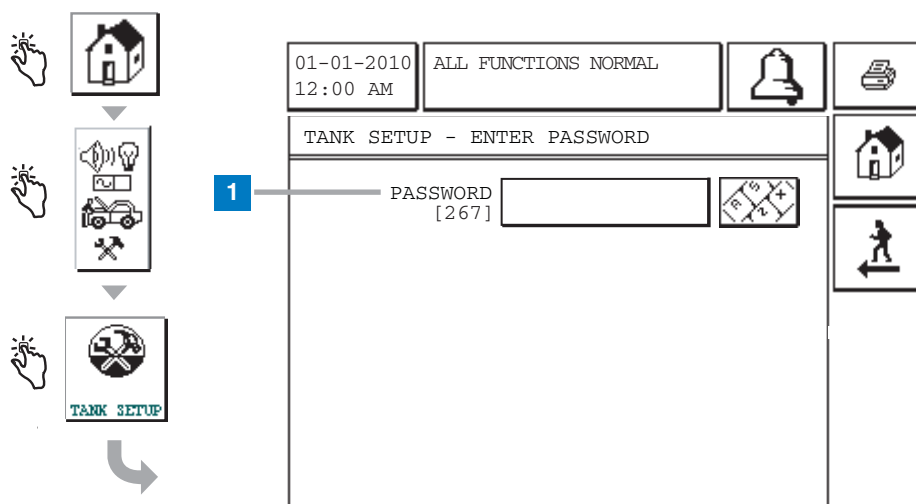
This screen lists information about the TLS2 Console's installed software and features:

- System Software Revision Level
- Software Part Number
- Software Creation Date
- System Features: Static Tank Leak Detect

Tank Setup Screens

[267] Tank Setup - Enter Password Screen

If the System Security Setup - Setup Password (page 14) is enabled, you will be required to enter that password before accessing the Tank Setup Screen (page 39). If the Setup Password is disabled, the Tank Setup - Enter Password Screen will not display.



Legend for numbered boxes

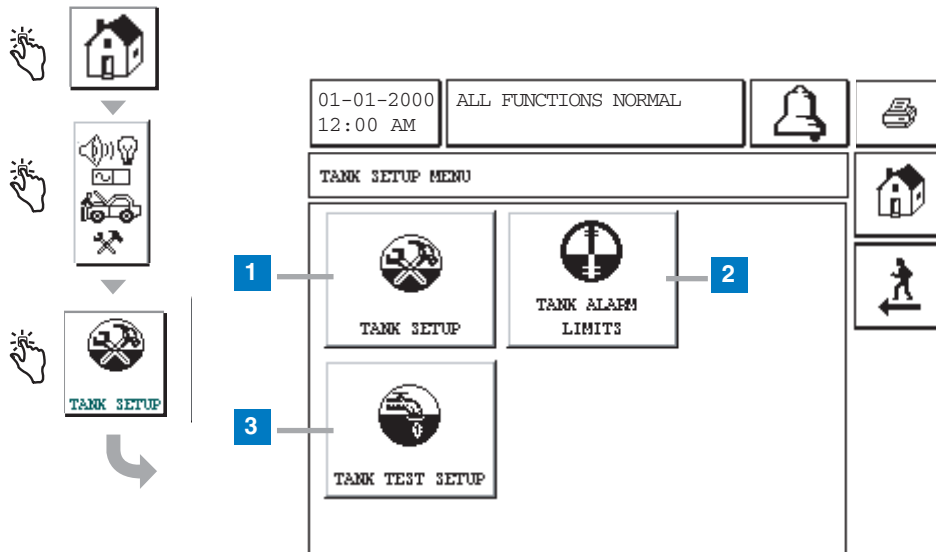
- 1 Password [267] - To access the Tank Setup Screen (page 39), you must enter the 6 to 16 character alphanumeric System Security Setup - Setup Password.

As you enter the password, asterisks (*) will display in place of the entered characters.

If the entered password is correct, the Tank Setup Screen will display.

If the entered password is incorrect, you will be asked to re-enter the password.

Tank Setup Screen



Legend for numbered boxes

This screen contains access to Tank Setup Screens.

- 1** Tank Setup button - touch to display the Tank Setup Screen (page 38).
- 2** Tank Alarm Limit button - Touch to display the Tank Alarm Limits Setup Screen (page 47).
- 3** Tank Test Setup button - Touch to display the Tank Test Setup Screen (page 51).

[119-121] Tank Setup Screen 1

01-01-2000 12:00 AM ALL FUNCTIONS NORMAL

TANK SETUP TANK 1

1 CONFIGURE [119] ENABLED

2 PROD LABEL [120] 12345678901234567890

3 MANIFOLD STATUS [121] 2

1 2 3 4 5 6

Legend for numbered boxes

This screen accesses Tank Setup parameters.

- 1 Configure [119] - Touch the Down Arrow button to the right of the window and select: Enabled or Disabled (default).
- 2 Prod Label [120] - Touch the Down Arrow button to the right of the window and enter up to a 20 character label. Only numerals from 0 - 9 and Roman alphabet characters can be entered.
- 3 Manifold Status [121] - Touch the Keypad button to the right of the window. Enter the number(s) of the tanks to which this tank is manifolded. You must enter a comma between tank numbers if more than one tank is entered.

Tank Setup parameters continue on next page.

[122-124] Tank Setup Screen 2

Legend for numbered boxes

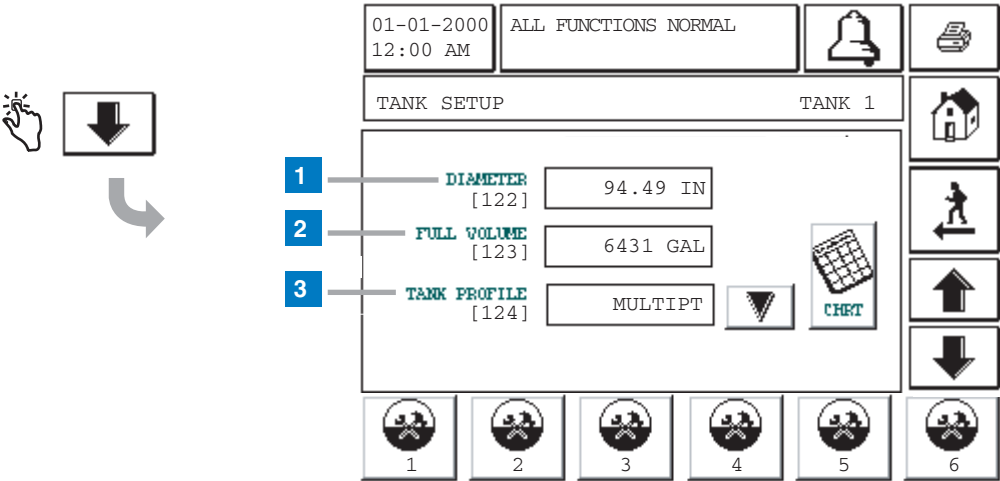
This screen continues Tank Setup.

- 1 Diameter [122] - touch the Down Arrow button to the right of the window and enter the diameter of the tank.
- 2 Full Volume [123] - touch the Down Arrow button to the right of the window and enter the Full Volume of the tank.
- 3 Tank Profile [124] - touch the Down Arrow button to the right of the window and select a tank profile: Linear -for rectangular tanks or cylindrical tanks standing on end, 1 point - for flat-ended steel tanks (default), 4 points - for fiberglass tanks, or 20 points - for all tanks. If a tank's chart has been downloaded to the TLS2 using TLS Chart Loader, multipoint will be added to the list of available tank profiles (see next page).
- 4 Tank Chart button - This button only appears if you have selected the 4-point, 20-point or Multipoint Tank Profile (For more on the Multipoint Tank Profile selection see next page).

4 or 20 Point Tank Chart

- The system will calculate heights for each point (4 or 20) based on the selected profile and the tank's diameter, and display them beside windows in which you must enter the corresponding volume. Get the volume for the displayed heights from the tank chart and enter that volume in the window.
- Take care to enter the exact value from the tank chart for the labeled height. Out of range entries will not be accepted.
- If the 4-point or 20-point profile is selected, you must enter a volume for each point or the system will compute a volume of 0 for any height.

Tank Setup Screen 2 (Multipoint Tank Profile Selected)



Legend for numbered boxes

Multipoint Tank Profile

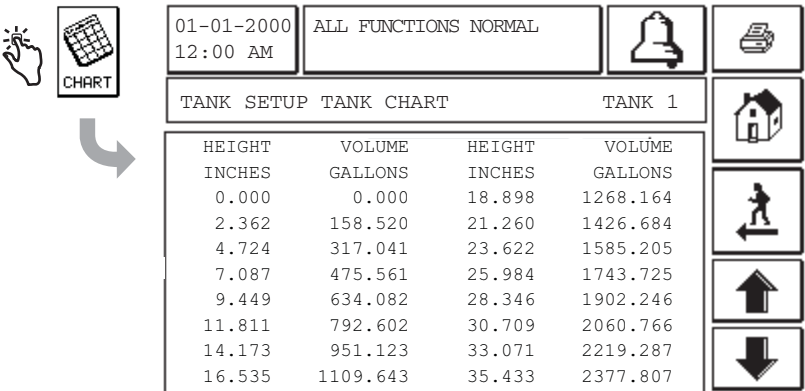
A custom PC-based program (**TLS Chart Loader**) interfaces to the TLS2 via a serial, modem or TCP/IP connection and is required to download multipoint charts. The **TLS Chart Loader** program is available on our website at www.veeder.com.

Once a tank's chart has been downloaded to the TLS2, multipoint will be added to the list of available tank profiles. If the multipoint tank profile (3) is selected, all height to volume conversions will be performed using the downloaded multipoint chart.

When multipoint chart is selected the tank setup parameters Diameter (1) and Full Volume (2) are automatically set to the chart's values and cannot be changed as long as the multipoint tank profile remains selected.

The TLS2 multipoint tank chart will support tank charts ranging from 20 to 400 points. Each chart point is a pair of values, height and volume.

Touching the Chart button displays the downloaded multipoint chart.



Tank Setup parameters continue on next page.

[125-128] Tank Setup Screen 3

01-01-2000 12:00 AM ALL FUNCTIONS NORMAL

TANK SETUP TANK 1

1 THERMAL COEFF [125] 0.00070

2 TANK TILT [126] 0 IN

3 FLOAT SIZE [127] 2 IN

4 STICK OFFSET [128] 87 IN

1 2 3 4 5 6

Legend for numbered boxes

This screen continues Tank Setup.

- 1 Thermal Coefficient [125] - Touch the Down Arrow button to the right of the window and enter the diameter of the tank.

To ensure accurate temperature compensated volume conversions the product's thermal coefficient of expansion must be correctly entered. An incorrect value will adversely affect leak detection testing and temperature compensated inventory values.

Table 2 lists the U.S. and Metric coefficients for approved fuels and liquids. Enter the coefficient in U.S. or Metric units, depending on the units specified in System Setup (page 9). **Be careful to add the correct number of zeros to the right of the decimal point. Incorrect entry can cause test failures and other problems.**

- 2 Tank Tilt [126] - Touch the Down Arrow button to the right of the window and enter the tank tilt. The allowable range is -144 to +144 inches (-365.76 to +365.76 cm) and the default is 0.

Tank Tilt allows you to adjust for a difference between fuel height at the probe location and fuel height at the center of the tank caused by a tilt in the tank. You must enter a minus (-) if the Tank Tilt is a negative value. A Tank Tilt value is not required if the probe is located in the center of the tank. If the probe is located in the center of the tank, the value entered is 000.00 U.S. units or 0000.0 Metric units. If the probe is not in the center of the tank, calculate the tank's tilt using the directions in Table . Enter the value from Column G in the worksheet as the Tank Tilt.

- 3 Float Size [127] - Touch the Down Arrow button to the right of the window and from the float sizes presented, enter the Mag probe float size that you installed on the tank's probe

- 4 Stick Offset [128] - Touch the Down Arrow button to the right of the window and enter a Stick Offset value. The allowable range is -144 to +144 inches (-365.76 to +365.76 cm) and the default is 0.

Note: To enter a Stick Offset value, the Stick Offset option must have been enabled (page 36), and you must have calculated and entered the tank tilt (if necessary). A Stick Offset can be entered so that the probe (product) height "appears" to be equal to a stick gauge reading of the product height - *This entry is for operator convenience only, and as such it has no bearing on product volume calculations.*

To determine the value to enter for Stick Offset, record the probe height reading and record a stick height reading from the tank. If the probe's fuel height reading is lower than the stick reading, enter the positive difference between the two. If the probe's reading is higher than the stick reading, enter the negative difference between the two. For example, if stick height = 52 and probe height = 48, you enter +4; if stick height = 52 and probe height = 54, you enter -2.

Table 2: U.S. and Metric Thermal Coefficients

Product	Thermal Coefficient (U.S. Units)	Thermal Coefficient (Metric Units)
Alcohol	0.00063	0.00114
Ad Blue or DEF	0.00022	0.00040
Aviation Gas	0.00075	0.00135
Biodiesel B20	0.00045	0.00081
Biodiesel B100	0.00044	0.00079
Diesel (fuel oil #2)	0.00045	0.00081
Ethylene Glycol	0.00037	0.00067
Fuel Oil #4	0.00047	0.00085
Gasohol	0.00069	0.00125
Gear Oil, 90W	0.00047	0.00085
Hydraulic Oil	0.00047	0.00085
Jet Fuel	0.00047	0.00085
Kerosene (fuel oil #1)	0.00050	0.00090
LPG Butane*	0.00109	0.00196
LPG Propane*	0.00160	0.00288
Leaded	0.00070	0.00126
Low Benzene Unleaded	0.00070	0.00126
Motor Oil	0.00047	0.00085
Premium	0.00070	0.00126
Regular Unleaded	0.00070	0.00126
Super Unleaded	0.00070	0.00126
Transmission Fluid	0.00047	0.00085
Turbine Oil	0.00047	0.00085
Used Water	0.00012	0.00022
Washer Fluid	0.00047	0.00085
Used Oil	0.00044	0.00079

*Coefficient dependent on temperature, 15°C is nominal.

Calculating Tank Tilt

Use the worksheet below to record measurements and perform Tank Tilt calculations for each of the tanks.

1. Stick the tank at the fill riser opening at least three times. Record the average reading in column A of the chart.
2. Before beginning this step, make sure the Tank Tilt [126] on the screen = 0. Record the probe's Fuel Height (In-Tank Inventory Function) reading in column B of the chart.
3. Subtract the value entered in column B from the value entered in column A. Record the result in column C.
4. Measure the distance in inches (or millimeters if you use Metric Units) between the probe and fill risers. Record the measurement in column D.
5. Divide the value in column C by column D to determine the pitch. Record the results in column E.
6. Measure the distance in inches or millimetres from the probe riser to the center of the tank. Record the distance in column F.
7. Multiply column E by column F to determine Tank Tilt ($E \times F = \text{Tank Tilt Value}$). Record the value in column G.

Tank Tilt Calculation Worksheet

	A	B	C	D	E	F	G
Tank No.	Stick Gauge Avg. Height @ Fill Riser	Probe's Fuel Height Reading (Probe Riser)	(A - B = C)	Distance Fill to Probe Risers	Pitch (C / D = E)	Distance from Probe Riser to Center of Tank	Tank Tilt* (E x F = G)
1							
2							
3							
4							
5							
6							
*Tank Tilt may be a positive (+) or negative (-) value. If it is a negative value, BE SURE to change the value symbol to minus (-) when entering a negative Tank Tilt value.							

[131-133] Tank Setup Screen 4

05-07-2011 11:45:23 ALL FUNCTIONS NORMAL

TANK SETUP TANK 1

1 DENSITY CODE [131] B705386719512

2 DENSITY FLOAT S/N [132] 11100123

3 GOST VOL CORRECTION [133] ENABLE

1 2 3 4 5 6

Legend for numbered boxes

This screen concludes Tank Setup.

- 1 Density Code [131] - The density float is etched along one side of the device with a unique Density Code which must be entered in this screen to enable the console to accurately compute the density of the fuel in the tank. This code is assigned at the factory during calibration of the magnets used in the float. As the density float can be shipped separately from the probe, the user will need to record the Density Code on each density float and the tank in which the float is installed. The user will then need to program the console in the above screen with the selected tank's float Density Code. The Density Code is exactly 14 characters (e.g., B7053686719512) and the first letter indicates the float product type – A is for gasoline, B is for diesel.

If the Density Code is modified, the Total TC Density Offset value is set to 0.

- 2 Density Float S/N [132] - The density float is etched along one side of the device with a unique Density Float S/N which must be entered in this screen. As the density float can be shipped separately from the probe, the user will need to record the Density Float S/N on each density float and the tank in which the float is installed. The user will then need to program the console in the above screen with the selected tank's float Density Float S/N. The Density Float S/N is exactly 8 characters (e.g., 11452122).

If the Density Float S/N is modified, the Total TC Density Offset value is set to 0.

- 3 GOST Vol Correction [133] - The GOST Volume Correction feature adjusts the volume calculation of fuel in the tank using the GOST R 8.595 correction factor. Enable this field to automatically adjust all volume calculations for this tank based on the temperature of the fuel. Allowable selections: Enabled or Disabled. Default: Disabled

[101-104] Tank Alarm Limits Setup Screen 1

01-01-2000 12:00 AM ALL FUNCTIONS NORMAL

TANK SETUP ALARM LIMITS TANK 1

1	MAX PRODUCT [101]	98000 GAL	[Icon]
2	OVERFILL [102]	0%	[Icon]
3	DELIVERY NEEDED [103]	0%	[Icon]
4	LOW PRODUCT [104]	500 GAL	[Icon]

1 2 3 4 5 6

Legend for numbered boxes

This screen begins Tank Alarm Limits setup.

- 1 Max Product [101] - Alarms when the level of fluid in the tank exceeds the volume you enter here. Allowable range is 0-26000 gallons (0-98420 L). Default is 0. If the value entered is 0 or full volume, this alarm is disabled. An active Probe Low Temperature Warning will disable this alarm. Touch the Down Arrow button to the right of the window and enter the max product for the tank.
- 2 Overfill [102] - Overfill Limit warns of a potential overfill during a delivery. When the volume reaches this limit, the system can activate an overfill alarm. The overfill alarm threshold is referenced to the Max Product value. If the Max Product value is 0, the Overfill Alarm threshold is referenced to the Full Volume capacity. Allowable range is 0 to 100%. Default is 0 (disabled). An active Probe Low Temperature Warning will disable this alarm.
- 3 Delivery Needed [103] - Delivery Needed warns when the level of fluid in the tank drops to a level at which the operator calls for a delivery. This value is a percentage of Full Volume with an allowable range of 0 to 100%. Default is 0% (which disables the alarm). Touch the Down Arrow button to the right of the window and enter a volume higher than that of the Low Product alarm.

- 4 Low Product [104] - Low Product warns when volume in the tank pumps down to the level you enter here. Allowable range is 0-26000 gallons (0-98420 L). Default is 0 (which disables the alarm). An active Probe Low Temperature Warning will disable this alarm. Touch the Down Arrow button to the right of the window and enter this value at a volume lower than that of the Delivery Needed alarm.
NOTE: Typically this alarm is set to the lowest level before the pump runs dry. All dispensing should stop when this alarm is active.

The Tank Alarm Limit Setup continues on next page.

[105-108] Tank Alarm Limits Setup Screen 2

Legend for numbered boxes

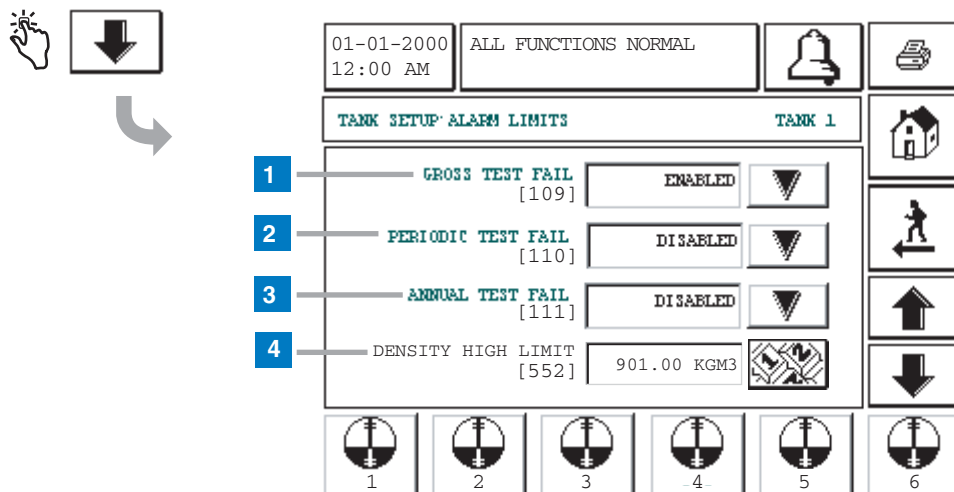
This screen continues Tank Alarm Limits setup.

- 1** High Water [105] - Alarms when the level of water in the tank exceeds the height you enter here. Set this value at a level lower than the pickup for the submersible pump or suction line. Allowable range is 0-9 inches (0-228.6 mm). Default is 0 (which disables the alarm). Touch the Down Arrow button to the right of the window and enter the desired high water limit.
- 2** Delivery Delay [106] - Use this display to set a delay time between the completion of a bulk delivery and the Delivery Increase Report. This feature prevents generation of multiple reports during the intervals between multi-compartment drops to one tank. The feature also allows fuel to "settle out" after a delivery, which is especially important in manifolded tank groups. Allowable delay is 1 to 60 minutes. Default is 1. Touch the Down Arrow button to the right of the window and enter a desired delay.
- 3** Ann Leak Test Min [107] - This value sets the minimum tank volume required to record a passed annual leak test. The value reflects federal, state, and local requirements. This value is a percentage of Full Volume with an allowable range of 1.0 to 100%. Default is 0 (which disables the alarm). Touch the Down Arrow button to the right of the window and enter a volume.

- 4** Per Leak Test Min [108] - This value sets the minimum tank volume required to record a passed periodic leak test. The value reflects federal, state, and local requirements. This value is a percentage of Full Volume with an allowable range of 1.0 to 100%. Default is 0 (which disables the alarm). Touch the Down Arrow button to the right of the window and enter a volume.

The Tank Alarm Limit Setup continues on next page.

[109-111, 552] Tank Alarm Limits Setup Screen 3

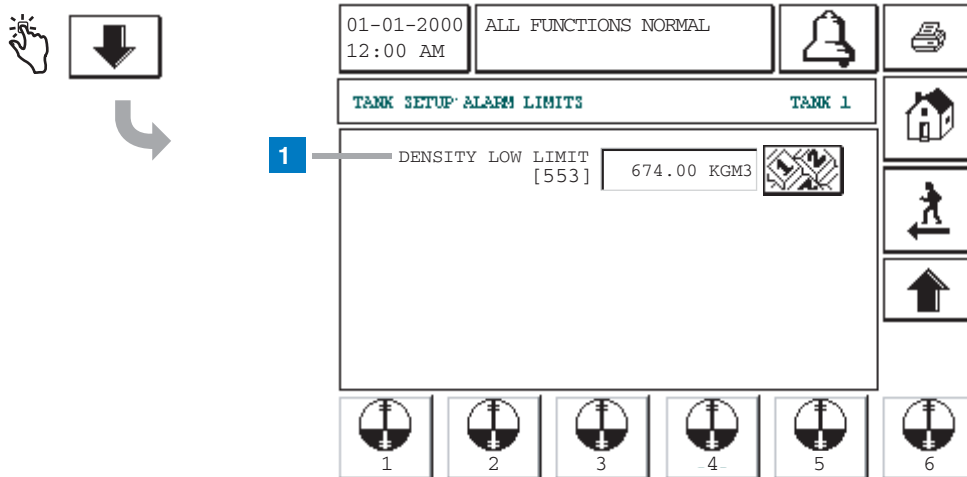


Legend for numbered boxes

This screen continues Tank Alarm Limits setup.

- 1 Gross Test Fail [109] - Gross Test Fail allows you to disable or enable an alarm that triggers if a 3 gph (11.3 lph) leak test fails. Choices are Alarm Enabled or Disabled. Default is Disabled. Touch the Down Arrow button to the right of the window and enter the desired choice.
- 2 Periodic Test Fail [110] - Periodic Test Fail allows you to disable or enable an alarm that triggers if a 0.2 gph (0.76 lph) leak test fails. Choices are Alarm Enabled or Disabled. Default is Disabled. Touch the Down Arrow button to the right of the window and enter the desired choice.
- 3 Annual Test Fail [111] - Annual Test Fail alarms when an annual leak test has not passed. Choices are Alarm Enabled or Disabled. Default is Disabled. Touch the Down Arrow button to the right of the window and enter the desired choice.
- 4 Density High Limit [552] - touch the numeric button to enter a high limit at which you want to set the density warning. Allowable Tank Density High Limit range is : 674.00 to 901.00 kg/m³ (42.076 TO 56.248 lbs/ft³). Default high limit is 901.00 kg/m³ (56.248 lbs/ft³).

[553] Tank Alarm Limits Setup Screen 4

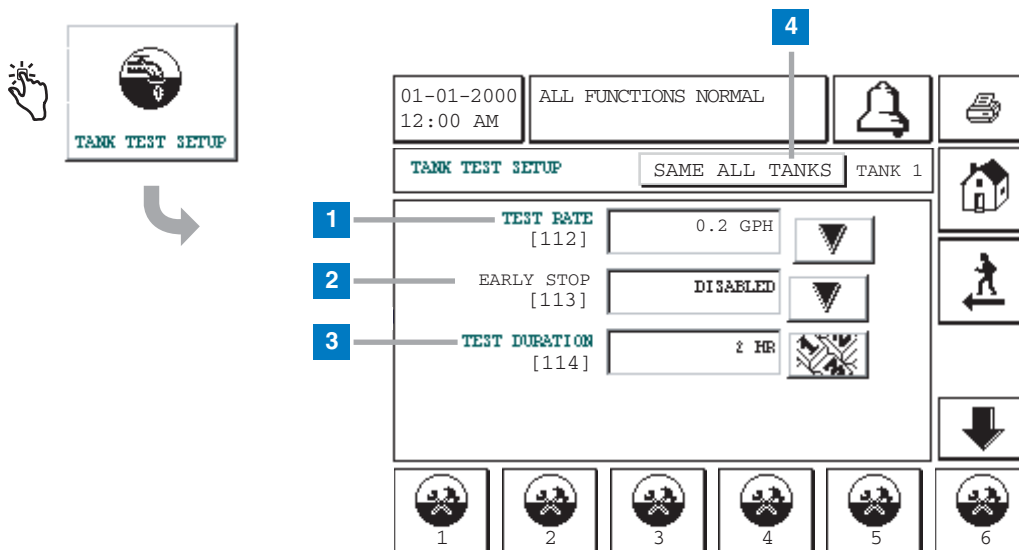


Legend for numbered boxes

This screen concludes Tank Alarm Limit setup.

- 1 Density Low Limit [553] - touch the numeric button to enter a low limit at which you want to set the density warning. Allowable Tank density low limit range is: 674.00 to 901.00 kg/m³(42.076 to 56.248 lbs/ft³). Default low limit is 674.00 kg/m³ (42.076 lbs/ft³).

[112-114] Tank Leak Test Setup Screen 1



Legend for numbered boxes

The Tank Leak Test Setup allows you to establish and enter the method, timing, and duration of automatic leak tests. You must have a Mag 1 or 2 probe installed to perform leak tests.

If you are using the In-Tank Leak Test feature for underground storage tank regulatory compliance, be sure the leak test limits you establish and enter comply with the test type, accuracy, and frequency requirements as defined by local, county, state, federal and any other regulatory authority governing your site.

In addition, set the test time for a period when no fueling from or bulk delivery to the tank will occur. Such activity during a leak test procedure will result in inaccurate leak test results.

- 1** Test Rate [112] - You can set the leak test rate at 0.2 gph (0.76 lph) (default) or 0.1 gph (0.38 lph). Selecting 0.1 gph (0.38 lph) requires a Mag 1 probe. Touch the Down Arrow button to the right of the window and enter the desired choice.
- 2** Early Stop [113] - Disabled is the default setting. When enabled this feature will prevent an In-Tank Leak Test from starting under the following conditions:
 - Tank volume is less than Leak Min Periodic value or Leak Min Annual value.
 - It is less than 8 hours from a delivery.
 - The product temperature is less than 0°F (-17.6°C) or more than +100°F (+37.4°C).

- There is too little fuel in tank.

Touch the Down Arrow button to the right of the window and enter the desired choice.

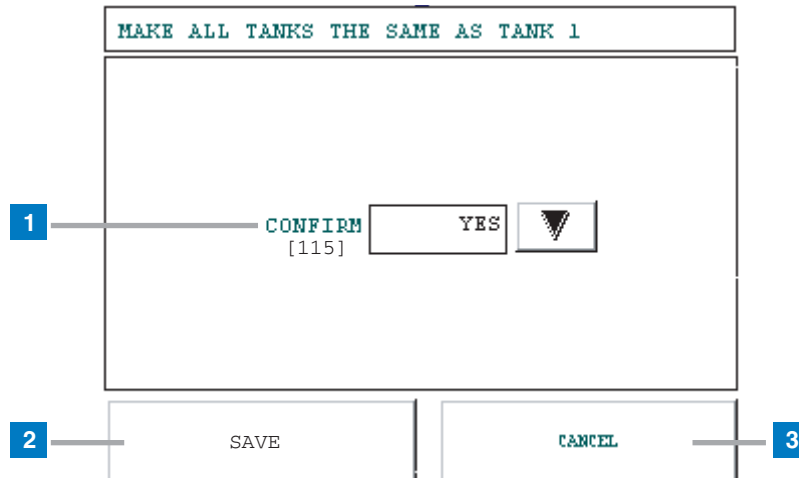
- 3** Test Duration [114] - The maximum duration is 24 hours. There is a minimum duration of two hours for 0.2 gph (0.76 lph) tests and three hours for 0.1 gph (0.38 lph) tests.

Note: If you have Early Stop enabled and the console determines that an Tank Leak Test has passed the test is completed before the duration times out. Default duration is 2 hours. Touch the Down Arrow button to the right of the window and enter the desired choice.

- 4** Same All Tanks button - Touch this button to transfer identical selections made on this screen for Tank 1 to All Tanks (opens the confirm Same All Tanks Screen on page 52).

The Tank Leak Test setup concludes on page 50.

[115] Same All Tanks Screen

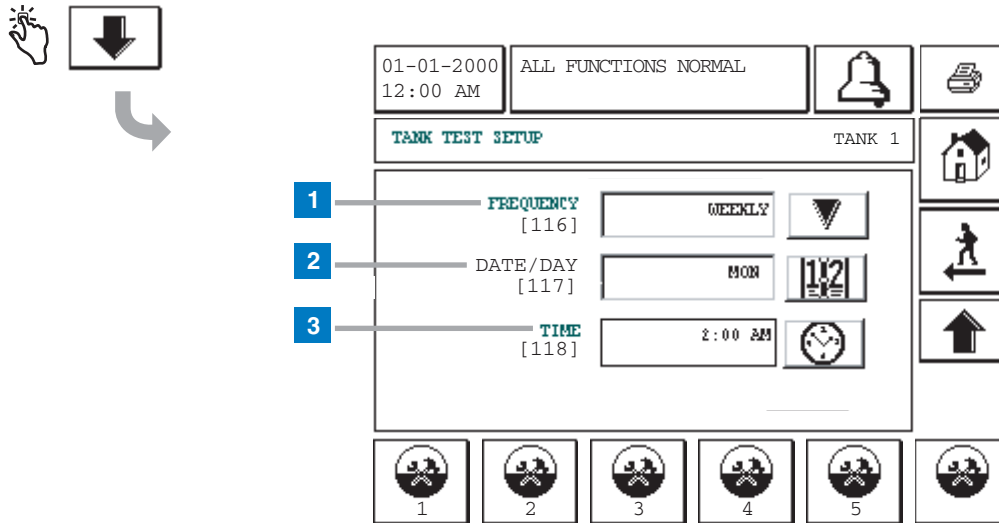


Legend for numbered boxes

This screen appears if you touch the SAME ALL TANKS button on the Tank Leak Test Setup screens.

- 1 Confirm [115] - Select Yes to transfer the Tank 1 setup selections on the Tank Leak Test Setup screens to all configured tanks in the system. Select No not to transfer the Tank 1 setup to all tanks. Default is No. If necessary, touch the arrow button on the right of the window and change the entry.
- 2 Save button - Touch this button to save your selection and return to the Tank Leak Test Setup screen.
- 3 Cancel button - Touch this button to cancel your choice and return to the Tank Leak Test Setup screen.

[116-118] Tank Leak Test Setup Screen 2



Legend for numbered boxes

This screen concludes Tank Leak Test Setup.

- 1** Frequency [116] - You can choose from several Tank Leak Test frequency options:

- On Date
- Annually
- Monthly
- Weekly
- Daily

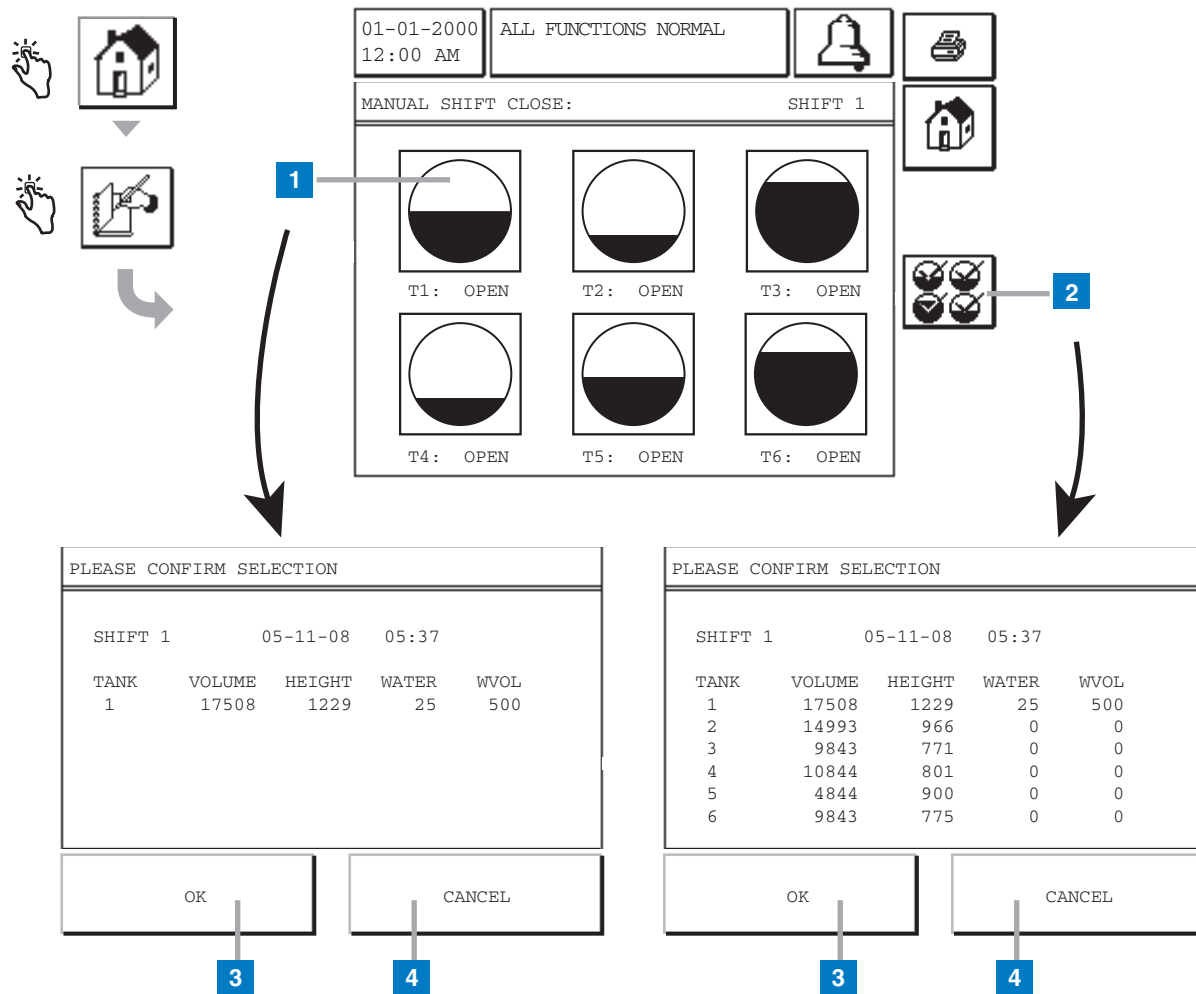
Touch the Down Arrow button to the right of the window and enter the desired choice.

- 2** Date/Day [117] - Touch the Date button to enter the day, month, and year on which to run the test.

- 3** Time [118] - Touch the Time button to enter the Time of Day for the leak test.

Manually Closing a Shift

Manual Shift Close Screen



Legend for numbered boxes

- 1 You can manually close the shift for any tank by touching the desired tank's graphic on the screen, or
- 2 You can manually close the shift for all tanks by touching the All Tanks button.
- 3 For either Single or All Tank shift closure, touch the OK button to confirm the closing.
- 4 For either Single or All Tank shift closure, touch the Cancel button to abort the closing.

NOTES:

Pressing a tank that is already closed will not display the confirmation close screen.

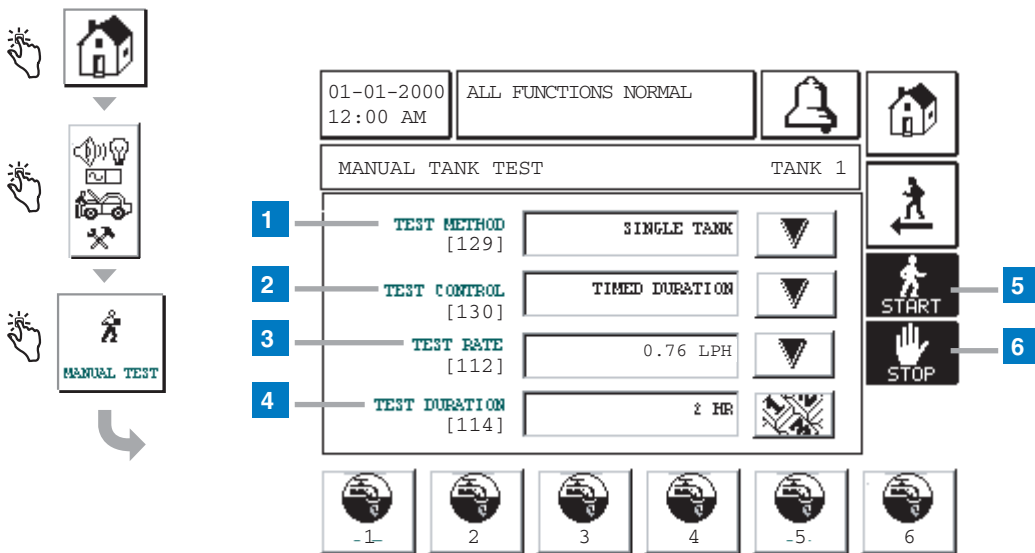
Once all tanks are closed, you can not close another shift until 2 hours after the last tank was closed.

From midnight to 11:59 pm, you can manually close a maximum of four shifts.

Manually Starting/Stopping Tank Leak Tests

Use this screen to manually start or stop a Tank Leak Test.

Manual Test Start/Stop Screen



Legend for numbered boxes

- 1** Test Method [129] - Select Single Tank or All Tanks. Touch the Down Arrow button to the right of the window and enter the desired choice.
- 2** Test Control [130] - Select Timed Duration or Manual Stop (test runs until you stop it, or for 24 hours, whichever comes first). Touch the Down Arrow button to the right of the window and enter the desired choice.
- 3** Test Rate [112] - Select a leak test rate of 0.2 gph (0.76 lph) (default) or 0.1 gph (0.38 lph). The 0.1 gph (0.38 lph) rate requires a Mag 1 Probe. Touch the Down Arrow button to the right of the window and enter the desired choice.
- 4** Test Duration [114] - Select a test duration of from 0 to 24 hours. There is a minimum duration of two hours for 0.2 gph (0.76 lph) tests and three hours for 0.1 gph (0.38 lph) tests. Default is 2 hours.
Note: this window only appears if you selected Timed Duration in the Test Control window. Touch the Down Arrow button to the right of the window and enter the desired choice.
- 5** Test Start button - Touch this button to begin the test.
- 6** Test Stop button - Touch this button to stop a tank leak test.

Reports

System Reports

System reports are accessed from the System Status (Home) Screen (see page 5) by touching one of the four report buttons at the bottom of the screen. Table 4 describes the available System reports.

Table 4: System Reports









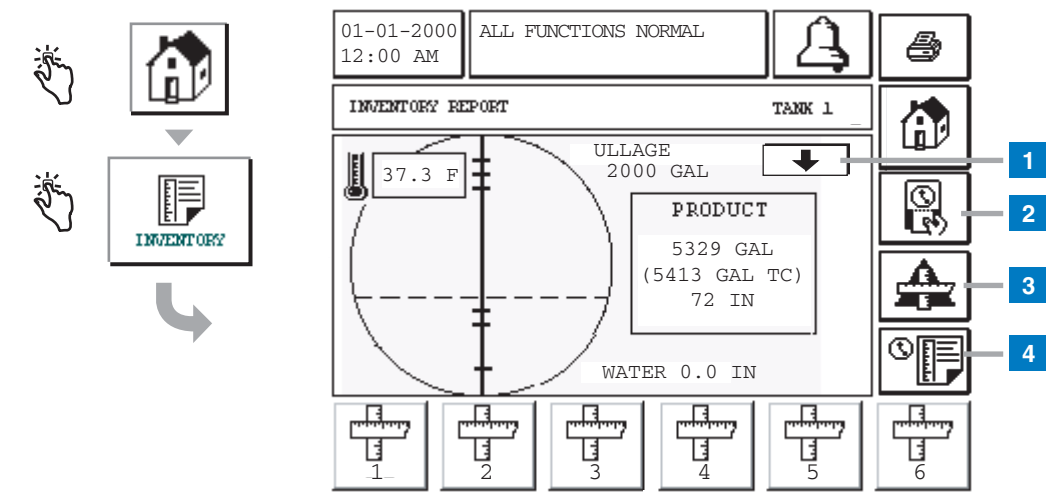
Report Button	Report	Report Parameters
	<p>Touch to display Inventory and Shift Inventory Reports for each tank. You can touch the Print button on the display to print the report to a connected printer.</p>	<p>INVENTORY REPORT (Non-Density Probe) Fuel Volume, TC Fuel Volume, Ullage, Fuel height, Water Height and Fuel Temperature. See example on page 58.</p> <p>INVENTORY REPORT (Density Probe) Fuel Volume, Mass, Density, Fuel height, Water Height and Fuel Temperature. See example on page 60.</p>
	 <p>Touch the down arrow inside the Inventory Screen to display the Full Inventory Report for the selected tank.</p>	<p>FULL INVENTORY REPORT (Non-Density Probe) Fuel Volume, TC Fuel Volume, Volume, TC Net Volume, Ullage, Fuel Temp, Fuel height, Water Height, Water Volume and Net Volume See example on page 59.</p> <p>FULL INVENTORY REPORT (Density Probe) Fuel Volume, TC Fuel Volume, Volume, TC Net Volume, Ullage, Fuel Temp, Fuel height, Mass, Water Height, Density, Water Volume, TC Density and Net Volume</p>
	 <p>Touch to display the Hourly Inventory Report for a selected tank. Touch the Print button to print the report to a connected printer.</p>	<p>HOURLY INVENTORY REPORT Date, Hour, Volume, Height, Water and Temp See example on page 59.</p>

Table 4: System Reports


Report Button	Report	Report Parameters
	<p>Touch to display Delivery Reports for each tank. Includes last delivery and up to previous 9 deliveries. You can touch the Print button on the display to print the report to a connected printer.</p>	<p>DELIVERY REPORT (Non-Density Probe) Start Date, Time, Volume, TC Volume, Water Height, Fuel Temp and Fuel Height End Date, Time, Volume, TC Volume, Water Height, Fuel Temp and Fuel Height Increase Volume Amount and TC Volume Amount See example on page 61.</p> <p>DELIVERY REPORT (Density Probe) Start Date, Time, Volume, Mass, Density, Water Height, Fuel Temp and Fuel Height End Date, Time, Volume, Mass, Density, Water Height, Fuel Temp and Fuel Height Increase Volume Amount and Mass Amount See example on page 62.</p>
 <p>Touch to display the Environmental Reports Screen. When this screen displays you can select one of two test reports.</p>	<div>  <p>Touch the Last Results button to display the results of the last passed Annual, Periodic, and Gross tests. You can touch the Print button on the display to print the report to a connected printer.</p> </div> <div>  <p>Touch the Fullest Pass button to display the results of the last 12 Periodic (1 for each month) tests and Last Annual test in which the tank had the most volume. You can touch the Print button on the display to print the report to a connected printer.</p> </div>	<p>CURRENT TEST RESULTS Test Type, Start Date/Time, Test Result, Hours Run, %Volume in Tank at Time of Test</p> <p>FULLEST LAST PASS REPORT Test Type, Start Date/Time, Hours Run, %Volume in Tank at Time of Test</p>
	<p>Touch to display the Active Alarm Reports Screen. You can touch the Print button on the display to print the report to a connected printer.</p>	<p>ACTIVE ALARM REPORT Device (T = Tank, C = Comm), Alarm Type, Date, Time See example on page 63.</p>

Inventory Report (US Units and Non-Density Probe)





To view the inventory report for a tank, touch the inventory report button for the desired tank at the bottom of the screen. To view the Shift Inventory report for the selected tank, touch the Shift Inventory button (item 2 in the screen above). To view the stick height (if enabled) for the selected tank, touch the Delta Stick button (item 3 in the screen above). To view the Inventory Log report for the selected tank, touch the Inventory Log Report button (item 4 in the screen above). To view the Full Inventory report for all tanks, touch the Down Arrow button (item 1 in the screen above).

Example Report Printout - Inventory Report with TC volume



T 1:REGULAR UNLEADED							
TANK	VOLUME	TC VOLUME	ULLAGE	HEIGHT	WATER	TEMP	
1	5329	5413	4500	48.8	0.0	37.3	
2	5329	5413	4500	48.8	0.0	37.3	

Example Report Printout - Shift Inventory Report with TC volume







T 1 : REGULAR UNLEADED							
TANK	PRODUCT						
1	REGULAR UNLEADED						
SHIFT 1	STARTING VALUES	VOLUME	TC VOLUME	ULLAGE	HEIGHT	WATER	TEMP
	ENDING VALUES	8518	8492	1482	76.26	0.0	64.7
	DELIVERY VALUE	8518	8492	1482	76.26	0.0	64.7
	TOTALS	0					
		0					
SHIFT 2	STARTING VALUES	8518	8492	1482	76.26	0.0	64.7
	ENDING VALUES	8518	8492	1482	76.26	0.0	64.7
	DELIVERY VALUE	0					
	TOTALS	0					

Inventory Report Notes

- TC Volume and temperature columns are printed only for the probes in the system that have temperature measurement capability.
- If system setup parameter Print TC Volumes is set to NO, the TC Volume and temperature columns are not printed.
- The water column is printed only for probes in the system that have water measurement capability.





Example Report Printout - Snapshot Shift Inventory Report



SHIFT 1 05-11-08 05:37

TANK	VOLUME	HEIGHT	WATER	WVOL
1	17508	1229	25	500
2	14993	966	0	0
3	9844	771	0	0
4	10844	801	0	0
5	4844	900	0	0
6	9843	775	0	0

Example Report Printout - Inventory Log Report









DATE	VOLUME	HEIGHT	WATER	TEMP
08-5-08 09:00	17508	1229	25	15
08-5-08 08:00	16508	1129	25	12
08-5-08 07:00	15508	1029	25	12
08-5-08 06:00	14508	929	25	12
08-5-08 05:00	137508	829	25	12
08-5-08 04:00	12508	729	25	12

Inventory Log Report Notes



The Inventory Log report (reference page 19) is a rolling log of 72 (max.) records.



Full Inventory Report (US Units and Non-Density Probe)





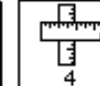



01-01-2000
12:00 AM

ALL FUNCTIONS NORMAL





INVENTORY	REGULAR UNLEADED	TANK 1
FUEL VOLUME	10000	TC VOLUME 7366
VOLUME	7433	TC NET VOLUME 6811
ULLAGE	2567	TEMP 72.0
HEIGHT	16.71	
WATER HEIGHT	2.5	
WATER VOLULME	560	
NET VOLUME	6873	

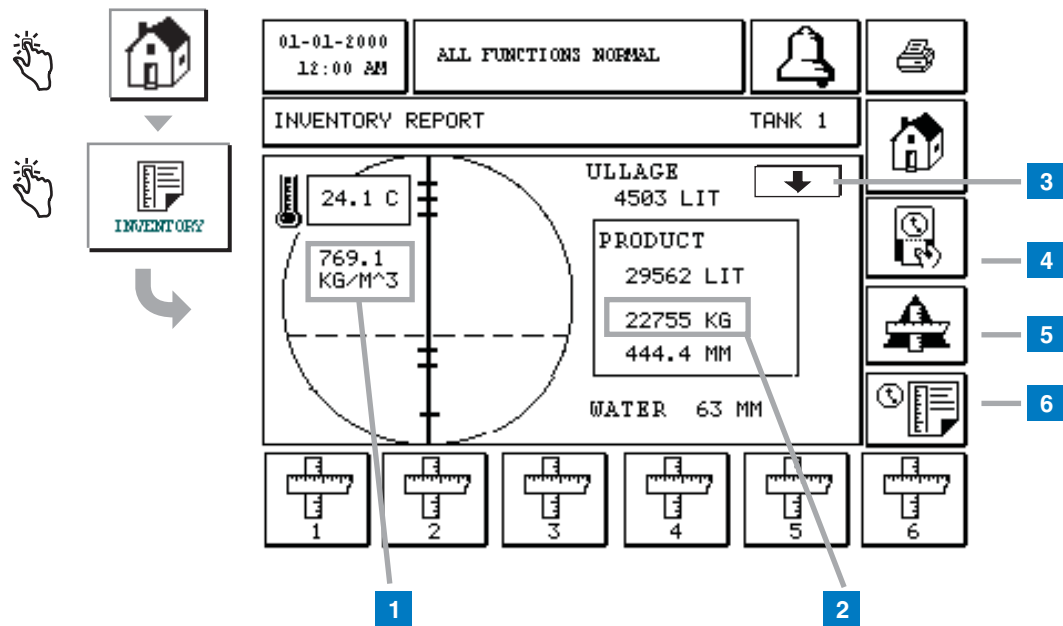


Example Report Printout - Full Inventory Report

↓

TANK	:	2	5	6
FULL VOLUME	:	10000	10000	10000
VOLUME	:	247	7433	1828
ULLAGE	:	9753	2567	8172
HEIGHT	:	5.8	16.7	11.4
WATER HEIGHT	:	2.0	2.5	4.8
WATER VOLUME	:	51	560	528
NET VOLUME	:	196	6873	1300
TC VOLUME	:	246	7366	1819
TC NET VOLUME	:	195	6811	1294
TEMP	:	64.5	72.0	66.1

Inventory Report (Metric Units and Density Probe)






The inventory report for a tank with a density probe has the density value displayed in the tank graphic (item 1 in the screen above) and the mass value displayed in the Product box (item 2 in the screen above). If Temperature Compensated Density is enabled, TC will follow the density value, e.g., 769.1 kg/m³ TC. The other values are in the same locations as for the non-density probe. Touch the inventory report button for the desired tank at the bottom of the screen. To view the Shift Inventory report for the selected tank, touch the Shift Inventory button (item 4 in the screen above). To view the stick height (if enabled) for the selected tank, touch the Delta Stick button (item 5 in the screen above). To view the Inventory Log report for the selected tank, touch the Inventory Log Report button (item 6 in the screen above). To view the Full Inventory report for all tanks, touch the Down Arrow button (item 3 in the screen above).

Example Report Printout - Inventory Report with Density Probe

↓




T 1:REGULAR UNLEADED						
TANK	VOLUME	MASS	DENSITY	HEIGHT	WATER	TEMP
1	29562	22755	769.1	444	63	24.1

Example Report Printout - Full Inventory Report with Density Probe



TANK	:	2	5	6
FULL VOLUME	:	37850	37850	37850
VOLUME	:	934	28134	6920
ULLAGE	:	36916	9716	30930
HEIGHT	:	147	424	291
WATER HEIGHT	:	51	64	123
WATER VOLUME	:	192	2121	1999
NET VOLUME	:	742	26013	4921
TC VOLUME	:	931	27879	6886
TC NET VOLUME	:	739	25777	4897
TEMP	:	18.1	22.2	18.9
MASS	:	---	20374	---
DENSITY	:	---	724	---
TC DENSITY	:	---	730.6	---

Delivery Report (US Units and Non-Density Probe)

31-07-2003
12:00 AM


ALL FUNCTIONS NORMAL









DELIVERY REPORT

TANK 1

	START	END
DATE	05-06-09	05-06-09
TIME	4:06 PM	4:10 PM
VOLUME	7656 GAL	9493 GAL
TC VOLUME	7560 GAL	9474 GAL
AMOUNT	1837 GAL	
TC AMOUNT	1814 GAL	





1

2

3



4

5

6

Touch the Tanker button at the bottom of the screen to view a delivery for that tank.






Example Printout - Delivery Report with Non-density Probe

T 1:REGULAR UNLEADED							
INCREASE	DATE/TIME	VOLUME	TC VOLUME	WATER	TEMP	HEIGHT	
END:	05-06-09 4:10PM	9493	9474	5.3	76.9	21.6	
START:	05-06-09 4:06PM	7656	7560	5.1	77.0	17.2	
AMOUNT:		1837	1814				


61


Delivery Report (Metric Units and Density Probe)

31-07-2003
12:00 AM

ALL FUNCTIONS NORMAL





DELIVERY REPORT

TANK 1

START

END

DATE

05-06-09

05-06-09

TIME

4:06 PM

4:10 PM

VOLUME

28978 LIT

35929 LIT

MASS

22183 KG

29358 KG

AMOUNT


6952 LIT


DENSITY

MASS


7175 KG

978.1 KG/M^3







1




2




3



4






5



6

Note: If TC Density is enabled, then TC Density will be displayed instead of Density.

Example Printout - Delivery Report with Density Probe

T 1:REGULAR UNLEADED

INCREASE

DATE/TIME

VOLUME

MASS

DENSITY

WATER

TEMP

HEIGHT

END:

05-06-09 4:10PM

35929

29358

817.0

134.8

24.9

549.7

START:

05-06-09 4:06PM

28978

22183

764.9

130.5

25.0

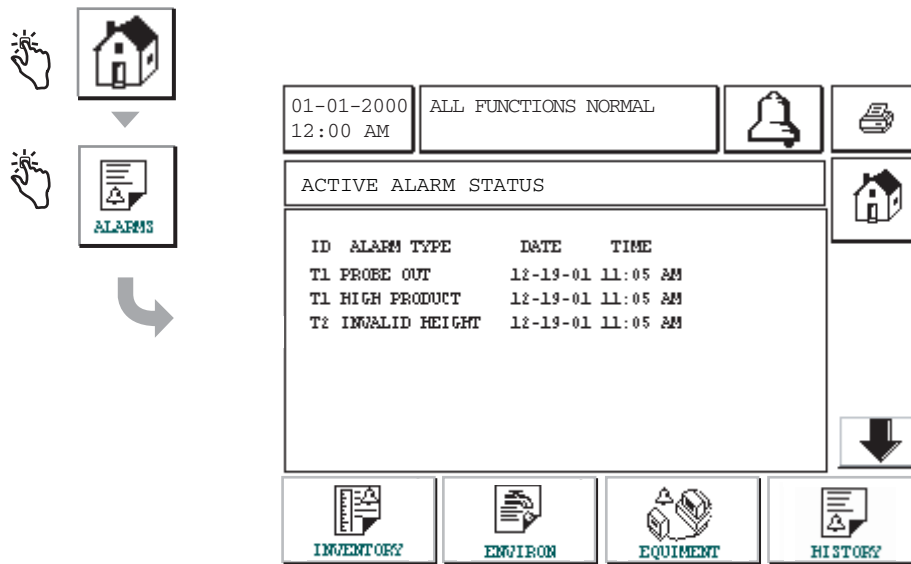
436.1

AMOUNT:

6952

7175

Active Alarm Status Screen



Alarm Reports

Alarm reports are accessed from the Active Alarm Reports Screen above by touching the report buttons across the bottom of the screen. Table 5 describes the available reports.

Table 5: Alarm Reports







Button	Report	Report Parameters
	Touch to display the Inventory Alarm Report. Touch the Down/Up arrow buttons to scroll through all alarms. Touch the Print button on the display to print the report to a connected printer.	INVENTORY ALARM REPORT Date/Time of the following last 3 inventory alarms: Max Product, Overfill Limit, Invalid Fuel Level, High Water, Delivery Needed, Low Product, and Low Temperature.
	Touch to display the Environmental Alarm Report. Touch the Down/Up arrow buttons to scroll through all alarms. Touch the Print button on the display to print the report to a connected printer.	ENVIRONMENTAL ALARM REPORT Date/Time of last 3 Gross, Periodic, and Annual Test Fails
	Touch to display the Equipment Alarm Reports Screen. From this screen you can choose to view Tank Equipment Alarm Reports	TANK EQUIPMENT ALARM REPORT Date/Time of last 3 Probe Out alarms for each tank.

Table 5: Alarm Reports

Button	Report	Report Parameters
<p>4</p>  <p>Touch to display the Alarm Reports - Alarm History Screen. From this screen you can choose to view history of High or Low Priority Alarms.</p>	 <p>Touch to display the High Priority Alarm Report. Touch the Print button on the display to print the report to a connected printer</p>	<p>HIGH PRIORITY ALARM REPORT</p> <p>Displays Device (T = Tank, C = Comm) number, Alarm Type, Date, Time, and status of last 50 High Priority alarms: Max Product, Overfill, Low Product, High Water, Gross Test Fail, Periodic Test Fail, Annual Test Fail, Probe Out, and Auto-dial Failure. For Probe Outs only, The printed version also includes a Count column which lists the number of times the alarm had repeated since the Start Date.</p>
	 <p>Touch to display the Low Priority Alarm Report. Touch the Print button on the display to print the report to a connected printer.</p>	<p>LOW PRIORITY ALARM REPORT</p> <p>Displays Device (T = Tank, C = Comm) number, Alarm Type, Date, Time and status of last 50 Low Priority alarms: Delivery Needed, Invalid Fuel Height, and Low Temperature,</p>

Important Alarm Notes

Touching the Alarm Ack button (item 3 on page 5) turns off the beeper even if the alarm is still active. The Alarm Status Screen displays the alarm until it is cleared. When an alarm condition returns to the normal state, the alarm will be removed from the list of active alarms.

When no alarms are active, the front panel LED is in the Normal state (continuous green) and the System Status (Home) Screen Message Window reads All Functions Normal (Item 2 on page 5).

An active Probe Out or Low Temperature Warning will inhibit all level alarms (Max Product, Overfill, Low Product, Delivery Needed, and High Water).

Information on Alarm States

Active Alarm

When an alarm goes active, the console's internal beeper activates, the alarm relay activates (if enabled), the front panel LED flashes red, and the Screen's Message Window (item 2 on page 5) displays an alarm message. In the case of multiple alarms, the Message Window will automatically scroll through the active alarms. In the case of an alarm assigned to autodial, the console dials out and establishes a connection with the remote host. The host can then send requests to the console to determine the reason for the call.

Acknowledging an Active Alarm

When an alarm is active, the user can turn the beeper off and deactivate the alarm relay by touching the ALARM Button (Item 3 on page 5). The front panel LED will stay in the ALARM state and the alarm will remain in the active alarm list until the alarm returns to normal state. If the alarm is inactive but not acknowledged, it will remain in the alarm list and the beeper and alarm relay (if enabled) will remain active until it is acknowledged.

Returning to Normal State

With any alarm when an out-of-limit condition(s) is corrected, or a faulty device is replaced with a properly operating one, the alarm is automatically cleared. To clear a failed leak test alarm, a passing leak test must be run.

In-Tank Alarm Information

Max Product Alarm

If the product level volume exceeds the Max Product value, the Max Product Alarm will activate. If the alarm is active and the product level volume is lower than the Max Product value by at least 0.005 times the full volume capacity or 10 gallons [37.8 L] (whichever is greater), the alarm will deactivate. The Max Product value is entered as a volume with the default value equal to 0. If the Max Product value is equal to 0 or the full tank volume capacity, the alarm is disabled. An active Probe Low Temperature Warning will disable the alarm.

Overfill Alarm

If the product level volume exceeds the Overfill Alarm threshold and there is a delivery in progress, the Overfill Alarm will activate. When the delivery stops, the alarm will deactivate. The Overfill alarm value is entered as a percentage with the default value equal to 0%. An overfill threshold value of 0% disables the alarm. The overfill alarm threshold is referenced to the Max Product value. If the Max Product value is 0, the overfill value is referenced to the Full volume capacity. An active Probe Low Temperature Warning will disable the alarm.

Low Product Alarm

If the product level volume is less than the Low Product threshold, the Low Product Alarm will activate. If the alarm is active and the product level volume is higher than the threshold by at least 0.005 times the full volume capacity or 10 gallons [37.8 L] (whichever is greater), the alarm will deactivate. The Low Product value is entered as a volume with the default value equal to 0. If the value is equal to 0, the alarm is disabled. An active Probe Low Temperature Warning will disable the alarm.

High Water Alarm

If the water level height continuously exceeds the High Water threshold for a period exceeding 3 minutes, the High Water Warning will activate. The high water alarm will not activate if there is a delivery in progress. If the alarm is active and the water level height is lower than the threshold by at least 0.2 inches (5 mm), the alarm will deactivate. The High Water value is entered as a height with the default value equal to 0. If the value is equal to 0, the alarm is disabled. An active Probe Low Temperature Warning will disable the alarm.

Probe Out Alarm

If the console is not reliably communicating with the probe, the Probe Out alarm will activate.

Invalid Fuel Height

If the water float and the product float are too close together to provide reliable height data, the Invalid Fuel Height alarm will activate.

Probe Low Temperature Warning

Standard Probe: If the Probe is reporting a temperature lower than -4°F (-20°C), the Low Temperature warning will activate. If the alarm is active and the temperature rises above 0°F (-17.7°C) the alarm will deactivate.

Low Temperature Probe: Alarm -40°F (-40°C), Clear -36°F (-37.7°). When the low temperature warning is active the High Water, Low Product, Max Product, Delivery Needed, and Overfill alarms are disabled.

Delivery Needed Alarm

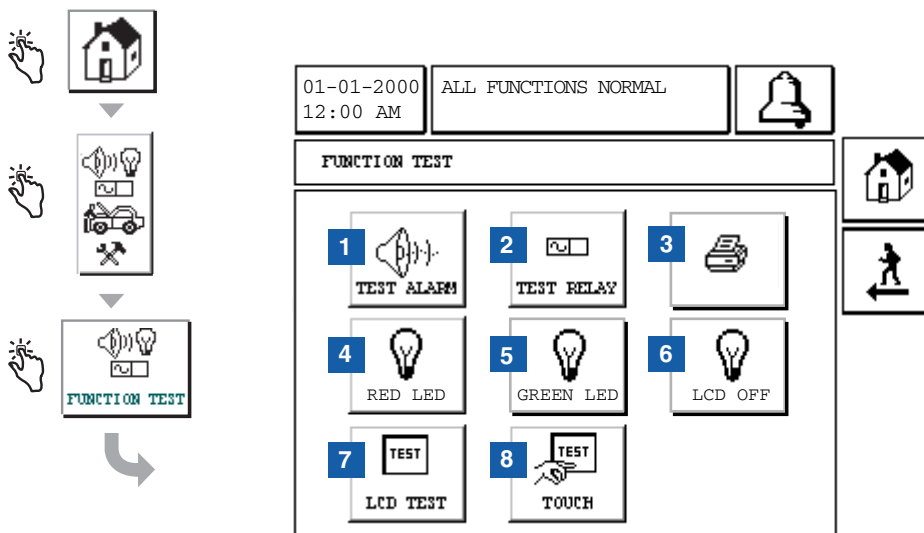
When the tank's product level drops below the preset limit, the Delivery Needed alarm will activate.

Leak Test Alarm

When a Gross, Periodic, or Annual leak test fails a Gross, Periodic, or Annual Leak Test Alarm will activate. To clear a failed leak test alarm, a passing leak test must be run.

Diagnostic Screens

Function Test Menu Screen

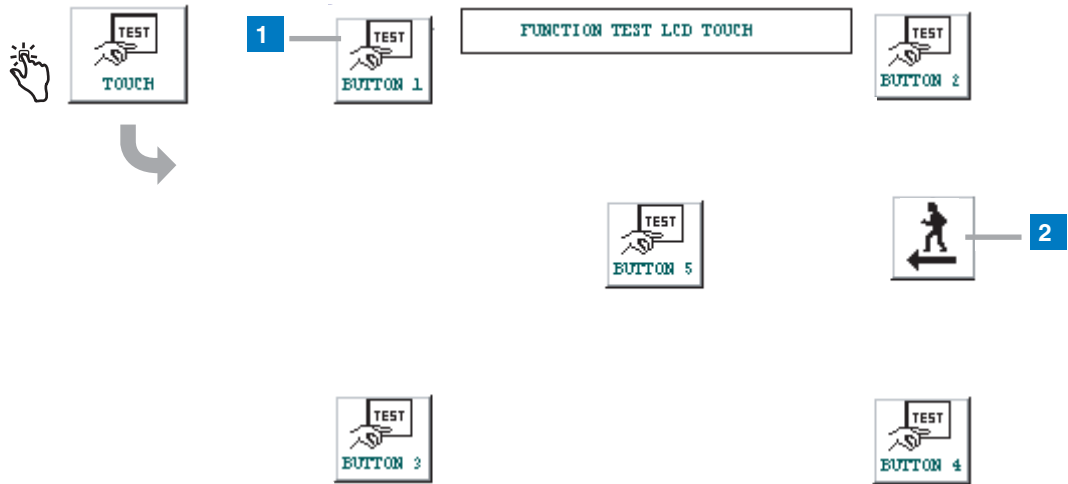


Legend for numbered boxes

This screen displays System Test Functions.

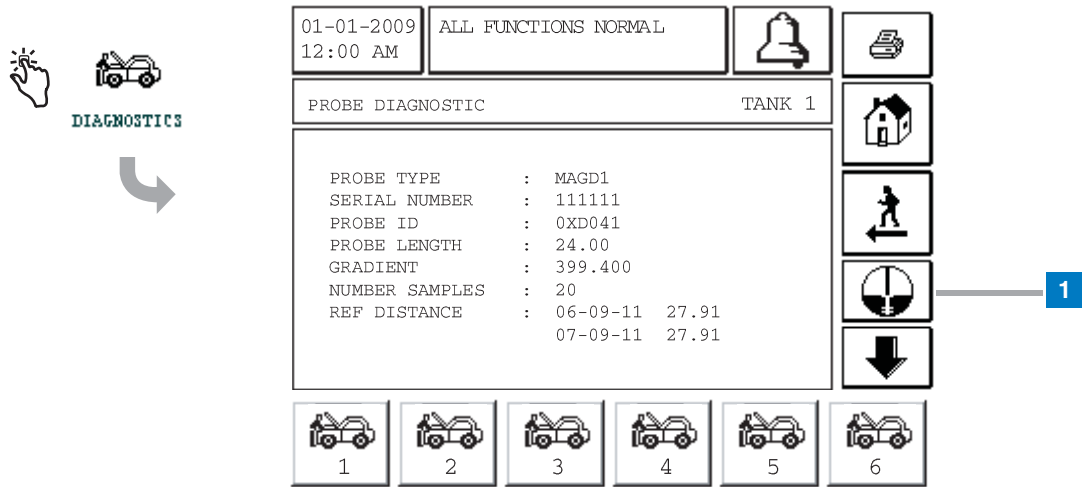
- 1 TEST ALARM button - Touch and the console beeper will beep.
- 2 TEST RELAY button - Touch and the relay is activated for 5 seconds.
- 3 Printer button - Touch and a test line will print to a connected printer.
- 4 RED LED button - Touch and the red front panel LED turns On for several seconds.
- 5 GREEN LED button - Touch and the green front panel LED turns On for several seconds.
- 6 LCD OFF button - Touch and the Display Screen backlight is turned Off. Touch this button again to turn the Display Screen backlight back On.
- 7 LCD TEST button - Touch and a video test pattern will run for several seconds and then clear.
- 8 TOUCH button - Touch to display the LCD Touch Test Screen (page 67).

LCD Touch Test Screen



This screen displays 5 test buttons (e.g., item 1) around the display. Touch one of these buttons and a message appears showing that button's corresponding x/y coordinates and a look up list with the correct coordinates for all 5 buttons). Touch the Back button (item 2) to return to the Function Test Menu Screen.

Probe Diagnostic Screen



Touch the down arrow to view available probe temperature data. To view another tank's probe diagnostics, touch the desired tank's Diagnostic button at the bottom of the screen. Touch the Density button (1) to view the Density Offset Menu screen (see page 69) which will display if there are any tanks that are active, configured and have a density probe.

Example Report Printout - Probe Diagnostic Report

SOFTWARE VERSION 349nnn-nnn-n



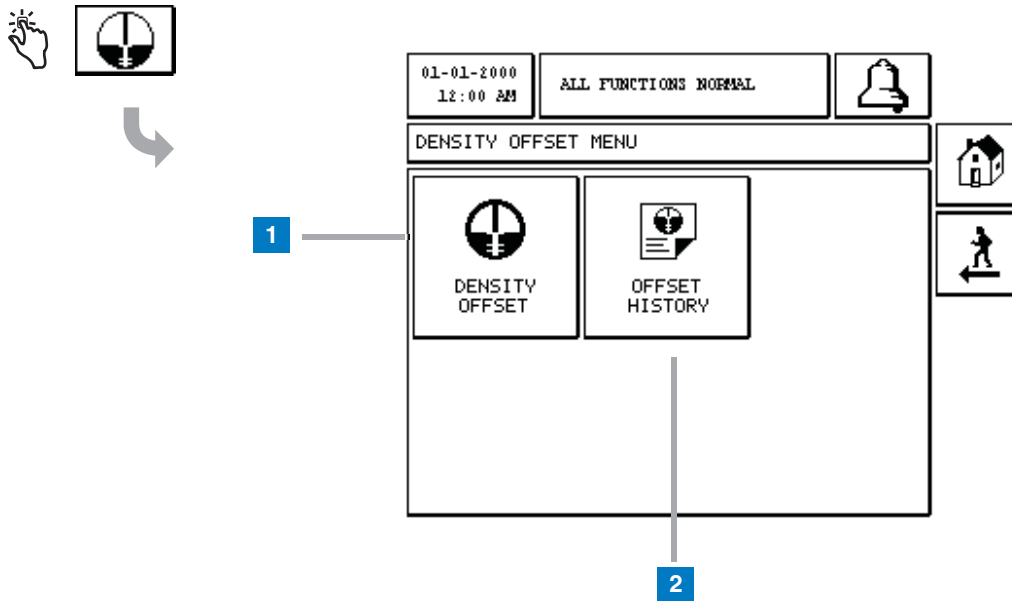
TANK	:	1	2	3
PROBE TYPE	:	MAG 1	MAG 1	MAG 1
SERIAL NUMBER	:	168809	50069	50069
PROBE ID	:	0XC000	0XC000	0XC000
PROBE LENGTH	:	30.00	18.0	18.0
GRADIENT	:	354.520	351.000	351.00
NUMBER SAMPLES	:	20	20	20
SAMPLES READ	:	47357	4730	4729
SAMPLES USED	:	47348	4706	4704
REF DISTANCE	:	08-21-08 102.00	08-21-08 102.00	08-21-08 102.00
		08-27-08 102.01	08-27-08 102.01	08-27-08 102.01
REF DISTANCE	:	08-21-08 102.00	08-21-08 102.00	08-21-08 102.00
		08-27-08 102.01	08-27-08 102.01	08-27-08 102.01
TEMP 6	:	72.6	76.9	71.2
TEMP 5	:	72.1	76.6	70.8
TEMP 4	:	70.9	76.1	70.3
TEMP 3	:	69.4	75.9	70.0
TEMP 2	:	68.3	75.8	69.7
TEMP 1	:	67.6	75.6	69.5
TEMP 6 - TEMP 5	:	0.5	0.3	0.4
TEMP 5 - TEMP 4	:	1.3	0.5	0.5
TEMP 4 - TEMP 3	:	1.5	0.2	0.3
TEMP 3 - TEMP 2	:	1.1	0.1	0.3
TEMP 2 - TEMP 1	:	0.7	0.2	0.2
COUNTS 00	:	001319	001405	001405
COUNTS 19	:	0X0000	0X0000	0X0000

Availability of Probe Data

Diagnostic probe data for configured tanks or for active tanks will be available in the Probe Diagnostic Screen above, in printed reports, and in serial commands. An active tank is defined as a tank that has a probe that is communicating with the system. If the tank is configured but not active, all data will be zero and the probe type will be unknown.

When the software identifies probes that do not have temperature measurement capability, it will inhibit temperature related data. For probes that do not have water measurement capability, it will inhibit water related data.

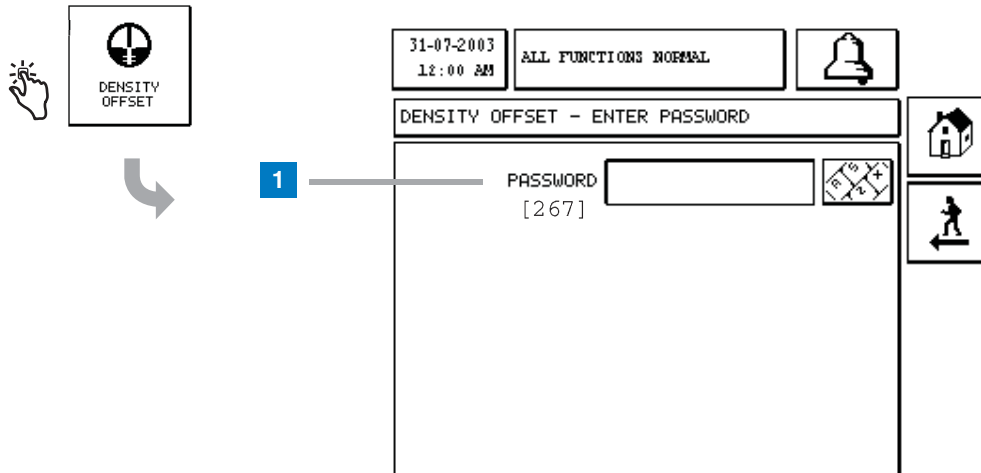
Density Offset Menu Screen



Legend for numbered boxes

- 1 Density Offset button - touch to display the Density Offset - Enter Password Screen.
- 2 Offset History button - touch to display the Density Offset History Screen.

[267] Density Offset - Enter Password Screen



Legend for numbered boxes











- 1 Password [267] - If the Density Password has not been setup on the System Setup Security – Density Password screen (see page 15) then the Density Offset – Enter Password screen will display “NEED TO SET UP A DENSITY PASSWORD” and the user will not be able to enter the Density Password.

When the user enters the password, each character will be displayed as an asterisk on this screen and on the keypad screens. If the entered password is correct, the Density Offset screen will be displayed. If the entered password is incorrect then the message “PASSWORD IS INCORRECT, RE-ENTER” will be displayed.

After a user enters the Density Password, it doesn't have to be re-entered if the user stays on the following screens:

- Density Offset Menu screen
- Density Offset screens
- Density Offset History screen

Density Offset Screen 1

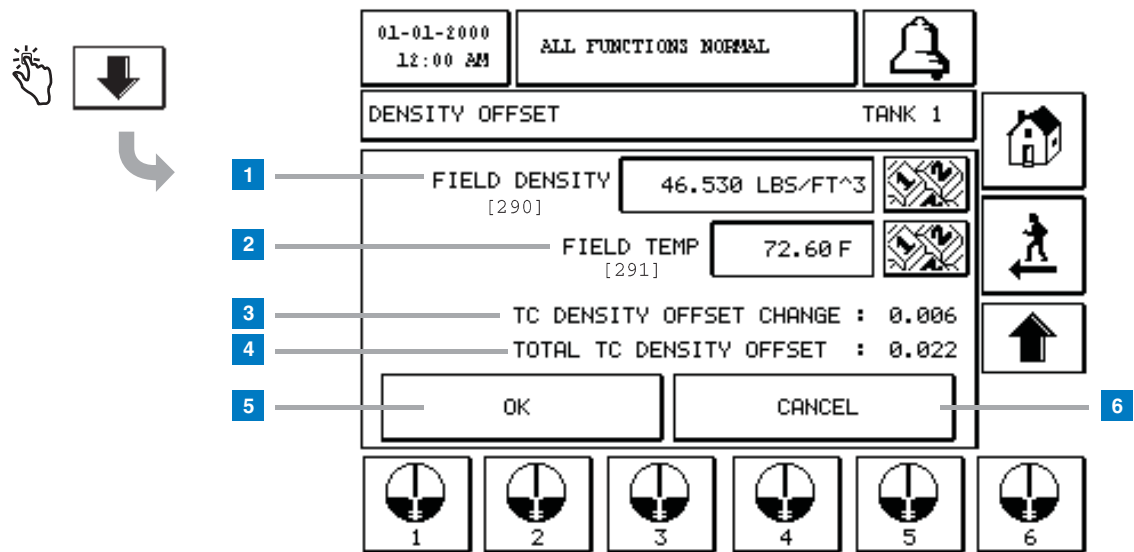
01-01-2000 12:00 AM	ALL FUNCTIONS NORMAL				
DENSITY OFFSET		TANK 1			
<div>TLS DENSITY : 46.524 TLS TEMP : 72.59 TLS TC DENSITY : 46.949</div>		  			
 1	 2	 3	 4	 5	 6

The data on this screen is not refreshed unless:

- 1 The user leaves the Density Offset screens
- 2 The user switches tanks
- 3 The user creates a new Density Offset by pressing the OK button on the second Density Offset screen.

Tank buttons on the button ribbon of both of the Density Offset screens will only be displayed for tanks that are configured, active and have a density probe.

[290, 291] Density Offset Screen 2



Legend for numbered boxes

The second Density Offset screen allows you to enter field measured density [290] and temperature [291]. When you first enter this screen, Field Density (1) and Field Temp (2) will be blank, and TC Density Offset Change (3) and Total TC Density Offset (4) will display a '-' which indicates they have yet to be calculated.


After entering a Field Density and Field Temp, a value will display for both the TC Density Offset Change and the Total TC Density Offset. If you press the OK button (and the Total TC Density Offset is in range +/- 0.0625 LBS/FT³) a new Density Offset will be created and the values on this screen will be cleared. You can view this new density offset record in the Density Offset History screen.


After you enter a Field Density and/or a Field Temp you can press the Up Arrow button to go to the first Density Offset screen and keep the entered field data. If you leave these two Density Offset screens or you switch tanks then the entered field data will be cleared.

Note: If you have not entered a Density Float Serial Number (see page 46) then the TC Density Offset Change and the Total TC Density Offset will not be calculated when the Field Density and Field Temp are entered.


Touch the OK button (5) to accept Field Density/Field Temp entries or the Cancel button (6) to cancel your entries.

Density Offset History Screen







OFFSET HISTORY



01-01-2000
12:00 AM

ALL FUNCTIONS NORMAL







DENSITY OFFSET HISTORY


TANK 1

DATE / TIME : 08-09-11 9:10


	TLS	FIELD	TOTAL
DENSITY :	46.524	46.530	
TEMP :	72.59	72.60	
TC DENSITY :	46.949	46.955	
TC REF TEMP :	59.00	59.00	
TC OFFSET :	0.016	0.006	0.022









1




2



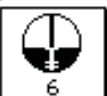
3



4



5



6

This screen will display the most recent Density Offset record. If a tank does not have a Density Offset record then "NO DATA" will be displayed on the screen. Tank buttons on the button ribbon will only be displayed for tanks that are configured, active and have a density probe.

Label Code Index

Table 6 and Table 7 are included to help non-English speaking users find translations of all English labels used in the TLS2 Setup screens. Beneath each label is a unique code in brackets, e.g., [101]. This code is listed in the tables below and points to every Setup Screen in this manual where the label is used.

Table 6: Tank Setup Label Codes

Label Code	Label	Where Used
101	Max Product	page 47
102	Overfill	page 47
103	Delivery Needed	page 47
104	Low Product	page 47
105	High Water	page 48
106	Delivery Delay	page 48
107	Ann Leak Test Min	page 48
108	Per Leak Test Min	page 48
109	Gross Test Fail	page 49
110	Periodic Test Fail	page 49
111	Annual Test Fail	page 49
112	Test Rate	page 51 and page 55
113	Quick Mode	page 51
114	Test Duration	page 51 and page 55
115	Confirm	page 52
116	Frequency	page 50
117	Date/Day	page 50
118	Time	page 50
119	Configure	page 38
120	Prod Label	page 38
121	Manifold Status	page 38
122	Diameter	page 41
123	Full Volume	page 41
124	Tank Profile	page 41
125	Thermal Coeff	page 43
126	Tank Tilt	page 43

Table 6: Tank Setup Label Codes

Label Code	Label	Where Used
127	Float Size	page 43
128	Stick Offset	page 43
129	Test Method	page 55
130	Test Control	page 55
131	Density Code	page 46
132	Density Float S/N	page 46
133	GOST Vol Correction	page 46
320	Delivery Completed	page 25

Table 7: System Setup Label Codes

Label Code	Label	Where Used
201	System Language	page 9
202	Units	page 9
203	Serial Language	page 9
204	Header 1	page 10
205	Header 2	page 10
206	Header 3	page 10
207	Header 4	page 10
208	Comm 1 Password Enable	page 13
209	Comm 1 Password	page 13
210	Comm 2 Password Enable	page 13
211	Comm 2 Password	page 13
212	Date	page 16
213	Time	page 16
214	Time/Date Format	page 16
215	Shift 1	page 20
216	Shift 2	page 20
217	Shift 3	page 20
218	Shift 4	page 20
219	Daylight Savings	page 21

Table 7: System Setup Label Codes

Label Code	Label	Where Used
220	Start Date	page 21
221	Start Time	page 21
222	End Date	page 21
223	End Time	page 21
224	Phone Number	page 22
225	Retries	page 22
226	Retry Delay	page 22
227	Max Product	page 23
228	Overfill Limit	page 23
229	Delivery Needed	page 23
230	Low Product	page 23
231	High Water	page 24
232	Gross Test Fail	page 24
233	Periodic Test Fail	page 24
234	Annual Test Fail	page 24
235	Invalid Fuel Height	page 25
236	Probe Out	page 25
237	Low Temperature	page 25
238	Comm Type	page 27, page 28 & page 33
240	ISO 3166 Country	page 9
239	Handshaking	page 27 and page 28
241	Page Eject	page 28 and page 33
244	Modem Type	page 29
245	Dial Type	page 29
246	Answer On	page 29
247	Dial In	page 33
248	Dial Out	page 33
249	Baud Rate	page 30
250	Parity	page 30
251	Data Length	page 30

Table 7: System Setup Label Codes

Label Code	Label	Where Used
252	Stop Bits	page 30
253	Printer Lang	page 28 and page 33
254	TC Density	page 35
256	Alarm Relay	page 34
257	TC Reference	page 35
258	Print TC Volume	page 35
259	H-Protocol Format	page 36
260	Euro Protocol Prefix	page 36
261	Stick Height Offset	page 36
262	Leak Test Format	page 36
263	Old Password	page 14 and page 15
264	New Password	page 14 and page 15
265	Confirm New	page 14 and page 15
266	Password	page 7
267	Password	page 38 and page 70
290	Field Density	page 72
291	Field Temp	page 72
320	Delivery Completed	page 25
321	Autodial Confirm	page 22
500	Shift Close Method	page 19
501	Shift Close Timeout	page 19
502	Inventory Log Time	page 19
503	Inventory Log Interval	page 19
550	Shift Close Event	page 26
551	Density Warning	page 26
552	Density High Limit	page 49
553	Density Low Limit	page 50

