

ProGauge

ProGauge MagLink LX 4, LX Plus & LX Ultimate Operator Manual

Part Number: M2052

Revision: 6



MagLink LX 4, LX Plus & LX Ultimate

DFS Worldwide Brands





IMPORTANT: Before you use this manual, make sure you have the most recent revision. Look at the revision of this document to make sure it agrees with the most current revision found in the FMS Technical Library. Download the latest revision if necessary.



IMPORTANT: If you have an installation in an area that has possible internet connectivity issues, it is recommended to either print or download these manuals to a mobile device (mobile phone, tablet or iPad) before you go to the installation site.



READ CAREFULLY: OPW Fuel Management Systems and Dover Fueling Solutions cannot be held responsible for installations, configurations or use of its products that does not comply with the most recent documentation available.



NOTE: It will be necessary to have Single Sign-On (SSO) credentials to get access to manuals, instructions, software updates and other important assets. Speak with your FMS sales representative or contact FMS Customer Service at 1-888-679-3835 (1-888-OPW-FUEL) for information. Once you have been approved for SSO credentials go to the [FMS Technical Library](#) to find the most recent revisions of all manuals and instructions.



NOTE: All references to other manuals and instructions in this manual can be found in the FMS Technical Library. Make sure you have the most recent revision.

Related Manuals

Other related manuals necessary to install, configure, maintain or use this product:

[M2050 LX 4 Installation Manual](#)

[M2050-PLUS LX Plus Installation Manual](#)

[M2051 LX 4 and LX Plus Configuration Manual](#)

[M2052 LX 4 and LX Plus User Manual](#)

[M2054-QS LX 4 and LX Plus Quick Start](#)

[FMM2058-PLS LX Plus Wiring Diagram](#)

[FMM2058-PG LX Plus Wiring With ProGauge](#)



ProGauge is a part of Dover Fueling Solutions.

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Security Best Practices

To prevent unauthorized access or unwanted intrusions into your system, DFS Information Technology strongly recommends that you obey the Security Best Practices that follow:

- Change the default password **immediately** to enhance security. Default passwords are often easy to guess or widely known, making devices vulnerable to unauthorized access.
- Limit access to the system. Access should only be granted on a need-to-know basis.
- Secure all control systems by minimizing their exposure and ensuring they are not accessible from the internet. This is important to prevent unauthorized access.
- Identify the control system network and relocate devices behind firewalls.
- Isolate the system from the business network to enhance security measures.
- Maximize isolation of the different networks (segmentation) by firewalls, routers, and VPN solutions to largely exclude attack paths to the Industrial Control System network.
- When remote access is required, use secure methods, such as Virtual Private Networks (VPNs) or known secure remote access management tools. Use the latest version of the tools and implement the updates as recommended.

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Section 1 - Preface

Start Italiana S.r.l. has made every effort possible to see that this document is complete, accurate and updated. With every revision of the console, the related information is added to the document. Start Italiana S.r.l. reserves the right to make unannounced improvements and/or changes in the product and/or associated programs. Start Italiana S.r.l. is not liable for damages of any kind, including those resulting in the document, including typographical errors.

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Section 2 - General Warnings

Carefully read the instructions in this manual before you do the installation procedures.

Only approved persons are permitted to install this equipment and configure the console.

The manufacturer is not responsible for operations that are not included in this manual.

The manufacturer is not liable in regard to competent bodies for changes to the equipment and software that are not approved.

In case of failure or defect, refer directly to an authorized service provider or manufacturer.

The manufacturer is not liable for injury and/or damage to persons and/or property and/or pets caused by the failure to obey safety instructions.

All approved personnel must know all safety requirements in this manual, the configuration manual and the user manual.

Refer directly to an approved service provider or manufacturer for questions about the operation of the equipment.



IMPORTANT: You must read and obey all safety instructions in this manual before you use this equipment.



WARNING: Incorrect use of this equipment that does not agree with the instructions in this manual can cause a risk to safety.



Section 3 - Introduction

This manual was prepared in accordance with IEC 82079-1 standards. "Preparation of instructions for use - Structuring, content and presentation - Part 1: General principles and detailed requirements and according to the ATEX Directive 2014/34/EU concerning equipment and protective systems intended for use in potentially explosive atmospheres."

This manual gives all necessary information about the operation of the MagLink LX consoles.

IMPORTANT: This manual must be used together with the related product manuals:



- » M2050 LX4 Installation Manual / M2050-PLUS MagLink LX Plus Installation Manual / M2060 LX Ultimate Installation Manual
- » M2051 LX 4, LX Plus & LX Ultimate Configuration Manual

You must install the console as shown in M2050 LX4 Installation Manual / M2050-PLUS MagLink LX Plus Installation Manual / LX Ultimate Installation Manual, configure the console as instructed in the M2051 LX 4, LX Plus & LX Ultimate Configuration Manual, and use the console in the field as shown in this manual.

WARNING: This device must not be discarded with household waste. This device is labeled in accordance with European Directive 2012/19/UE concerning used electrical and electronic appliances (waste electrical and electronic equipment – WEEE).



This guideline gives the methods for the return and recycling of used electronic devices as applicable throughout the EU. To return your used device, use the return and collection systems available to you.

The battery used in this device may present a risk of fire or chemical burn if mistreated. Do not disassemble, heat above 50°C or incinerate.



The table that follows lists reference data of the manufacturer:

<i>Data</i>	<i>Description</i>
Name	START ITALIANA S.r.l. Via Natta 6
Address	20823 Lentate Sul Seveso, (MB) Italy
Telephone	+39 0362 1581465
Fax	+39 0362 1581464

<i>Data</i>	<i>Description</i>
Website	www.startitaliana.com
e-Mail	support@startitaliana.it



NOTE: The units of measurement contained in this manual refer to a specified selection by the user. Refer to the for more information on how to set units of measure.

Section 4 - General Description

This console is used to monitor probe levels and gives tank alarm notifications. The console can hold up to 16 on-board probes, four (4) on-board relays with six (6) inputs and an external expansion module that can hold up to four (4) expansion cards.



NOTE: A maximum of two (2) MagDirect consoles with 8 probes each can be added.



NOTE: Each expansion card can have 8 relay outputs, 8 digital inputs or 4-20mA. These cards can be put together so that the system can have 32 relays and 0 inputs, 32 inputs and 0 relays and a mixture of both in increments of 8.

The console can interface with a site's FCC/POS through serial or Ethernet connection.

The console has a resistive type touchscreen that can be used with fingers (also with gloves), stylus pens for touchscreens and other applicable tools. To use the screen, it is necessary to contact the screen and apply a light force.

The table below shows the technical characteristics of the LX 4 and LX Plus consoles:

<i>MagLink LX Technical Characteristics LX 4 and LX Plus</i>	
<i>Characteristic</i>	<i>Value</i>
Power supply	100 - 240 V~, 50-60 Hz
Consumption	15 VA
Operating temperature	(-10 - +50) °C
Relative humidity	(5 - 95)%, non-condensing
Number of probes	Up to 32 on LX 4 (16 probes through the internal barrier and 16 probes with added MagDirect modules), up to 12 on LX Plus
Number of ON-OFF external sensors	Up to 32 non-discriminating sensors, up to 16 discriminating sensors
Number of ON-OFF internal sensors	6 (only when Dipswitch 2 is ON) LX 4 console ONLY.
External relay outputs	Up to 32
Internal relay outputs LX4 model	4
Internal relay outputs LX Plus model	2
Lower power of the relay output	0,5 A, 33 V~, or 2 A, 30 V DC
Output power for the probes	12 V DC, 100 mA per output for each probe, connectors MR3 MR4 (up to 8 probes for each connector)
Serial communication of the probes	RS485
Host communication (management)	RS232 and TCP/IP
Printer communication	RS232 and USB
Integrated web server for remote configuration, consultation, communication, and emails as well as HOST COMMUNICATION	TCP/IP
Case	Plastic
Protection	IP40
Dimensions: MagLink LX 4 and LX Plus	265 x 190 x 95 mm

The table below shows the technical characteristics of the LX Ultimate console:

<i>MagLink LX Technical Characteristics LX Ultimate</i>	
<i>Characteristic</i>	<i>Value</i>
Power supply	100 - 240 V [~] , 50-60 Hz
Consumption	15 VA
Operating temperature	(-10 - +50) °C
Relative humidity	(5 - 95)%, non-condensing

<i>Probes and Sensors</i>	<i>1 x ISB</i>	<i>1 x ISB + 1 VSmart</i>	<i>1 x ISB + 2 VSmart</i>
Maximum number of barrier points	48	144	240
- Number of supported probes	12	32	32
- Number of supported environmental sensors (excluding optical sensors)	48	144	240
- Number of supported environmental sensors @ total capacity for probes	0	16	112
Number of PLLD sensors and STP	16	16	16
Internal relays	2	2	2
External relays (OM4 Module) - 4 relays / module	4		
External VSmart Module - 2 ISB / module	4		
External DAS PLLD Module - 8 PLLD sensors / module	2		
External LIM STP Controller - 4STP / controller	4		

<i>Characteristic</i>	<i>Value</i>
Lower power of the relay output	0,5 A, 33 V [~] , or 2 A, 30 V DC
Output power for the probes	12 V DC, 100 mA per output for each probe, connectors MR3 MR4 (up to 8 probes for each connector)
Serial communication of the probes	RS485
Host communication (management)	RS232 and TCP/IP
Printer communication	RS232 and USB

Characteristic	Value
Integrated web server for remote configuration, consultation, communication, and emails as well as HOST COMMUNICATION	TCP/IP
Case	Plastic
Protection	IP40
Dimensions: MagLink LX Ultimate	400 (W) x 280 (H w/cable) x 120 (D) mm

4.1 Compatible Probes

The probes in the list below are compatible with the MagLink LX:

- XMT EXD 485
- XMT SI 485
- XMT RF (an RF receiver is necessary)
- DMP-IS-485
- 924B (FMS) - **(924B probes are only compatible with LX Plus/Ultimate)**



NOTE: ALL the floats used on probes have more than 10 years of life time in the fuel tanks

Auxiliary equipment that can be used with the MagLink LX console include:

- Expansion cards, up to 32 relays and 0 inputs, up to 32 inputs and 0 relay, and a mixture of both in increments of 8.
- Local Printer
- VSmart Module (LX Plus and LX Ultimate only)
- OM4 Module (LX Plus and LX Ultimate only)
- LIM Module (LX Plus and LX Ultimate only)

4.2 Correct Use

Only use the MagLink LX console for use as given in this manual. The console must be installed in a safe area. The console includes an intrinsic safety barrier and two (2) channels (BRA-2SIP) to connect XMT-SI-485 and DMP-IS-485 probes.

The table below shows the characteristics of use of the intrinsically safe barrier contained in the console:

<i>MAGLINK LX Features (barrier)</i>	<i>Description</i>
Group (area of use)	II (Surface industries different from mines)
Category and type of potentially explosive atmosphere	(1) G
Protection mode	ia
Group of substances (gases, vapors or mists)	IIB

The specifications of use for console security and for the Barrier are given in this manual and on the product label.



IMPORTANT: Safety instructions constitute an attachment to this manual and users must acknowledge it before using the equipment.



WARNING: The Console must not be used in hazardous areas (because there is a risk of fire and explosion). The probes of the XMT-SI-485 family are installed in hazardous areas and must be connected to the Barrier contained in the console.



4.3 Incorrect Use

Incorrect and alternative uses include:

- **Resistive touch screen:** Only use fingers or special tools made for resistive touchscreens to select screen options.
- **USB and USB Port devices:** Only use this port for firmware updates, console backup and USB printer connection.
- **Serial ports:** Only use the serial ports for printer and PC connection with management programs that interface with the protocols given by Start Italiana S.r.l.
- **Network cable:** Only use the network cable connection for console configuration, and local network connections (Refer to the M2051-EU Configuration manual).

Section 5 - Power ON/OFF



IMPORTANT: Only authorized/trained personnel can energize the console and must obey the manufacturer's instructions. Operation must obey the safety instructions shown in the Installation Manual (M2050-EU).

To energize the console:

1. Make sure that the power button is in the OFF position (0).
2. Connect the power cable.
3. Connect the corporate network cable, if necessary.
4. Push the power button to the ON position (1).

If the console is not configured when it is energized it will cause an alarm because it does not communicate with a tank. Push the **red arrows** up or down until you see the page "ALARM LOG." Push the **ACK** button to stop the alarm.

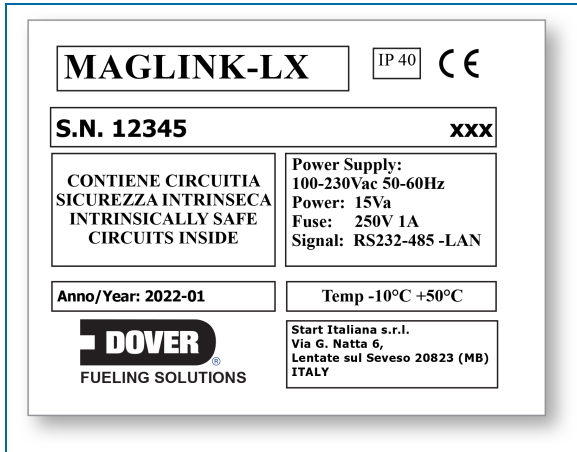
To make changes to the console configuration, refer to the MagLink LX Configuration Guide M2051-EU.

To de-energize the console, push the power button to the OFF position.

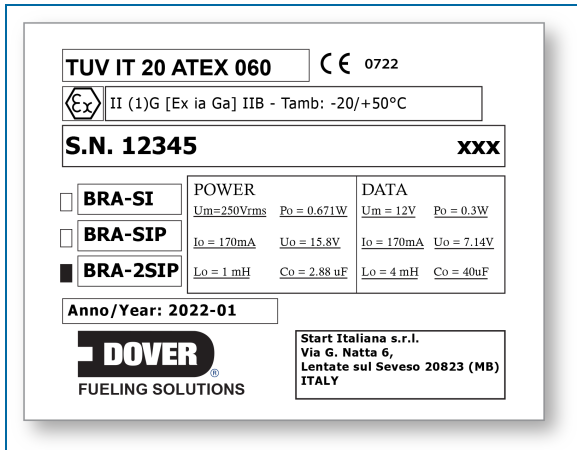


NOTE: The MagLink LX console uses an industrial grade SD card. Safe data storage is available if there is power loss.

Section 6 - Product Labels



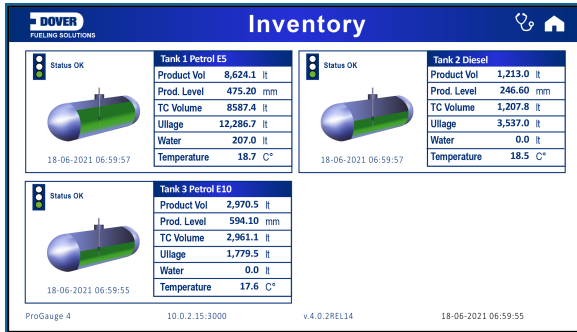
- Name and address of the manufacturer
- CE marking with the Notified Body
- Product Name
- The "Caution" symbol (0434B of 01/2004), according to ISO 7000
- Serial number
- Year of production
- Power Supply(VAC and Hz)
- Power consumption (VA)
- Operating temperature (°C)
- Ingress protection (IP grade)
- Fuse rating
- Indication that inside there is intrinsically safe circuit



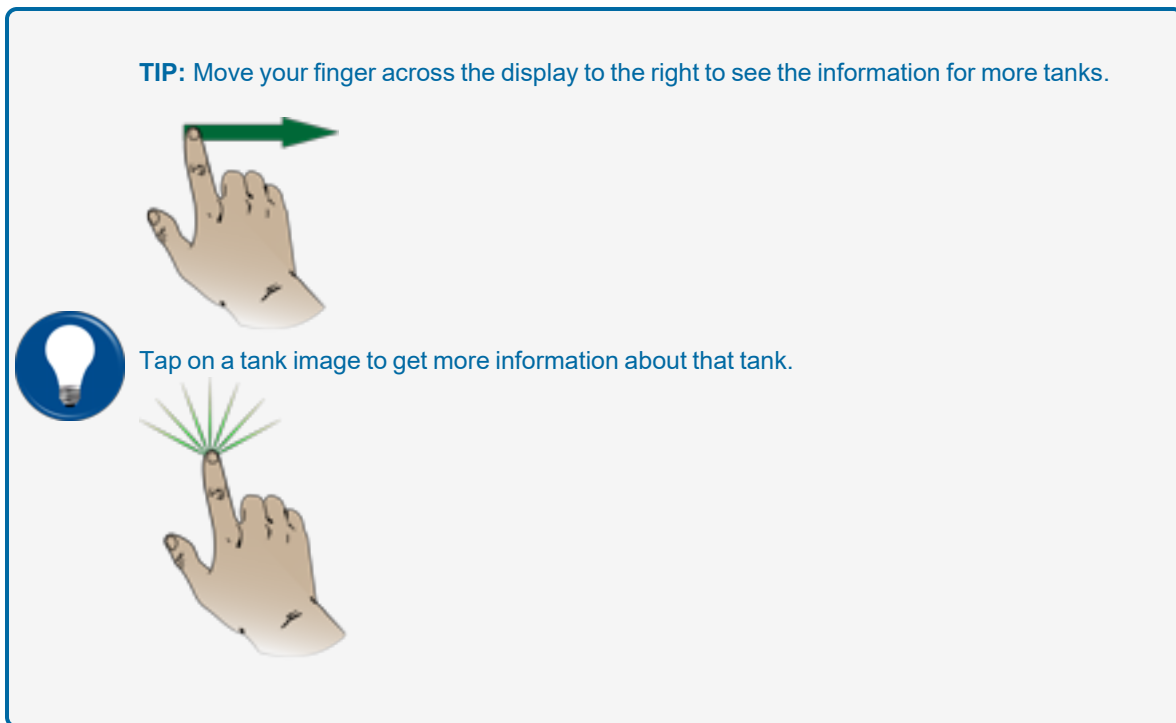
- Name and address of the manufacturer
- Equipment Type (BRA-SIP, or BRA-2SIP)
- ATEX Reference number of the certificate
- ATEX Marking: Ex II (1) G [Exia] IIB FISCO power supply UM=250 V [Exia] IIB
- Serial number
- Electrical data

Section 7 - Graphical User Interface

7.1 Inventory



The Inventory page shows information related to tanks. Up to four (4) tanks can be shown on a page.



A screen will open that shows information related to the categories in the tables that follow:

Volume	
Product	Gross Product volume at the current temperature (includes the water volume)
TC Volume	Compensated product volume temperature (at 15° C or 20° C: refer to the configuration)

Volume

Ullage	Empty space calculated from the safe working capacity (refer to the configuration)
Capacity	The total capacity of the tank (refer to the strapping table).



NOTE: The density data in the table that follows will show only if a Density Measurement sensor is installed.

Info

Density	The density at current temperature.
Tc Density	The density at the reference temperature.
Weight	The weight of the product calculated by the measured density.
Product Level	The current product level.

Temperature

Current	The current product temperature.
Compensated	The temperature setting that is used for volume compensation (refer to the configuration).

Water



Water Vol.	The current water volume.
Water Level	The current water level.



NOTE: The Density value will be the same as the TC Density unless there is a Density Float installed on the probe. The console will show the density value at the current temperature only when there is a Density Float installed on the probe.

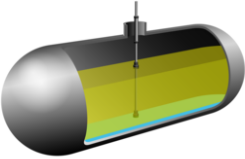
7.1.1 Status Icons

Status OK (Green) No Alarm

DOVER FUELING SOLUTIONS **Inventory detail**   

1 - Tank 1 Diesel (Tank capacity: 22,011.4 litres)

Status Ok
09-12-2021 16:49:07



NO ALARM




Volume		litres	Info	
Product Vol	12,487.2		Density	827.1 Kg/m3
TC Volume	12,415.8		TC Density	831.8 Kg/m3
Ullage	8,423.6		Weight	10,071.766 Kg
Capacity	22,011.4		Prod.level	635.47 mm

Water		Temperature		°C
Water Vol	307.4 litres	Current	21.8	
Water Level	16.27 mm	Compensated	15.0	

ProGauge 4 192.168.1.14:3000 v.4.16.1 Serial: 00001 09-12-2021 13:49:04

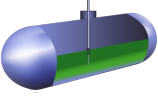
- The "Traffic Light" is green.
- There are no Alarms.
- The NO ALARM button is "grayed out."

Status Alarm HH, H (Red) In Alarm

DOVER FUELING SOLUTIONS **Inventory Detail**   

1 - Tank 1 Petrol E5 (Tank Capacity 22,011.4 litres)

Alarm Water
18-06-2021 07:12:00



ACKNOWLEDGE ALARM

Volume		litres	Info	
Product Volume	8,624.1		Density	760.0 kg/m3
TC Volume	8,587.4		TC Density	760.0 kg/m3
Ullage	12,286.7		Weight	6,369.076 Kg
Capacity	22,011.4		Prod. Level	475.2 mm

Water		Temperature		°C
Water Vol	2,167.1 litres	Current	24.6	
Water Level	158.00 mm	Weight	15.0	

- The "Traffic Light" is red.
- The alarms are HH (High-High) and H (High).
- The color in the related fields is changed to pink.
- The "Acknowledge Alarm" button is On. Push the Acknowledge Alarm button to acknowledge the alarm in the system.

Status Alarm AH, H (Yellow) Alarm Acknowledged

DOVER
FUELING SOLUTIONS

Inventory Detail

1 - Tank 1 Petrol E5 (Tank Capacity 22,011.4 litres)

Alarm Water
18-06-2021 07:11:15

Volume (litres)

Product Volume	8,624.1
TC Volume	8,587.4
Ullage	12,286.7
Capacity	22,011.4

Info

Density	760.0 kg/m3
TC Density	760.0 kg/m3
Weight	6,369.076 Kg
Prod. Level	475.2 mm

Water

Water Vol	1,108.2 litres
Water Level	89.00 mm

Temperature (°C)

Current	18.7
Compensated	15.0

ACKNOWLEDGED

- The "Traffic Light" is yellow.
- The alarms HH (High-High) and H (High) have been acknowledged
- The color in the related fields is changed to yellow.
- The ACKNOWLEDGED button is "grayed out."

TIP: Move your finger down the display to see the next screen. The screen will show the configured tank thresholds and other data from the tank setup.



DOVER
FUELING SOLUTIONS

Inventory Detail

1 - Tank 1 Petrol E5 (Tank Capacity 22,011.4 litres)

Thresholds (mm)

HH	925.00
HH	900.00
L	75.00
LL	50.00
Water	40.00

Settings

Serial	0000008619
Capacity	22,011.4 lt
Max level	1,000.00 mm
Product offset	0.00 mm
Water offset	0.00 mm
Min Water float	0.00 mm
Safe capacity	95.0 %

TIP: Move your finger down the display to see diagnostics information and the Tank Strapping table.



DOVER
FUELING SOLUTIONS

Inventory detail

📄 🩺 🏠

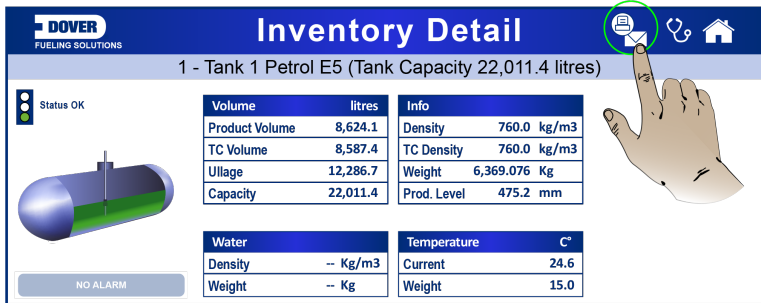
1 - Tank 1 Diesel (Tank capacity: 22,011.4 litres)

Diagnostic [DMP08]		09-12-2021 13:44:27		Strap table [mm] - [litres]	
Data 1	73986.00	Data 6	11	0	0.0
Data 2	29751.00	Data 7	0	1	207.0
Data 3	149165.00	Data 8	0	10	264.7
Data 4	809.600	Data 9	2	20	332.8
Data 5	255			30	413.2
				40	506.3
				50	613.5
				60	731.3
				70	855.5
				80	985.9
				90	1,121.8
				100	1,262.8

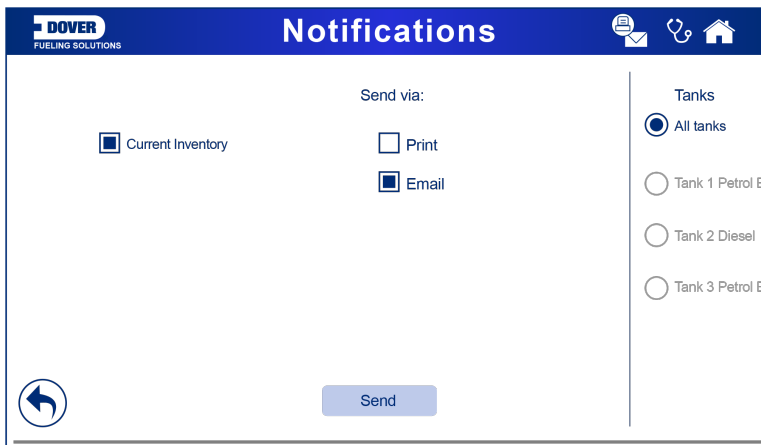
Read diagnostic
Diagnostic
Temperature
Level

ProGauge 4
192.168.1.14:3000
v.4.16.1
Serial: 00001
09-12-2021 13:44:49

7.2 Print/Email Current Inventory On Demand



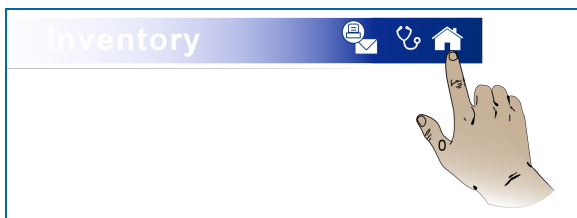
Push the **Email/print** button in the top right of the Tank Inventory Detail" screen.



- Select a radio button on the right panel of the screen for the applicable tanks.
- Select the method to send, Print or Email.
- Push Send


Print will send a print job to a local printer. Email will send an email notification to all configured contacts (see the M2051 LX4 Configuration manual for information about contacts).

7.3 Main Menu



Push the **Home** button in the top right of the Inventory screen to go to the *Main Menu*.

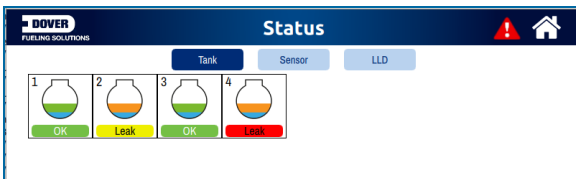


 **NOTE:** The LLD icon is only applicable to the MagLink LX Plus and LX Ultimate consoles.

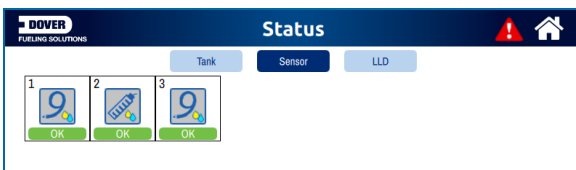
7.4 Status Page

Push the **Status** icon on the *Main Menu*. The display will navigate to the "Status" screen that shows information related to the condition of the Tanks, Sensors or LLD (MagLink LX Plus and LX Ultimate consoles only). Select the applicable button on the screen.

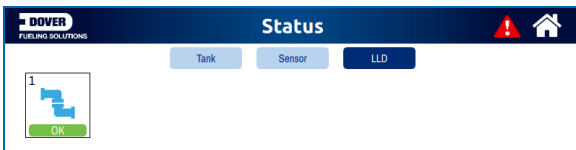
The icons will show in green if there are no alarms. If a tank, sensor or LLD (MagLink LX Plus and LX Ultimate consoles only) is in alarm, its icon will show in red.



Tank Status Page



Sensor Status Page



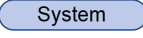

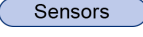





LLD Status Page (MagLink LX Plus and LX Ultimate Consoles Only)

7.5 Calendar



Push the **Calendar** icon on the *Main Menu* and the "Calendar" screen will come into view.

There is a group of icons along the left side of the calendar. These icons are used as filters to select what events are shown on the calendar display.

-  Select this icon to show events related to the console.
-  Select this icon to show events related to tanks.
-  Select this icon to show events related to sensors.
-  Select this icon to show events related to LLDs (for MagLink LX Plus and LX Ultimate consoles only).
-  Select this icon to show deliveries.
-  Select this icon to show alarms.
-  Select this icon to show warnings.
-  Select this icon to show leak tests.

Use the radio buttons along the right side of the calendar to select the applicable tanks.

Push a date box to see information for the events on that date.

7.6 Notifications

Push the **Notifications** icon on the *Main Menu* and the "Notifications" screen will come into view.

Under *Information to send*, select the applicable **type** of information to send.

Under *Send via*, select the **method** used to send the information.

Push the **SEND** button.

Select the **recipients** from the *prompt screen* that shows.

7.7 Leak Test

In this screen the user can configure the tank leak test settings.

Select the **Tank** in the right panel.

Select the tank leak test **type** (0.2 gph or 0.1 gph).

Enter the time **period** and the **minimum volume** that must be in the tank for the test to start (make sure that this parameter agrees with the leak certification of the system).

Select if the test is to start **Now** or you can configure a **start date and time** to start a test **Later**.

7.8 LLD (MagLink LX Plus and LX Ultimate Consoles Only)

Pressure

Running	The pipeline pressure once the STP has stopped running
Dispensing	The pipeline pressure during the dispensing process
Current	The current pipeline pressure

STP

Enabled	Shows whether the STP is blocked or not. In normal condition it will show "Enable=Yes" but if the Leak is detected and the STP has been disabled then it will show "Enable=No".
Hook	Shows the state of the hook signal
Pump state	Shows whether the STP has been confirmed to be ON (feedback signal received)

Alarm Conditions

The alarm conditions are shown next to the traffic light. Possible conditions are:

Ok - No alarm

Disabled - When the pipeline has been disabled via the web configuration

OPEN: the pressure sensor is disconnected from the I/O module (under pressure)

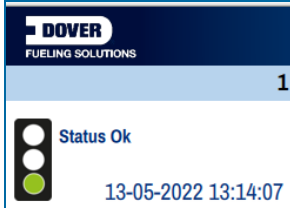
SHORT: the wires from pressure sensor are shorted (overpressure)

NO LINK: there is a problem with communication to the PLLD-DAS or I/O module (wires can be disconnected or the module is not powered)

NO STP LINK: there is a problem with the communication to the LIM (wires can be disconnected or LIM is not powered)

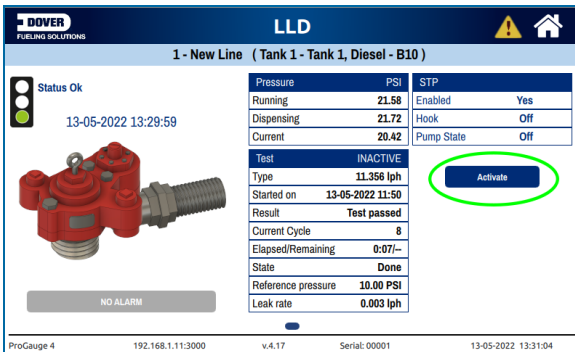
STP CONTROLLER: Two conditions, OFF ERROR when the STP Pump can't be activated (eg broken wires to STP) or ON ERROR when the STP is activated but it cannot be deactivated (e.g shorted wires to STP)

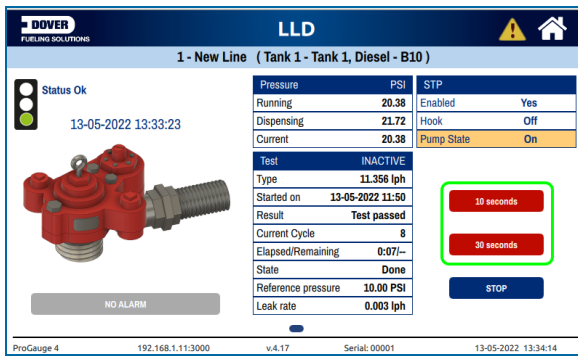
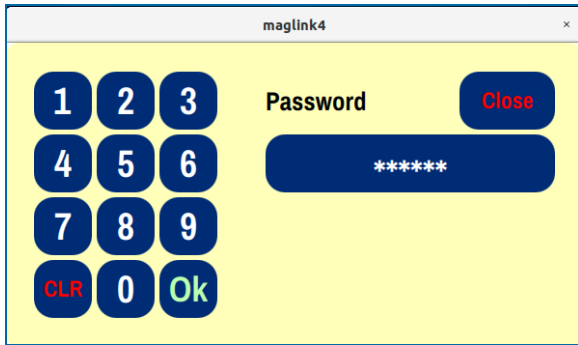
LEAK: test result is "Leak Detected"



7.8.1 Force STP Activation

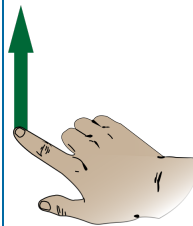
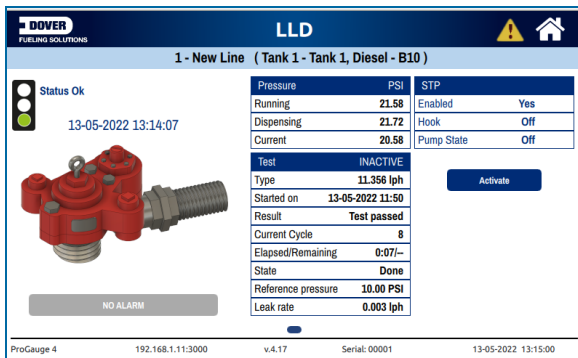
If you select the **Activate** button on the LLD screen, the user will be prompted to enter the 6-digit numeric password. Two buttons **10 seconds** and **30 seconds** will come into view. Select one of these two buttons to force the STP to be activated for 10 or 30 seconds as a way to do a check of the operation of the STP. The sequence of screens is shown below:

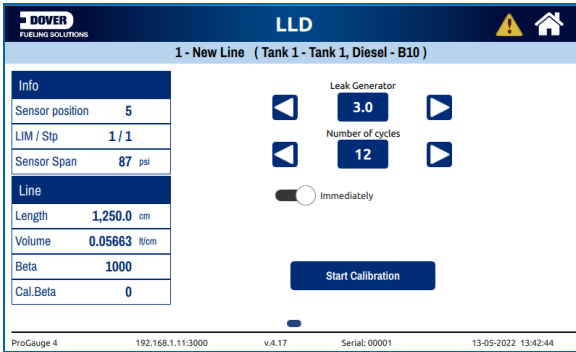




7.8.2 Beta Calibration

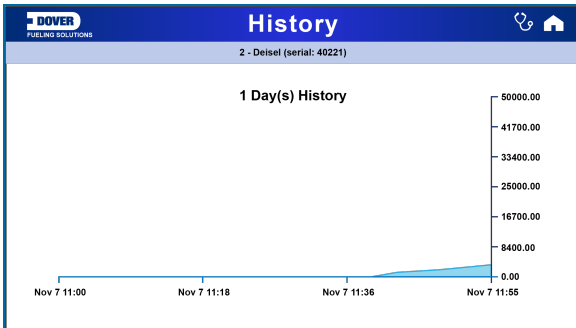
Swipe up on the LLD screen. The screen will change to show the Calibration menu. In the Calibration menu, the system can calculate the Beta pipe stiffness if the user has started a controlled 3.0 gph leak in the pipeline. The console will start and stop the STP multiple times and will collect pressure data to calculate the Beta. The sequence of screens is shown below:





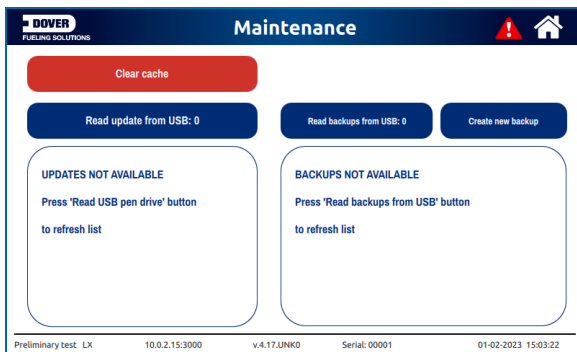
- Set the “Leak Generator” to **3.0 (3.0 gph)** and the “Number of cycles” to **12**.
- Push the **Start Calibration** button. Wait for the calibration cycle to complete.
- The configuration parameters will show in the left panels.

7.9 History



Push the **History** icon on the *Main Menu* and the History screen will come into view. The History screen shows the tank volume over a selected period.

7.10 Maintenance



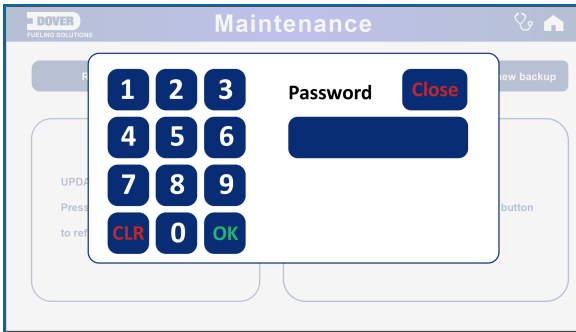
Push the **Maintenance** icon on the *Main Menu* and the "Maintenance" screen will come into view. In this screen you can:

- Use a USB thumbdrive to do software updates:



NOTE: It will be necessary to have Single Sign-On (SSO) credentials to get access to manuals, instructions, software updates and other important assets. Speak with your ProGauge sales representative or use the contact information in the front of this manual to get information.

- Get the update file from Dover Fueling Solutions. Go to: [EMEA Technical Services](#) > ATG Library > ProGauge Consoles > MagLink LX 4 & LX Plus > Software.
- Open the **LX4Plus_xxx_update_pack.zip file**.
- Download the lx4_new.zip file.
- Copy it onto a USB thumb drive.
- Put the thumb drive into the USB port on the console.
- Push the **Read update from USB** button.
- Restore a configuration backup from a USB thumb drive:
 - Put the USB thumb drive containing the backup to the console into the USB port of the console.
 - Push the **Read backups from USB** button.
- **Create new backups** : This will make a backup of the configuration. If a USB thumb drive is put into the USB port of the console, then the backup will be stored to the thumb drive. If there is no USB thumb drive in the console, then the backup will be stored to the SD-card.



Push one of the **buttons** on the "Maintenance" screen. A 6-digit password must be entered before you can proceed.



NOTE: Note: The password is set up on the web configuration page (refer to **Passwords** in the [M2051 LX 4-LX Plus-LX Ultimate Configuration Manual](#)).



REMINDER: Only an Admin user can set or change a password.



TIP: Delete the cache memory: This will help when the console responds slowly to functions or when alarm statuses do not update correctly.

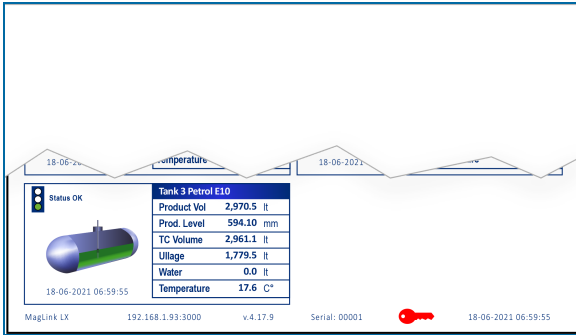
7.11 Shifts



Push the **Shifts** icon on the *Main Menu* and the "Shifts" screen will come into view. The shifts from the last three days will show.

Select the **Open Station** button to manually open/close the site. After the site is closed, the console can monitor the tank for a sudden loss event (a sudden loss threshold must be configured for this).

When the site is closed, a red key will appear at the bottom of the screen. See the illustration below:



Select the **Close shift** button to manually close a shift.

Select the **Last shift** button to send the last shift information to a connected printer.

7.12 Reports



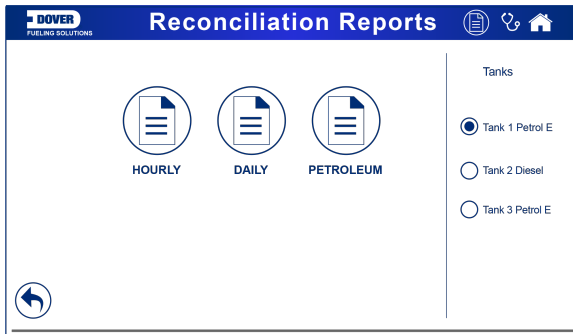
Push the **Reports** icon on the *Main Menu* and the "Reports" screen will come into view. You can make reports for the selections shown in the screen image above.

7.12.1 Sales Report



The sales report shows the daily tank sales for the last seven days

7.12.2 Reconciliation Report



To see a **Reconciliation Report**:

- Select a **Tank** from the panel on the right of the screen.
- Select the report type (Hourly, Daily, Petroleum).

7.12.2.1 Hourly Report

The hourly report shows the loss rate up to the hour. The sales are cumulative up to the hour. The loss/gain from evaporation is calculated on the configured evaporation factor in the ACR tank configuration.

7.12.2.2 Daily Report

START/END TIME	ACCOUNTING (lt/h)	OPENING/CLOSING STOCK (lt)	DELIVERIES (lt)	DELIVERIES VAR (%)	TANK DEPLETION (lt)	PUMP SALES (lt)
10-06-2021 08:19:22		12,003.7				
10-06-2021 08:18:00	-2,768.7	12,002.7	-2,767.7	-	-2,768.7	-

The daily report shows the variance for the day. The “DELIVERIES VAR” field will show the difference between measured delivery volume and bookstock delivery volume (if the bookstock information has been entered into the console. This feature will be available in future software releases).

7.12.2.3 Petroleum Report

DOVER FUELING SOLUTIONS		Petroleum Report	
Note: Report for the last 30 days			
Accounting Var Volume	-6,526.7	It	
Accounting Var Perc	--	%	
Deliveries Volume	8,876.7	It	
Deliveries Var Volume	2,305.5	It	
Deliveries Var Perc	--	%	
Tank Depletion Volume	8,868.2	It	
Pump Sales Volume	--	It	
Operating Var Volume	-8,868.2	It	
OperatingVar Perc	--	%	
Temp Var Volume	-39.2	C°	
Evap Var Volume	--	It	
Water Var Volume	8,883.3	It	
Pump Calib Volume	--	It	
Theft Volume	--	It	
Test Vend Volume	--	It	
Unaccounted Var Volume	-17,711.6	It	
Unaccounted Var Perc	--	%	

The petroleum report shows data for the last 30 days. The console will calculate the variance because of pump calibration, theft volume, test vend volume (as long as the related configuration has been done in the ACR parameters).

7.12.3 Delivery Report

DOVER FUELING SOLUTIONS		Delivery					
Note: Report for the last 7 days							
TANK	START/END TIME	DURATION (min)	OPENING STOCK (It)	CLOSING STOCK (It)	DELIVERIES (It)	START/END WATER (°F)	START/END TEMP (C°)
2	01.10.2020 19.12.49 01.10.2020 19.20.00	7.2	3066.3	4428.6	1362.4	78.1 78.0	26.6 26.6
2	30.09.2020 16.50.03 30.09.2020 16.52.09	2.1	1250.2	3066.1	1816.3	74.2 73.8	27.3 27.4

The delivery report shows all of the tank delivery information for the last seven days.

7.12.4 Leak Report

DOVER FUELING SOLUTIONS		Leak					
Note: Report for the last 7 days							
TANK	START/END TIME	DURATION (min)	FLOWRATE (It/h)	PRODUCT TC (It)	WATER (It)	TEMPERATURE (C°)	STATUS
2	07-12-2021 18:27:01 08-12-2021 10:13:02	846.0	-0.783	3,421.7	--	15.3	Power failure during test

ProGauge 4 192.168.1.14:3000 v-4.16.1 Serial: 00001 09-12-2021 12:12:02

The Leak report shows all the leak test results for the last seven days.

7.12.5 LLD Leak

DOVER FUELING SOLUTIONS							
LLD Leak							
Note: Report for the last 7 days							
LINE	START/END TIME	DURATION	TYPE	RUNNING PRESSURE (gph)	REFERENCE PRESSURE (PSI)	LEAK RATE (gph)	RESULT
1	07-08-2023 18:31:07 07-08-2023 18:32:49	0:01	3.0	—	10.00	—	Aborted (stopped)
1	07-08-2023 18:29:49 07-08-2023 18:29:27	0:02	3.0	49.59	10.00	—	Aborted (stopped)
1	04-08-2023 14:48:19 04-08-2023 14:50:20	0:01	3.0	—	10.00	—	Aborted (stopped)
1	04-08-2023 14:39:45 04-08-2023 14:41:27	0:01	3.0	—	10.00	—	Aborted (stopped)

The LLD Leak report will show LLD historical results for the last 7 days.

7.12.6 Shift Report

DOVER FUELING SOLUTIONS							
Shift Report							
Note: Report for the last 7 days							
TANK	START/END TIME	OPENING STOCK (H)	CLOSING STOCK (H)	DELIVERIES (H)	DISPENSER SALES (H)	START/END WATER (H)	
1	30 09 2020 12 08 44						796.1
	30 09 2020 12 08 50	8,947.2	8,947.4	—	—		796.1
2	30 09 2020 12 08 44						74.3
	30 09 2020 12 08 50	1250.2	1250.1	—	—		74.3
1	30 09 2020 09 34 06						795.3
	30 09 2020 12 08 44	8,949.6	8,947.2	—	—		796.1
2	30 09 2020 09 34 05						73.9
	30 09 2020 12 08 44	1250.1	1250.2	—	—		74.3

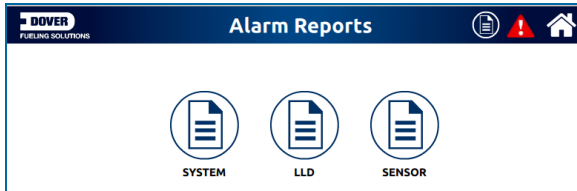
The shift report shows a full report of each shift for the last seven days. The report shows the deliveries and tank sales that occurred during the shift.

7.12.7 History

DOVER FUELING SOLUTIONS							
History							
Note: Report for the last 7 days							
TANK	TIME	PRODUCT LEVEL (mm)	PRODUCT VOLUME (H)	PRODUCT TC (H)	WATER (H)	TEMPERATURE (C°)	DENSITY (H)
1	01 10 2020 15 41 32	313.07	5072.0	5010.3	1317.3	28.9	760
2	01 10 2020 15 41 30	249.97	1249.8	1232.7	71.5	27.299999	760
1	01 10 2020 15 40 32	313.06	5071.8	5010.1	1317.3	28.9	760
2	01 10 2020 15 40 30	249.97	1249.8	1232.7	71.5	27.299999	760
1	01 10 2020 15 39 32	307.99	4968.1	4907.2	1268.4	28.9	760
2	01 10 2020 15 39 30	249.97	1249.8	1232.7	71.5	27.299999	760
1	01 10 2020 15 38 31	305.04	4908.1	4848.0	1255.2	28.9	760
2	01 10 2020 15 38 29	249.97	1249.8	1232.7	71.5	27.299999	760

The History report shows the inventory data of each tank. The console stores the inventory of every tank, for every minute.

7.12.8 Alarms



The Alarms report shows the alarms for the last seven days. The three (3) types of alarm screens are shown below:

TANK	TIME	PRODUCT LEVEL (in)	PRODUCT VOLUME (gal)	WATER (in)	WATER (gal)	ALARM	STATUS
4	08-08-2023 09:15:01	35.57	1,193.3	1.05	35.2	LEAK	ALARM
2	08-08-2023 15:48:21	38.60	1,227.9	--	--	LEAK	ACKNOWLEDGED
4	08-08-2023 15:47:43	--	--	--	--	--	--

System Alarm Screen

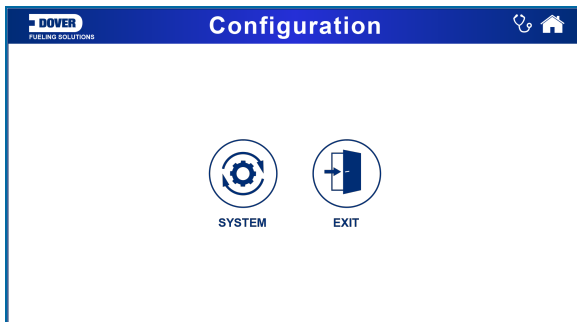
LINE	TIME	TYPE (gph)	RUNNING PRESSURE (PSI)	REFERENCE PRESSURE (PSI)	LEAK RATE (gph)	ALARM	STATUS
1	08-08-2023 15:59:04	--	--	--	--	--	--
1	08-08-2023 15:58:28	--	--	--	--	NO LINK	ALARM
1	08-08-2023 15:51:30	--	--	--	--	--	--

LLD Alarm Screen

TIME	SENSOR NUMBER	SENSOR NAME	ALARM	STATUS
08-08-2023 08:11:42	1	V1-1-0	--	--
02-08-2023 15:53:28	1	V1-1-0	No link	Alarm

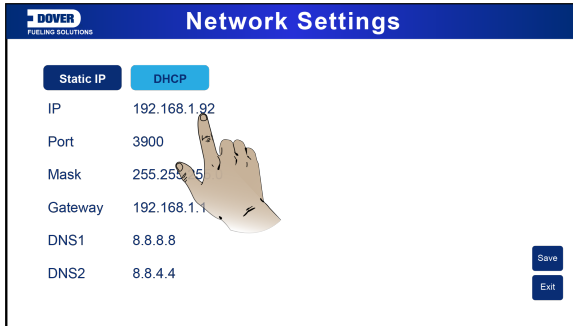
Sensor Alarm Screen

7.13 Configuration



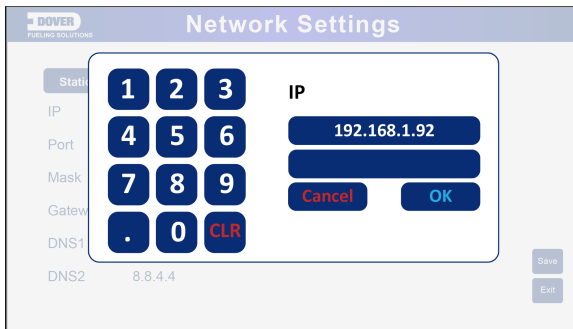
Push the **Configuration** icon on the *Main Menu*, enter your **Password** at the prompt and the "Configuration" screen will come into view.

7.13.1 System Configuration



Push the **System** icon on the *Configuration Menu* and the "Network Settings" screen will come into view.

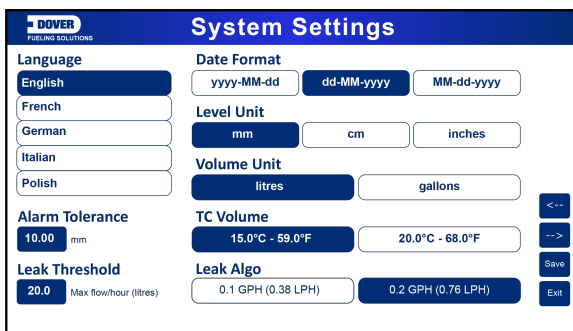
- Select a **parameter** to change. A keypad will come into view.



- Enter the new **value**.
- Click **OK** to save the value.

When you have completed all necessary changes, Click **Save**.

7.13.2 System Settings



Push the **Tank** icon on the *Configuration Menu* and the "System Settings" screen will come into view.

You can make changes to Tank configuration parameters in this screen (see the image above)

When you have completed all necessary changes, Click **Save**.

Push the **Exit** button to navigate from this screen to go back to the *Configuration menu*.

Section 8 - Technical Support

When you ask for technical support from DFS, it is recommended that you give direct access to the console over the internet through ports 3000 and 22. As an alternative, the console can be connected to a site computer and technical support can get access through a third-party program (such as TeamViewer). If technical support cannot get access to the console in one of these two methods, the user must supply technical support with the log files and the database backup of the console.

Refer to the "Utility" section of the M2051 LX4 Configuration manual for information on log files and the database backup in the console.

Revisions - M2052

Revision #	ECO	Effective	Software Version	Key Changes
0	1785	8/19/2020		Initial Release
1	1836	12/3/2020		Adds Settings and Shifts
2	1891	4/7/2021		Corrected typo under GUI > Configuration. Add LX Plus characteristics, new address for Start Italiana
3	1944	8/10/2021		New screens for Inventory Detail, Leak Test, Reports, Reconciliation, Sensor Alarms, System Settings, Leak Test added to Main Menu, New Technical Support procedure.
4	1998	3/14/2022		density value note under "Inventory." Screen updates.
5	DB	9/14/2023		General updates, new screens. LLD support.
5.1	LC/DB	3/22/2024		Add Ultimate
6	NA/WP	6/17/2024		Security Best Practices



NOTE: It is possible that older software versions might not support all features

ProGauge

