GASBOY

MDE-5624A

Fleet Solutions
Truck PRIME Installation Manual

SAFETY CONSIDERATIONS

Read all warning notes and instructions carefully. They are included to help you install the Product safely in the highly flammable environment of the fuel station. Disregarding these warning notes and instructions could result in serious injury or property damage. It is the installer's responsibility to install, operate and maintain the equipment according to the instructions given in this manual, and to conform to all applicable codes, regulations and safety measures. Failure to do so could void all warranties associated with this equipment.

Remember that the fuel station environment is highly flammable and combustible. Therefore, make sure that actual installation is performed by experienced personnel, licensed to perform work in fuel station and in a flammable environment, according to the local regulations and relevant standards.

WARNING - EXPLOSION HAZARD

Use separate conduit for the intrinsically safe. Do not run any other wires or cables through this conduit, because this could create an explosion hazard.

Use standard test equipment only in the non- hazardous area of the fuel station and approved test equipment for the hazardous areas.

In the installation and maintenance of the product, comply with all applicable requirements of the National Fire Protection Association NFPA30 "Flammable and Combustible Liquids Code", NFPA 30A "Code for Motor Fuel Dispensing Facilities and Repair Garages", NFPA 70® "National Electric Code", federal, state and local codes and any other applicable safety codes and regulations.

Do not perform metal work in a hazardous area. Sparks generated by drilling, tapping, and other metal work operations could ignite fuel vapors and flammable liquids, resulting in death, serious personal injury, property loss, and damage to you and other persons.

CAUTION - SHOCK HAZARD

Dangerous AC voltages that could cause death or serious personal injury are used to power the product. Always disconnect power before starting any work. The product has more than one power supply connection points. Disconnect all power before servicing.

WARNING - PASSING VEHICLES

When working in any open area of fuel station, beware of passing vehicles that could hit you. Block off the work area to protect yourself and other persons. Use safety cones or other signaling devices.

WARNING

Substitutions of components could impair intrinsic safety. Use of unauthorized components or equipment will void all warranties associated with this equipment.

CAUTION

Do not attempt to make any repair on the printed circuit boards residing in the product, as this will void all warranties related to this equipment.

WARNING

The unit is not intended for installation in marine type environments.

PROPRIETY NOTICE

DISCLAIMER

This document is provided for reference only and while every effort has been made to ensure correctness at the time of publication, Orpak Systems Ltd. assumes no responsibility for errors or omissions.

FCC COMPLIANCE STATEMENT

The FCC Wants You to Know:

This equipment has been tested and found to comply with the limits for a Class B & C digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

a) Reorient or relocate the receiving antenna.

b) Increase the separation between the equipment and receiver.

c) Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.

d) Consult an authorized dealer or service representative for help.

FCC WARNING

Modifications not expressly approved by the manufacturer could void the user authority to operate the equipment under FCC Rules.

PROPRIETARY NOTICE

DISCLAIMER

Table of Contents

1 – Introduction

General

This manual describes the Truck PRIME, which is part of Gasboy® Fleet Solution. It provides a general description of the product, as well as installation guidelines.

This manual is intended for qualified authorized installers of the Truck PRIME and its components.

Solution Description

The Truck PRIME is a fuel control and data acquisition system (see Figure 1-1). The Truck PRIME is enclosed in a self-contained, weather-resistant cabinet designed to be compatible with the forecourt and on-site environments. The cabinet is designed to be installed on fuel trucks used as mobile refueling stations.

Figure 1-1: Truck PRIME

Truck PRIME is a major component in the Gasboy's Fleet Solution for mobile refueling stations. Truck PRIME provides the central function of the mobile site controller and fulfills other essential services on site such as Vehicle/Driver Identification System, Transaction data storage, device control, and more.

References

This manual provides installation instructions for the Truck PRIME system, please refer to the following manuals.

For specific installation and setup instructions not included in this manual, please refer to the following manuals:

- MDE-4815 Wireless Gateway Installation Manual
- MDE-4821 FHO Installation and User Manual
- MDE-4851 Fuel Point PLUS Installation and Configuration Manual
- MDE-5414 SiteOmat Setup and Maintenance Manual
- MDE-5415 SiteOmat360 Station Controller User Manual
- MDE-5623 Fleet Solutions Site PRIME Installation Guide, P/N 817438032
- Fuel & Drive Mobile Application User Manual P/N: 817400190

Documentation Conventions

This manual uses the following conventions:

⚠ WARNING

Warning notes contain information that, unless strictly observed, could result in injury or loss of life.

Les consignes d'avertissement contiennent des informations qui, à moins d'être strictement respectées, peuvent entraîner des blessures ou la mort.

CAUTION

Caution notes contain information that, unless strictly observed, could result in damage or destruction of the equipment or long-term health hazards to personnel.

Les consignes de mise en garde contiennent des informations qui, à moins d'être strictement respectées, peuvent entraîner des dommages ou la destruction de l'équipement ou des risques à long terme pour la santé du personnel.

Abbreviations and Acronyms

Term	Description
ADSL	Asymmetric Digital Subscriber Line
Amps	Amperes
AVI	Automatic Vehicle Identification
CL	Current Loop
FCC	Federal Communications Commission
FHO	Fleet Head Office
GND	Grounded
IC	Integrated Circuit
MCC	Mains Circuit Control Box
MPI	Mechanical Pump Interface
MWGT	Master Wireless Gateway Terminal
nWGT	nano Wireless Gateway Terminal
PDB	Power Distribution Box
RTC	Real Time Clock
SAM	Security Application Module
TLG	Tank Level Gauging System
UPS	Uninterruptible Power Supply
VIU	Vehicle/Driver Identification Unit
VPN	Virtual Private Network

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2 – Important Safety Information

Notes: 1) Save this Important Safety Information section in a readily accessible location.

2) Although DEF is non-flammable, diesel is flammable. Therefore, for DEF cabinets that are attached to diesel dispensers, follow all the notes in this section that pertain to flammable fuels.

This section introduces the hazards and safety precautions associated with installing, inspecting, maintaining or servicing this product. Before performing any task on this product, read this safety information and the applicable sections in this manual, where additional hazards and safety precautions for your task will be found. Fire, explosion, electrical shock or pressure release could occur and cause death or serious injury, if these safe service procedures are not followed.

Preliminary Precautions
You are working in a potentially dangerous environment of flammable fuels, vapors, and high voltage or pressures. Only trained or authorized individuals knowledgeable in the related procedures should install, inspect, maintain or service this equipment.

Emergency Total Electrical Shut-Off
The first and most important information you must know is how to stop all fuel flow to the pump/dispenser and island. Locate the switch or circuit breakers that shut off all power to all fueling equipment, dispensing devices, and Submerged Turbine Pumps (STPs).

⚠ WARNING

The EMERGENCY STOP, ALL STOP, and PUMP STOP buttons at the cashier's station WILL NOT shut off electrical power to the pump/dispenser. This means that even if you activate these stops, fuel may continue to flow uncontrolled.

You must use the TOTAL ELECTRICAL SHUT-OFF in the case of an emergency and not the console's ALL STOP and PUMP STOP or similar keys.

Total Electrical Shut-Off Before Access
Any procedure that requires access to electrical components or the electronics of the dispenser requires total electrical shut off of that unit. Understand the function and location of this switch or circuit breaker before inspecting, installing, maintaining, or servicing Gasboy equipment.

Evacuating, Barricading and Shutting Off
Any procedure that requires access to the pump/dispenser or STPs requires the following actions:

- An evacuation of all unauthorized persons and vehicles from the work area
- Use of safety tape, cones or barricades at the affected unit(s)
- A total electrical shut-off of the affected unit(s)

Read the Manual
Read, understand and follow this manual and any other labels or related materials supplied with this equipment. If you do not understand a procedure, call a Gasboy Authorized Service Contractor or call the Gasboy Support Center at 1-800-444-5529. It is imperative to your safety and the safety of others to understand the procedures before beginning work.

Follow the Regulations
Applicable information is available in National Fire Protection Association (NFPA) 30A; *Code for Motor Fuel Dispensing Facilities and Repair Garages*, NFPA 70; *National Electrical Code (NEC)*, Occupational Safety and Health Administration (OSHA) regulations and federal, state, and local codes. All these regulations must be followed. Failure to install, inspect, maintain or service this equipment in accordance with these codes, regulations and standards may lead to legal citations with penalties or affect the safe use and operation of the equipment.

Replacement Parts
Use only genuine Gasboy replacement parts and retrofit kits on your pump/dispenser. Using parts other than genuine Gasboy replacement parts could create a safety hazard and violate local regulations.

Safety Symbols and Warning Words

This section provides important information about warning symbols and boxes.

Alert Symbol

⚠ This safety alert symbol is used in this manual and on warning labels to alert you to a precaution which must be followed to prevent potential personal safety hazards. Obey safety directives that follow this symbol to avoid possible injury or death.

Signal Words
These signal words used in this manual and on warning labels tell you the seriousness of particular safety hazards. The precautions below must be followed to prevent death, injury or damage to the equipment:

⚠ **DANGER**: Alerts you to a hazard or unsafe practice which will result in death or serious injury.

⚠ **WARNING**: Alerts you to a hazard or unsafe practice that could result in death or serious injury.

⚠ **CAUTION** with Alert symbol: Designates a hazard or unsafe practice which may result in minor injury.

CAUTION without Alert symbol: Designates a hazard or unsafe practice which may result in property or equipment damage.

Working With Fuels and Electrical Energy

Prevent Explosions and Fires
Fuels and their vapors will explode or burn, if ignited. Spilled or leaking fuels cause vapors. Even filling customer tanks will cause potentially dangerous vapors in the vicinity of the dispenser or island.

DEF is non-flammable. Therefore, explosion and fire safety warnings do not apply to DEF fluid lines.

No Open Fire


Open flames from matches, lighters, welding torches or other sources can ignite fuels and their vapors.

No Sparks - No Smoking

Sparks from starting vehicles, starting or using power tools, burning cigarettes, cigars or pipes can also ignite fuels and their vapors. Static electricity, including an electrostatic charge on your body, can cause a spark sufficient to ignite fuel vapors. Every time you get out of a vehicle, touch the metal of your vehicle, to discharge any electrostatic charge before you approach the dispenser island.

Working Alone

It is highly recommended that someone who is capable of rendering first aid be present during servicing. Familiarize yourself with Cardiopulmonary Resuscitation (CPR) methods, if you work with or around high voltages. This information is available from the American Red Cross. Always advise the station personnel about where you will be working, and caution them not to activate power while you are working on the equipment. Use the OSHA Lockout/Tagout procedures. If you are not familiar with this requirement, refer to this information in the service manual and OSHA documentation.

Working With Electricity Safely

Ensure that you use safe and established practices in working with electrical devices. Poorly wired devices may cause a fire, explosion or electrical shock. Ensure that grounding connections are properly made. Take care that sealing devices and compounds are in place. Ensure that you do not pinch wires when replacing covers. Follow OSHA Lockout/Tagout requirements. Station employees and service contractors need to understand and comply with this program completely to ensure safety while the equipment is down.

Hazardous Materials

Some materials present inside electronic enclosures may present a health hazard if not handled correctly. Ensure that you clean hands after handling equipment. Do not place any equipment in the mouth.

⚠ WARNING

The pump/dispenser contains a chemical known to the State of California to cause cancer.

⚠ WARNING

The pump/dispenser contains a chemical known to the State of California to cause birth defects or other reproductive harm.

Gilbarco Veeder-Root encourages the recycling of our products. Some products contain electronics, batteries, or other materials that may require special management practices depending on your location. Please refer to your local, state, or country regulations for these requirements.

In an Emergency

Inform Emergency Personnel

Compile the following information and inform emergency personnel:

- Location of accident (for example, address, front/back of building, and so on)
- Nature of accident (for example, possible heart attack, run over by car, burns, and so on)
- Age of victim (for example, baby, teenager, middle-age, elderly)
- Whether or not victim has received first aid (for example, stopped bleeding by pressure, and so on)
- Whether or not a victim has vomited (for example, if swallowed or inhaled something, and so on)

⚠ WARNING


Gasoline/DEF ingested may cause unconsciousness and burns to internal organs.
Do not induce vomiting. Keep airway open.
Oxygen may be needed at scene. Seek medical advice immediately.

⚠ WARNING

DEF generates ammonia gas at higher temperatures.
When opening enclosed panels, allow the unit to air out to avoid breathing vapors.
If respiratory difficulties develop, move victim away from source of exposure and into fresh air. If symptoms persist, seek medical attention.

⚠ WARNING


Gasoline inhaled may cause unconsciousness and burns to lips, mouth and lungs.
Keep airway open.
Seek medical advice immediately.

⚠ WARNING


Gasoline/DEF spilled in eyes may cause burns to eye tissue.
Irrigate eyes with water for approximately 15 minutes.
Seek medical advice immediately.

⚠ WARNING


Gasoline/DEF spilled on skin may cause burns.
Wash area thoroughly with clear water.
Seek medical advice immediately.

⚠ WARNING

DEF is mildly corrosive. Avoid contact with eyes, skin, and clothing. Ensure that eyewash stations and safety showers are close to the work location. Seek medical advice/recommended treatment if DEF spills into eyes.

IMPORTANT: Oxygen may be needed at scene if gasoline has been ingested or inhaled. Seek medical advice immediately.

Lockout/Tagout

Lockout/Tagout covers servicing and maintenance of machines and equipment in which the unexpected energization or start-up of the machine(s) or equipment or release of stored energy could cause injury to employees or personnel. Lockout/Tagout applies to all mechanical, hydraulic, chemical, or other energy, but does not cover electrical hazards. Subpart S of 29 CFR Part 1910 - Electrical Hazards, 29 CFR Part 1910.333 contains specific Lockout/Tagout provision for electrical hazards.

Hazards and Actions

WARNING

Spilled fuels, accidents involving pumps/dispensers, or uncontrolled fuel flow create a serious hazard.
Fire or explosion may result, causing serious injury or death.
Follow established emergency procedures.
DEF is non-flammable. However it can create a slip hazard. Clean up spills promptly.

The following actions are recommended regarding these hazards:

Collision of a Vehicle with Unit | Fire at Island | Fuel Spill

- Do not go near a fuel spill or allow anyone else in the area.
- Use station EMERGENCY CUTOFF immediately. Turn off all system circuit breakers to the island(s).
- Do not use console E-STOP, ALL STOP, and PUMP STOP to shut off power. These keys do not remove AC power and do not always stop product flow.
- Take precautions to avoid igniting fuel. Do not allow starting of vehicles in the area. Do not allow open flames, smoking or power tools in the area.
- Do not expose yourself to hazardous conditions such as fire, spilled fuel or exposed wiring.
- Call emergency numbers.

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3 – System Overview

General

This section provides a detailed description of the Truck PRIME system, as well as the available configurations, system specifications, and communication standards.

System Description

The Truck PRIME system is a mobile Fleet Management System. The system controls, monitors, and stores on-the-spot data from refueling by tanker truck for customers with large onsite equipment. The system is suitable for a large range of homebase customers.

The system consists of a controller mounted on the truck and Vehicle ID Units installed on the fleet vehicles.

Truck PRIME enables refueling of vehicles equipped with vehicle ID units only. The vehicle's fuel inlet must be positioned in the proximity of the fuel pump nozzle, ensuring end-to-end authentication of the vehicle, meaning that only authorized vehicles can fuel. After providing fuel, the system registers the transaction data.

The heart of the homebase station solution is the SiteOmat automation software. SiteOmat runs on an embedded operating system on the controller unit (nOrCU). The controller is an embedded hardware platform designed to survive the harsh gas station environment. It uses a solid-state flash disk and Real Time Clock (RTC) with backup, along with surge suppressors for transient and noise immunity. The system also includes power fail recovery mechanisms.

Automatic Vehicle Identification

Automatic Vehicle Identification (AVI) is an important option for maximal control and savings on fuel expenditure. The dispenser is authorized to refuel after a positive identification of the vehicle and only while the nozzle is inside the fuel inlet of the identified vehicle. All transaction information is automatically recorded. A combination of vehicle and driver identification is also possible for tight tracking.

Remote Web Access

Remote Web-based capabilities for monitoring, management, and maintenance are available. A standard PC with an internet browser (Google Chrome/Microsoft Edge) is used for management of the site either locally or remotely (secured). Special management software is not required due to the built-in Web server technology integrated into the station controller and the large variety of communication links supported – both wired and wireless.

Fleet Head Office

Centralized management is provided by the optional Fleet Head Office server. The Fleet Head Office consolidates the data from multiple sites and generates reports, including exception reports. It also enables control of the limits and restrictions placed on the various fleet vehicles. Furthermore, authorized fleet personnel are able to log in remotely and have full control over the forecourt.

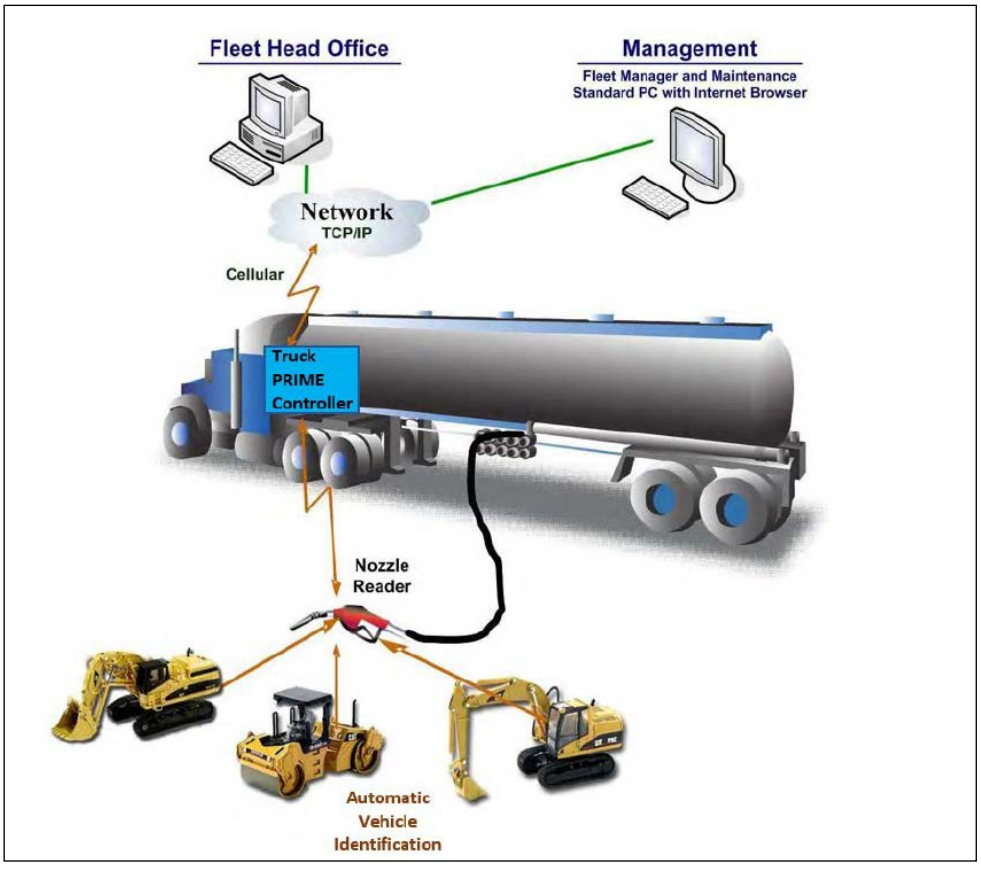
Restrictions and Limits

Control of a fleet's fuel expenses can be controlled by defining limits (day, week, or month), maximum number of refueling (per day, week, or month), and setting restrictions (days of the week, fuel type, stations, and time intervals). In case of system configuration for multiple sites, the centralized Fleet Head Office needs to synchronize the data between all sites so that the limits can be applied to a whole system rather than to an individual site. In case of communication failure, the specific site will be able to refuel for a predefined grace period using the most recent limits stored in its database.

Truck PRIME Capabilities for Mobile Station Management

Truck PRIME provides features for comprehensive management of the mobile refueling station by enabling a large variety of communication links: cellular, dial-in modem, Wi-Fi, radio modem, and satellite (see Figure 3-1).

Figure 3-1: Truck PRIME Capabilities



System Workflow

The following is an example of an operational workflow for self-service at a site equipped with Truck PRIME:

Refueling Scenario with Truck PRIME

The Truck PRIME equipped fuel truck arrives at the construction site to refuel its fleet vehicles. The operator inserts the nozzle into a vehicle fuel inlet and waits for authorization. Truck data is automatically read and stored in the controller for authentication and authorization. Upon approval, the fueling transaction starts; following fueling, the transaction data is kept internally until transferred to the Head Office (HO) for future billing.

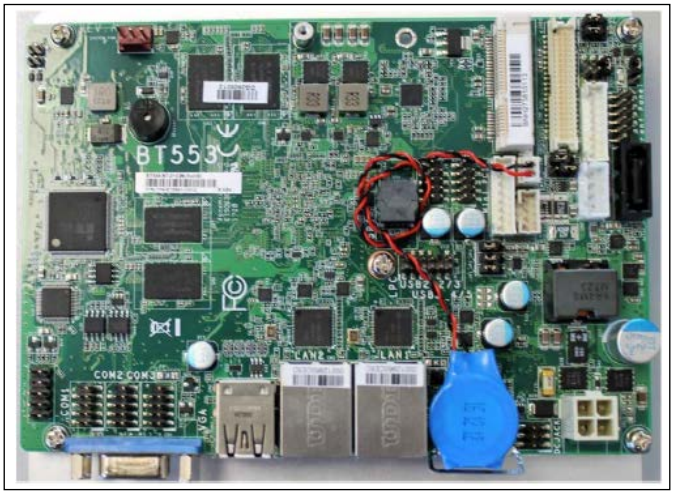
Main Components

The following provides a description of Truck PRIME main sub units.

Controller Unit (nOrCU)

The Controller Unit (nOrCU) is a complete forecourt controller with its own embedded operating system. The unit consists of an embedded hardware platform with a solid state flash storage, RTC with a backup. nOrCU features two separate and isolated networks (TCP/IP over Ethernet). One network links the OrIC Prime system components. The second network is intended for external remote communication (Head Office, third party systems). This network is protected by SSL security. The nOrCU includes a built-in server for Web access through an internet browser (see Figure 3-2).

Figure 3-2: nOrCU



OrPAY1000 (Optional)

The OrPAY1000 terminal is an efficient and advanced user interface that includes a 4.3-inch multimedia color LCD display, four addressable screen keys, and a full alphanumeric vandal proof 40-key keyboard (see Figure 3-3).

Figure 3-3: OrPAY1000

TR500 (Optional)

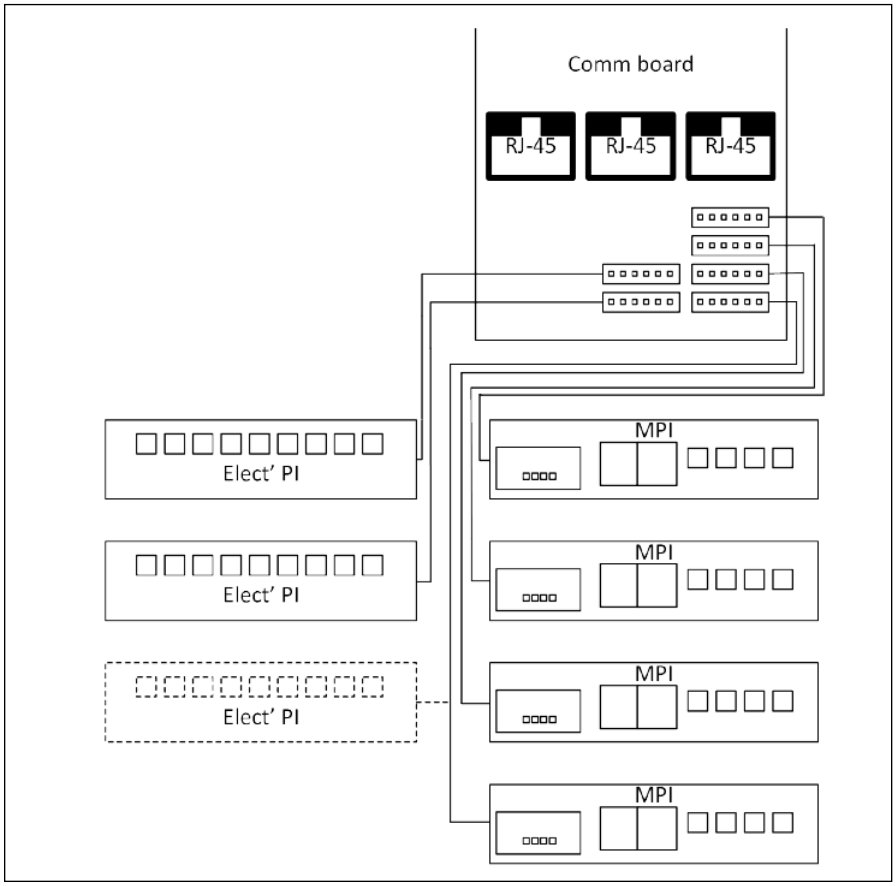
The TR500 is a compact standalone reader unit for tags intended for vehicle or driver tag identification in gas stations and other applications. The TR500 includes a Security Application Module (SAM) used to handle the encrypted tags. The TR500 is installed within easy reach for customers wishing to refuel, and it transmits information to the station automation system over an Ethernet or RS-485 cable (see Figure 3-4).

Figure 3-4: TR500

Communication Interfaces

Truck PRIME contains seven slots for the various optional communication interfaces. Three slots are intended for electronic pumps only (located on the left side), and four slots are intended for mechanical pumps, 1M modules. The maximum configuration is either three electronic pumps only, or two electronic pumps, and four mechanical pumps (see Figure 3-5).

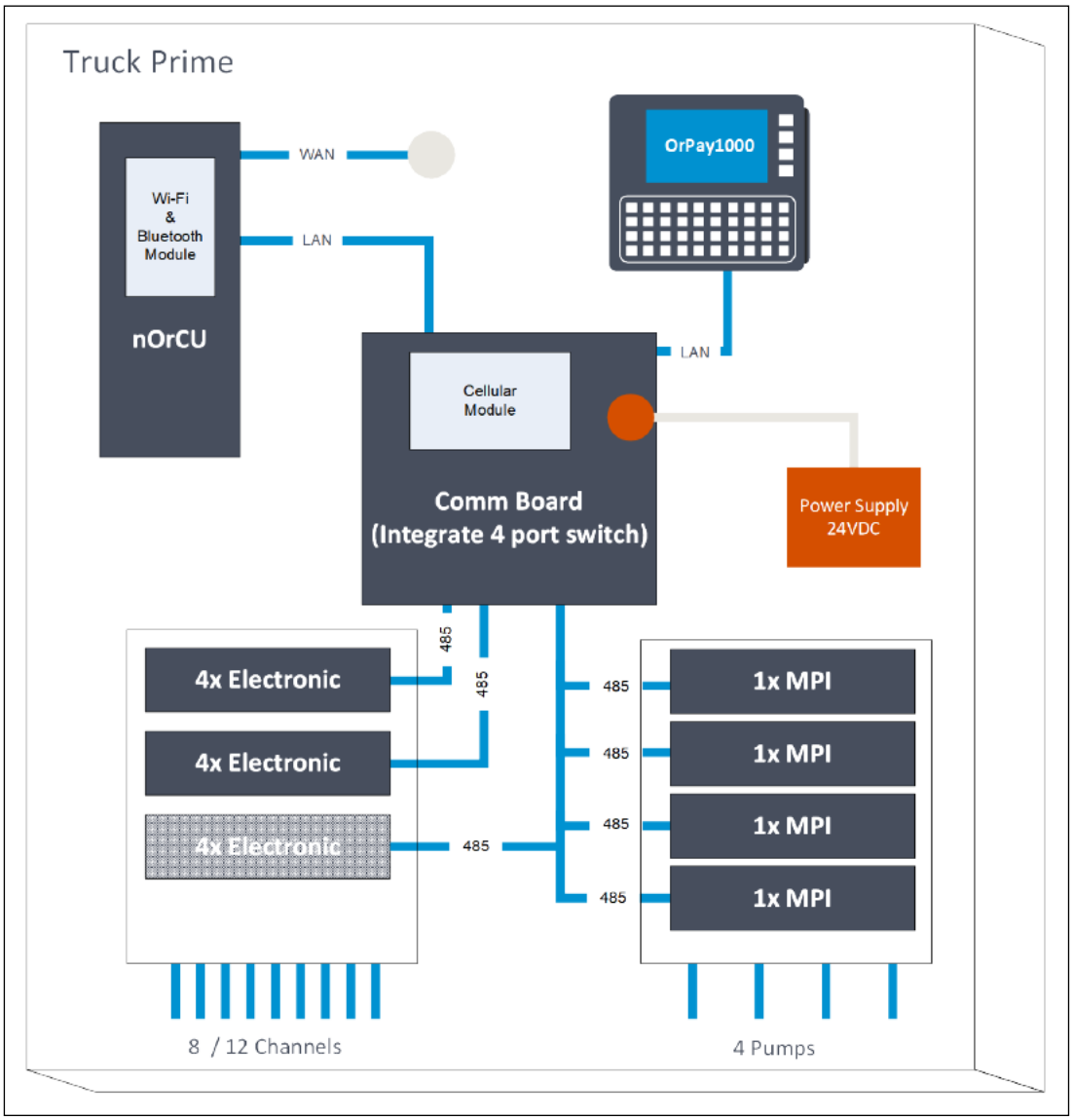
Figure 3-5: TR500



Internal Configuration

The following is an example of the Site PRIME internal configuration.

Figure 3-6: Site PRIME Internal Configuration



Available Configurations

Truck PRIME is available in several configurations, in accordance with its intended use and the components installed.

The following paragraphs describe the several configurations and their component devices.

Truck PRIME/Extension Box

Truck PRIME is supplied with the controller unit embedded in the cabinet. In this configuration, Truck PRIME acts as a full station controller, providing the functions of authorization unit, central forecourt devices controller, link to the Head Office, etc.

Truck PRIME supports up to 4 mechanical pumps. If more pumps are needed, an additional extension box is required. Each extension box can support up to 4 mechanical pumps.

In the Extension Box Configuration, the controller unit is removed from the basic Truck PRIME. This cabinet operates as an authorization terminal and is intended to ease the system operation in large homebase stations. In this configuration, the station includes a main Truck PRIME and a second unit in Extension Box Configuration.

The extension box unit is linked to the main Truck PRIME via a CAT5E cable (Ethernet), and communicates with the controller unit and the Head Office. In this configuration, the controller unit in the Truck PRIME is shared by both cabinets.

Note: The maximum number of devices/pumps on each bus is as follows:
- *For RS485 - 6 devices/pumps*
- *For Current Loop - 4 devices/pumps*

For best communication balance, it is recommended to connect one device/pump on each bus and then loop to the other buses, so that all pumps/devices are divided across the buses. Of course, it is NOT allowed to connect different device types on the same bus (channel).

Security and Protection

The transaction activities of the Truck PRIME are secured and protected for transmission and authorization activities.

Network Security

The Ethernet LAN is isolated from the external WAN by the site controller. In case of remote maintenance, a firewall should be applied either at the router level or preferably at the homebase station level.

Maintenance Security

The Truck PRIME maintenance and setup procedures require inserting a user name and password for access. For further information, please refer to the *MDE-5414 SiteOmat Setup Instructions Manual*.

Truck PRIME is locked by key to prevent unauthorized access to the bypass switches and controller electronics.

Housing

The Truck PRIME enclosure is a weather proof cabinet, able to sustain the harsh environment of the site. Truck PRIME is installed with a rear shock absorber assembly that dampens the vibrations from the truck and the road (see "Truck PRIME with Shock Absorber Assembly Installation Procedure" on page 5-32).

The overall structure is installed vertically on any flat surface and secured with eight screws.

The Truck PRIME cabinet is locked by key for safety and security. The key should be stored in a well-kept, secure, and safe place.

Any installation should provide convenient access for service and maintenance. Not suitable for use in hazardous locations.

Technical Specifications and Standards

The following details the technical specifications, as well as the communication and security standards for the Truck PRIME.

Truck PRIME Technical Specifications

The following details the physical, electrical, and environmental specifications of the Truck PRIME.

Parameter	Value
Dimensions (W x H x D)	317mm x 294mm x 177mm (12.4803" x 11.5748" x 6.9685")
Supply Voltage	12 - 24V DC
Power Consumption	2.5A (max)
Operating Temperature	• **No OrPAY1000**: -40°F to +158°F (-40°C to +70°C) • **OrPAY1000**: -40°F to +149°F (-40°C to +65°C)
Storage Temperature	-22°F to +104°F (-30°C to +40°C)
Humidity	80% Non-condensing
Communication Interface	**Default**: • 1x Ethernet RJ-45 - GBE for WAN (nOrCU) • 2x Ethernet RJ-45 100Base-T for internal or external optional devices. **Optional Modules**: • 4G LTE Cellular modem with 2G/3G backward compatibility • Wi-Fi AP 2.4/5GHz • Wireless communication via nWGT (for units without OrPAY1000) • Tag Reader via TR500 (for units without OrPAY1000)

AC/DC MPI Module Specifications

The following details the specifications of the AC/DC MPI Module.

Parameter	Value
For MPI Module Pump Control Maximum Current Single SSR	• Open state voltage ratings: AC: 100-240 V DC: 10-32 V • Open state leakage current: maximum 5mA • Close state maximum current: 1.8A
Power supply output voltage to Pulser unit	12 VDC 100 mA (max)
Pulser Input High level voltage	• Positive “Hi-Logic” voltage: 4 V - 32 VDC • Negative “Hi-Logic” voltage (-4V) - (-32 V)DC • “Low-Logic” voltage (-0.6 V) - (+0.6) VDC
In-use	• Low voltage DC in-use: Active: 0 - 2 V DC Inactive state: - 6 V - 32 VDC - Open contact • High voltage AC in-use: Active: 100 VAC - 240 VAC Inactive: 0 - 10 VAC *Note: Do not connect both Low and Hi In-use line simultaneously.*
Bypass	• Mechanical bypass switch operates in parallel to SSR • Smart Bypass reporting: When SSR is at an open state, voltage on SSR contacts is monitored - Standard: AC: 100 - 240V DC: 10 - 32V - Bypass: AC or DC: 0 - 4V When SSR goes to Closed state, the last value before going to Closed state is reported.

Note: When using digital pulsers, the voltage wave peak must tangent to 0V; otherwise, it will not intercept in the decoder or will be counted twice.

Communication Standards

Truck PRIME communicates over the following standards:

- TCP/IP over Ethernet
- RS-232 link (with the relevant Pump Interface module installed)
- RS-485 link (with the relevant Pump Interface module installed)
- RS-422 link (with the relevant Pump Interface module installed)
- IEEE 802.15.4.

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4 – Preliminary Installation Procedures

General

This section provides preliminary guidelines for Truck PRIME. These include the following:

- Preliminary Instructions
- Wiring and Wire Conduits Requirements

Precautions and Safety Notes

Prior to any installation activities, carefully observe the precautions and safety notes given below.

⚠ WARNING

Before installing or servicing equipment, carefully observe the warnings and precautions provided at the beginning of this manual.

The fuel truck environment is highly flammable and combustible. Therefore, ensure that the installation is performed by experienced personnel, licensed to perform work in a homebase station and capable of implementing all applicable requirements of the National Fire Protection Association NFPA-30 “Flammable and Combustible Liquids Code”, NFPA-30A “Code for Motor Fuel Dispensing Facilities and Repair Garages”, NFPA-70A “National Electric Code”, federal, state, local codes, and any other applicable safety codes and regulations.

System power may come from more than one source. Disconnect all power sources, including pumps, before attempting to work on the system.

Install Truck PRIME in an area in accordance with the safety restrictions. The Truck PRIME site preparation is the customer's responsibility.

Do not connect power to Truck PRIME and other peripherals, including pumps, until complete installation is inspected and certified.

Do not perform any metal work in the hazardous area. Sparks generated by drilling, tapping, and metal work operations could ignite fuel vapors and flammable liquids. This may result in death, serious personal injury, property loss, and damage to you and other persons.

When working in any open area of the homebase station, beware of passing vehicles. Block off the work area to protect yourself and other persons using safety cones or other signaling devices.

Before any kind of work is performed on the fuel truck, ensure that its tank is empty and drained of all liquids.

Conduits

The installation of the Truck PRIME requires setting several conduits in the fuel truck. The conduits are required for the routing and protection of the different types of cables.

This section provides the procedures for preparing the conduits and cable layout in the fuel truck beforehand. These procedures consist of:

- Wire conduits installation
- Cables routing within the conduits
- Power equipment setup

Requirements

Conduits must comply with the following requirements:

- All conduits must be made and installed according to local regulations.
- It is recommended to use metal conduits (preferably Vx metal) to provide the necessary shielding and protection.
- All conduits must be inserted in the Truck PRIME enclosure through the openings provided in the bottom panel.

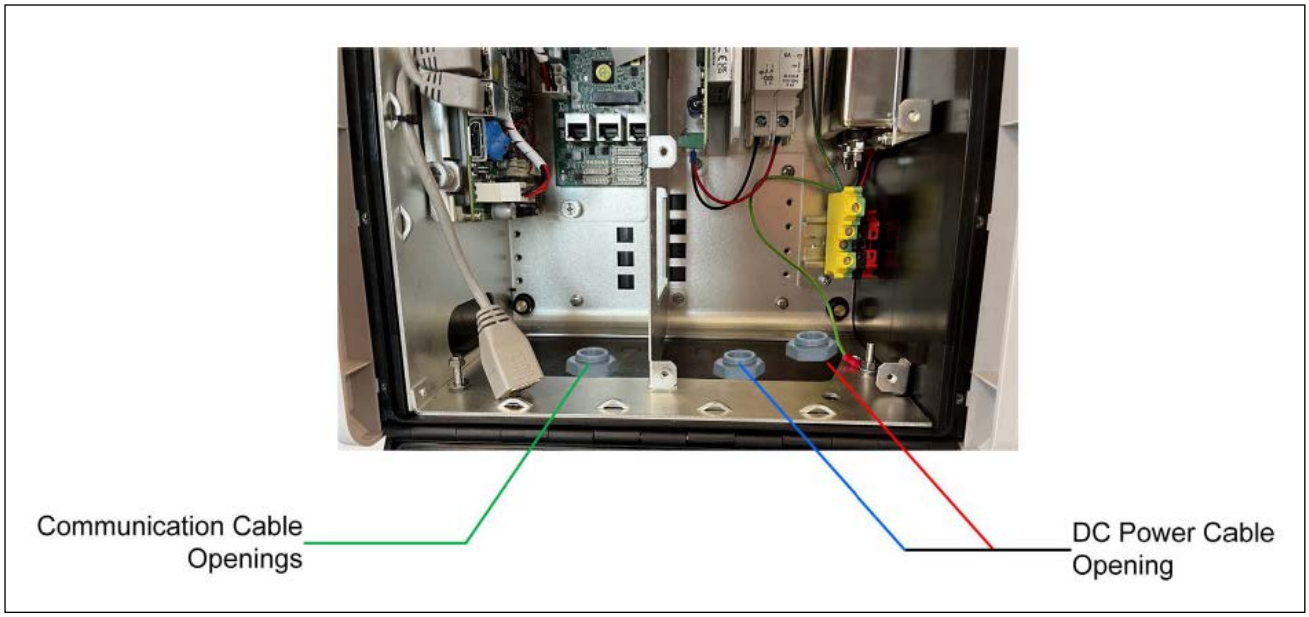
Conduits in Truck PRIME

The bottom panel in the Truck PRIME includes four openings of 3/4-inch diameter for the insertion of cables into the unit. Connect the wiring through cable glands. The cables and wires are inserted through the conduits according to their types and routed to their sources.

The conduits are used for the following:

- One conduit is intended for communication cables.
- Two conduits are intended for low voltage cables.

Figure 4-1: Conduit Openings



Required Conduits in the Truck

Different types of conduits are necessary for different types of equipment. Therefore, the locations of the conduits should be planned based on the location of the equipment that connects to it.

The following conduits are required in the fuel truck:

- Voltage conduits
  - DC power for Truck PRIME
  - Pump control from pumps to Truck PRIME
  - Pump In-use signal from pumps to Truck PRIME
  - 24V power
- Communication Conduits
  - Pulser from pumps to Truck PRIME
- Power conduit
  - Truck PRIME is supplied power from the truck power system, once the ignition switch has been supplied. Conduits of power cables should be done in accordance with local practices.

Wiring Conduits in Truck PRIME

Truck PRIME includes several wiring openings, each suited to specific wires, as listed in the below table.

Sr No.	Conduit Type	Type
1	Low voltage	Pulser, LAN cables, pump, 24V power
2	High Voltage	Pump power cable, XLPE cable
3	High Voltage	Control, in-use

Installation

To install conduits, proceed as follows:

1. Determine the location of the Truck PRIME in the fuel truck.
2. Install a junction box close to the valve for valve control.
3. Install a junction box for the pulser and nozzle antenna.
4. Deploy a conduit from the junction boxes to the Truck PRIME (pulser, valve, and nozzle antenna).
5. Deploy a conduit from truck power system to Truck PRIME. Truck PRIME is supplied from the truck power system, once the ignition switch has been supplied power.

Cable Insertion

The following describes the requirements and procedures for the insertion of cables in the conduits.

Note: The type of cable needed varies in accordance with the device that it connects to. The wire used must be stranded and not a solid core. Select a cable specification in accordance with local environment conditions.

⚠ WARNING

For supply connections, use wires suitable for at least 90°C/194°F. Signal wiring connected in this box must be rated at least 300V.

Cable Types

The following types of cables are used for the wiring of the Truck PRIME system.

Sr No.	Function	Type
1	Power supply and valve control	As used in vehicles, 1.5 – 2.5 mm^2 (15 to 13 AWG) XLPE.
2	Pulser and In-use Signal	Data communication cable, 300 V RMS, 90ºC, shielded twisted pair, oil resistant, 24 AWG, low capacitance below 60 PF/meter similar to Belden 9729 cable. Low capacitance cable designed for communication, such as BELDEN 8723.
3	LAN	CAT5E, Shielded, 300 V RMS, 90°C/194°F similar to Belden 121700A
4	GND	Ground cable 0.4” (10.8 mm^2)

Connections must be done through a junction box (4x4x4-inch (10x10x10 cm)) located near the peripherals.

Power Setup

External Fuse

The Truck PRIME requires an external FUSE. Additional vehicle type 6 Amp fuse should be installed between the truck's power supply system and the Truck PRIME.

CAUTION

The fuse should link the wire very close to the battery, and at the distribution point (via a distribution block).

Truck PRIME Power System

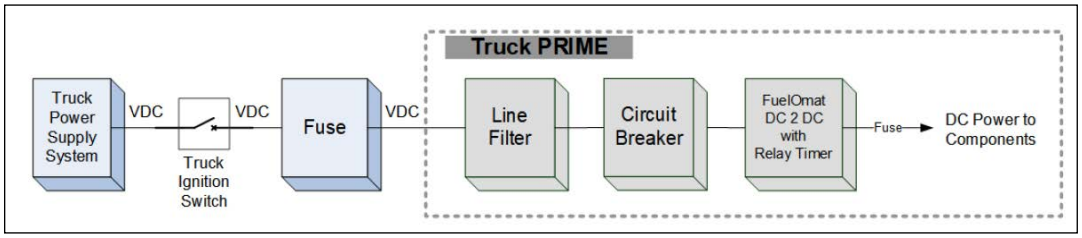
The truck's power supply system is connected to the terminal block in the Truck PRIME. The system uses a Line Filter between the terminal block and the main switch in order to attenuate conducted interference.

The Line Filter is coupled with a circuit breaker that serves as a main power switch.
The system includes a 12-24VDC DC/DC power supply with an integrated Timer relay. This timer provides 30 seconds delay between powerfeed and power output. This delay protects against short bursts of power when the driver starts the truck. The delay is reset at each starting attempt. Consequently, Truck PRIME is turned on 30 seconds after the truck is powered, when the motor should be operating steadily.

Connection Diagram

The following diagram shows the requested connections of the power equipment (see Figure 4-2).

Figure 4-2: Power Equipment Connections

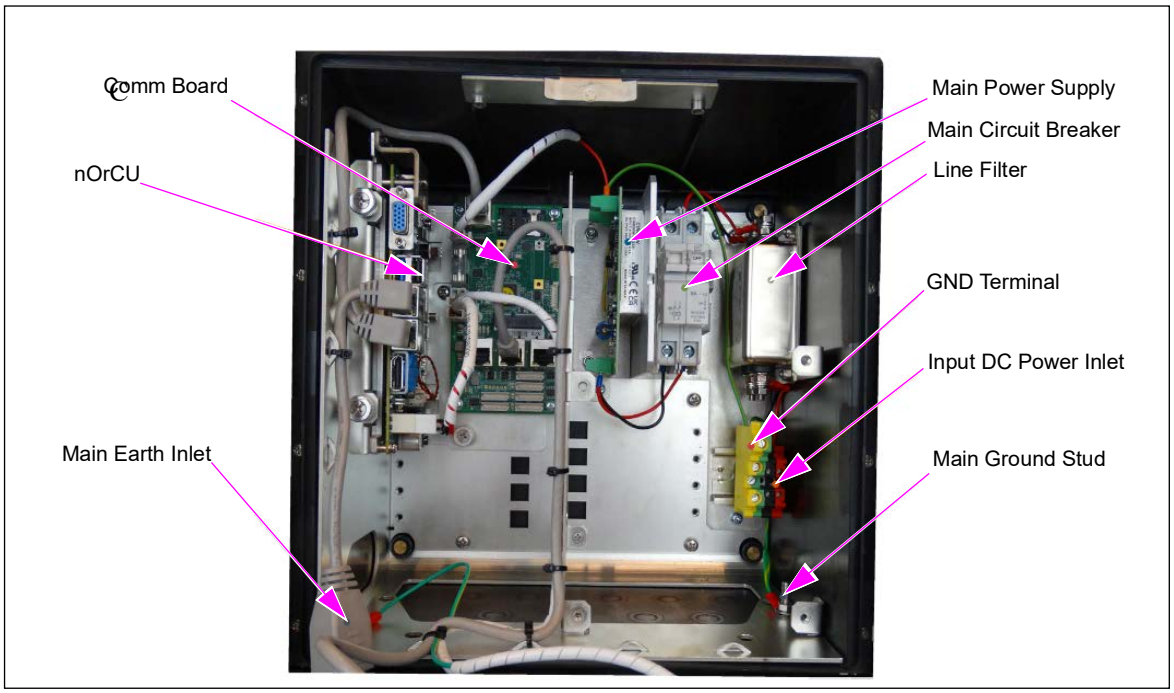


Apart from the power equipment, other components should be connected to the power supply such as the TLG and dispensers.

Connecting the Power Equipment

- Pump wiring connections:
  - Pulser
  - Valve
  - In use (Optional, not existing in most cases)
- Communications:
  - RS-485 for peripheral device
- Power:
  - DC Power to Line Filter
- Other connections, not to the Terminal Block (see Figure 4-3 on page 24).
  - LAN connection

Figure 4-3: Power Supply Components and Grounding Studs



-

Grounding

Proper system grounding is an extremely important part of the system installation.

The Truck PRIME should be connected to battery voltage (24V recommended) via a thick wire. Controller power should be via a separate switch and connected to the vehicle battery in a way that ensures it will be powered up ONLY if the ignition switch is on.

All communication wires must be according to these specifications:

- Twisted pair
- Separately shielded
- Low capacitance

The shield of all communication wires should be grounded (i.e., connected to the vehicle chassis) on one side only, leaving the other side open.

It is strongly recommended to add a DC/DC converter to the controller power. It will stabilize and protect the power as truck power is not stable.

5 – Truck PRIME Installation Procedures

General

This section provides the installation procedures for Truck PRIME. These procedures include:

- Installation Guidelines
- Fuel Truck on page 26
- Mapping the Truck on page 26
- Installing the Truck PRIME on page 27

Installation Guidelines

BEST PRACTICE

Perform a site survey of the station prior to installation.

Installation procedures and requirements depend, to some extent, on the specific fuel truck and its mechanical and electrical layout. Therefore, use the information in this section to develop installation plans for each specific installation. Because installation requirements vary widely from case to case, no installation hardware is supplied by the equipment manufacturer, and installation planners must develop their own requirements.

The customer should provide an installation plan, designed by an authorized engineer, and ensure that it adheres to all local standards. This plan design should reflect the existing electric infrastructure of the fuel truck.

Precautions and Safety Notes

Prior to actual installation activities, carefully observe the precautions and safety notes detailed in “Precautions and Safety Notes” on page 19.

Fuel Truck

Prior to installation, you are required to obtain an overview of the fuel truck functional architecture. This overview is required in order to draw an architecture diagram with all components and their communication links.

Mapping the Truck

The mapping of the fuel truck is required prior to installation. This procedure consists of the following steps:

1. Locating and Mapping all Objects of the Site.
2. Assigning Logical Identifications (IDs) to the Devices.
3. Assigning the Ethernet and serial addresses of devices linked to the network.
4. Obtaining a functional and physical map of the devices in the site.

Locating and Mapping all Objects of the Site

a Locate the fuel tanks.

b Locate the intended position of the Truck PRIME.

c Draw a basic map of the site with all the objects.

Assigning Logical Identifications (IDs) to the Devices

a To each fuel tank:
- Assign the tank sequential number (coordinated with the station manager)
- Assign a fuel code and name
- Assign a TLG Probe (AP) ID

b To each dispenser unit:
- Assign an ID to every dispenser name and pump server
- Assign an ID to every dispenser pump (P)
- Assign an ID to every pump CPU address, if any
- Assign an ID to the nozzles (N)
- Assign to each nozzle the tank (T) ID to which it is linked

c Assign an ID to the Truck PRIME after installation on a flat surface.

Note: The map methodology and IDs will be used for setup configuration.

Installing the Truck PRIME

The Truck PRIME is mounted in the safe area of the fuel truck's driver's cabin or on the truck with a Shock Absorber Assembly to protect the components from shock incurred during travel.

The installation procedure consists of the following general steps:

1 Installing Truck PRIME on the truck.

2 Running cables through the conduits to Truck PRIME.

3 Wiring Truck PRIME.

Preliminary Setup Procedures

To perform the preliminary setup procedures:

1 Determine where the Truck PRIME will be installed.

2 Insert the cable glands into the Truck PRIME.

For installation of Truck PRIME only (without the Shock Absorber Assembly):

1 Install the Truck PRIME on the support rails in the driver's cabin.

2 Run the cables through the conduits to the Truck PRIME.

3 Wire the Truck PRIME.

For installation of Truck PRIME with the Shock Absorber Assembly:

1 Install the Shock Absorber Assembly on support flanges in the selected area on the truck.

2 Install the Truck PRIME onto the Shock Absorber Assembly (see "Truck PRIME in Driver's Cabin Installation Procedure" on page 30 below).

3 Run the cables through the conduits to the Truck PRIME.

4 Wire the Truck PRIME.

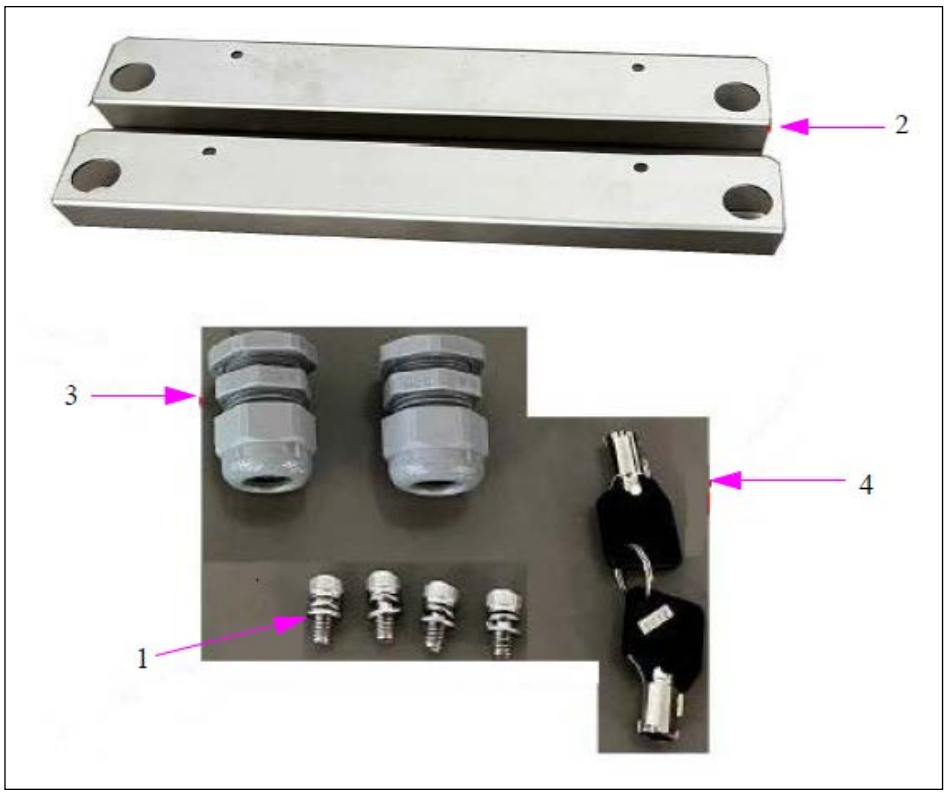
The following sections describe in detail how to install Truck PRIME in different scenarios.

Support Rails Installation Procedure

The table below lists the assembly parts required for the installation of the Truck PRIME support rails (see Figure 5-4).

Item Number	Description	Quantity
1	SCREW, M6x12 SST + 2 WASHERS	4
2	MID RANGE WALL MOUNTING RAIL	2
3	CABLE GLAND, NYLON, EG-16, KSS	2
4	Unit Keys	2

Figure 5-4: Support Rails Assembly Parts



To install the unit, proceed as follows:

1 Place one rail on the top pair of holes and fasten into place with 2x M6x12 screws using a 5-mm Hex (Allen) Key.

Figure 5-5: Top Rail

2 Place the second rail on the bottom pair of holes and fasten into place with 2x M6x12 screws using a 5-mm Hex (Allen) Key.

Figure 5-6: Both Rails

3 For an installation without shock absorbers, mount the Truck PRIME on a shock absorbed area on the truck (such as the Driver's Cabin) (see "Truck PRIME in Driver's Cabin Installation Procedure" below).

Truck PRIME in Driver's Cabin Installation Procedure

To install the Truck PRIME in the driver's cabin:

1 Look for the support rail at the back of the driver's cabin in the fuel truck. There are usually two perpendicular rails.

2 Select the rail where installation is easier (less cluttered area).

3 Prepare two support flanges beforehand, with two setting holes in each.

4 Connect the Truck PRIME through the internal four holes or through the support rails to the support flanges.

5 Use dedicated drill screws for the installation to the support rails.

After the Truck PRIME installation is completed, proceed with unit wiring according to the instructions provided in Appendix A on page 79.

Cable Gland Insertion

To insert the cable glands to the Truck PRIME, proceed as follows:

Note: 1) It is recommended to connect the cable glands before installing the Truck PRIME on the wall.
2) Place the Truck PRIME on a stable and level surface before proceeding.

1 Select the knockout openings for the installation and open them using a hammer and large screwdriver (see Figure 5-7 and Figure 5-8 on page 31).

Figure 5-7: Knocking Out Using Hammer

Figure 5-8: Knocked Out Opening

2 Insert a cable gland into each opened knockout opening (see Figure 5-9 and Figure 5-10).

Figure 5-9: Cable Gland Outside View

Figure 5-10: Cable Gland Inside View

3 Fasten the cable gland securely with the appropriate tools to ensure a proper seal (see Figure 5-11).

Figure 5-11: Cable Gland Fastening

Truck PRIME with Shock Absorber Assembly Installation Procedure

To install the Truck Prime on a location that does not have a shock absorber, the Truck PRIME should be installed with the Truck PRIME SHOCK ABSORBER KIT, P/N: 819040150 (Gasboy P/N: M15778B515). The Assembly Parts are details below (see Figure 5-12).

Part Number	Description	Quantity
814608000	MECHANICAL PART SHOCK ABSORBER, WIRE GGD4.8- 47/54/4L	4
815101600	NUT, SELF LOCK M6, D-985, NYLOCK	4
815262000	SCREW, ALLEN, M6x25, SST, CAP HD	4
815323050	WASHER FLAT M6 DIN125A-A2, SST	8

Figure 5-12: Shock Absorber Assembly Parts

To install the Shock Absorber Assembly, proceed as follows:

1 Mount the four shock absorber sets on each rail corner.

Figure 5-13: Shock Absorber Unit

2 Verify assembly order and alignment as shown in Figure 5-14.

Figure 5-14: Assembled Shock Absorbers

Installation Procedure on a Truck Wall

Note: If the OrPAY1000 will be used as an MWGT for AVI support, the Truck PRIME should be installed in a location where the signal will not be blocked. It is recommended to add a repeater to strengthen the RF network.

To perform the installation, proceed as follows:

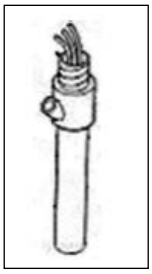
1. Use the drill template provided with the product to mark the location of the four holes for drilling.
2. Drill four holes in the installation locations and insert four wall anchors (or equivalent) in the holes.
3. Set the Truck PRIME on the location so that the installation holes on the rails fit with the anchors.
4. Secure the Truck PRIME. Verify that the Truck PRIME enclosure is firmly held.

Figure 5-15: Truck PRIME Installed on Truck Wall

Sealing Conduits

The conduits must be sealed in accordance with NFPA requirements and local regulations, to prevent the passage of gases through conduits, cables, and conductors. Fittings are required wherever volatile liquids or gases are present in the surroundings.

Figure 5-16: Conduit Fitting



Connections to Truck PRIME

⚠ WARNING

Do not perform any electrical work, maintenance, or repairs to the product when it is connected to power. Before performing any work on the product, disconnect it from the main power supply.

Notes:1) Ensure that the cable glands are securely tightened to the cables running through them in order to ensure that they are properly sealed.
2) In order to perform the wiring, the protective cover over the high voltage area needs to be removed and then replaced once the work is complete.

The electrical and communication connections should be made as follows:

1 Designate an opening for the power supply, and other openings for the high voltage, the pumps, the low voltage, and the communication cables (see Figure 5-17).

Figure 5-17: DC Power Supply Connected to GND/Neutral/Line

2 The connections shown in Figure 5-17 are as follows:

Version	Input Power Range	T.B Yellow/Green (1)	T.B Black (2)	T.B Red (3)
Truck PRIME (including UX)	12-24 V DC	GND/Vehicle Shield	Minus (-)	Plus (+)

Pump Interface Modules

To install the pump interface modules, proceed as follows:

1 Wire the connections to and from the modules before attaching the module to the Truck PRIME.

2 The connections to the modules are made with the designated connectors for each modules.

3 To attach the modules, slide the module against the anchor in the designated area, perpendicular to the main plate, and secure the opposite side of the module with a screw, through the fastening point. The orientation of the fastening point depends on the type of pump module being installed.

Figure 5-18: Fastening Point of the Mechanical Pump Module on the Right

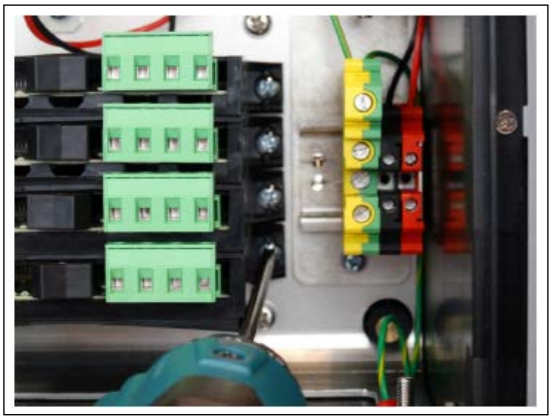
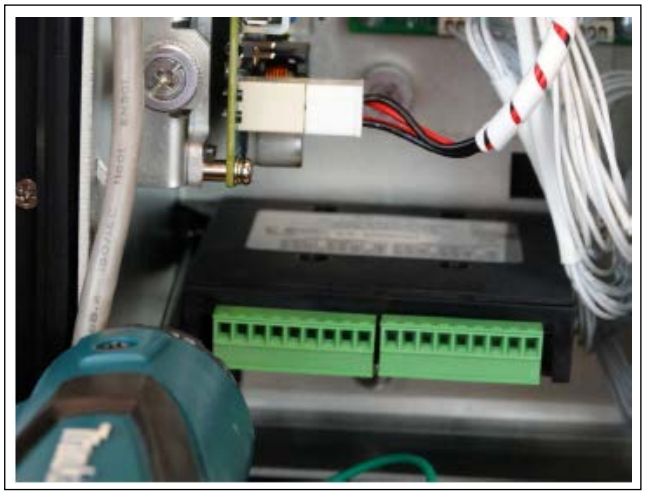


Figure 5-19: Fastening Point of the Electronic Pump Module on the Left



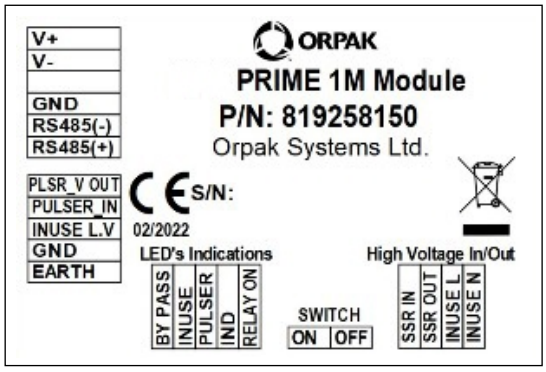
The following describes the various pump modules available and how to wire them.

PRIME 1M Module

The 1M Module is a pump module designed for mechanical pumps.

Figure 5-20: 1M Module

Figure 5-21: 1M Module Wiring Connections



1M Module - LED Indicators

The following table describes the various LED indicators on the 1M Module and their meaning (see below table). A legend below the tables explains the symbols and their meaning.

Indicator Meaning	LED				
	Bypass	In use	Pulser	Ind	Relay On
A bypass state is detected	●				
In-use input is active		●			
Pulses are counted			☼		
Power is on and working properly				●	
SSR Relay is switched to close state					●

● LED ON ☼ LED Flashing

A load must be applied to the SSR in and out in order for the unit to work.

Without load, the unit indicates that it is in Bypass mode (bypass LED is on) and the controller will consider the pump to be offline.

⚠ WARNING

For single SSR output of an MPI module, do not exceed 1.8 amps. This is the maximum current allowed when connecting load. For more information, see AC/DC MPI Module Specifications on page 17.

Post-Installation Checklist

After completing the installation procedure, carefully inspect the connection between the Truck PRIME and the external power mains and the data sources. In particular, pay attention to the following:

a Correct wiring
- Is all of the wiring inserted within metal conduits?
- Is the DC wiring inserted in separate conduits?
- Are the systems and peripheral equipment powered on a separate dedicated breaker?
- Is the wiring shielded properly?
- Are the cables correctly routed in the truck?
- Are the communication lines under the maximum allowable distance?
  - RS-485: 330 feet (100 m)

b Clean dirt and wire remnants

In case problems are detected after installation or during operation, repeat the post-installation checks listed above.

PRIME Add-Ons

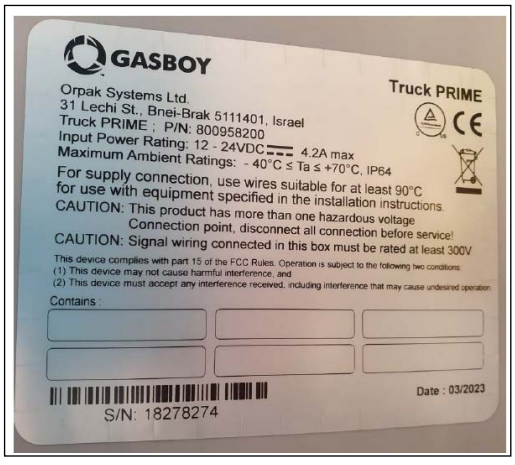
The following sections describe the assembly procedures for all the available PRIME Add-Ons.

These add-ons need to be defined properly in the relevant software.

Each transmitting add-on has a different FCC/IC approval. A PRIME unit with a transmitting unit installed from the production line will have the FCC/IC number printed on it.

All add-ons require adding an FCC/IC label to the PRIME main label. After each installation, add the Add-On FCC/IC label in one of the available spaces on the product label (see FCC/IC label on Product Label) (see Figure 5-22).

Figure 5-22: FCC/IC Label on Product Label



Cellular Modem Module

The Cellular Modem Module is a 4G LTE Cellular modem (with 2G/3G backward compatibility) that allows communication between the controller and the HO. The Cellular Modem Module Assembly (M15778B504) is provided with the following assembly kit components (see Figure 5-23, Figure 5-24, Figure 5-25, and Figure 5-26 on page 41).

Item No.	Description	Quantity
1	Cellular Antennas	1
2	Cellular Modem Module	1
3	Screw. M2x6, PAN HD PH	2
	Washer, Spring, M2	2
	Washer, Flat, M2	2
4	Screw, M4x8 SST+2 Washers	2
5	Antenna shelf	1
6	Cable tie	2
7	Harness 2x USB	1
8	Harness USB cover	1
9	Screw M3x20 PAN HD	1
10	FCC/IC Label	1
Assembly Kit Number: 819258125 Gasboy Kit Number: M15778B504		

Figure 5-23: Cellular Modem Module Assembly Parts (1-3)

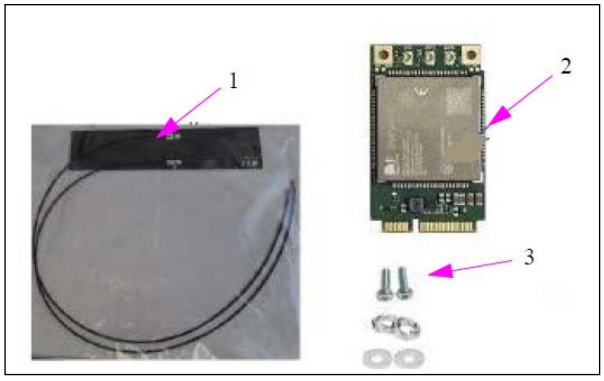


Figure 5-24: Cellular Modem Module Assembly Parts (4-5)

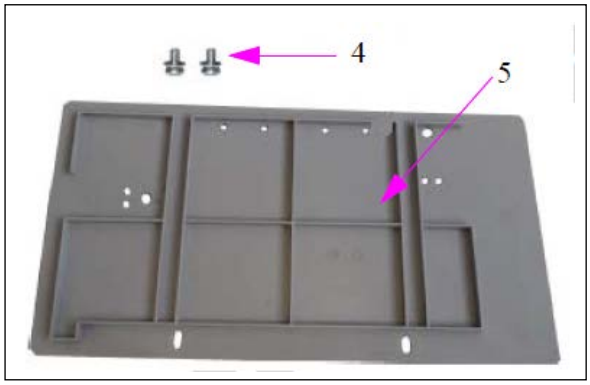


Figure 5-25: Cellular Modem Module Assembly Parts (6-9)

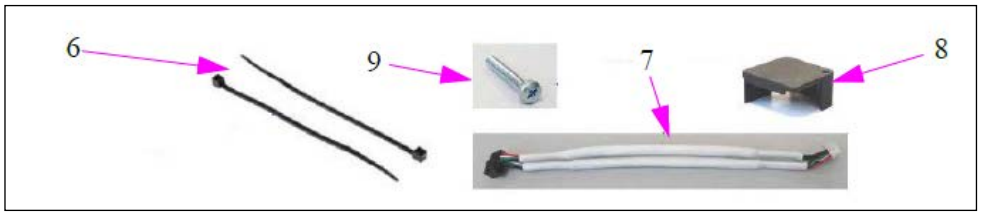


Figure 5-26: Cellular Modem Module Assembly Parts (10)

To install the Cellular Modem Module, proceed as follows:

1 Turn the main power switch to the OFF position (see Figure 5-27).

Figure 5-27: Main Power Switch - OFF

2 Disconnect and extract the nOrCU and the CommBoard bracket (see Figure 5-28).

3 Remove the three captive screws (marked with yellow arrows) and disassemble the power harness connector (marked by the green arrow). Cut the cable ties (marked by the orange arrows).

Figure 5-28: nOrCU Connection

4 Connect the USB cable to the USB connector on the nOrCU (for an illustration of the connector port to connect, refer to Figure 5-39 on page 45). Cover and fasten the cable with the cable cover, with the M3x20 screw (see Figure 5-29, Figure 5-30, and Figure 5-31).

Figure 5-29: USB Cable Connected to the USB Connector

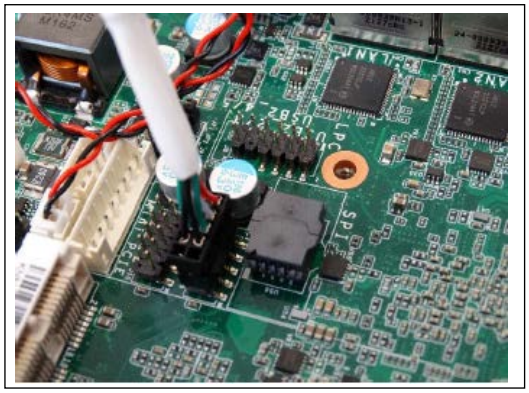
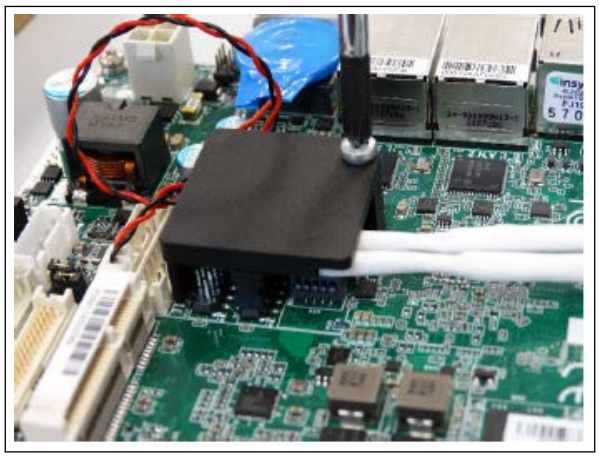


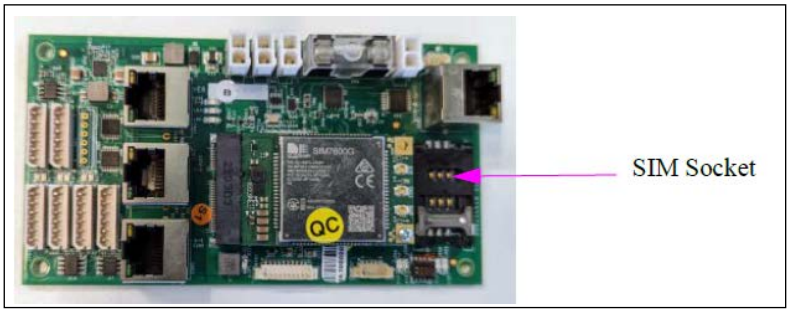
Figure 5-30: USB Cover Placed

Figure 5-31: USB Cover Fastened



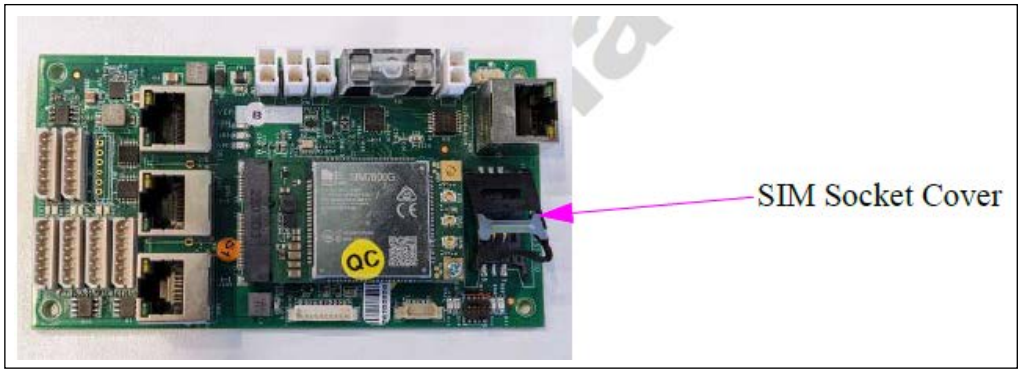
5 Install the SIM card in the CommBoard SIM socket.

Figure 5-32: CommBoard SIM Socket



6 Gently pull up the SIM socket cover to enable insertion.

Figure 5-33: SIM Socket Cover Raised



7 Insert the SIM card into the SIM socket.

Figure 5-34: SIM Card in SIM Socket

8 Gently push down the SIM socket cover to return to its original position (see Figure 5-35).

Figure 5-35: SIM Socket Cover Replaced

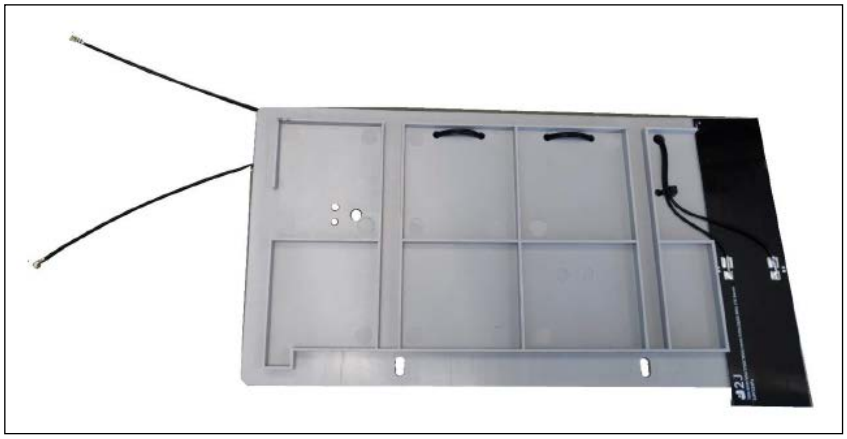
9 Install the antennas on the antenna tray.

a Clean the antenna tray with alcohol to remove oil residue and dirt.

b Peel the adhesive guard and place the antennas.

c Secure the antenna wires with cable tie, and place the antenna wires as follows.

Figure 5-36: Antenna Placement

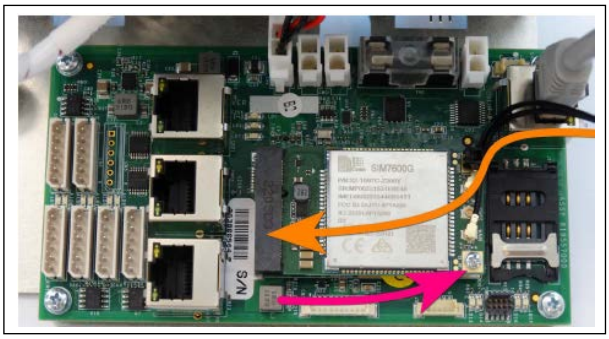


10 Connect the antennas to the module and fasten the antenna wires with a cable tie as seen in the below figure.

Figure 5-37: Antennas Connected to Module

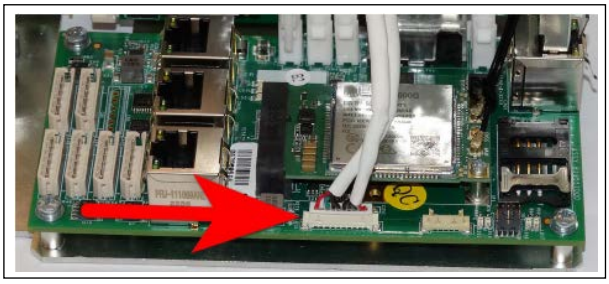
11 Install the module to the CommBoard mPCIe connector. Slide the mPCIe Modem into the mPCIe connector on the CommBoard (marked with an orange arrow), and fasten with the screw and washers from the kit (marked with purple arrow).

Figure 5-38: Modem on the CommBoard mPCIe Connector



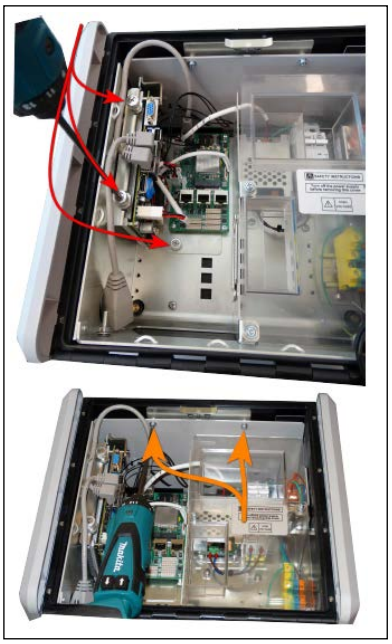
12 Install the USB cable to the relevant connector on the CommBoard.

Figure 5-39: USB Installed on CommBoard



13 Install the Antenna tray and the nOrCU with the CommBoard bracket: fasten the nOrCU block captive screw (marked with the red arrows), and fasten the Antenna tray screws from the kit (marked with the orange arrows). Close the bracket captive screws and fasten the tray using the M4x8 screws.

Figure 5-40: Antenna Tray Installation



14 Reconnect all the disassembled harnesses and turn the main power switch to the ON position.

Wi-Fi + BT Modem Module

The Wi-Fi + BT Modem Module is a Wi-Fi Access Point 2.4/5 GHz that is used for the Fuel and Drive app to connect with the controller. The Wi-Fi + BT Modem Module Assembly Kit (M15778B503) is provided with the following components (see Figure 5-41 and Figure 5-42 on page 47).

Item No.	Description	Quantity
1	Wi-Fi Antenna set	1
2	Wi-Fi + BT M.2 Module	1
3	mPCIe to M.2 adapter+screws	1
4	SCREW. M2x6, PAN HD PH	2
	WASHER, SPRING, M2	2
	WASHER, FLAT, M2	2
5	Screw, M4x8 SST+2 Washers	2
6	Antenna shelf	1
7	Cable tie	2
8	FCC/IC Label	1
Assembly Kit Number: 819258120 Gasboy Kit Number: M15778B503		

Figure 5-41: Wi-Fi + BT Modem Module Assembly Parts (1-4)

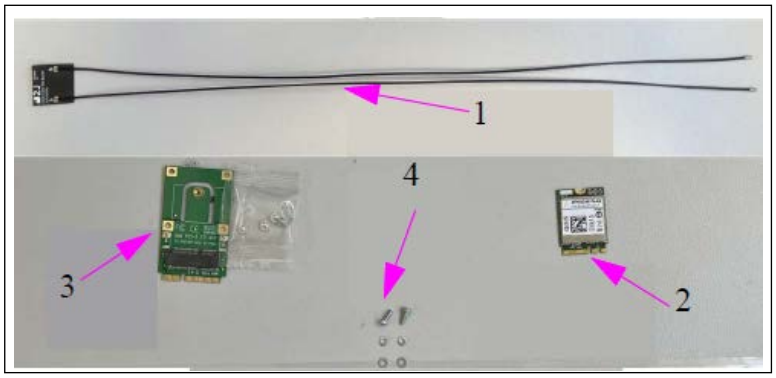
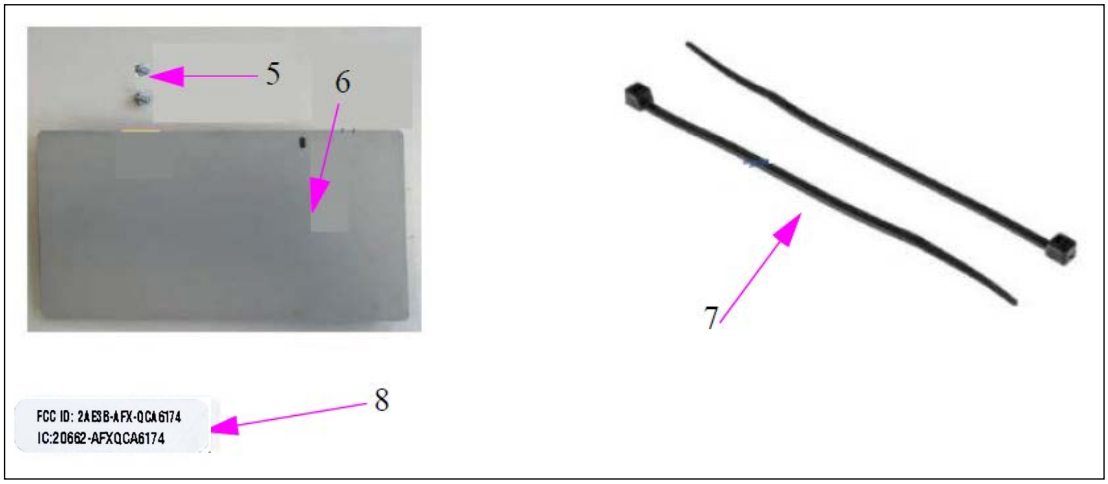


Figure 5-42: Wi-Fi + BT Modem Module Assembly Parts (5-8)



To install the Wi-Fi + BT Modem Module, proceed as follows:

1 Turn the main power switch to the OFF position (see Figure 5-43).

Figure 5-43: Main Power Switch - OFF

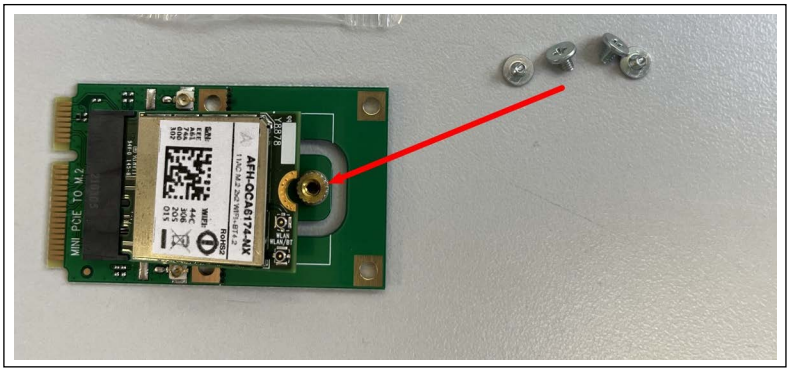
2 Disconnect and extract the nOrCU and the CommBoard bracket (see Figure 5-44).

3 Remove the three captive screws (marked with yellow arrows) and disassemble the power harness connector (marked by the green arrow). Cut the cable ties (marked by the orange arrows).

Figure 5-44: nOrCU Connection

4 To assemble the M.2 modem in the M.2 to mPCIe adapter, insert the M.2 Module into the M.2 socket of the adapter and faster with the supplied adapter screws.

Figure 5-45: M.2 Modem in the M.2 to mPCIe Adapter



5 Install the antennas on the antenna tray.

a Clean the antenna tray with alcohol to remove oil residue and dirt.

b Peel the adhesive guard and place the antennas.

6 Secure the antenna wires with the antenna anchor and fasten with a cable tie.

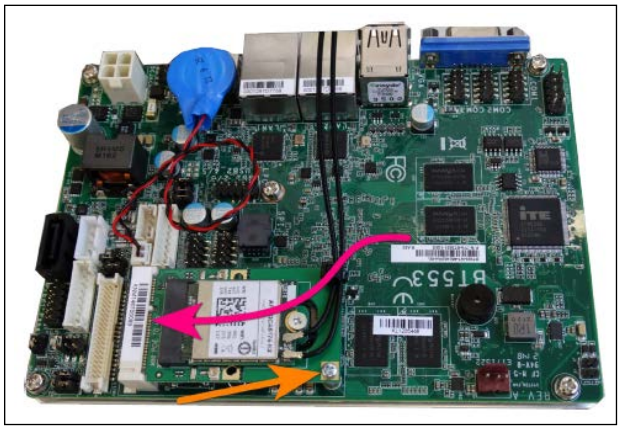
Figure 5-46: Antenna Anchor

7 Connect the antennas to the modem assembly and fasten with a cable tie.

Figure 5-47: Antennas Fastened With Cable Tie

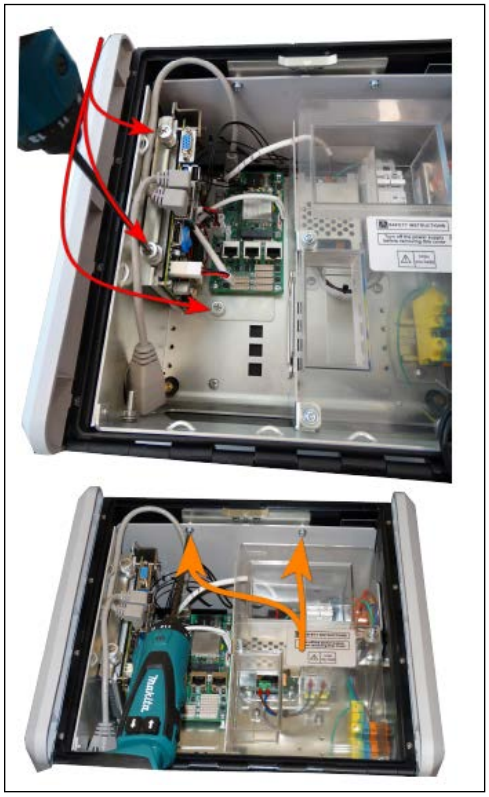
8 Install the modem assembly to the mPCIe connector on the nOrCU. Slide the mPCIe Wi-Fi set into the mPCIe connector on the nOrCU (marked with a purple arrow), and assemble the screw and washers from the kit (marked with an orange arrow).

Figure 5-48: Modem Assembly on the mPCIe Connector



9 Install the Antenna tray and the nOrCU with the CommBoard bracket. Fasten the nOrCU block captive screw (marked with the red arrows), and fasten the Antenna tray screws from the kit (marked with the orange arrows) using the M4x8 screws (see Figure 5-49).

Figure 5-49: Antenna Tray Installation



10 Reconnect all the disassembled harnesses and turn the main power switch to the ON position.

nano Wireless Gateway Terminal (nWGT)

The nWGT assembly (M15778B505) is provided with the following components (see Figure 5-50).

Item No.	Description	Qty
1	PCB Assy.nWGT-Wide	1
2	Harness Mid Range NWGT W Power	1
3	3 Cable LAN UL, 60-cm, 90° C	1
4	Screw # 3x12 PAN HD, TO Plastic	4
5	Cable tie	4
6	Washer M5, EXT. Tooth Lock	1
7	NUT, M5	1
8	Washer Flat M5 SST DIN-125	1
9	FCC/IC Label	1
Assembly Kit Number: 819227450 Gasboy P/N: M15778B505		

Figure 5-50: nWGT Assembly Parts (1-4)

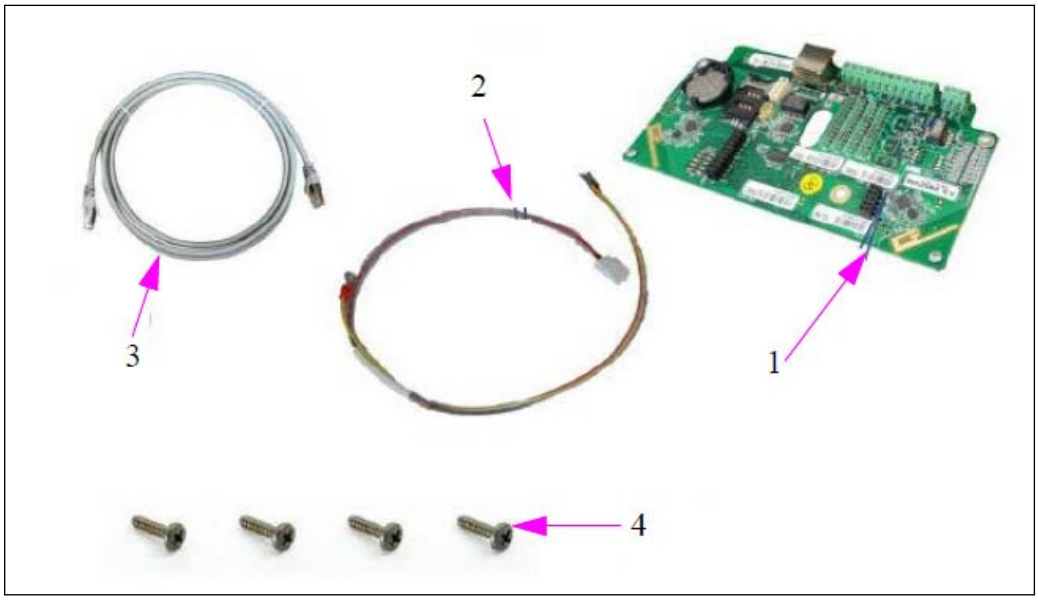
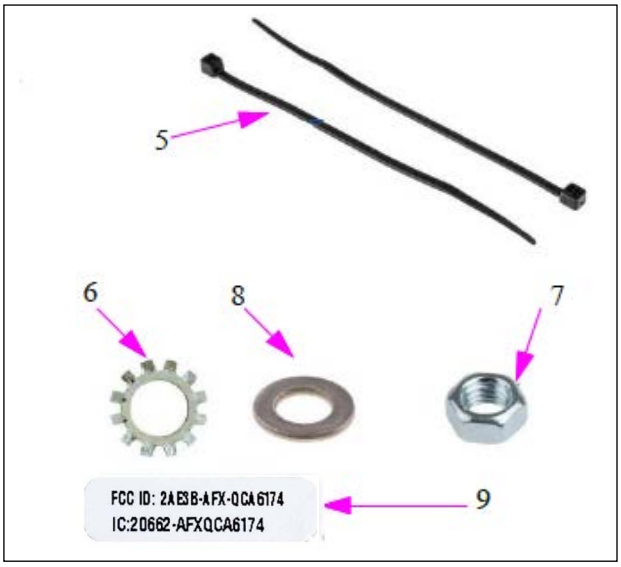


Figure 5-51: nWGT Assembly Parts (5-8) and nWGT FCC/IC Label (9)



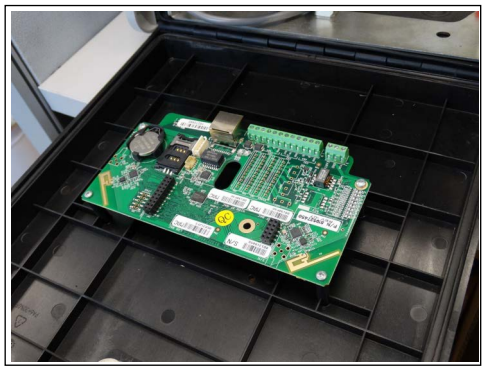
To install the nWGT, proceed as follows:

1 Turn the main power switch to the OFF position.

Figure 5-52: Main Power Switch - OFF

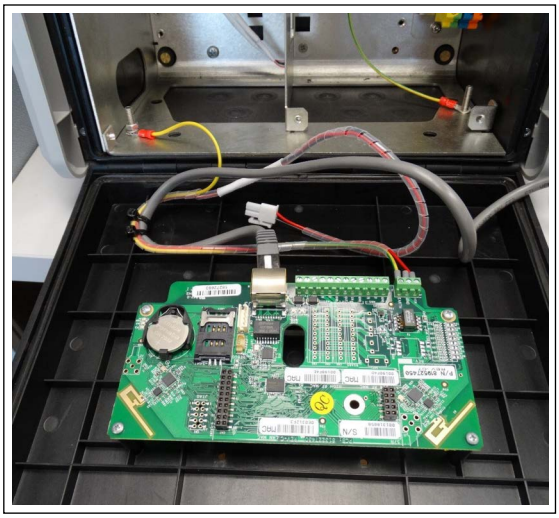
2 Install the nWGT on the inside door panel, using the four 3x12 screws to fasten the unit into place.

Figure 5-53: nWGT Installed



3 Connect the 60-cm LAN cable to the nWGT power harness, anchoring the cables to the door with the cable ties. Fasten the GND cable to the GND stud using the M5 set (tooth lock washer, standard washer, and nut).

Figure 5-54: Cables Connected



4 Connect the power harness and the LAN cable to the CommBoard and fasten the cables to the partition wall.

Figure 5-55: Connected to CommBoard

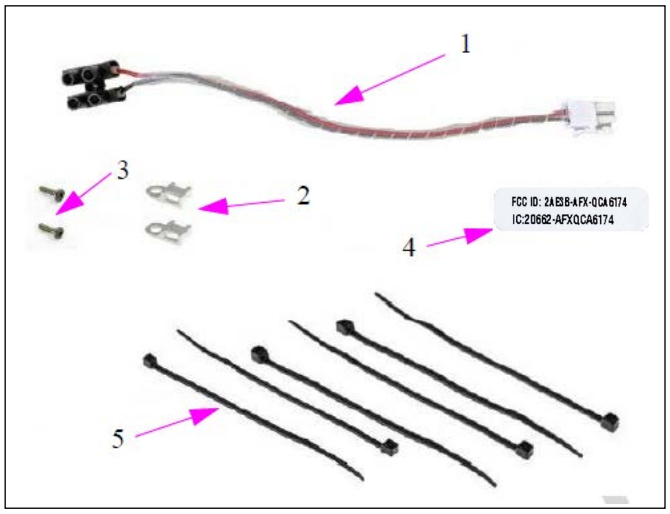
5 Turn the main power switch to the ON position.

TR500

The TR500 is provided with the following assembly kit components (see Figure 5-56).

Item No.	Description	Qty
1	Harness Mid Range TR500 Power	1
2	Anchor Mount, TA1S8-C	2
3	Screw # 3x12 Pan HD, To Plastic	2
4	FCC/IC Label	1
5	Cable tie	6
Assembly Kit Number: 819258200 Gasboy Part Number: M15778B516		

Figure 5-56: TR500 Assembly Parts



To install the TR500, proceed as follows:

1 Turn the main power switch to the OFF position.

Figure 5-57: Main Power Switch - OFF

2 Using a drill, cut four 3.5-mm holes and a 20-mm hole in the front panel (see Figure 5-58 and Figure 5-59).

Figure 5-58: Drill Locations

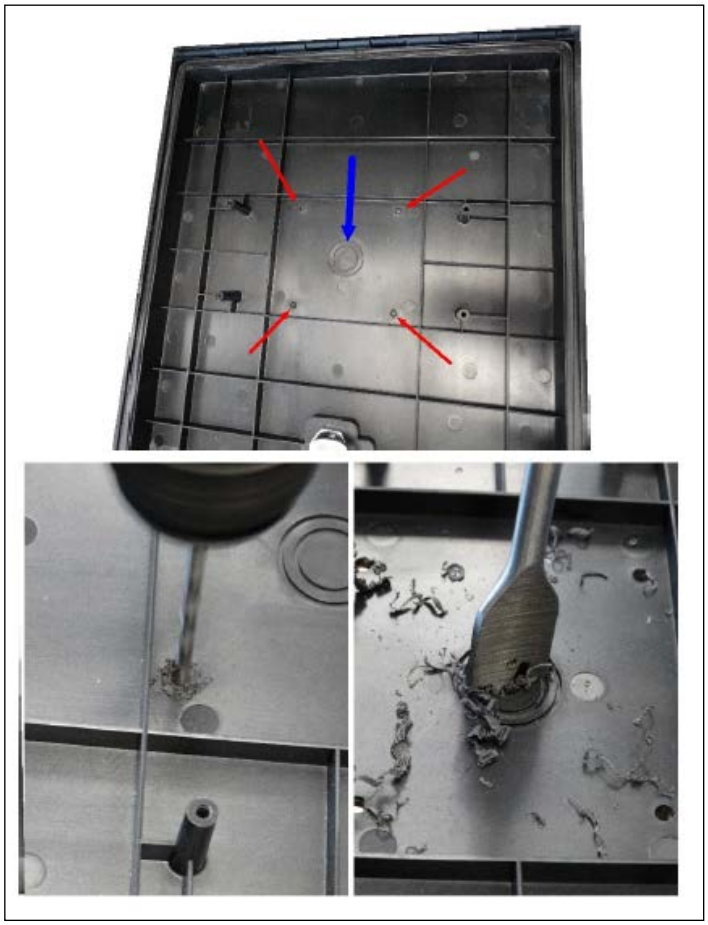
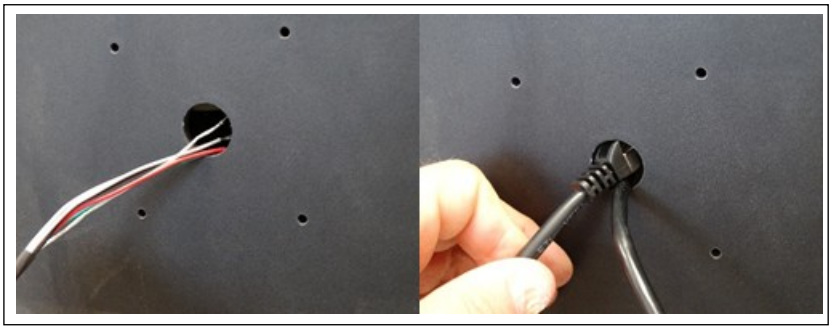


Figure 5-59: Front Panel with Holes Drilled

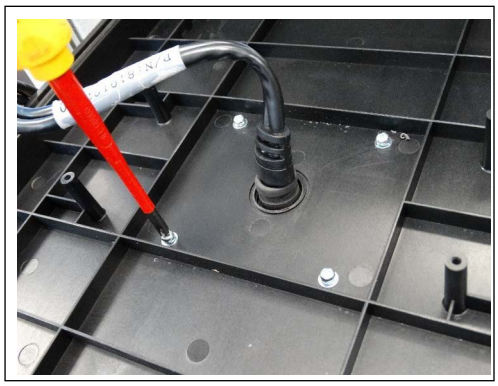
3 Pull the TR500 power supply and LAN harness through the 20-mm holes.

Figure 5-60: Threading Cables



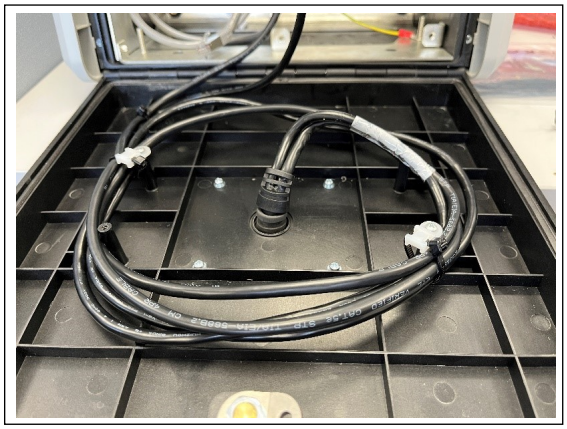
4 Attach the TR500 to the panel and fasten with the four M3 screws supplied with the TR500.

Figure 5-61: Attaching TR500



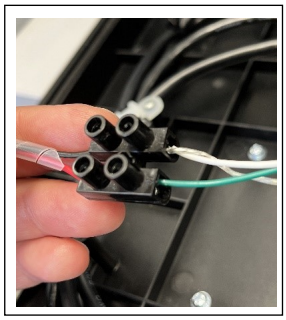
5 Anchor the harness to the front panel with the anchors and screws provided with the kit.

Figure 5-62: Harness Anchored



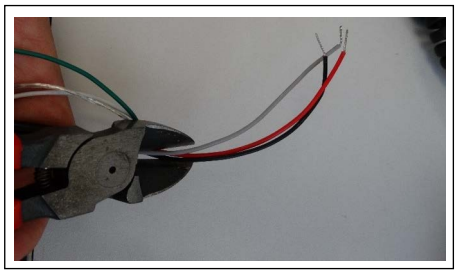
6 Connect the TR500 power harness to the kit power harness, Red to Green, and Black to White+Clear.

Figure 5-63: Connecting to Harness



7 Cut the remaining wires in the TR500 power harness: red, black, grey.

Figure 5-64: Cutting the Wires



8 Connect the power harness and the LAN cable to the CommBoard and fasten the cables to the partition wall.

Figure 5-65: Connected to CommBoard

9 Turn the main power switch to the ON position.

Figure 5-66: Truck PRIME With TR500 Switched On

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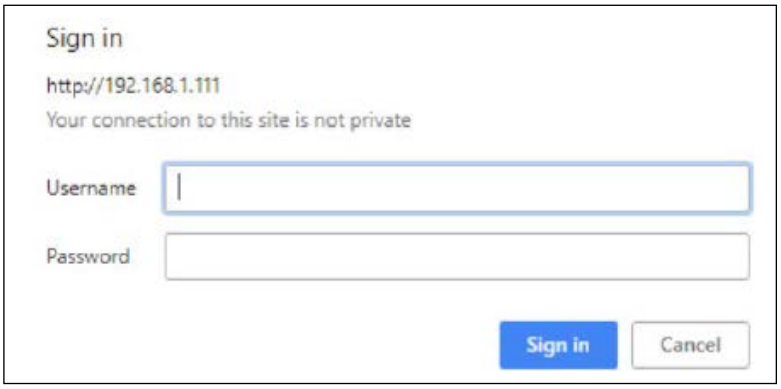
6 – PRIME Converter Setup

General

This section provides instructions for setting up the PRIME Converter. To access the setup site for Site PRIME, proceed as follows:

Open an internet browser (currently only Chrome is supported) and enter the default IP address provided (the default is https://192.168.1.111). The Converter Setup homepage appears with a login dialog (see Figure 6-1).

Figure 6-1: PRIME Converter Setup Login



To log in, proceed as follows:

1 Enter the initial credentials for first login:
- Username: Admin
- Password: Admin

2 Click **Sign In**. The following screen is displayed.

Figure 6-2: PRIME Converter Setup Homepage

3 Immediately after the first login, you will be prompted to change your username and password.

The Converter settings page includes the following navigation buttons on the left side of the screen:

Buttons	Description
Home Page	Basic device information
Setup	Main device settings
Software Upload	Uploads configuration files and software/firmware updates.
Status	Displays previous software and firmware updates that were uploaded, if any.
Change Password	Enables the user to change the credentials used to log into the website.
Reset Password	Resets the password for the device in order to reactivate it.
Logout	Logs out of the web site.

Home Page

The Home page displays current device information (see Figure 6-2 on page 62).

Field	Description
Ethernet IP	Ethernet IP address
Ethernet MAC	Ethernet MAC address
SW Version	Software version installed on the device
HW Family	Hardware version installed on the device
Boot Loader Version	Boot Loader Version installed on the device
Pump Interface 1 Version	Pump software version for the PI in Slot 1
Pump Interface 2 Version	Pump software version for the PI in Slot 2
Pump Interface 3 Version	Pump software version for the PI in Slot 3
Location	Location of the Site PRIME
Serial Number	Serial number of the device
Device Key	The current key used for activating the device

Note: If no module has been connected in the slot for a specific pump (1, 2, or 3), the corresponding Pump Interface 1/2/3 Version field will be blank. Only the details of connected pump modules will be displayed.

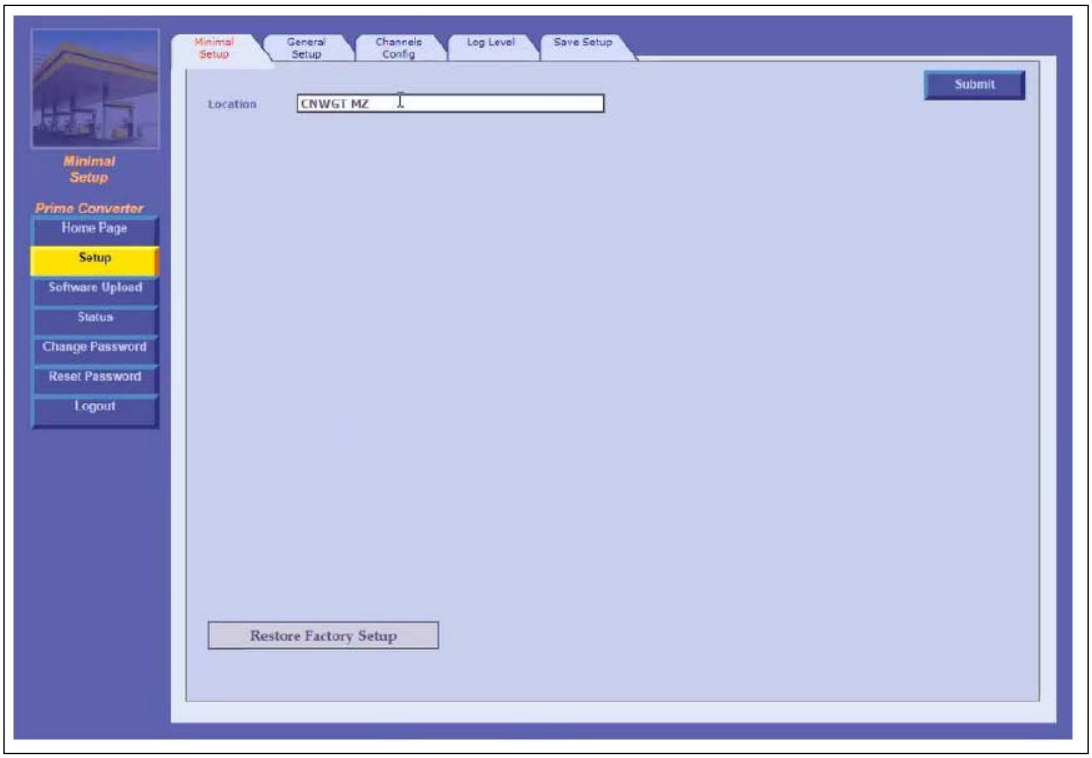
Setup

The Setup page is comprised of five tabs: Minimal Setup, General Setup, Channels Config, Log Level, and Save Setup. Click the Setup navigation button to view and define the parameters in each tab.

Minimal Setup

The Setup page opens with the **Minimal Setup** tab selected as default.

Figure 6-3: Minimal Setup Tab



The following actions are available:

- In the Location field, enter a description for the location of the device (optional).
- **Restore Factory Setup** will reset the device to the factory defaults (optional).

CAUTION

The Restore Factory Setup option should be used only when there is an issue that can't be solved any other way. When clicking this button, all previously defined settings will be overwritten.

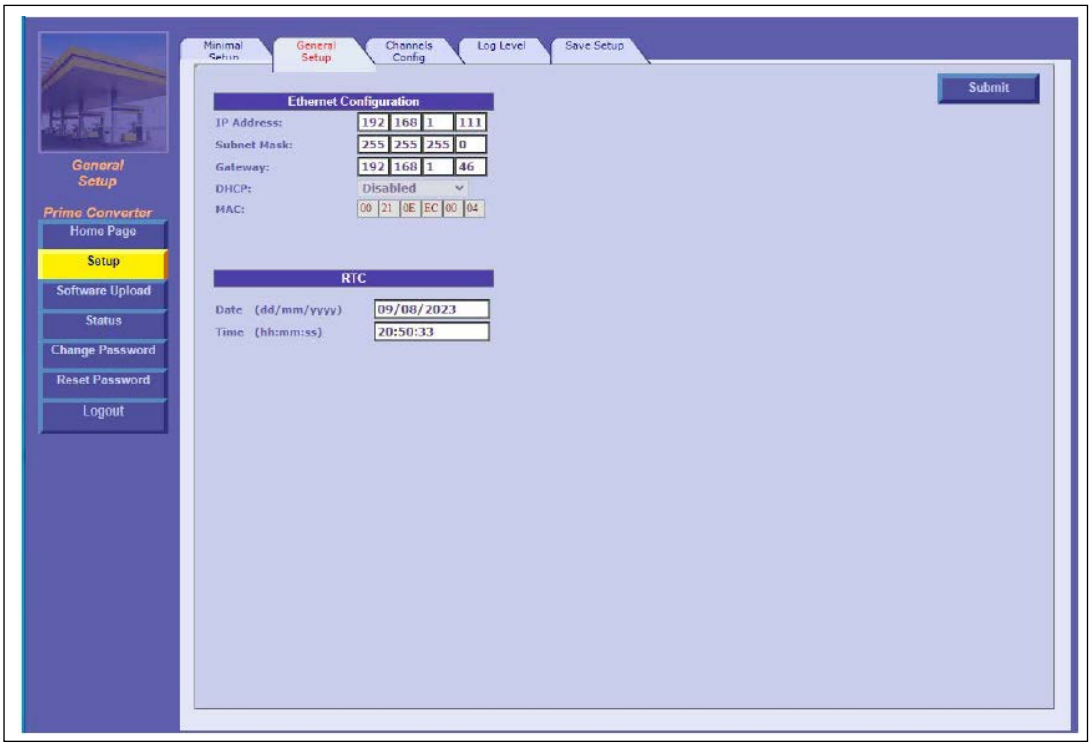
- Click **Submit** to save the changes locally.

Note: Clicking on Submit only saves the configuration temporarily on a local level. To commit the changes permanently, ensure to save everything via the Save Setup tab.

General Setup

1 Click **General Setup** tab. The following screen is displayed.

Figure 6-4: General Setup Tab



2 The following actions are available:

a Define the General Setup fields detailed in the table.

b Click **Submit** to save the changes locally.

Note: Clicking on Submit only saves the configuration temporarily on a local level. To commit the changes permanently, ensure that everything is saved using the Save Setup tab.

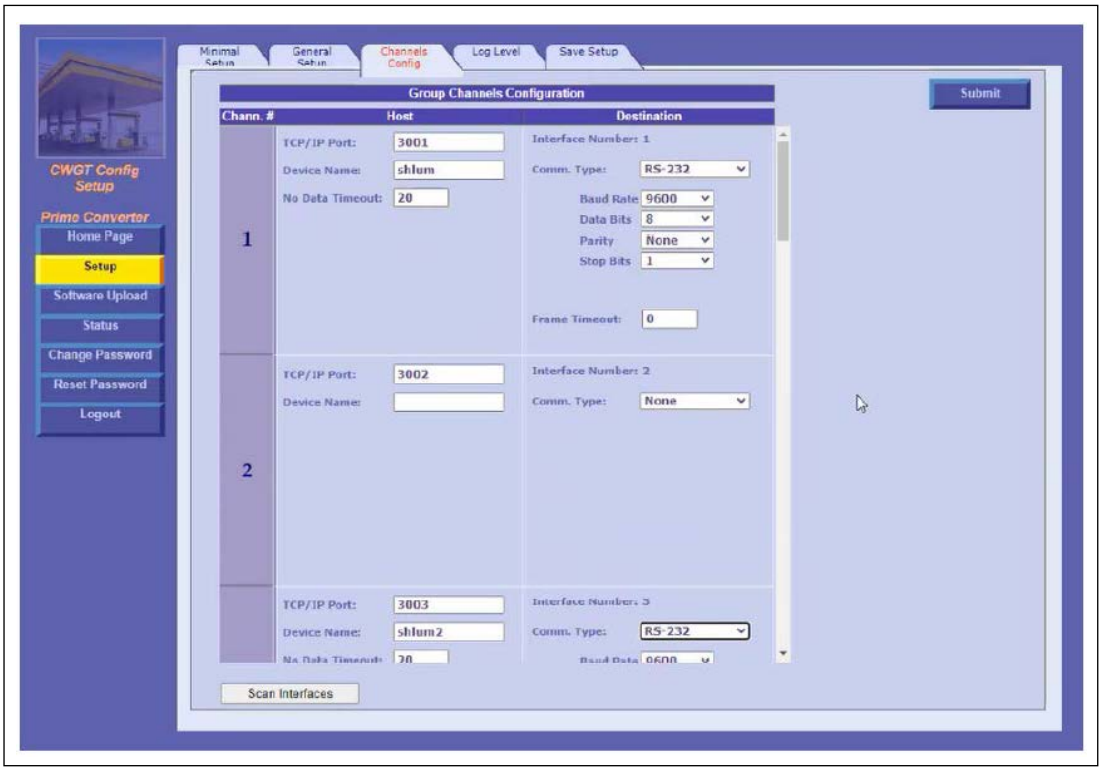
Field	Description
Ethernet Configuration	
IP Address	Device IP address
Subnet Mask	Subnet Mask address
Gateway	Gateway
DHCP	Not currently available
MAC	MAC address
RTC	
Date (dd/mm/yyyy)	Date
Time (hh:mm:ss)	Time

Note: 1) The RTC setting is important when activating converter logging. When activated, the logger will draw the timestamp from this setting.
2) Ensure that no pumps at the station are actively fueling before changing the date or time.

Channels Config

The **Channels Config** tab is the main screen for configuring the converter. Clicking the **Scan Interfaces** button at the bottom of the screen automatically identifies and populates the details of all connected modules, and presents them with channel numbers on the left, up to a maximum of 12 channels.

Figure 6-5: Channels Config Tab



All new cards manufactured today include a built-in classification that is automatically identified during the scan.

*Note: After clicking the Scan Interfaces button, a confirmation dialog with the following message will appear: You are about to scan hardware interfaces. Continue?" Click **OK** to proceed with the scanning.*

Each channel includes the following fields.

Field	Description
Host	
TCP/IP Port	Host TCP/IP Port. Port numbers can range from 1024 to 56000
Device Name	Device Name (Ideally should reflect the corresponding destination, i.e. “CL” for Current Loop destinations)
No Data Timeout	The controller checks communication at regular intervals; if no communication is detected within the timeout interval, the channel will automatically reset. The setting can range from 50 to 100. If set to 0, the channel will not reset.
Destination	
Interface Number	Channel number between 1-12 (up to 4 per PI)
Comm. Type	Communication protocol for the interface • None (if there is no protocol) • RS-232 (electronic PI) • RS-485 (electronic PI) • RS-422 (electronic PI) • Current Loop (electronic PI) • MPI-C Standalone (channel in a single card) (mechanical PI) RS-232 and RS-422 channels are configured on the same PI:Channels 1 and 2 are RS-232 and channels 3 and 4 are RS-422
Baud Rate	Communication Interface details. Refer to the table below for details by pump type.
Data Bits	
Parit	
Stop Bits	
Current Select	This setting is for Current Loop channels only, and specifies the type of current used by the channel. For Wayne type pumps, select 20mA, and for Gilbarco type pumps, select 40mA.
Frame Timeout	Longest pause in milliseconds between received bits before destination interface interprets the pause as the end of one message, and interprets further transmissions as a new message (0 = 4 bytes of silence). If there are problems with the frame timeout, it is recommended to start raising the value gradually (to 1, 3, 5, etc.) and checking each time for improvement. The maximum recommended value is 10.

Pump Type	BaudRate	Data Bits	Parity	Stop Bits
Gasboy	9600	8	None	1
Gilbarco Current Loop: 20mA	5787	8	Even	1
Wayne Current Loop: 40mA	9600	8	Odd	1

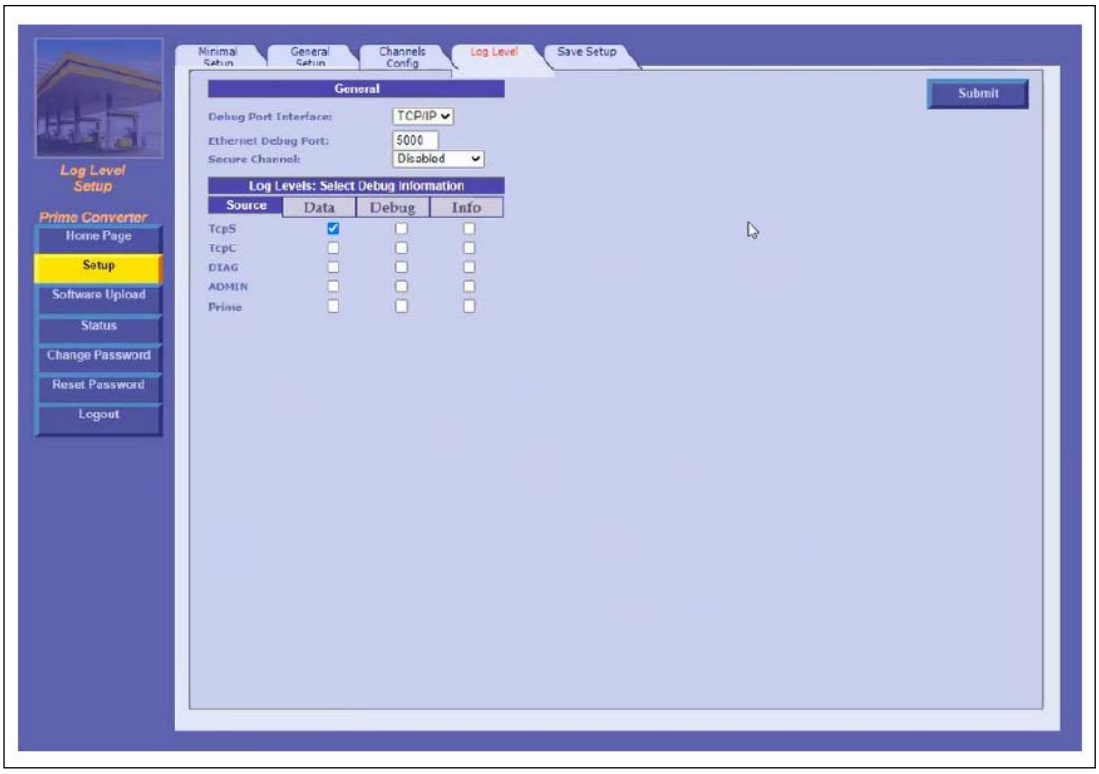
After setting the required parameters for the channels, click **Submit** to save the changes locally.

Note: Clicking on Submit only saves the configuration temporarily on a local level. To commit the changes permanently, make sure to save everything using the Save Setup tab.

Log Level

The Log Level tab is required only when logs are needed.

Figure 6-6: Log Level Tab



The Log Level section defines settings for logs that are sent to the provider.

Note: Please consult with the provider's Customer Services prior to defining the Log Level settings.

The following actions are available:

1 Define the Log Level fields detailed in the table below.

2 In the Debug Port Interface drop-down, select the port through which the log will be transferred:
- **None**: Logs are not transferred
- **Com**: Transfers the logs via RS-232
- **TCP/IP**: Transfers the logs via LAN connection

3 Click **Submit** to save the changes locally.

Note: Clicking on Submit only saves the configuration temporarily on a local level. To commit the changes permanently, make sure to save everything using the Save Setup tab.

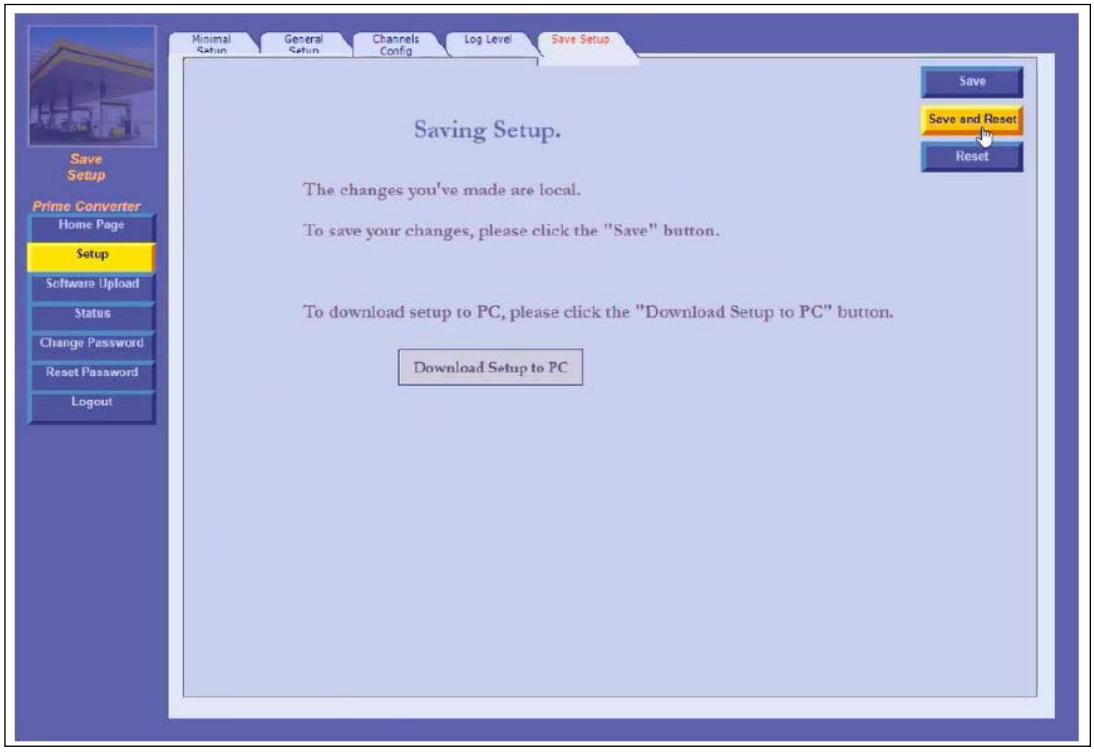
Field	Description
General	
Debug Port Interface	• None: Logs are not transferred • Com: Transfers logs via RS-232 (requires connecting a communication cable) • TCP/IP: Transfers logs via LAN • Auto: Transfers logs automatically
Ethernet Debug Port	Port number. The default is 5000
Secure Channel	
Log Levels: Select Debug Information	
Source	Logs: • TcpS • TcpC • DIAG • ADMIN • Prime
Log Levels	• Data (the most common setting is selecting the TcpS > Data checkbox) • Debug • Info

Save Setup

After you have completed and submitted all configuration details, you must save all changes in the Save Setup tab in order to write the changes to the flash memory and save the configuration permanently. To save changes, proceed as follows:

1 Click the **Save Setup** tab. The following screen is displayed.

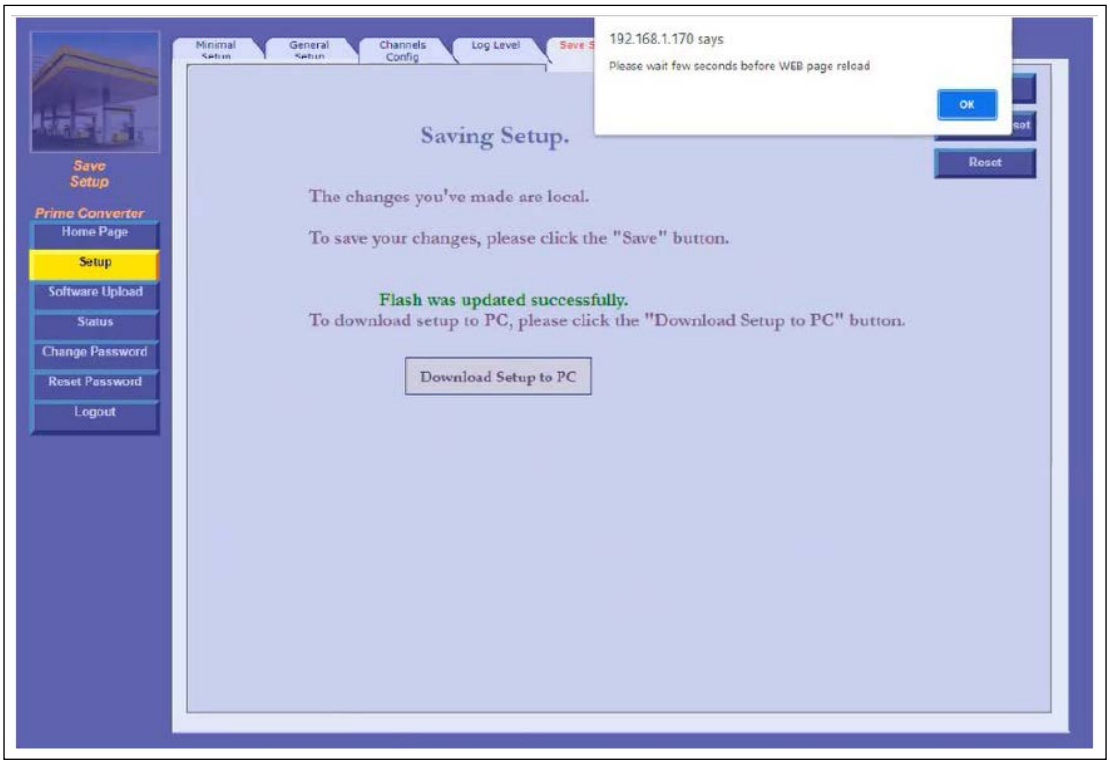
Figure 6-7: Save Setup Tab



2 Click **Save and Reset**. A confirmation pop-up is displayed with the message “Save changes and reset the device?”.

3 Click **OK** to continue. The following dialog box is displayed.

Figure 6-8: Save Confirmation



4 Click **OK** to complete the save process. After a few seconds, you will be logged out and asked to sign in again.

Figure 6-9: Sign In Prompt

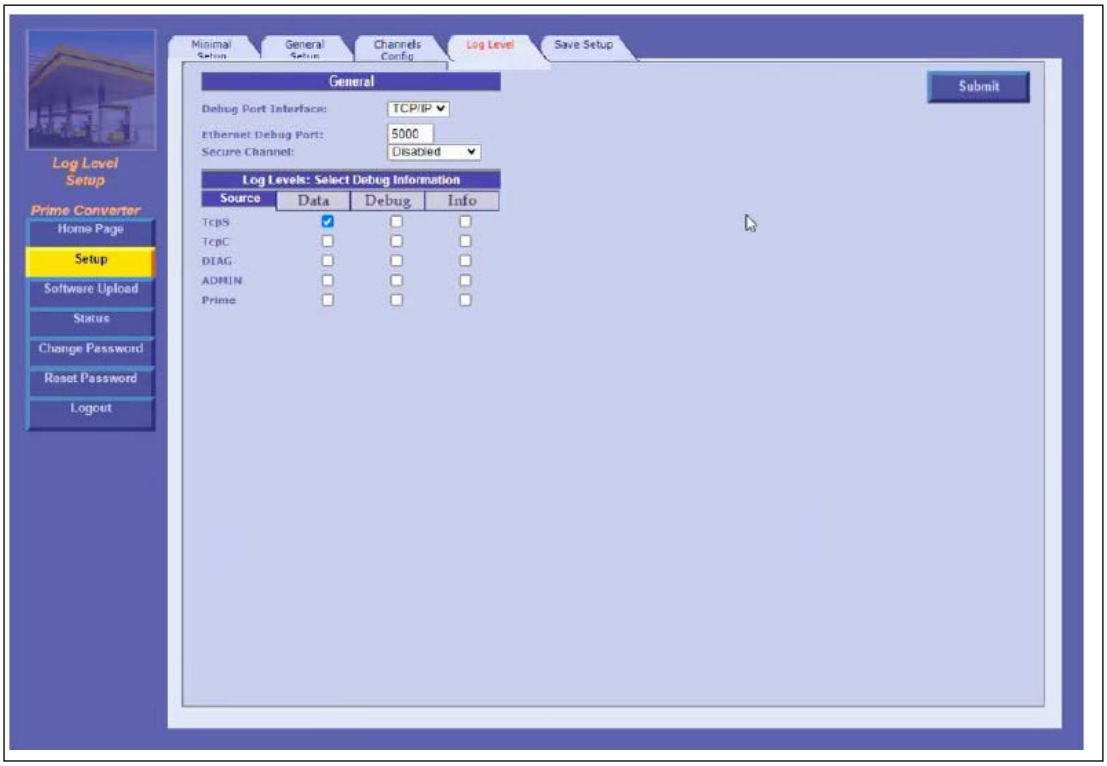
5 After signing in, the following prompt is displayed.

Figure 6-10: Update Configuration

6 Click **OK**. The Home screen will display the updated settings.

7 To download an XML file containing all of the settings defined on the Setup page to the local machine, click **Download Setup to PC**. The following dialog box is displayed.

Figure 6-11: Download Setup File



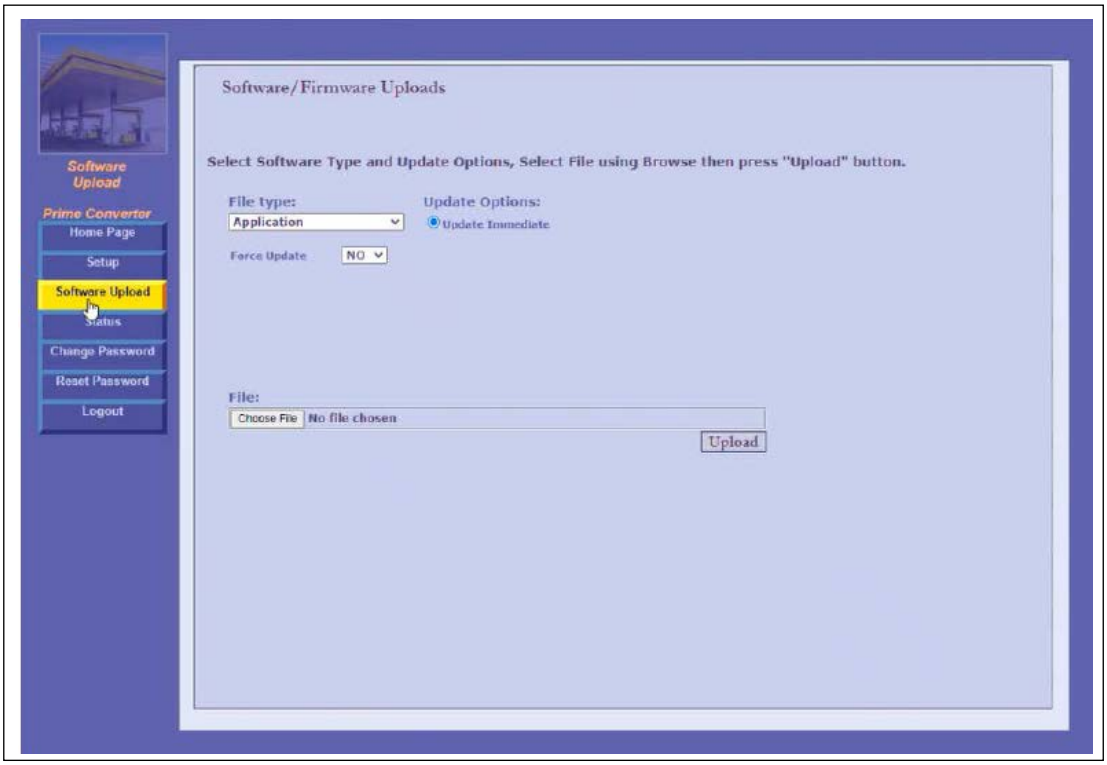
8 Click **OK** to confirm.

Note: The dialog screenshots in this procedure are for demonstration purposes only, including the IP address in the headers. Use the IP address provided to you by Customer Support when performing this procedure.

Software Upload

The Software Upload screen enables uploading the newest software and firmware versions provided to the technicians by the provider (see Figure 6-12).

Figure 6-12: PRIME Converter Software Upload Page



The Software Upload screen includes the following fields:

Field	Description
File Type	• Application • Boot Loader • Configuration File • Pump Mezzanine
Update Options	Currently only Update Immediate is available
Choose File	Opens a browser to select a file for upload
Force Update	When enabled, forces a software update. Used only when reverting to a previous version of the software

To upload a file to the device, proceed as follows:

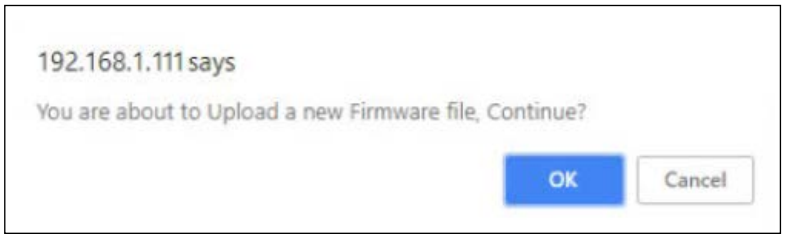
1 In the File Type drop-down, select the file type that you want to upload.

2 Click **Choose File** to launch a browser window, and browse to the file path of the software version to upload.

3 Select the file and click **Open.**

4 Click **Upload**. The following dialog is displayed.

Figure 6-13: Confirm Upload Dialog



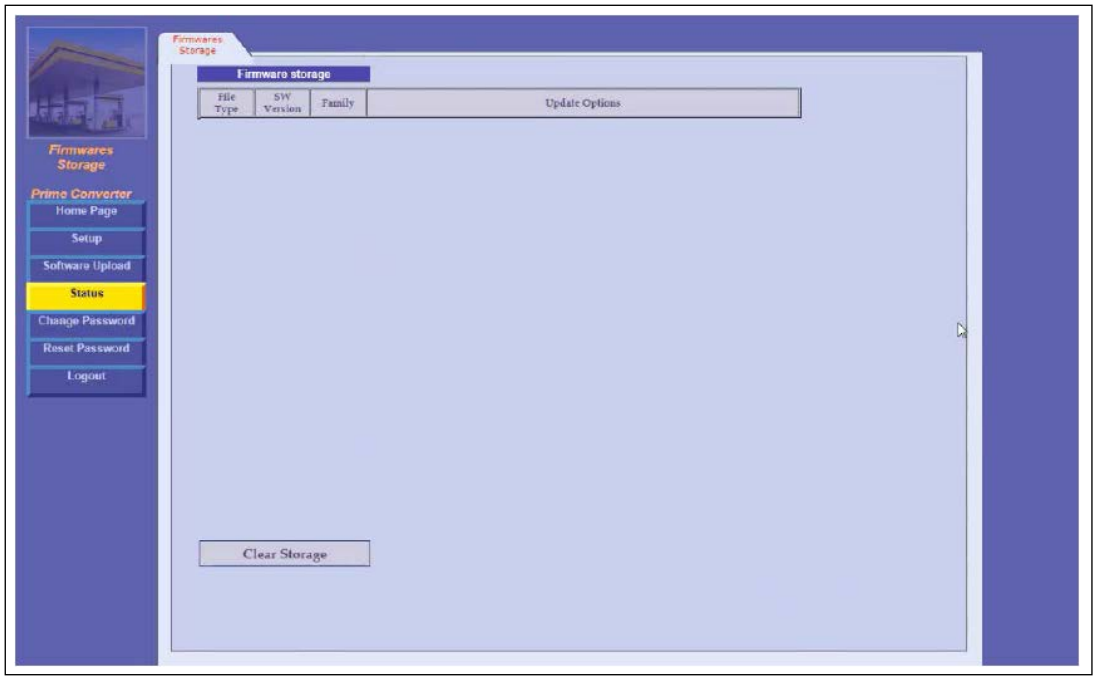
5 Click **OK** to confirm and upload the file.

Note: The Pump Mezzanine option refers to the converter's interface with the connected device, which is displayed in the Pump Interface 1/2/3 Version in the Home screen.

Status

The Status page displays all the previous software and firmware updates that were uploaded and implemented in the device. These uploads will be listed in the table under Firmware storage.

Figure 6-14: PRIME Converter Status Page

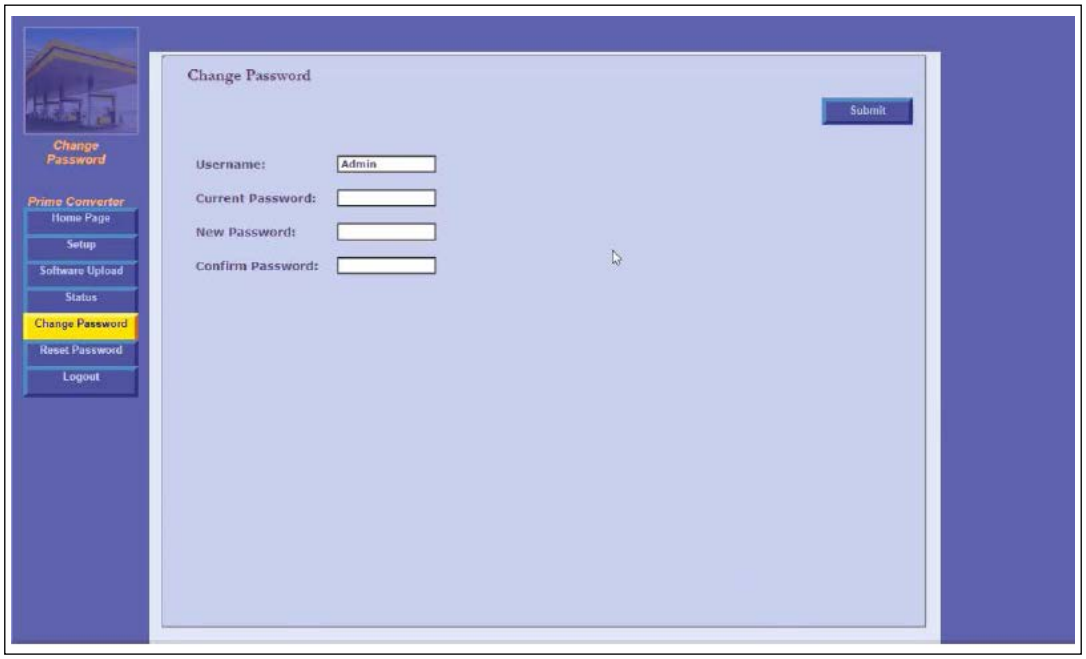


To clear all the uploads listed under Firmware storage, click **Clear Storage**.

Change Password

On the Change Password page, the user can change the password used to log into PRIME Converter web site.

Figure 6-15: PRIME Converter Change Password Page



To change password, proceed as follows:

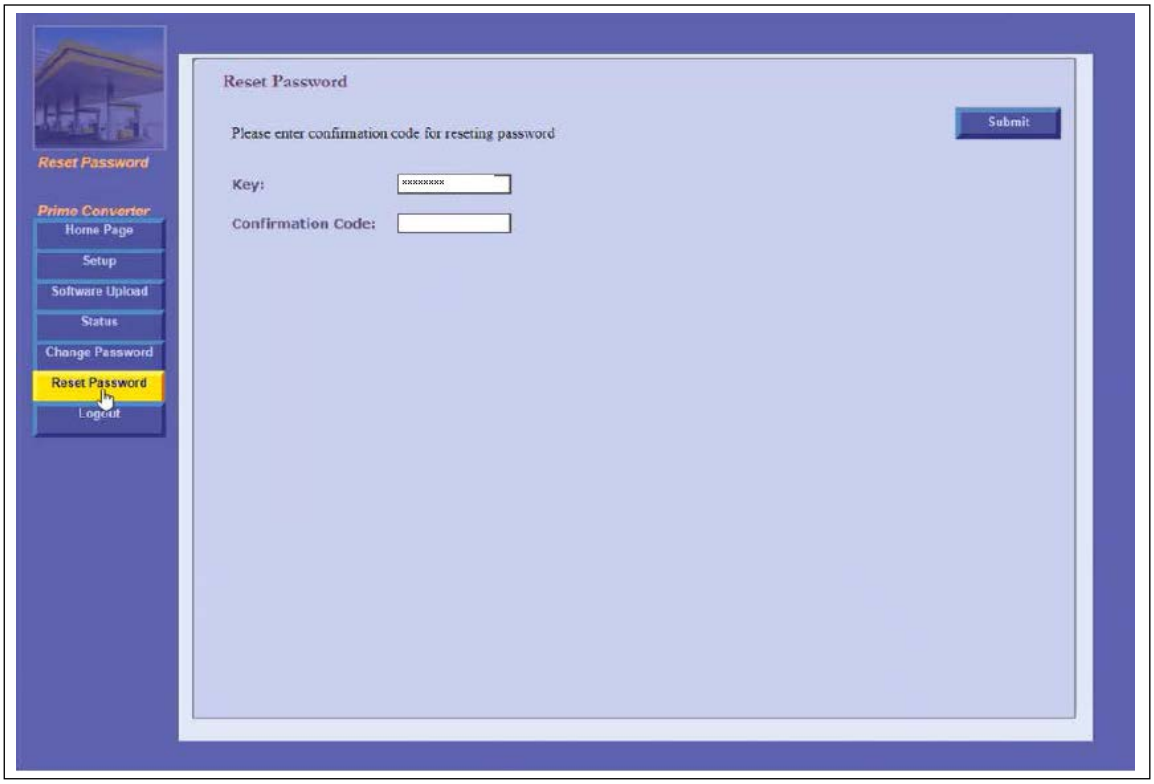
1 In the Change Password Page, fill in the details for the following fields:
- **Username**: Enter the existing user name.
- **Current Password**: Enter the existing password.
- **New Password**: Enter the new password that you want to use.
- **Confirm Password**: Enter the new password again to confirm it.

2 After filling in all the details, click **Submit**. The new password is now in effect.

Reset Password

The Reset Password page is used to change the password or Device Key used to log into the device.

Figure 6-16: PRIME Converter Reset Password Page



The device key is replaced every few seconds. To reset the device password (such as when they forgot the password), the technician will need to contact the provider and perform the reset with them, proceed as follows:

1 The technician gives the provider the number that is displayed in the Key box.

2 The provider gives the technician a confirmation code.

3 The technician then enters the code provided into the Confirmation Code box.

4 The technician clicks the **Submit** button. The user name and password are reset to **Admin / Admin**.

Note: To reset the password, the user needs to open the page in the browser with the Converter's IP address, and immediately click the Reset Password tab on the left of the screen before the login screen appears (see Figure 6-16). This action should be performed quickly.

Appendix A

General

This appendix provides the wiring diagrams of the Truck PRIME, as follows:.

Figure A-1: Truck PRIME with Orpay1000

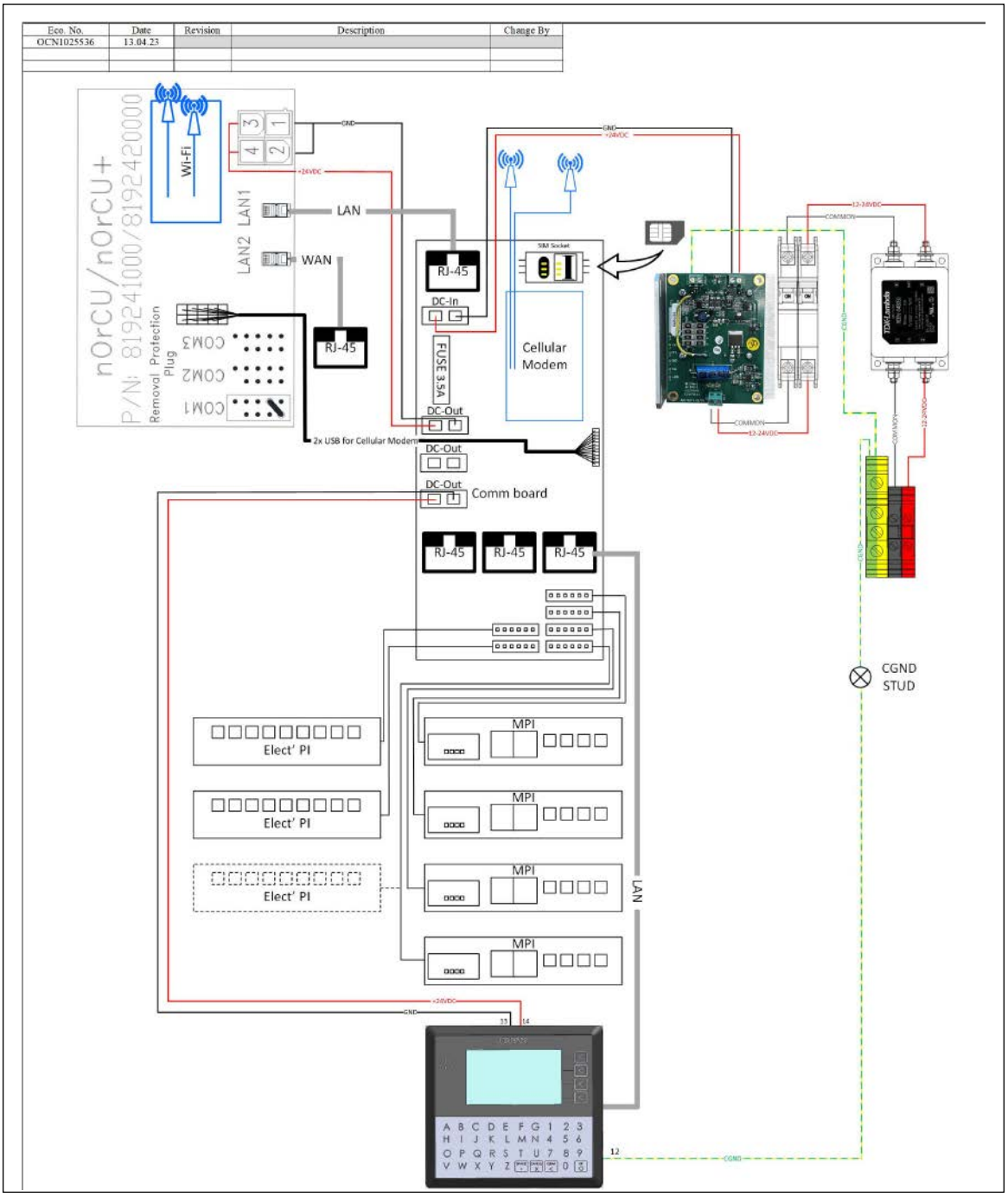
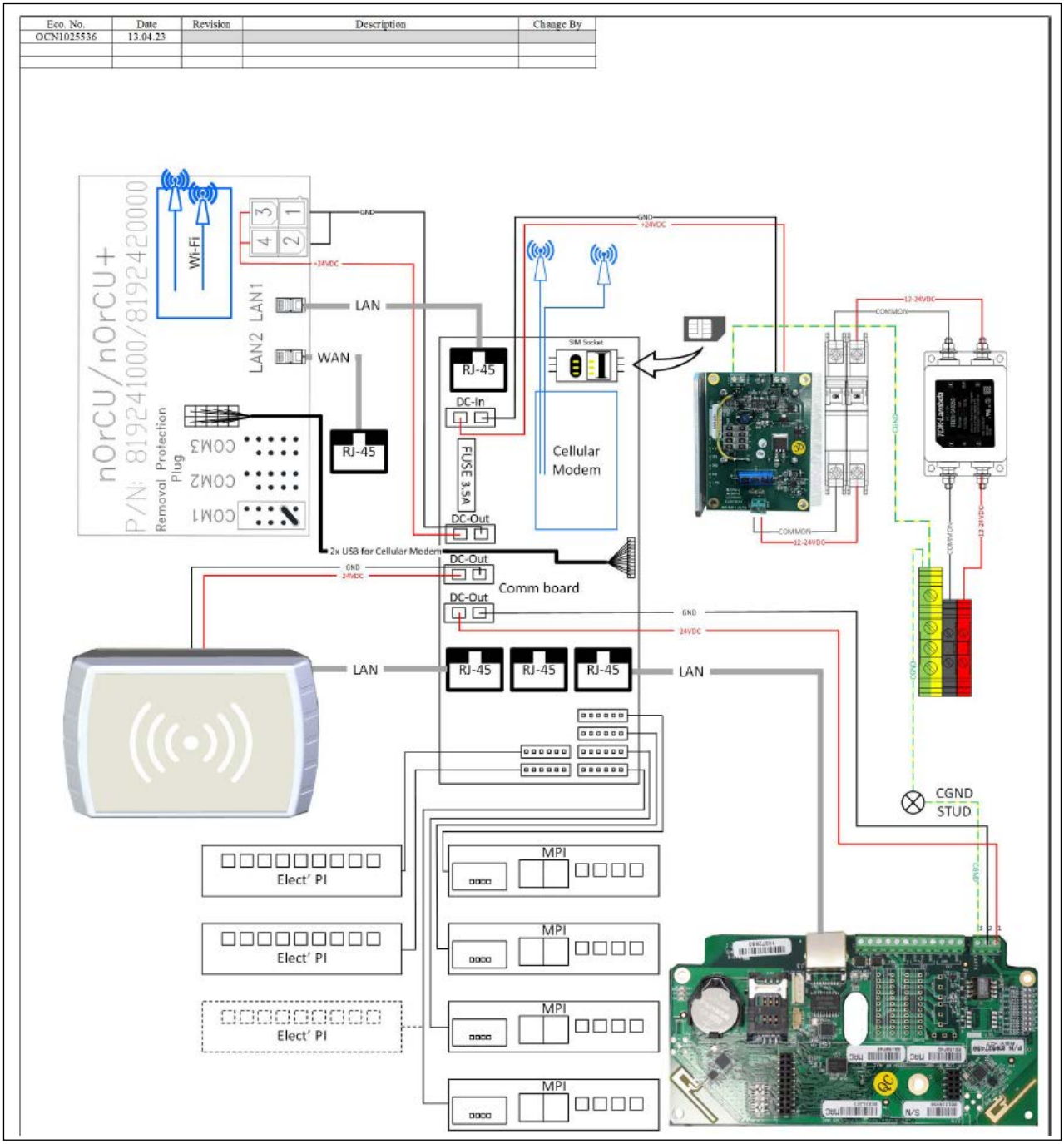


Figure A-2: Truck PRIME with TR500



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