

ProGauge MagLink LX 4 Console Installation Manual

Part Number: M2050

Revision: 6



MagLink LX 4 Console

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: 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.



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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-LX Plus-LXUltimate Configuration Manual](#)

[M2052 LX 4-LX Plus-LX Ultimate User Manual](#)

[M2054-QS LX Consoles Quick Start](#)

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

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

[FMM2060 LX Ultimate Installation Manual](#)



ProGauge is a part of Dover Fueling Solutions.

Contact

ProGauge

DOVER FUELING SOLUTIONS ITALIA SRL

Via Natta 6

20823 Lentate Sul Seveso

MB, Italy

Tel. +39 0362 1581465

Fax +39 0362 1581464

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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.

Section 3 Table of Contents

Section 1 Preface	6
Section 2 General Warnings	7
Section 3 Introduction	8
3.1 Safety Warnings	10
3.2 Information Panels	10
Section 4 General Indications	12
Section 5 Product Labels	14
Section 6 Installation	15
6.1 Installation Warnings	15
6.2 Installation Location	15
6.3 Electrical Connection	16
6.4 Installation Procedure	17
Section 7 Connections	19
7.1 Connection to the Intrinsically Safe XMT-SI and DMP-SI Probes	20
7.2 Connection to the XMT Explosion-proof Probe	21
7.3 Connection to the RF Receiver (for XMT-SI-RF)	22
7.4 Interface to Relay - Diagram of Connectors	23
7.5 DIP-Switch Configuration	25
7.6 Micro SD Card	26
7.7 Close and Start Up the Console	27
7.8 DB9 Connections to a Management System	27
7.8.1 FuelPOS/DIALOG Fuel Management System	27
7.8.2 GILBARCO Fuel Management System	28
7.8.3 Wayne Fusion Fuel Management System	28
Section 8 Maintenance and Technical Support	30

8.1 Maintenance	30
8.2 Technical Support	30
Section 9 Wiring Diagrams	31
9.1 Connect XMT-SI probes	31
9.2 Connect XMT Exd probes	32
9.3 Connect RF Probes	33
9.4 Connect On/Off Sensors	34
Appendix A - Console Dimensions	35

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.



IMPORTANT: If a replacement power supply cable is necessary, use an applicable, approved ELBZ/7 type power cord. Do not use another type of power cable.

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 LX 4/ LX Plus console.

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



» M2051 MagLink LX 4/LX Plus Configuration Manual

» M2052 MagLink LX 4/LX Plus User Manual

You must install the console as shown in this manual, configure the console as instructed in the M2051 MagLink LX 4/LX Plus Configuration Manual, and use the console in the field as shown in the M2052 MagLink LX 4/LX Plus 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:

<i>Data</i>	<i>Description</i>
Name	START ITALIANA S.r.l.
Address	Via Natta 6
	20823 Lentate Sul Seveso, (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 MagLink LX 4/LX Plus 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.



READ CAREFULLY: This panel points to information that must be fully read and understood before doing the procedure(s) that comes after.

Section 4 General Indications

The MagLink LX 4 console is shipped in a cardboard box (L 450 x H 300 x D 200 [mm]) and includes the components as follows:

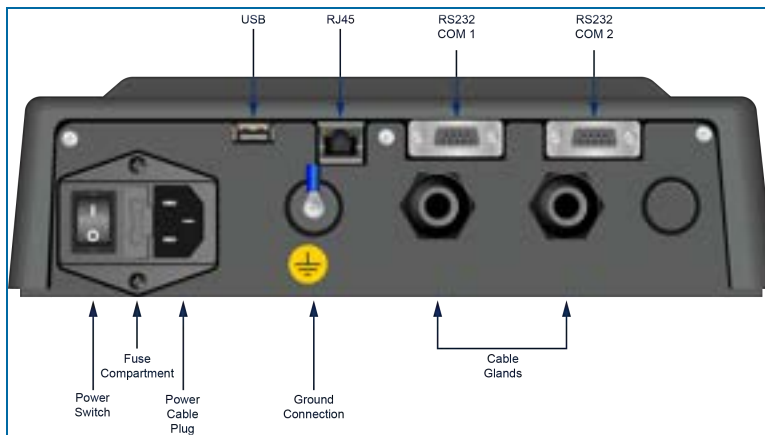
- MagLink LX 4 console
- Connection cable (220 V AC with Schuko plug)
- Quality control certification checklist
- User manual, installation manual and web configuration manual

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:



Make sure that the power cable is correctly installed. Put the Power Switch to the on ("I") position to supply power to the console.

Put the Power Switch in the off ("O") position to remove power from the console.



DANGER: The console can contain electrical power after it has been shut down. To prevent electrical shock do not open the console to do service for a minimum of two (2) minutes.



IMPORTANT: Wait a minimum of two (2) minutes before you supply power to the console again after it has been put in the Off position. This will give the console time to fully shut down.

<i>Element</i>	<i>Description</i>
USB	For USB printer connection. It can also be used for firmware updates and back-up of the console (Refer to the M2052 MagLink LX 4/LX Plus User Manual)
RJ45	For console configuration, and local network connections (Refer to the M2051 MagLink LX 4/LX Plus 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



- 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-SI, BRA-SIP, or BRA-2SIP)
- ATEX Reference number of the certificate
- ATEX Marking: Ex II (1) G [Ex ia Ga] 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.



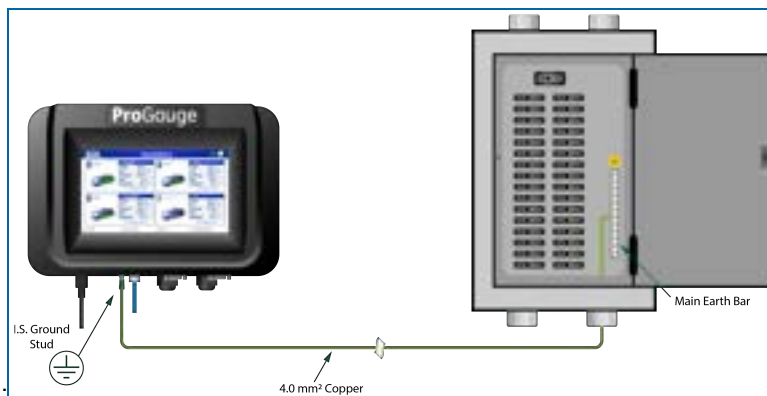
CAUTION: The console must be installed in a safe area.



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 mm² 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 mm² 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.

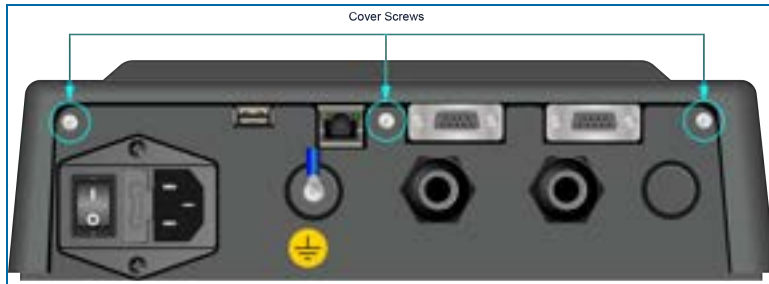


WARNING: There is high voltage within the console.



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

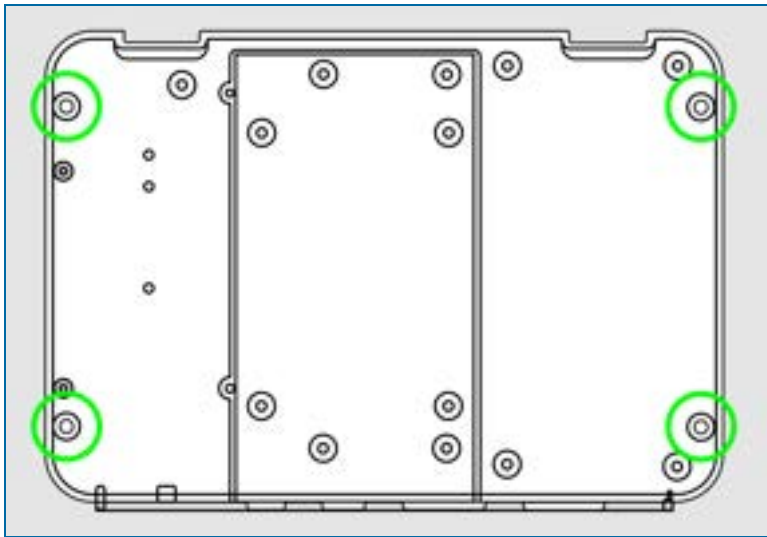
6.4 Installation Procedure



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.

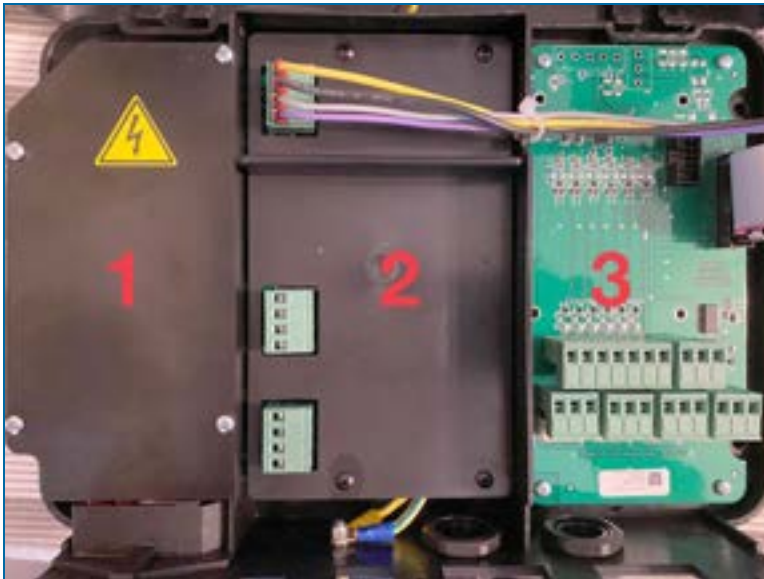
- a. Select a location to attach the console to an indoor wall where it can be easily seen. Make sure to keep sufficient access to the connection ports on the bottom of the console.
- b. Hold the unit against the wall where it will be attached. There are four (4) mounting screw holes in the unit (see 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.



NOTE: It is recommended to use size 6 Fischer wall anchors.

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

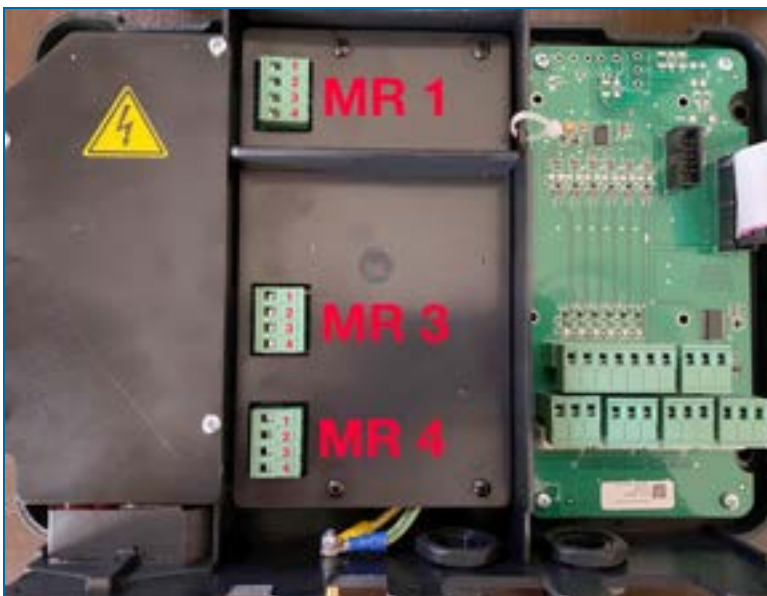
Section 7 Connections



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

<i>Component</i>	<i>Description</i>
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

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 LX 4Console:

<i>Connection</i>		<i>Specification</i>
MR1	Barrier Input	
	Safety Barrier Input (up to eight [8] probes)	
MR3		» Red (+ 12V) - Terminal 1 » Brown (RS485A) - Terminal 2 » Blue (RS485B) - Terminal 3 » White (-0 V) - Terminal 4
	Safety Barrier Input (up to eight [8] probes)	
MR4		» 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 LX 4 Console main board CN7 terminal block:

<i>Connection</i>	<i>Specification</i>
CN7	<ul style="list-style-type: none">» 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.



NOTE: The MAXIMUM number of probes that can be installed in the console is 32.

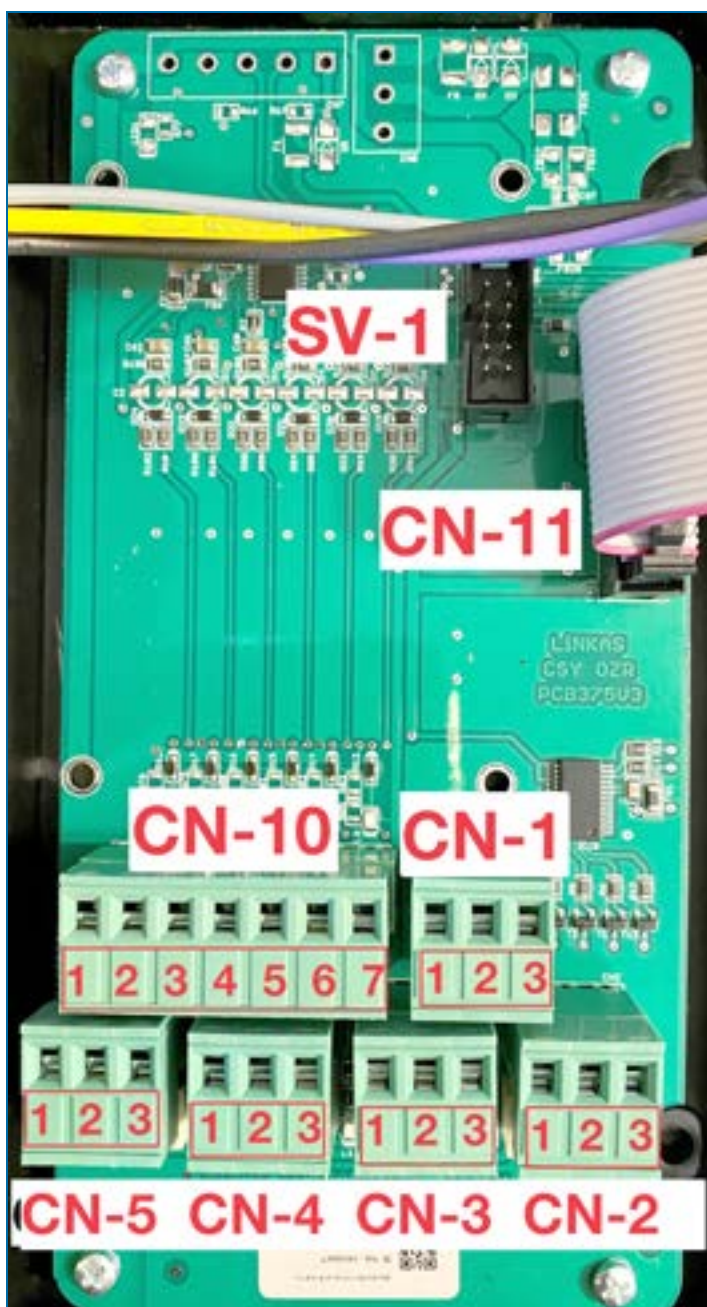
The RF receiver can connect directly to the CN7 terminal block connector. It does not go through the intrinsically safe barrier (the barrier is not applicable in this installation).

The table that follows shows the wiring connections between the RF Receiver and the LX 4 Console main board CN7 terminal block:

Connection	Specification
CN7	<ul style="list-style-type: none">» 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 LX 4 Console.

The table that follows shows the console connections:

<i>Connector</i>	<i>Specification</i>
CN1	Not Used
CN2	<u>Relay 1 Connector</u> 1 - Normally Closed 2 - Common 3 - Normally Open
CN3	<u>Relay 2 Connector</u> 1 - Normally Closed 2 - Common 3 - Normally Open
CN4	<u>Relay 3 Connector</u> 1 - Normally Closed 2 - Common 3 - Normally Open
CN5	<u>Relay 4 Connector</u> 1 - Normally Closed 2 - Common 3 - Normally Open
CN10	<u>Digital input connector (Activated with a positive voltage)-DEEP 3 OFF</u> 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
CN11	Main Board Connector

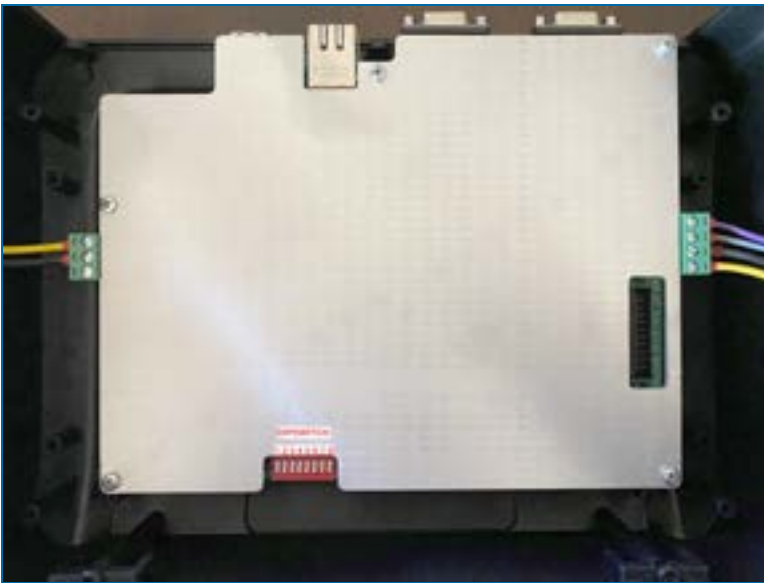
The table that follows identifies the Connectors and related status LEDs:

<i>Connector</i>	<i>Specification</i>
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)

<i>Connector</i>	<i>Specification</i>
L13	Input 2 status LED (Terminal 3)
L14	Input 1 status LED (Terminal 2)
L19	Relay 1 status LED (On = relay energized)

<i>Relay Specifications</i>	
Rated Load	0.5 A at 125 VAC; 2 A at 30VDC
Rated Carry Current	2 A
Max. Switching Voltage	250 VAC, 220 VDC
Max Switching Current	2 A

7.5 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:

<i>Switch Number</i>	<i>Description</i>
1	Relay function Normal/Closed Under Power OFF: Normal ON: Closed Under Power

Switch Number	Description
2	OFF = Internal inputs not available for alarms ON = Internal inputs available for alarms
8	Enables Weights & Measures lock (W&M) OFF: W&M disabled ON: W&M enabled

7.6 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.

7.7 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.

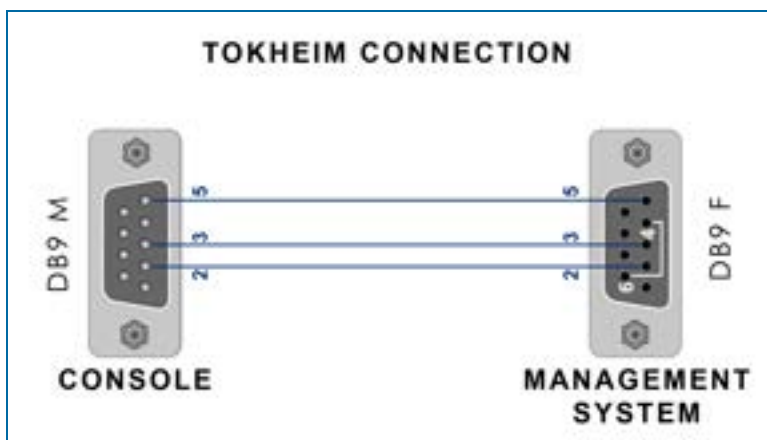
7.8 DB9 Connections to a Management System

The console can be connected through the RS232 port Com 1, Com 2 or through TCP/IP on these management systems:

» DIALOG	» ORPAK
» DOMS	» PIGNONE
» FUEL POS (VR350 Interface)	» Probe emulation
» GILBARCO (VR350 interface)	» RETALIX

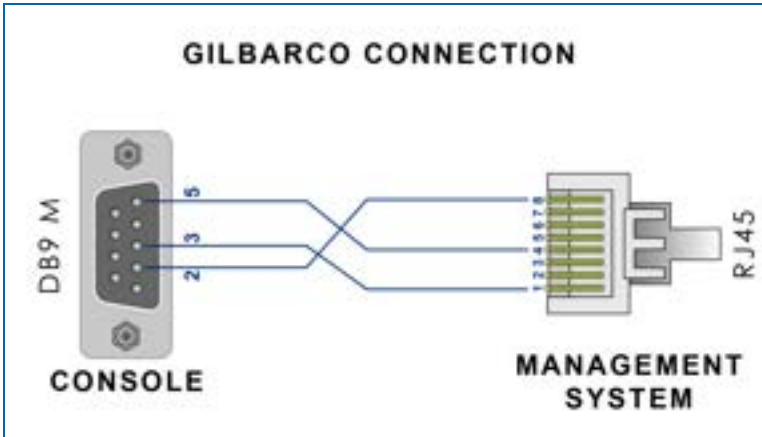
Pin-out diagrams for some of these connections are shown below.

7.8.1 FuelPOS/DIALOG Fuel Management System



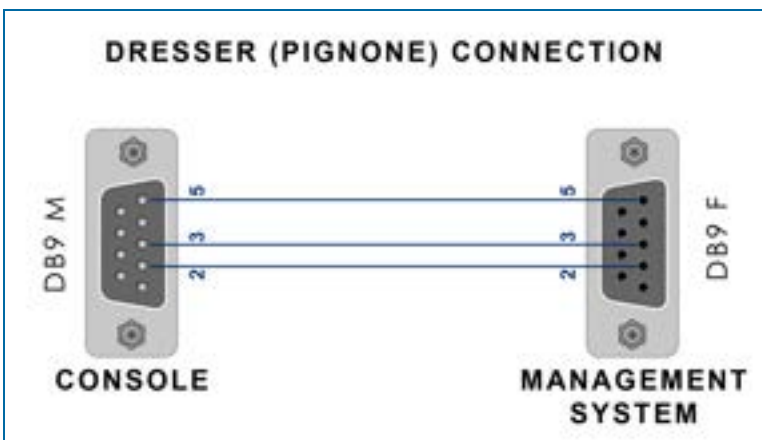
<i>Console (DB9)</i>	<i>DIALOG System (DB9)</i>
PIN 2	PIN 2
PIN 3	PIN 3
PIN 5	PIN 5
---	Connect PIN 4 with PIN 6

7.8.2 GILBARCO Fuel Management System



<i>Console (DB9)</i>	<i>GILBARCO System (RJ45)</i>
PIN 2	PIN 8
PIN 3	PIN 1
PIN 5	PIN 4

7.8.3 Wayne Fusion Fuel Management System



<i>Console (DB9)</i>	<i>DRESSER (PIGNONE) System (DB9)</i>
PIN 2	PIN 2
PIN 3	PIN 3
PIN 5	PIN 5



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 and Technical Support

8.1 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.

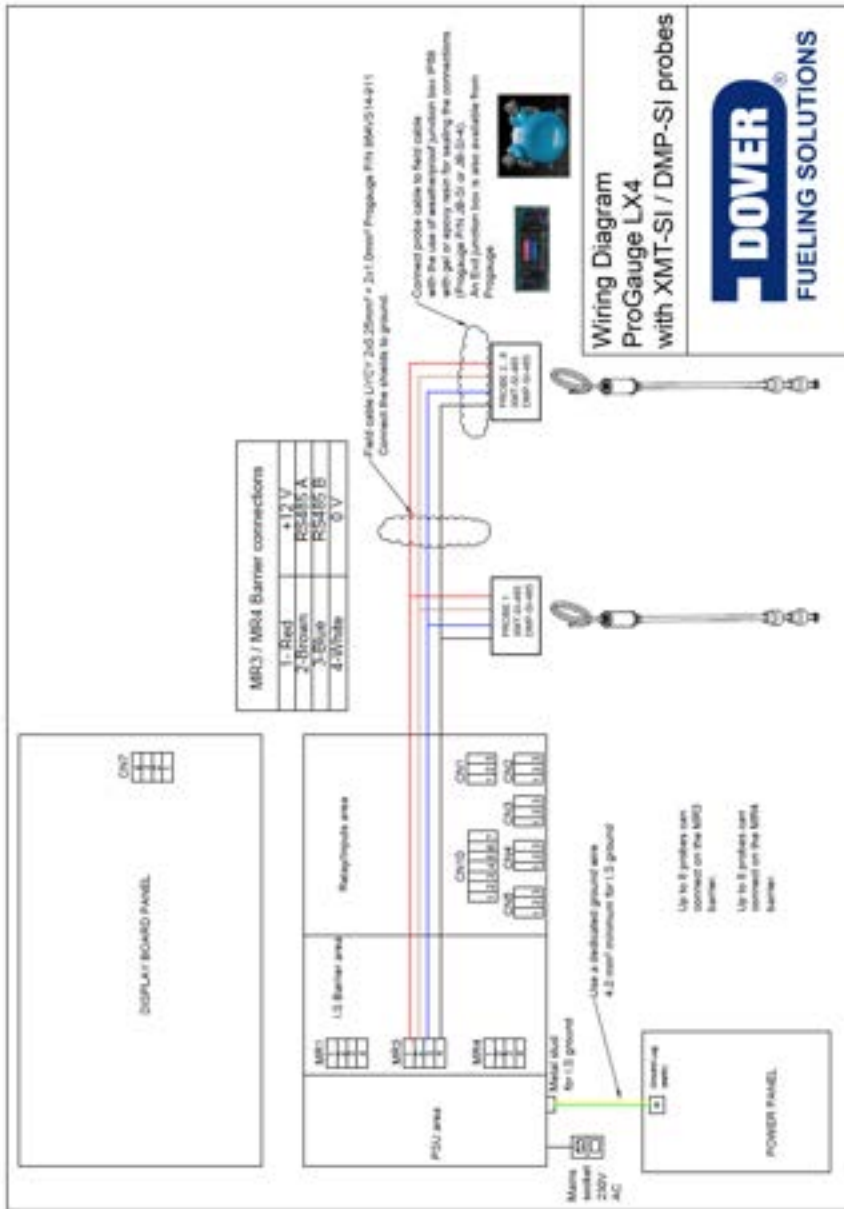
8.2 Technical Support

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.

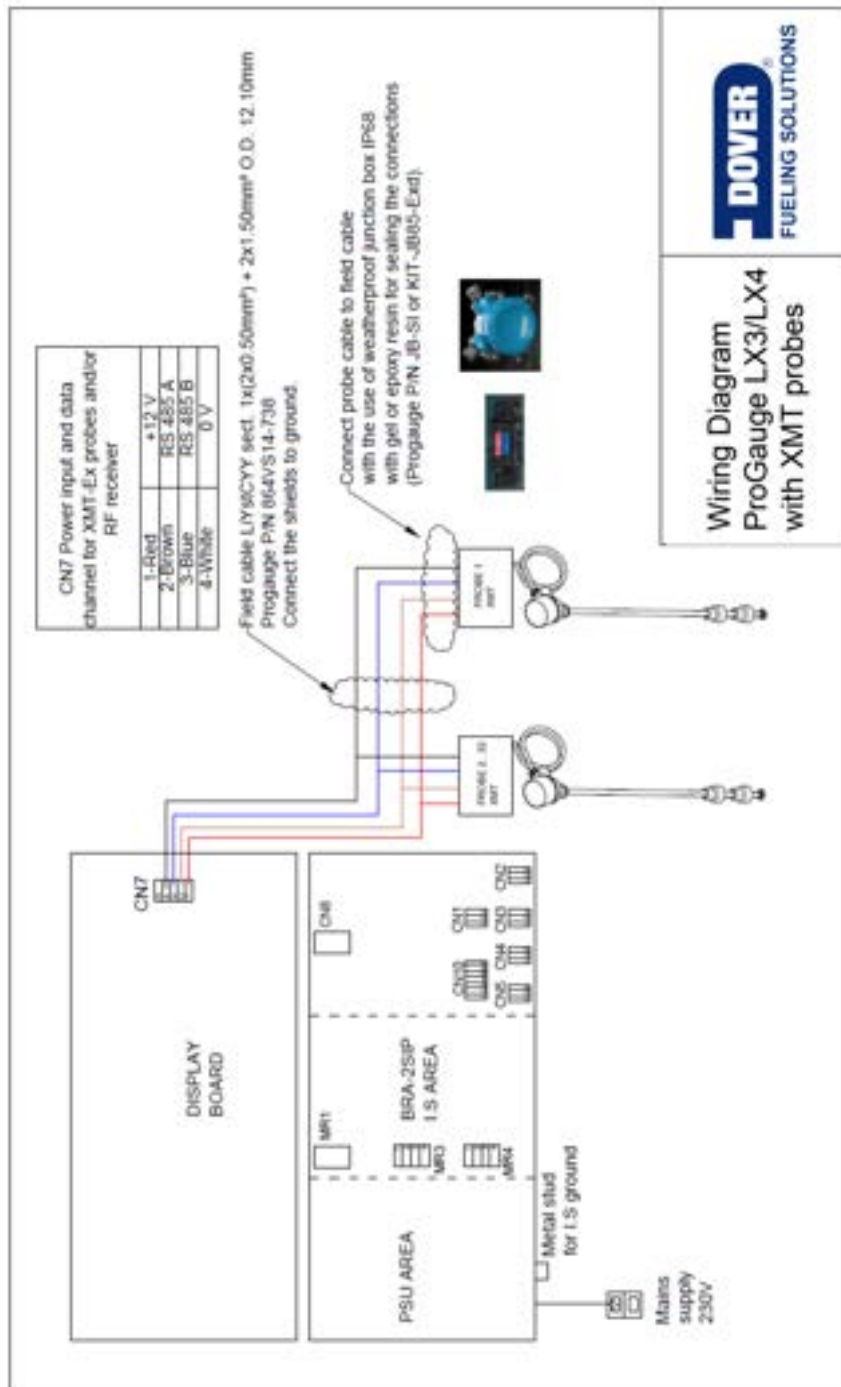
Refer to the "Utility" section of the M2051 LX 4/LX Plus Configuration manual for more information on log files and the database backup in the console.

Section 9 Wiring Diagrams

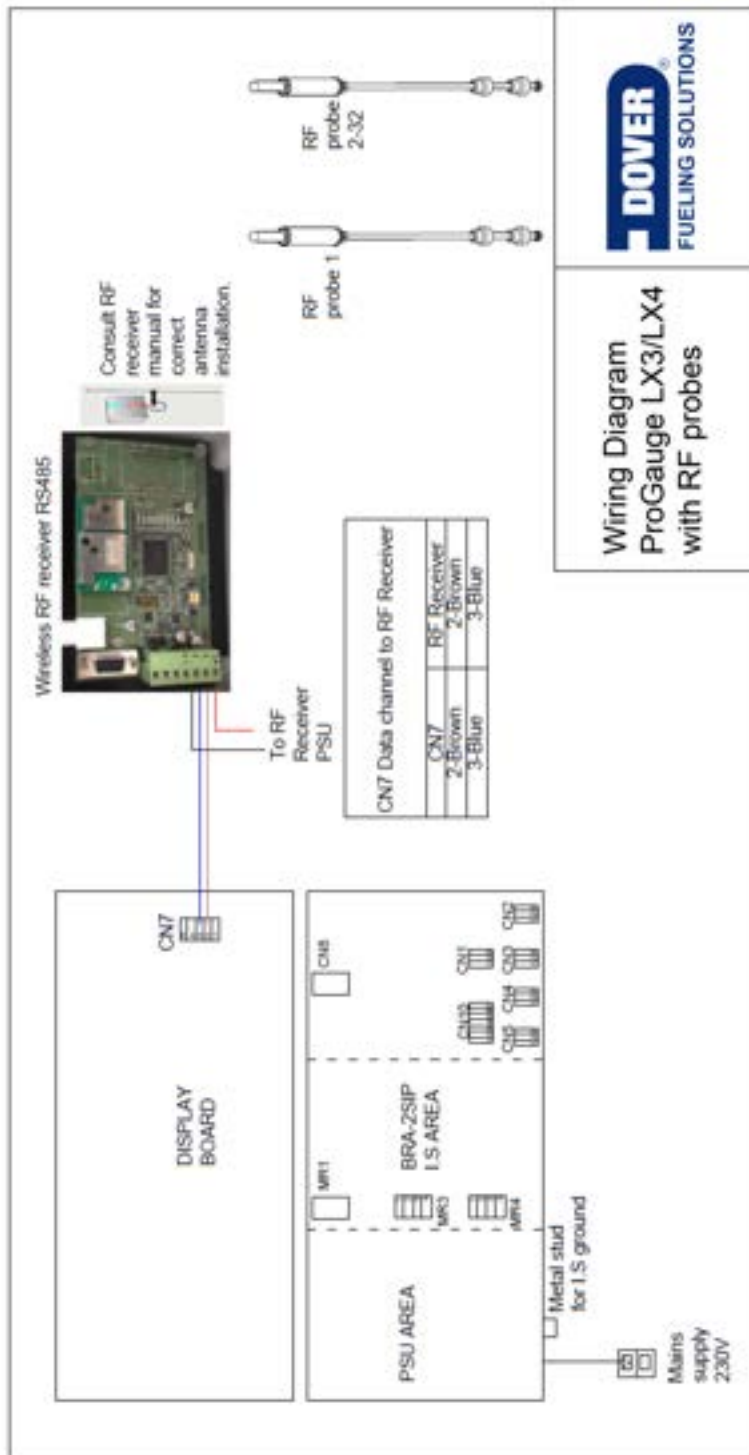
9.1 Connect XMT-SI probes



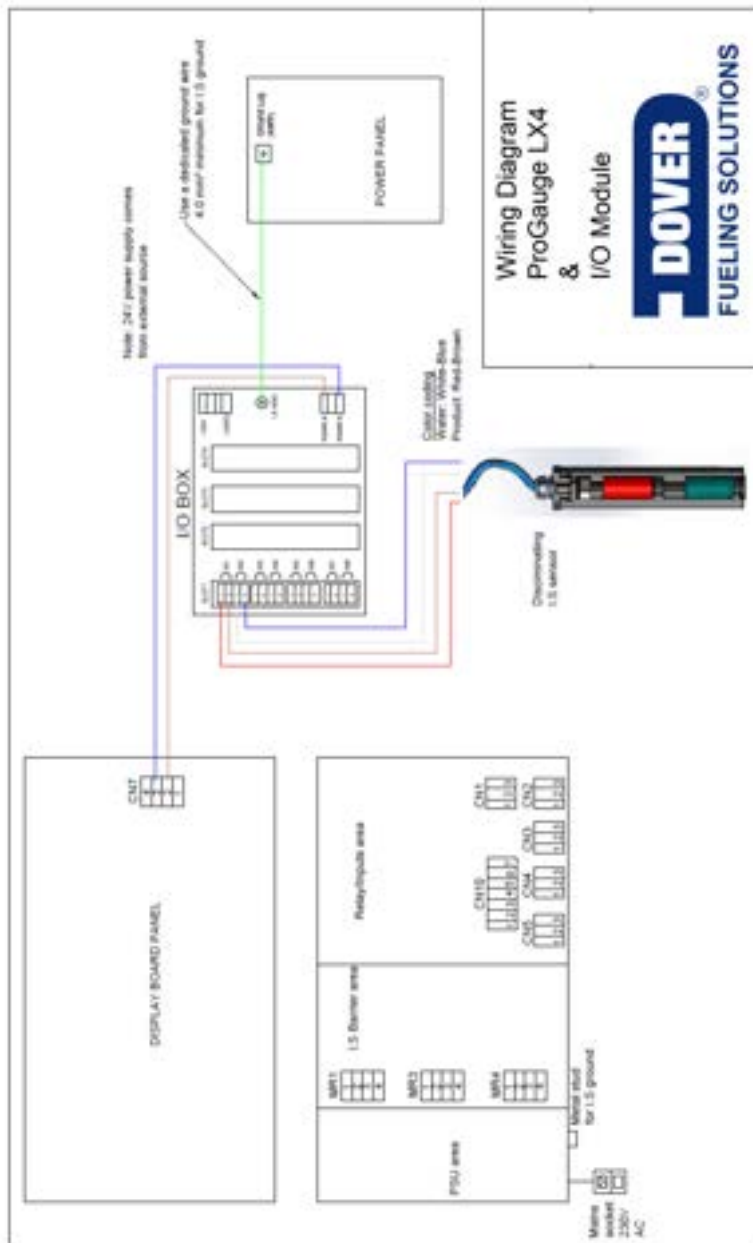
9.2 Connect XMT Exd probes



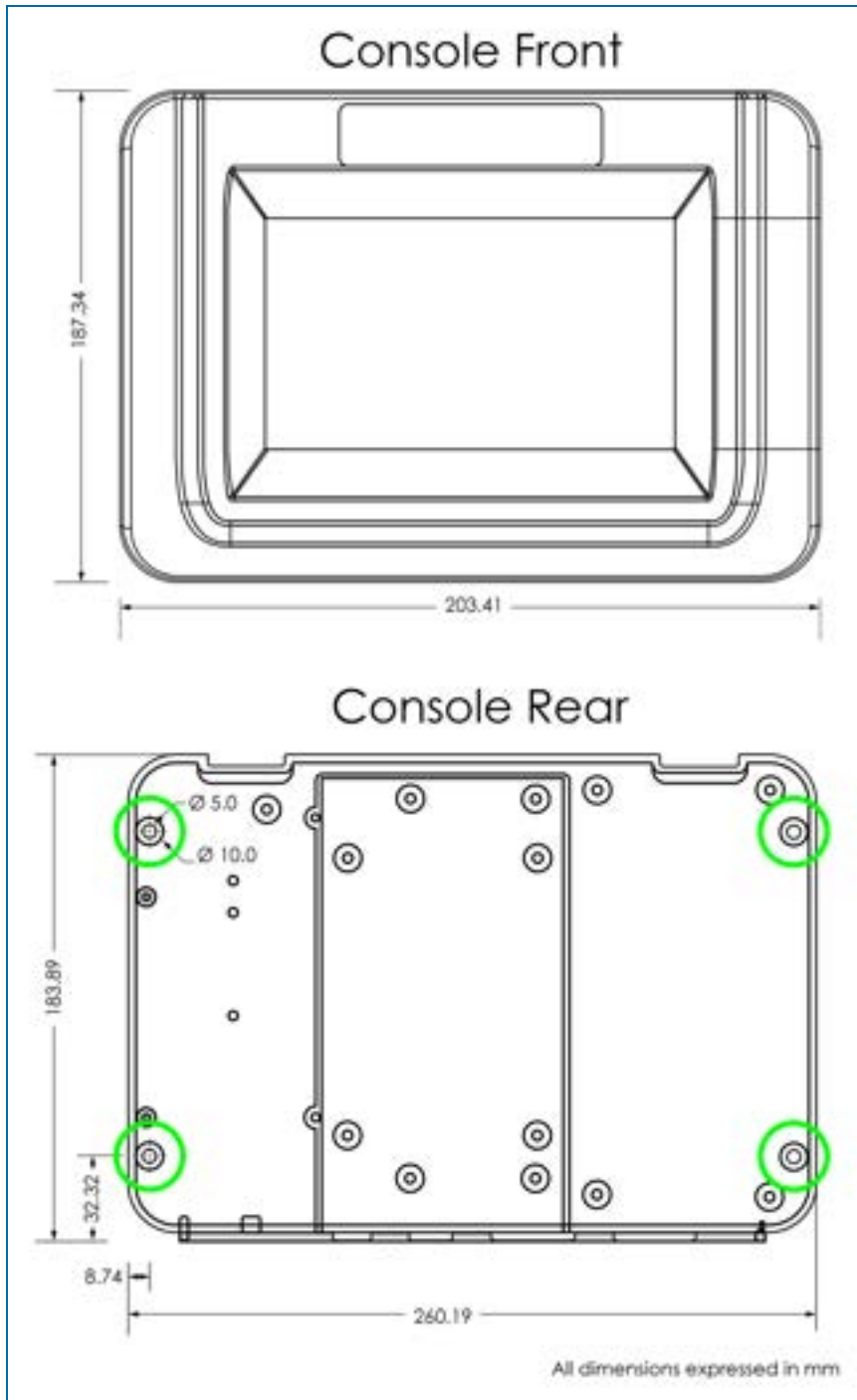
9.3 Connect RF Probes



9.4 Connect On/Off Sensors



Appendix A - Console Dimensions



Section A Revisions - M2050

<i>Revision #</i>	<i>Approval</i>	<i>Effective</i>	<i>Software Version</i>	<i>Key Changes</i>
0	1783	8/19/2020		Initial Release
1	1836	12/3/2020		Spec for I.S wiring to 4.0 mm2, wiring diagrams updated, Connections graphics, updated support. Barrier label
2	1944	8/10/2021		Updated ATEX Label, new Technical Support procedure
3	1998	3/14/2022		Add note for Maximum # of probes.
4	2045	7/28/2022		Add power shutdown instruction/note/warning panel. Removed IFSF/GSM card from inner component list.
5	DB	8/4/2023		Add spec table for relays.
6	NA/WP	6/17/24		Security Best Practices



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

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