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FUELING SOLUTIONS

Installation Manual

MagLink LX4

M2050-EU

Revision: 1

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ProGauge is a part of Dover Fueling Solutions.

Contact

ProGauge

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Copyright Information

Table of Contents

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 regards 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 installation of the MagLink LX4 console.

> **IMPORTANT:** This manual must be used together with the related product manuals:
>
> » M2051-EU MagLink LX4 Configuration Manual
> » M2052-EU MagLink LX4 User Manual
> You must install the console as shown in this manual, configure the console as instructed in the M2051-EU MagLink LX4 Configuration Manual, and use the console in the field as shown in the M2052-EU MagLink LX4 User 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:

Data	Description
Name	START ITALIANA S.r.l.
Address	Via Pola 6 20813 Bovisio Masciago (MB) Italy
Telephone	+39 0362 1581465
Fax	+39 0362 1581464
Website	www.startitaliana.com
e-Mail	support@startitaliana.it

INFORMATION: The units of measurement contained in this manual refer to a specified selection by the user. Refer to the M2051-EU MagLink LX4 Configuration Manual for more information on how to set units of measure.

3.1 Safety Warnings

This manual contains many important Safety Alerts. There can be a risk of injury or damage to property if you do not obey these alerts. The panels below show the types of safety warnings that can be seen and how each is specified.

DANGER: Indicates an immediately hazardous condition that, if not prevented, will result in death or serious injury.

WARNING: Indicates a possibly hazardous condition that, if not prevented, could result in death or serious injury.

CAUTION: Indicates a possibly hazardous situation that, if not prevented, could result in minor or moderate injury.

NOTICE: Indicates important information not related to hazards. A condition that, if not prevented, can result in property damage.

SAFETY INSTRUCTIONS: Indicates instructions and procedures related to safety or gives the location of safety equipment

3.2 Information Panels

NOTE: This panel gives more information about an instruction or procedure.

IMPORTANT: This panel contains special information that is important and must be read and obeyed.

REMINDER: This panel shows information that has been given before in the manual that is important to show again.

TIP: A step or procedure that is recommended to make another step or procedure easier.

INFORMATION: This panel shows references to more information in other sources.

Section 4 General Indications

The MagLink LX4 console is shipped in a cardboard box (L 450 x H 300 x D 200 [mm]) and includes the components as follows:

- MagLink LX4 console
- Connection cable (220 V AC with Schuko plug)
- Quality control certification checklist
- User manual, installation manual and web configuration manual

Weight of the console with its carton: 2 kg.

The table below shows the primary technical characteristics of the console:

Element	Characteristic
Display	Display TFT 7 inch Dimensions 155 x 88 [mm]
Console	Dimensions · Width 267 mm · Height with cable: 215 mm · Depth 80 mm

The illustration below shows the ports and connections on the bottom of the console:
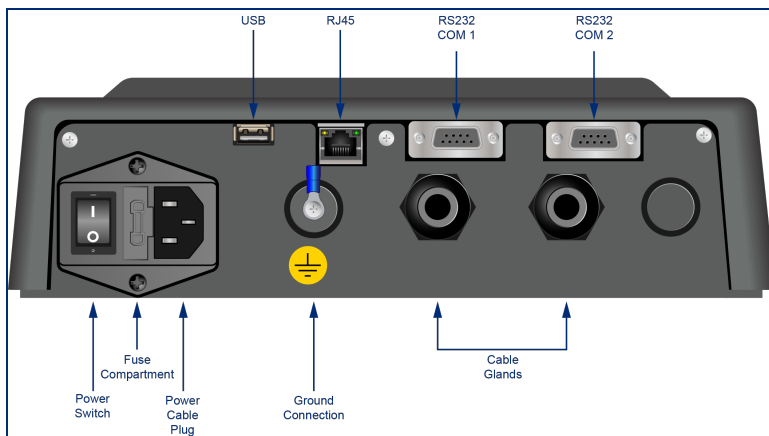
Element	Description
USB	For USB printer connection. It can also be used for firmware updates and back-up of the console (Refer to the M2052-EU MagLink LX4 User Manual)
RJ45	For console configuration, and local network connections (Refer to the M2051-EU MagLink LX4 Configuration Manual)
RS232 Com 1	Serial port for connection to management systems (FCC/POS/DCD)
RS232 Com 2	Serial port for connection to management systems (FCC/POS/DCD)
Ground connection	Ground connection of the internal Intrinsically Safe barrier. Use a dedicated 4.0 mm^2 copper cable to connect to the main ground lug in the electrical panel of the station. This will prevent high voltages sent to the Intrinsically Safe wiring side if there is an electrical fault in the power side.

Section 5 Product Labels

MAGLINK LX	YEAR: 2017
Tamb: -10°C - +50°C	Signal: RS 232-485

IP 40 CE 0722 CONTIENE CIRCUITI A SICUREZZA INTRINSECA
INTRINSICALLY SAFE CIRCUITS INSIDE

Serial Number:|SN LX|

⚠ ISO 7000-0434B (2004-1) Caution

Power supply: 100-240Vac 50-60Hz
Power: 15Va
Fuse: 250V 1A

START ITALIANA S.r.l.
Bovisio Masciago (MB) ITALY

- 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

START ITALIANA S.r.l. ITALY Via Pola n.6 Bovisio Masciago (MB)

CEC 10 ATEX 025 REV.3 Type: BRA-SIP ▪
Ⓔx II(1)G[Exia] IIB BRA-2SIP ▪
FISCO power supply Um=250V(Exia) IIB S.N.|VAR1|

Power=14 Vmax	DATA I/O =6Vmax
Um=250V Po=0.153W	Um=6V Po=0.126W
Io=100mA Uo=14Vmax	Io=100mA Uo=6 Vmax
Lo=1.5mH Co=3.55µF	Lo=6 mH Co=40µF
Ree(5-3)=15.3Ω	Ree(8-1)=12.6Ω

- 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 6 Installation

6.1 Installation Warnings

DANGER: Do not install the console in a hazardous area!

Flammable fumes can cause an explosion when mixed with air.

Dangerous areas can occur where there are gases or fumes.

The MagLink LX4 console is _**NOT**_ explosion-proof.

WARNING: Only use fuses of 250 V - 1 A for input power.

WARNING: connect the Intrinsically Safe Ground connection of the console to the earth system of the site. A possible explosion or fire can occur if damage is caused to the intrinsic safety of the device and high voltages are sent to the Hazardous Area.

6.2 Installation Location

Select a location for the console installation where weather cannot cause negative effects or damage to the electrical circuits (high and low temperatures, high humidity, direct sunlight etc.).

**NOTICE:** Install the console in a place that is protected from moisture, direct sun, and water splashes. The console should be installed indoors in a climate controlled room.

CAUTION: The console must be installed in a safe area.

6.3 Electrical Connection

To make a connection to 220 VAC:

- De-energize all power switches at the main electrical panel.

- Make sure to use the applicable connections to connect the console to the electrical panel.

- For power connections, use a single-phase cable, a section of which is not less than 1.5 mm^2 and one which is sufficiently protected. The power cord must comply with the standards IEC 60227 and IEC 60245. The cable supplied with the console already complies with these regulations.

- Make sure the power plug is connected to the ground and protected against short circuits and power surges.

- Make sure to connect the I.S. ground to the site's earth system. Use a dedicated 4.0 mm^2 copper cable (see the illustration below).
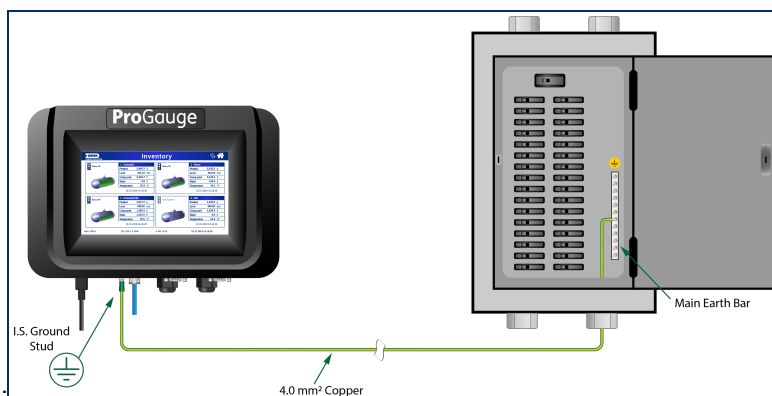
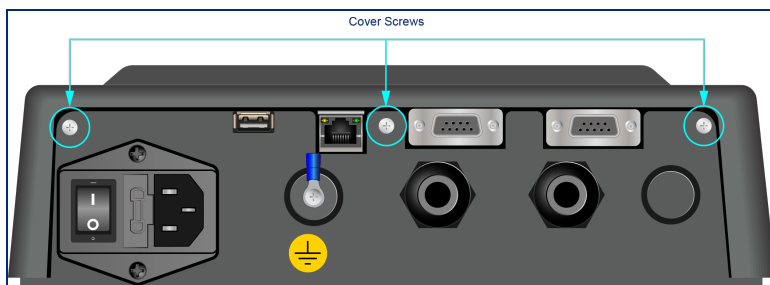- The power cord must be easy to identify and must have easy access so it can be used to remove power.

WARNING: There is high voltage within the console.

IMPORTANT: The electrical connection procedure must be done by approved personnel only!
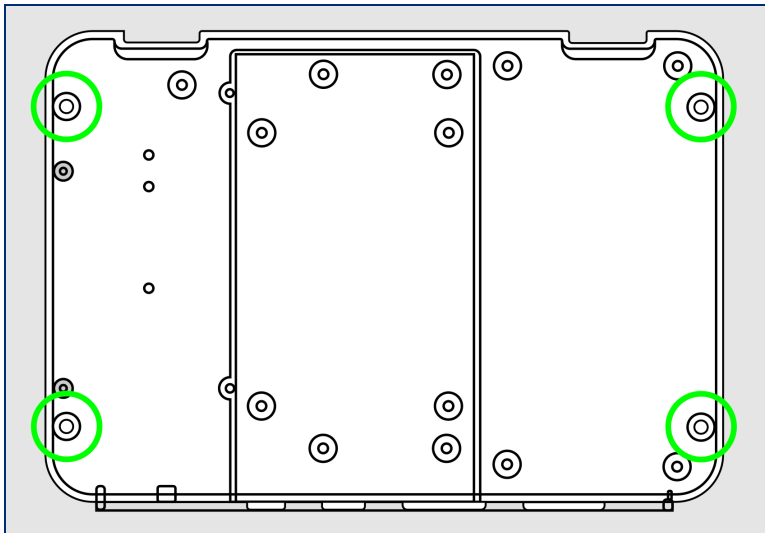
6.4 Installation Procedure

1. Remove the three (3) cover screws as shown in the illustration above.

2. Lift the cover carefully and disconnect the ribbon cable from the rear panel of the console as shown in the illustration above. Put the cover and screws in a temporary safe location where they can be found later and where the components cannot be damaged.

3. Attach the rear panel to a wall.

   a. Select a location to attach the console to an indoor wall where it can be easily seen. Make sure to keep sufficient access to the connection ports on the bottom of the console.

   b. Hold the unit against the wall where it will be attached. There are four (4) mounting screw holes in the unit (see the illustration above for the locations of the holes).

   c. Use a pen to identify the screw hole locations on the wall.

   d. Drill the holes at the screw hole location marks.

e. Tap the holes for an applicable screw size or put screw anchors in the hole. It is recommended to use size 6 Fischer wall anchors.

f. Attach the unit to the wall with the applicable screws.

Section 7 Connections
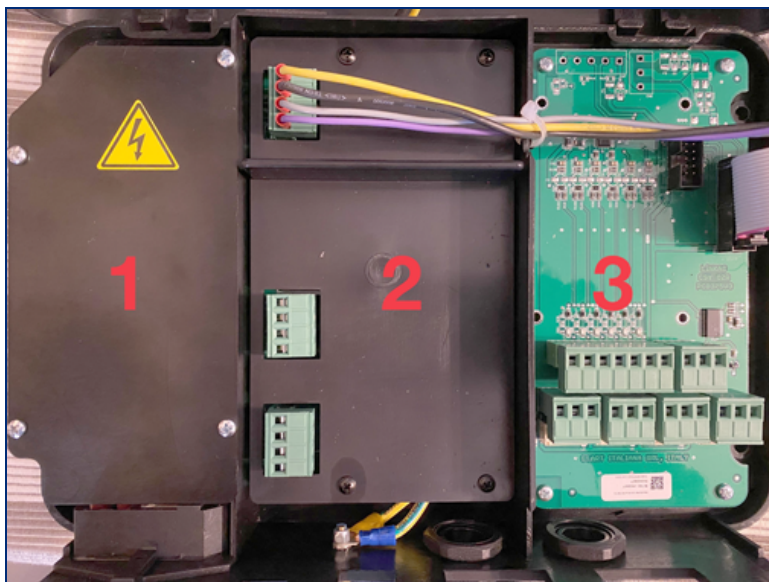
The table that follows shows a list of the inner components of the rear of the console.

Component	Description
1	Power Supply Unit (PSU) protection panel
2	BRA-2SIP barrier for connection to the DMP-SI-485 and XMT-SI-485 probes (8+8)
3	Four (4) Built-in Relays, Six (6) Inputs, OPTIONAL IFSF/GSM card (International Forecourt Standards Forum/Global Systems for Mobile Communications)

7.1 Connection to the Intrinsically Safe XMT-SI and DMP-SI Probes
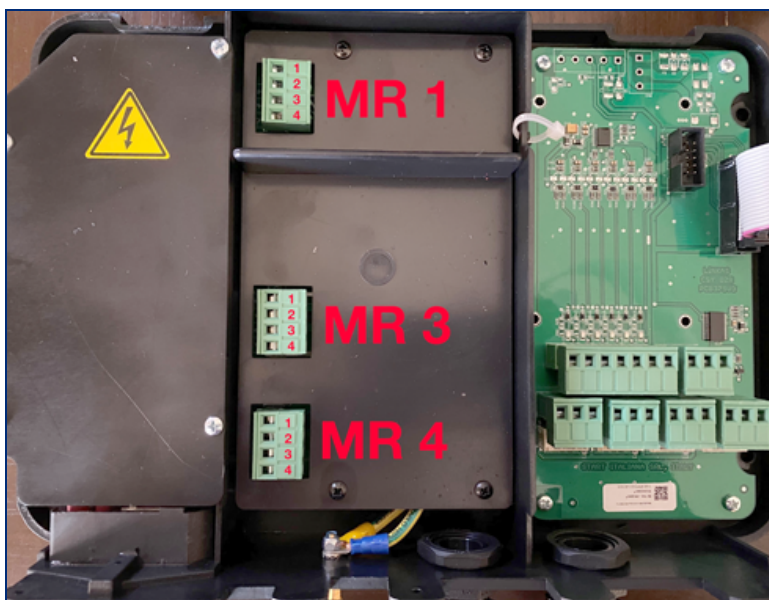
The table that follows shows the wiring connections between the XMT-SI and DMP-SI Probes and the LX4 Console:

| Connection	Specification
MR1	Barrier Input
MR3	Safety Barrier Input (up to eight [8] probes) » Red (+ 12V) - Terminal 1 » Brown (RS485A) - Terminal 2 » Blue (RS485B) - Terminal 3 » White (-0 V) - Terminal 4
MR4	Safety Barrier Input (up to eight [8] probes) » Red (+ 12V) - Terminal 1 » Brown (RS485A) - Terminal 2 » Blue (RS485B) - Terminal 3 » White (-0 V) - Terminal 4

If a site installation has more than 16 probes/tanks you must use an external MagDirect barrier connected to the console MR1 or CN7 (see below) terminal blocks. Each MagDirect barrier can hold up to eight (8) probes. See the Wiring Diagram section for more information.

7.2 Connection to the XMT Explosion-proof Probe
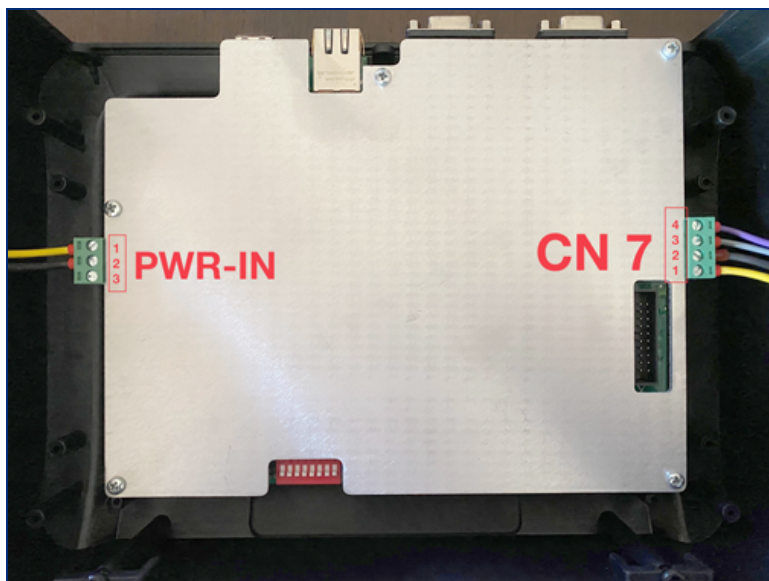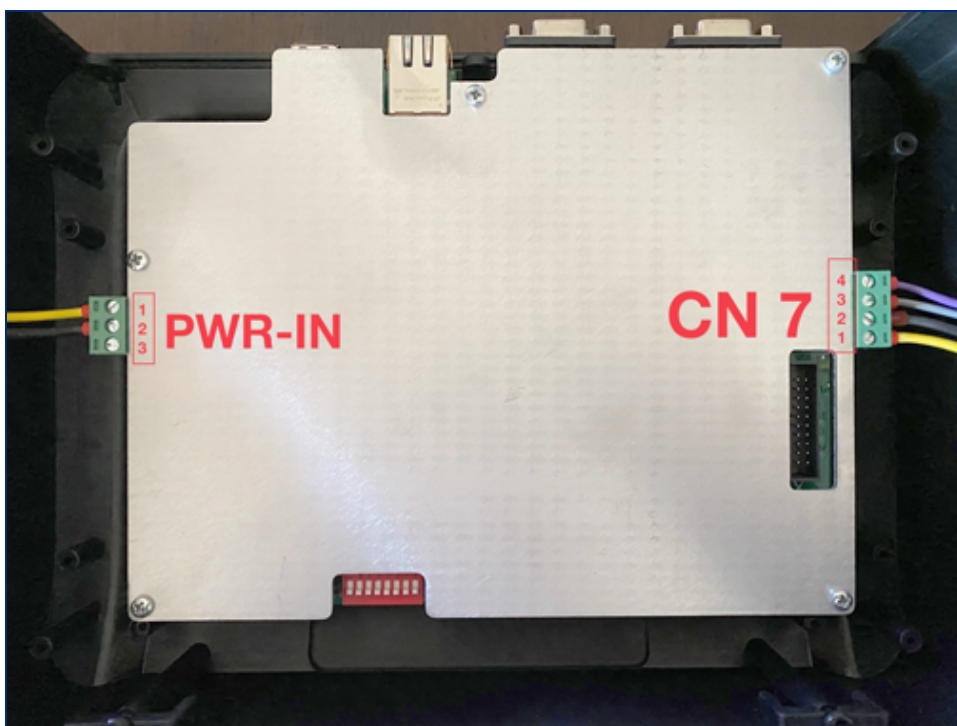

You can install up to 32 XMT probes on CN7.

The XMT model explosion probes must be connected in parallel to the console and directly to the connector CN7. It does not go through the intrinsically safe barrier (the barrier is not applicable in this installation).

The table that follows shows the wiring connections between the XMT Probes and the LX4 Console main board CN7 terminal block:

Connection	Specification
CN7	» White (-0 V) - Terminal 4 » Blue (RS485B) - Terminal 3 » Brown (RS485A) - Terminal 2 » Red (+ 12V) - Terminal 1

7.3 Connection to the RF Receiver (for XMT-SI-RF)

You can install up to 32 XMT-SI-RF probes on CN7.

The RF receiver can connect directly to the CN7 terminal block connector. It does not go through the intrinsically safe barrier (the barrier is not applicable in this installation).

The table that follows shows the wiring connections between the RF Receiver and the LX4 Console main board CN7 terminal block:

Connection	Specification
CN7	» White (-0 V) - Terminal 4 » Blue (RS485B) - Terminal 3 » Brown (RS485A) - Terminal 2 » Red (+ 12V) - Terminal 1

Refer to the RF Receiver installation manual's section on electrical connections for the correct connections of the receiver.

7.4 Interface to Relay - Diagram of Connectors
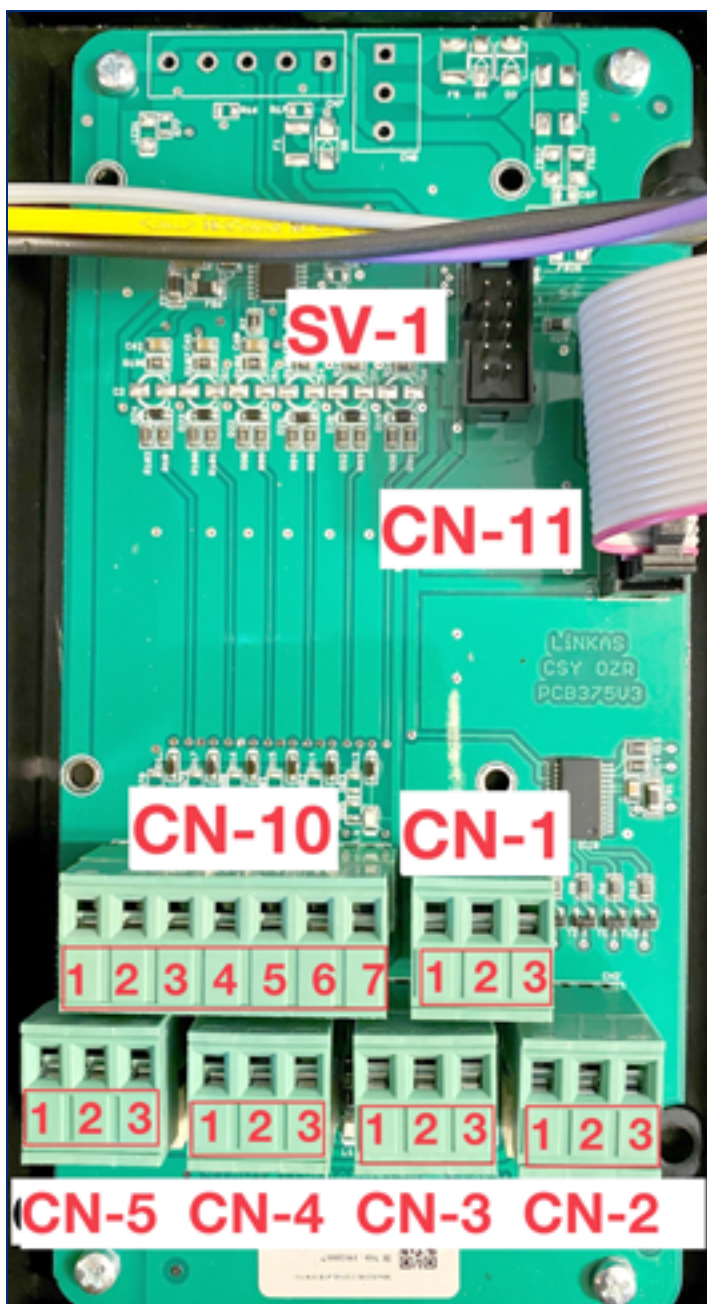
The illustration above shows the connections of a MagLink LX4 Console.

The table that follows shows the console connections:

Connector	Specification
CN1	Not Used
CN2	Relay 1 Connector 1 - Normally Closed 2 - Common 3 - Normally Open
CN3	Relay 2 Connector 1 - Normally Closed 2 - Common 3 - Normally Open
CN4	Relay 3 Connector 1 - Normally Closed 2 - Common 3 - Normally Open
CN5	Relay 4 Connector 1 - Normally Closed 2 - Common 3 - Normally Open
CN10	Digital input connector (Activated with a positive voltage)-DEEP 3 OFF 1 - GND (activated with a positive voltage) 2 - Input 1 3 - Input 2 4 - Input 3 5 - Input 4 6 - Input 5 7 - Input 6
CN10	Digital input connector (Activated with a positive voltage)-DEEP 3 ON 1 - GND (activated with a positive voltage) 2 - Not Enabled 3 - +12 VDC (theft protection) 4 - Not Enabled 5 - Not Enabled 6 - Not Enabled 7 - Not Enabled
CN11	Main Board Connector

The table that follows identifies the Connectors and related status LEDs:

Connector	Specification
SV1	Modem connector (optional) / IFSF (optional)
LED1	Power LED output to probe
L1	Relay 2 status LED (On = relay energized)
L2	Relay 3 status LED (On = relay energized)
L3	Relay 4 status LED (On = relay energized)
L9	Input 6 status LED (Terminal 7)
L10	Input 5 status LED (Terminal 6)
L11	Input 4 status LED (Terminal 5)
L12	Input 3 status LED (Terminal 4)
L13	Input 2 status LED (Terminal 3)
L14	Input 1 status LED (Terminal 2)
L19	Relay 1 status LED (On = relay energized)

7.5 IFSF OPTION

Connection of the IFSF module.

7.6 DIP-Switch Configuration
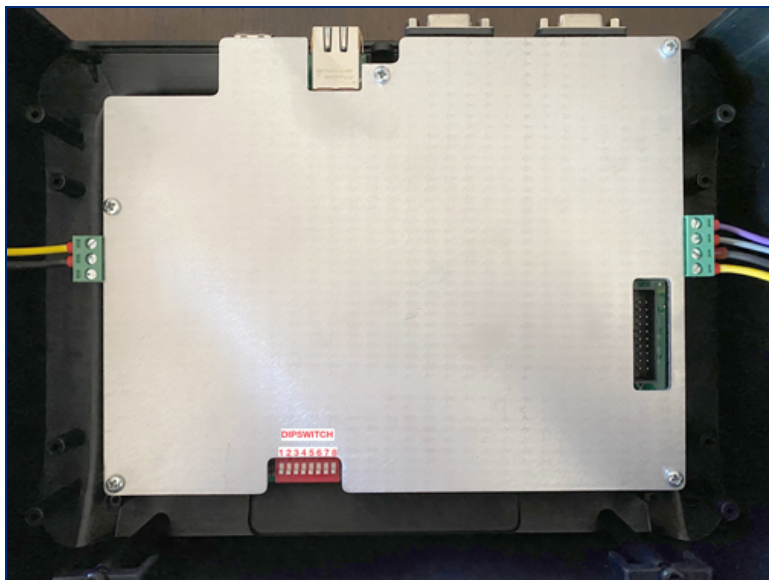
The illustration above shows the location of the DIP-Switch block on the Main Board.

The table that follows shows the configurations of the DIP-Switch:

Switch Number	Description
1	OFF = single Gilbarco ON = Double Gilbarco (required for DCD connections)
2	OFF = Internal inputs not available for alarms, but are used for other control functions ON = Internal inputs available for alarms
3	OFF = Automatic alarm mode off ON = Anti-theft mode (DIP-switch 2 must be OFF) with 3 + 12 V DC CN10 connection Terminal and 1 0 V DC Terminal
4	OFF = Relay in normal mode ON = Relay in reverse
5	Future Use
6	General Reset (de-energize the console, switch to ON, turn on the console, wait for the display cursor in the top left to flash, turn off the console, switch to Off, turn on the console) ⚠ IMPORTANT: The general reset results in loss of all configuration data, the history, alarms, delivery and reconciliations!
7	OFF = Reconciliation deactivated ON = Reconciliation activated

7.7 Micro SD Card

The illustration above shows the location of the Micro SD Card. The SD Card contains the operating system, firmware, configuration and a history of the console.

> **IMPORTANT:** Do not remove the micro SD card while the console is in operation. The console cannot function without the SD card in place.

7.8 Close and Start Up the Console

> **NOTE:** Be sure to connect the ribbon cable before you assemble the top and bottom sections of the console.

1. Put the cover of the console onto the rear panel that you attached to a wall.

2. Put the cover screws into the screw holes to hold the cover on the rear panel.

3. Connect the female end of the power cord to the console and the male 3-prong connector into an electrical wall outlet.

4. Put the Power Switch into the ON position.

Continue with the configuration as shown in the "Console Configuration" Manual.

7.9 DB9 Connections to a Management System

The console can be connected through the RS232 port Com 1 on these management systems:

- DIALOG
- DOMS
- FUEL POS (VR350 Interface)
- GILBARCO (VR350 interface)

- ORPAK
- PIGNONE
- Probe emulation
- RETALIX

Pin-out diagrams for some of these connections are shown below.

7.9.1 DIALOG Fuel Management System

TOKHEIM CONNECTION

CONSOLE — DB9 M — 5 3 2 → 5 3 4 2 6 — DB9 F — MANAGEMENT SYSTEM
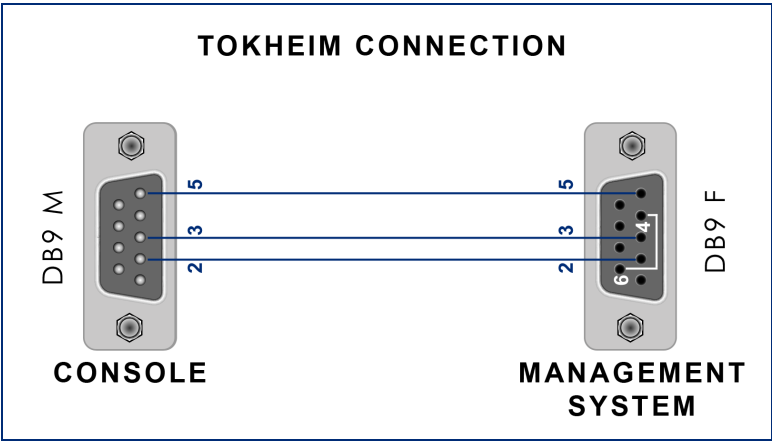
Console (DB9)	DIALOG System (DB9)
PIN 2	PIN 2
PIN 3	PIN 3
PIN 5	PIN 5
---	Connect PIN 4 with PIN 6

7.9.2 GILBARCO Fuel Management System

GILBARCO CONNECTION

CONSOLE — DB9 M — 5 3 2 → RJ45 — MANAGEMENT SYSTEM
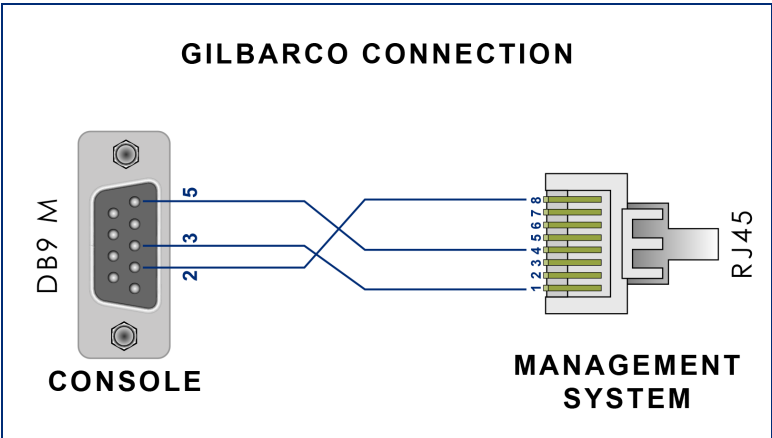
Console (DB9)	GILBARCO System (RJ45)
PIN 2	PIN 8
PIN 3	PIN 1
PIN 5	PIN 4

7.9.3 DRESSER (PIGNONE) Fuel Management System

DRESSER (PIGNONE) CONNECTION

DB9 M — CONSOLE

DB9 F — MANAGEMENT SYSTEM
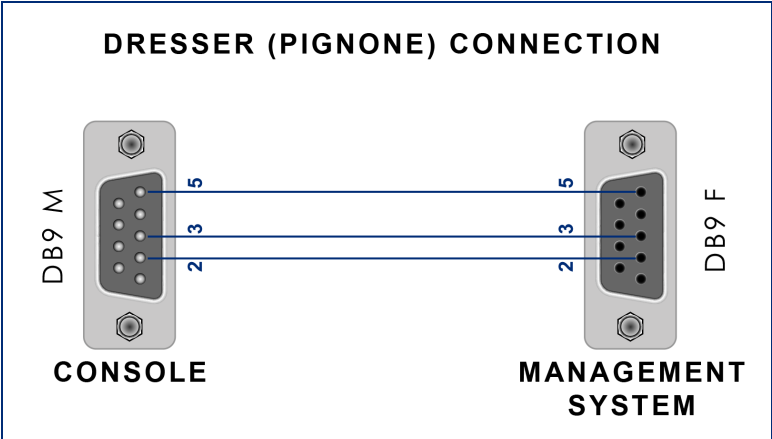
Console (DB9)	DRESSER (PIGNONE) System (DB9)
PIN 2	PIN 8
PIN 3	PIN 1
PIN 5	PIN 4

IMPORTANT: Do not use cabling longer than 15 meters (3.2 feet) for RS232 serial connections between the console and the management system.

Section 8 Maintenance

Refer to and obey the maintenance procedures as specified in *EN 60079-17* for maintenance and inspection in explosive atmospheres.

WARNING: It can be dangerous to open this console! Maintenance must only be done by approved personnel or the manufacturer of this unit.

Maintenance of electrical connections must only be done by approved and certified personnel (refer to this installation manual).

NOTICE: Changes to this console are not permitted unless they are approved by the manufacturer.

IMPORTANT: Do regular inspections to make sure the console is clean and that the condition of the console and its connections operate satisfactorily.

Do not use compressed air or liquid detergents to clean the touchscreen or the console. Clean the touchscreen and the outside of the console with a monitor/TV cleaning cloth.

Section 9 Technical Support

The best method to communicate with Technical Support personnel is to first connect the console to the Internet. The console must have a public IP Address and Ports 3000 and 22 open. Applicable data can be seen directly by Dover Fueling Solutions Technical Support personnel.

As an alternative, you can use a third-party program (such as TeamViewer 10 or AnyDesk). The console can then be connected to a remote computer used by Dover Fueling Solutions Technical Support personnel.

If access to the Internet is not available, the user must give Dover Fueling Solutions Technical Support personnel the applicable data and logfiles related to the console so a debugging procedure can be done.

The procedure that follows shows the steps to send this data to Technical Support:

> **IMPORTANT:** You must have a USB device with at least 50 MB of free space available. The USB device must be formatted to FAT32.

Connect the USB device to a PC.

Put a new folder on the USB device and give it the name **"lx-support"** (make sure you use lower case).

Eject the USB device from the PC.

Connect the USB device to the console (see "General Indications" on page 11 for the location of the USB port on the bottom of the console).

Push the **INFO** button to get access to the applicable page.

Push **Export Log** when it comes into view on the screen. The files will be copied to the **lx-support** folder on the connected USB device.

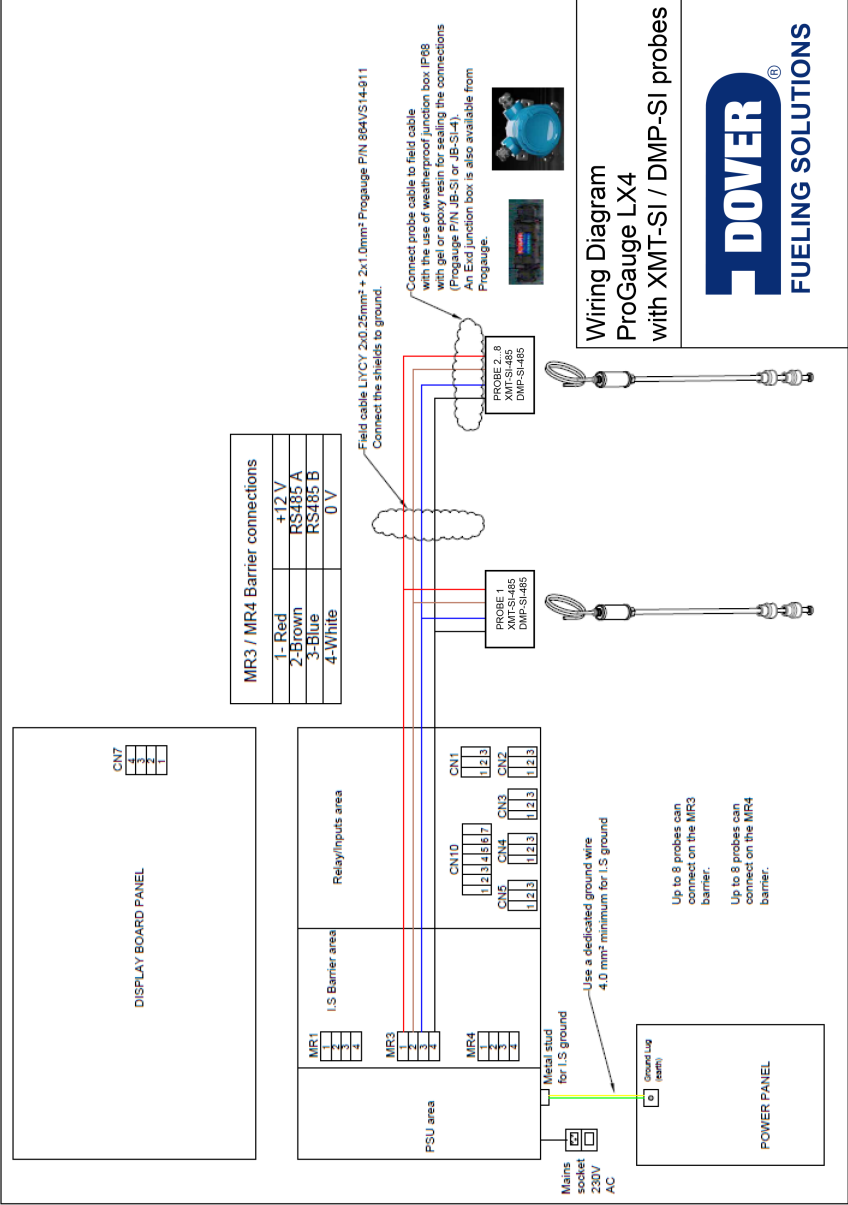Remove the USB device from the console.

Connect the USB device back to your PC.

Right-click the **lx-support** folder, select the **Send to** drop-down and select **Compressed (zipped) folder**.

Send the ZIP file by e-mail to support@startitaliana.it

Section 10 Wiring Diagrams

10.1 Connect XMT-SI probes

Wiring Diagram
ProGauge LX4
with XMT-SI / DMP-SI probes

10.2 Connect XMT Exd probes

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Wiring Diagram
ProGauge LX3/LX4
with XMT probes

CN7 Power input and data channel for XMT-Ex probes and/or RF receiver

1-Red	+12 V
2-Brown	RS 485 A
3-Blue	RS 485 B
4-White	0 V

Field cable LiYstCYY sect. 1x(2x0.50mm²) + 2x1.50mm² O.D. 12.10mm
Progauge P/N 864VS14-738
Connect the shields to ground.

Connect probe cable to field cable with the use of weatherproof junction box IP68 with gel or epoxy resin for sealing the connections (Progauge P/N JB-SI or KIT-JB85-Exd).

PROBE 1 XMT

PROBE 2..32 XMT

CN7

DISPLAY BOARD

CN8

CN2
CN1
CN3
CN4
CN5
CN10

MR1

BRA-2SIP
I.S AREA

MR3
MR4

PSU AREA

Metal stud
for I.S ground

Mains
supply
230V

10.3 Connect RF Probes

Wiring Diagram ProGauge LX3/LX4 with RF probes

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RF probe 2-32

RF probe 1

Consult RF receiver manual for correct antenna installation.

Wireless RF receiver RS485

To RF Receiver PSU

CN7 Data channel to RF Receiver			
CN7		RF Receiver	
2-Brown		2-Brown	
3-Blue		3-Blue	

DISPLAY BOARD

CN7

CN8

CN1

CN2

CN3

CN10

CN4

CN5

PSU AREA

MR1

BRA-2SIP I.S AREA

MR3

MR4

Metal stud for I.S ground

Mains supply 230V

10.4 Connect On/Off Sensors

Wiring Diagram
ProGauge LX4
&
I/O Module

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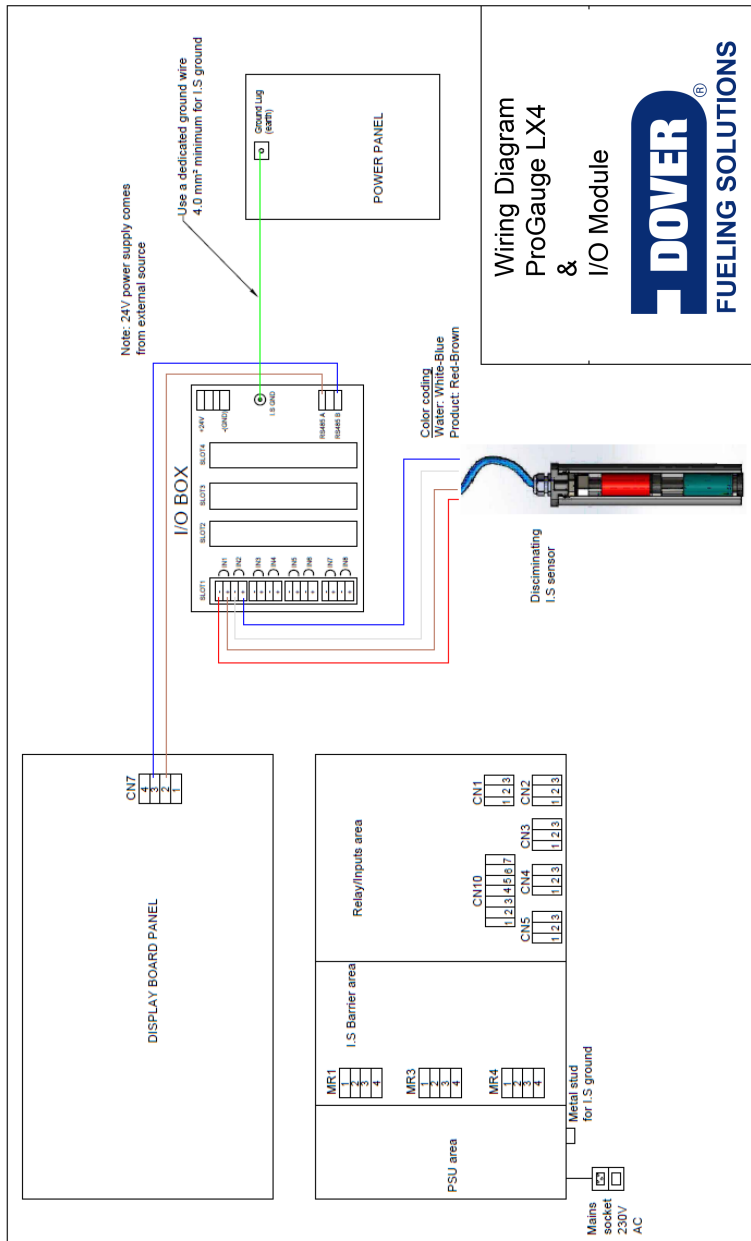
Revisions - M2050-EU

Revision #	ECO	Effective	Software Version	Key Changes
0	TBD	TBD		Initial Release
1	1836	12/3/2020		IS Wiring, wiring diagrams Connection graphics, support update

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

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INNOVATIVE SOLUTIONS FUELING BUSINESS SUCCESS WORLDWIDE
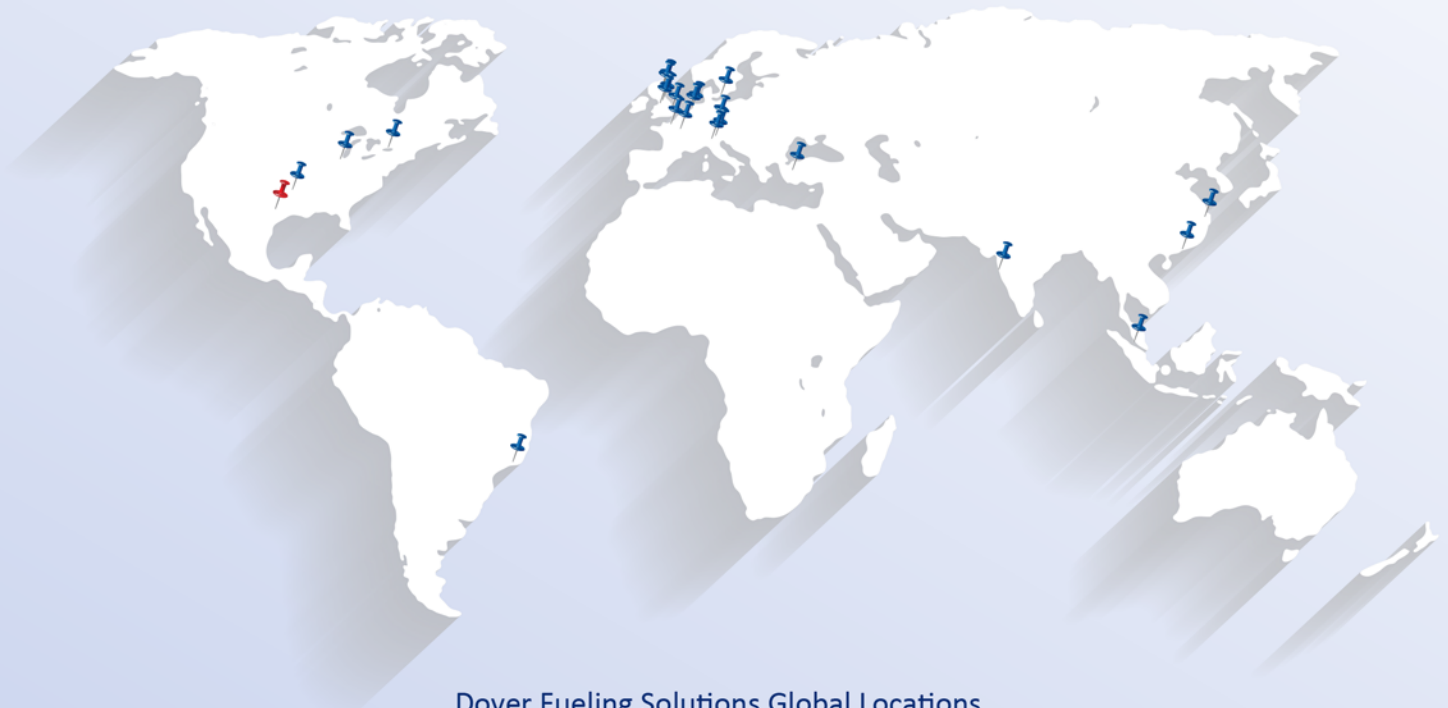
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