GASBOY

Fuel PointPLUS

Station Equipment Manual

Wireless Gateway

& Wireless Nozzle Reader Units

P/N: MDE-4851

Revision D

POWERED BY

This document is based on Orpak's ForeFuel Station Equipment Manual P/N 817439320

SAFETY CONSIDERATIONS

Carefully read all warnings and instructions, provided to help you install and maintain the equipment safely in the highly flammable environment of a gas station.
Disregarding these warnings and instructions could result in serious injury and property loss or damage.
It is your responsibility to install, operate and maintain the equipment according to the instructions 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.
Ensure that the installation is performed by experienced personnel, licensed to perform work in gas stations and in flammable environments, according to the local regulations and all relevant standards.

WARNING - EXPLOSION HAZARD

Use a separate conduit for intrinsically safe wiring. Do not run any other wires or cables through this conduit, since it may lead to 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.
Installation and service must comply with all applicable requirements of the National Fire Protection Association NFPA-30 “Flammable and Combustible Liquids Code”, NFPA-30A “Automotive and Marine Service Station Code”, 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 equipment. Always disconnect power before working on the equipment. The equipment may have more than one power supply connection point. Disconnect all power before servicing.

WARNING – PASSING VEHICLES

When working in an open area, 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 that reside in the equipment, as this will void all warranties associated with this equipment.

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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

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 :

Reorient or relocate the receiving antenna

Increase the separation between the equipment and receiver

Connect the equipment to an outlet on a circuit different from that to which the receive is connected

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.

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Section 1 Introduction

1.1. General

This manual describes the Fuel Point PLUS station-side equipment: the Wireless Gateway and the nano Nozzle Reader. It provides a general description of the system, a detailed description of the units, as well as installation, setup and maintenance guidelines.

1.2. Solution Description

Fuel Point PLUS is an automatic vehicle identification (AVI) Radio-frequency identification (RFID) fueling solution enabling fast refueling with no need for cash, card, or coupon payment – enhancing loyalty and allowing self-service refueling. Fuel Point PLUS ensures that fuel is being dispensed solely to the authorized vehicle whose account should be charged. Removing the nozzle and trying to fuel another vehicle immediately suspends RFID fueling activity.

The following describes the Fuel Point PLUS fueling process:

Once a vehicle arrives at the station, the Vehicle Data unit transmits vehicle's data to the Wireless Gateway, including:

- Identification
- Odometer and E.H.
- Additional data (such as diagnostics, fuel level and more)

When a fueling nozzle is inserted into the authorized vehicle's fuel inlet the Wireless Nozzle Reader unit reads encrypted Vehicle ID unit's data and sends it to the Wireless Gateway

The Wireless Gateway then combines both Vehicle ID and data and sends it to the Station Controller. Fuel Point PLUS is designed for full integration with Gasboy's Controller as well as with other leading forecourt automation providers' POS/SC

The Station Controller sends a request to the Authorization Server, which returns approval, balance, and restrictions (if any)

Once approved, the pump is opened. All of this happens within seconds and with no human intervention

The system monitors the entire fueling session, and if the nozzle is removed the pump is automatically stopped so that refueling continues only when the nozzle is put back into the same car.

1.3. System Architecture

Figure 1 shows a basic diagram of Fuel Point PLUS system architecture:

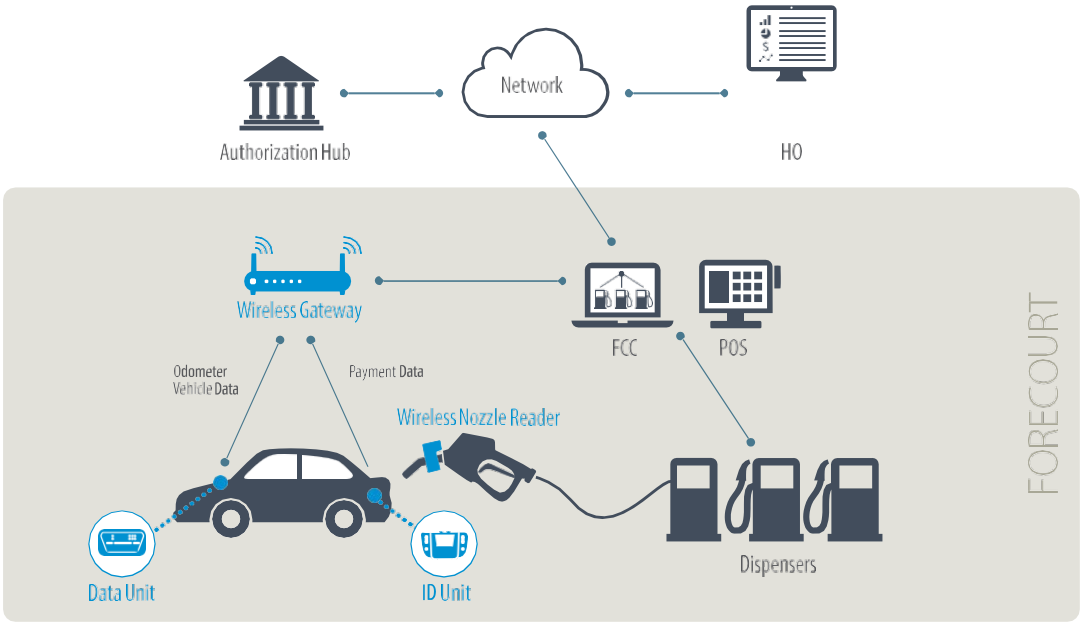

Figure 1 - System Architecture

1.4. Basic Steps for Deploying the Wireless Network

Perform a site survey and design your network layout. See Network Layout

Install the Wireless Gateway units. See Installing the Wireless Gateway

Install the nNR units. See Installing the nNR

Set the Wireless Gateway (Master). See Setting the Wireless Gateway (Master)

Set the Wireless Gateway units. See Setting the Wireless Gateway Units

Set the nNR units. See Programming the nNR

Verify that all network components are communicating properly. See Viewing Network Status

1.5. Manual Structure

Chapter 1: Introduction

This chapter provides a general description of the system.

Chapter 2: Wireless Gateway

This chapter provides a description of the Wireless Gateway units, as well as installation, setup and maintenance guidelines.

Chapter 3: nNR

This chapter provides a description of the nano Nozzle Reader units, as well as installation, setup and maintenance guidelines.

1.6. References

This manual provides installation and setup instructions for Fuel Point PLUS station-side equipment. For vehicle units' installation and setup, refer to *MDE-4868 Fuel Point PLUS Vehicle Units Manual*.

1.7. Documentation Conventions

This manual uses the following conventions:

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

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

Notes contain helpful comments or references to material not covered in the manual.

Best practice notes contain helpful suggestions.

Example notes contain additional information to illustrate a concept/procedure.

Section 2 Wireless Gateway

2.1. General

This chapter provides a description of the Wireless Gateway units, as well as installation, setup and maintenance guidelines.

2.2. Wireless Gateway Description

Gasboy's Wireless Gateway Wireless Network Gateway (see Figure 2) is the building block of Fuel Point PLUS's wireless network that covers the forecourt.

Connected in a mesh topology, each unit captures data and serves as a relay for other units. This creates a robust and reliable network that covers the entire forecourt to ensure all messages reach their destination, bypassing any possible physical interference or frequency jamming.

It receives both vehicle ID and data, decrypts the information and securely forwards it to the Station Controller. During refueling, the Wireless Gateway continues monitoring the signal to detect any attempt to remove the nozzle and refuel other vehicle on the same account.

Figure 2 - Wireless Gateway Outdoor - General View

There are two types of Wireless Gateway units:

Wireless Gateway (Master): functions as an access point of the Wireless Network and is directly connected to the Station Controller via LAN

Wireless Gateway: units that function as a router in the Fuel Point PLUS station. No LAN connection is required

Note: A station must include one Wireless Gateway (Master). This unit also functions as Administrator.

2.2.1. Main Features

Wireless Gateway's main features include:

- Mesh topology, scalable, redundant, and flexible wireless network
- The units communicate through low power short range RF in the ISM 2.4 GHz band, co-existing with any IEEE802.xx network (such as WiFi)
- Highly secure AES-128 data encryption
- Easy to install, setup, and upgrade via remote access
- Certifications: FCC, CE, UL, ETL

2.3. Housing Options

Wireless Gateway units are available in the following housing options:

2.3.1. Compact Outdoor Unit

The compact outdoor box (see Figure 3) is specially designed for top-of-the-pump, station office, or C- store installation. It includes an optional integrated power supply.

Figure 3 - Wireless Gateway Compact Outdoor Unit

2.3.1.1. Compact Outdoor Unit - Integrated P/S Specifications

(See Table 1).

Table 1 - Wireless Gateway Compact Outdoor Unit - Integrated P/S Specifications

Parameter	Value
PHYSICAL	
Height	180 mm (7.087")
Width	182 mm (7.165")
Depth	62.5 mm (2.461")
Weight	0.86 Kg
ELECTRICAL	
Operating voltage	12 - 28 VDC
Operating current	0.5 A
ENVIRONMENTAL	
Operating temperature	-40°C to +55°C (-40°F to +131°F)
Humidity	95% RH
IP Rating	IP66, (NEMA Type 4X)
COMMUNICATION	
TCP/IP over Ethernet	
EIA 802.15.4	
2.405- 2.480 GHz ISM band RF Network Communication with AES128 encryption	
POWER SUPPLY	
DC output voltage	12 - 28 VDC
Rated current	0.35 A
Current range	0~0.625 A
Rated power	15 W
Voltage tolerance	1.0%
Line regulation	0.5%
Load regulation	0.5%
Input voltage range	85~264 VAC
Frequency range	47~63 Hz
AC current (typical)	0.35 A/115 VAC 0.25 A/230 VAC

2.3.1.2. Compact Outdoor Unit Specifications

(See Table 2).

Table 2 - Wireless Gateway Compact Outdoor Unit Specifications

Parameter	Value
PHYSICAL	
Height	180 mm (7.087")
Width	182 mm (7.165")
Depth	62.5 mm (2.461")
Weight	0.73 Kg
ELECTRICAL	
Operating voltage	12 - 28 VDC
Operating current	0.5 A
ENVIRONMENTAL	
Operating temperature	-40°C to +55°C (-40°F to +131°F)
Humidity	95% RH
IP Rating	IP66, (NEMA Type 4X)
COMMUNICATION	
TCP/IP over Ethernet	
EIA 802.15.4	
2.405- 2.480 GHz ISM band RF Network Communication with AES128 encryption	

> **Note:** Operating temperature refers only to the unit, not including the external AC/DC adapter. The adapter shall operate within the temperature range specified by the manufacturer.

2.3.2. Integrated Unit

The integrated unit (see Figure 4) is designed for integration into pumps or installation in Gasboy's Islander PLUS homebase station controller pedestal.

Figure 4 - Wireless Gateway Integrated Unit

2.3.2.1. Integrated Unit Specifications

(See Table 3).

Table 3 - Wireless Gateway Integrated Unit Specifications

Parameter	Value
PHYSICAL	
Height	41 mm (1.6")
Width	201 mm (7.9")
Depth	120 mm (4.7")
Weight	0.36 Kg
ELECTRICAL	
Operating voltage	12 - 28 V DC
Operating current	0.5 A
ENVIRONMENTAL	
Operating temperature	-40°C to +55°C (-40°F to +131°F)
Humidity	95% RH
COMMUNICATION	
TCP/IP over Ethernet	
EIA 802.15.4	
2.405- 2.480 GHz ISM band RF Network Communication with AES128 encryption	

2.3.3. Outdoor Unit

The outdoor box (see Figure 5) is specially designed for top-of-the-pump, station office, or C-store installation. It includes an optional integrated power supply.

Figure 5 - Wireless Gateway Outdoor Unit

2.3.3.1. Outdoor Unit - Integrated P/S Specifications

(See Table 4).

Table 4 - Wireless Gateway Outdoor Unit - Integrated P/S Specifications

Parameter	Value
PHYSICAL	
Height	280 mm (11.024")
Width	190 mm (7.485")
Depth	130 mm (5.1118")
Weight	1.6 Kg
ELECTRICAL	
Operating voltage	12 - 28 VDC
Operating current	0.5 A
ENVIRONMENTAL	
Operating temperature	-40°C to +55°C (-40°F to +131°F)
Humidity	95% RH
IP Rating	IP66, (NEMA Type 4X)
COMMUNICATION	
TCP/IP over Ethernet	
EIA 802.15.4	
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DC output voltage	12 - 28 VDC
Rated current	0.35 A
Current range	0~0.625 A
Rated power	15 W
Voltage tolerance	1.0%
Line regulation	0.5%
Load regulation	0.5%
Input voltage range	85~264 VAC
Frequency range	47~63 Hz
AC current (typical)	0.35 A/115 VAC 0.25 A/230 VAC

2.3.3.2. Outdoor Unit Specifications

(See Table 5).

Table 5 - Wireless Gateway Outdoor Unit Specifications

Parameter	Value
PHYSICAL	
Height	280 mm (11.024")
Width	190 mm (7.485")
Depth	130 mm (5.1118")
Weight	0.8 Kg
ELECTRICAL	
Operating voltage	12 - 28 VDC
Operating current	0.5 A
ENVIRONMENTAL	
Operating temperature	-40°C to +55°C (-40°F to +131°F)
Humidity	95% RH
IP Rating	IP66, (NEMA Type 4X)
COMMUNICATION	
TCP/IP over Ethernet	
EIA 802.15.4	
2.405- 2.480 GHz ISM band RF Network Communication with AES128 encryption	

> **Note:** Operating temperature refers only to the unit, not including the external AC/DC adapter. The adapter shall operate within the temperature range specified by the manufacturer.

2.4. Network Layout

The following provides network design guidelines and recommendations to help in determining which equipment should be installed and at which location, so maximum coverage of the forecourt is achieved without obstacles and interferences.

2.4.1. Site Survey

To ensure maximum network coverage a site survey should be carried out prior to installing station equipment. The following data should be gathered:

- Number of dispensers equipped with Fuel Point PLUS
- Interface to Station Controller (LAN line)
- Distance between the islands and the dispensers within each island (station topology)
- Possible sources of interference (trucks and other large metal objects)
- Wireless Gateway outdoor optimal location from an aesthetic point of view
- Non-standard length hoses (used when vehicle's fuel filler is not siding the pump)

Once mapping is done, you'd need to define how to build the Wireless Gateway network, considering:

- Number of Wireless Gateway units (including the Wireless Gateway (Master)) are needed
- Types of Wireless Gateway to be used: Integrated (in the pump, or inside Home-Base pedestals) or Outdoor
- Wireless Gateway (Master) and Wireless Gateway units location

2.4.2. Wireless Gateway Positioning

Figure 6 shows the Wireless Gateway RF lobe in approximation.

- Most of the RF signal is spread upwards and to the sides
- In Outdoor units, the signal is the strongest in the direction of the front cover
- In Integrated units, the signal spreads mostly up, but since the signal is reflected inside the dispenser, it has less significance

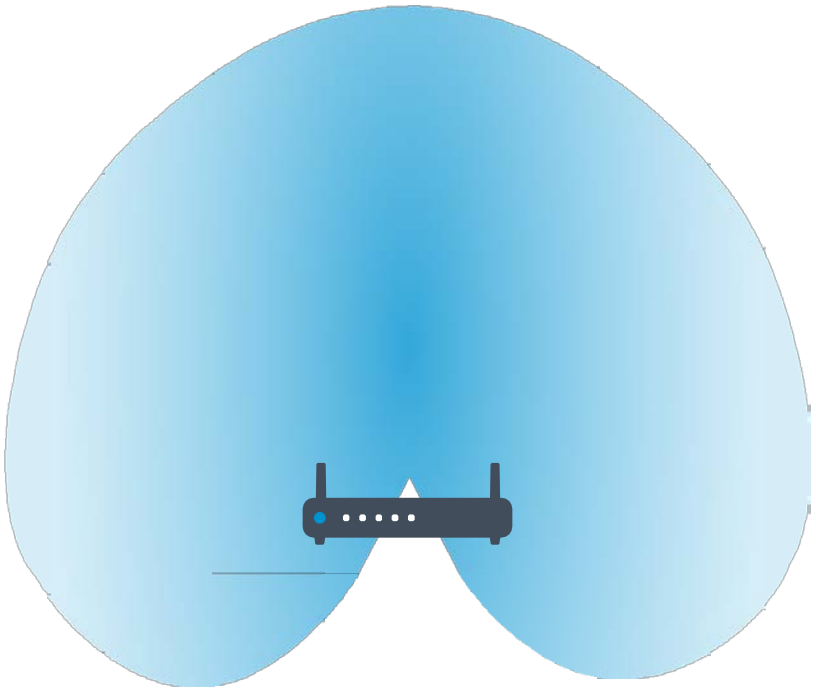

Figure 6 - Wireless Gateway RF Lobe (Approx. for Illustration Purposes Only)

Outdoor units should be installed so the RF lobe is directed to the area to be covered:

- If installed on a wall, the front panel should face the covered area and the other Wireless Gateway units
- If installed on the canopy, the front panel should be facing down
- If installed on top of the dispenser or on other horizontal surface, the front panel should be facing up, as long as the Wireless Gateway is not installed higher than 1.5-2m/5-6ft

Integrated units should be placed in the dispenser head, in the center or behind the display

Note: Some dispenser heads may substantially block the RF signal. In this cases, use an Outdoor unit instead.

2.4.3. Location Recommendations

Take into account the following recommendations:

- Maintain a clear line of sight between the Wireless Gateway units as much as possible. If
- an Outdoor unit is used, install it as high as possible
- If possible, install an Outdoor unit on the canopy from maintenance and infrastructure point of view
- If there is LAN connection in the forecourt, place the Wireless Gateway (Master) on the island and not on the station office/store wall

Best Practice: Use Outdoor units, whenever possible, to prevent signal from being blocked by the metal housing of the dispenser head.

2.4.4. Maximum Distance

Maximum distance between Wireless Gateway units should not exceed the following values (see Table 6).

Table 6 - Maximum Recommended Distance between Wireless Gateway Units

Wireless Gateway#1	Wireless Gateway#2	Distance
Integrated	Integrated	10m/32ft
Outdoor	Integrated	15m/50ft
Outdoor	Outdoor	20m/65ft
Outdoor >3m/10ft height	Outdoor >3m/10ft height	30m/100ft

Maximum distance between nNR and the closest Wireless Gateway unit should not exceed the following values (see Table 7).

Note: Values apply to clear LOS without obstacles.

Table 7 - Maximum Recommended Distance between Wireless Gateway and nNR

Wireless Gateway Type	Distance
Integrated	10m/32ft
Outdoor	20m/65ft
Outdoor >3m/10ft height	30m/100ft

Notes:

Values apply to clear LOS without obstacles

The fueling vehicle can be an obstacle when the fuel filler is not siding the pump. In this case, inlet is on the far side of the vehicle (not next to the dispenser). In such case, do one of the following:

Use an Outdoor unit installed at a higher height

Install an additional unit at the far side (i.e. the next island)

2.4.5. Network Design Scenarios

The Wireless Network can include a different number of Wireless Gateway units, depending on the station size and the area to be covered.

Multiple units ensure full coverage of the entire forecourt all the time and allow optional paths for the signal to prevent network interferences from trucks and other large metal objects.

The following are different design scenarios. Please note that there is not one way to locate the units, it is strongly dependent upon station topology and the level of coverage needed.

2.4.5.1. Scenario #1: 1 Wireless Gateway (Master) Outdoor

(See Figure 7)

Coverage: 1 island

Conditions: LAN line to the island (for communication to Station Controller)

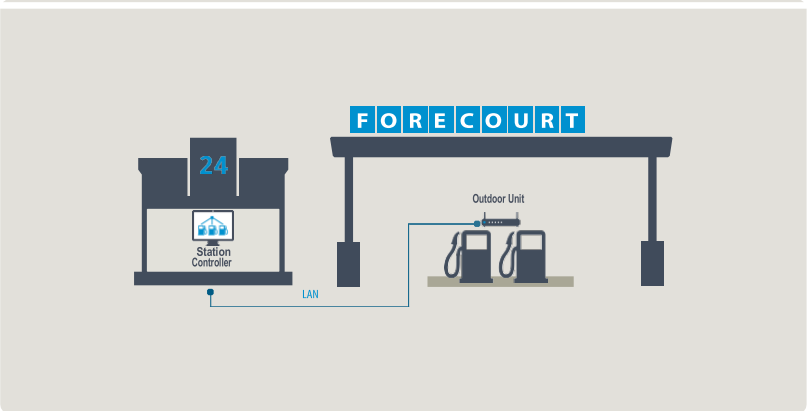

Figure 7 - Scenario No.1

2.4.5.2. Scenario #2: 1 Wireless Gateway (Master) Outdoor + 1 Wireless Gateway Outdoor

(See Figure 8)

Coverage: 1 island

Conditions: Maximum distance between units: 20m/65ft

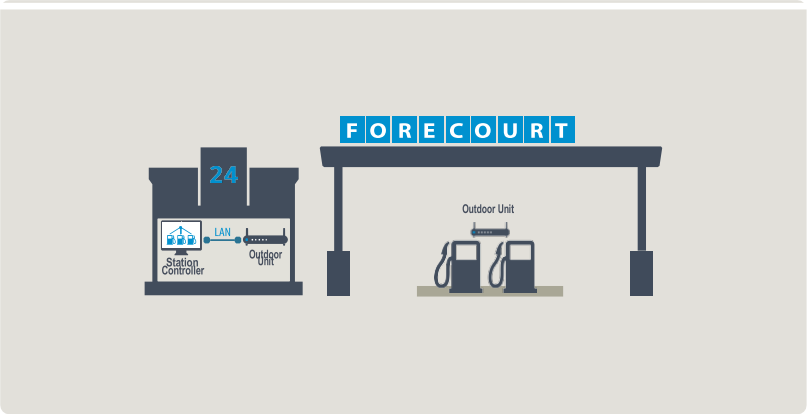

Figure 8 - Scenario No. 2

2.4.5.3. Scenario #3: 1 Wireless Gateway (Master) Outdoor + 1 Wireless Gateway Outdoor per Island

(See Figure 9)

Coverage: All islands

Conditions: Maximum distance between units: 20m/65ft

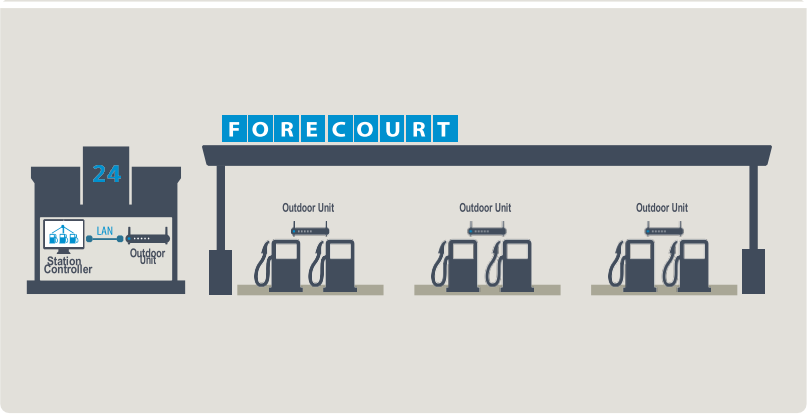

Figure 9 - Scenario No. 3

2.4.5.4. Scenario #4: 1 Wireless Gateway (Master) Outdoor + 2 Wireless Gateway Integrated per Island

(See Figure 10)

Coverage: All islands

Conditions:

Maximum distance between units: 10m/32ft.

Maximum distance between Wireless Gateway (Master) and closest Wireless Gateway unit: 15m/50ft

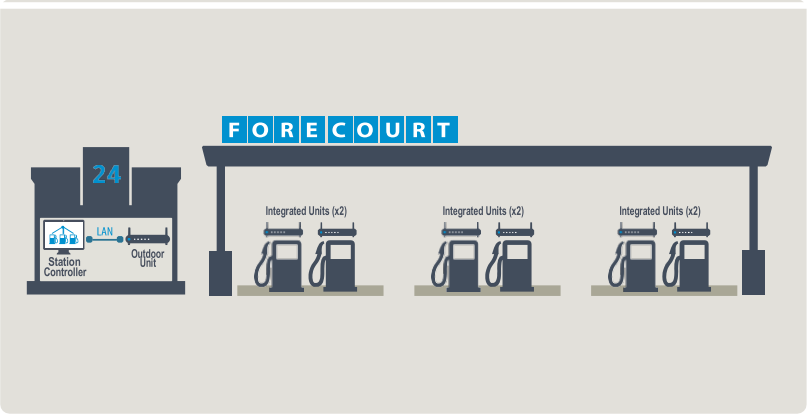

Figure 10 - Scenario No. 4

2.5. Installing the Wireless Gateway

The following provides instructions for installing the Wireless Gateway outdoor units.

> Note: Wireless Gateway integrated units are installed in Station Controller pedestals / cabinets and in pump-heads. Since guidelines vary according to dispenser model, please contact us for more information.

2.5.1. Installation Options

The following installation options are available:

Mounting on a wall or a on an existing pole

Installing on the canopy

Mounting on a dedicated pole or pedestal

2.5.2. Important Installation Notes

Note: Unit is intended to be supplied from building wiring, Overvoltage Category II, maximum mains transient 2500Vpk. If the unit is installed in Overvoltage Category higher than Overvoltage Category II, external overvoltage protective device compliant with IEC 61643 standard and NEC/CEC shall be provided in building installation to reduce mains transients to Overvoltage Category II, maximum mains transient 2500Vpk.

Note: A readily accessible 2-Pole circuit breaker, branch circuit overcurrent protector, rated maximum 16A (20A in North America), certified in accordance with the national code and requirements, shall be installed in building installation for disconnection from mains supply.

Note: When installed with power supply cord use H05VVf-3G0.75mm2 power supply cord.

Note: Unit shall be installed and connected to protective earth in accordance with the national code and regulations.

Note: This unit is intended for connection to TN and TT power system. It is also permitted for connection to IT power system of Norway.

Note: If mounted on a dedicated pole, installation of the pole in the Island must comply with the UL/EU or any local regulations requirements while securing the pole to the concrete floor, laying cables and placing the Wireless Gateway outside the hazardous location.

Note: The method to be used depends on station layout and configuration; installation should comply with UL an UE requirements.

Note: Replace lithium battery only with the same type and manufacturer CR-2032 by Renata.

2.5.3. Approved Location

This equipment is intended for installation in Restricted Access Location. The equipment shall be installed on concrete or other non-combustible surfaces only.

Due to safety requirements, the Wireless Gateway outdoor must be installed at non-hazardous area/non-classified area (see Figure 11):

Above 18" (0.5 meter) from the Isle floor

At least 18" (0.5 meter) away from the dispenser

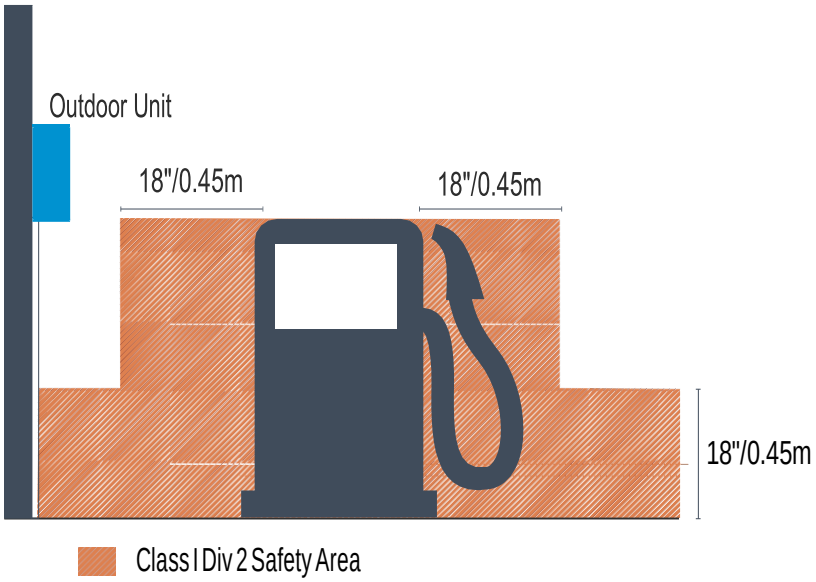

Figure 11 - Approved Location

2.5.4. Installation Instructions

1. Remove the Wireless Gateway front panel
2. Compact Outdoor units only: Remove the cable entry knockout plates on the bottom panel: For Wireless Gateway (Master), remove two panels (one for LAN and one for Power cables). For Wireless Gateway, remove one panel for the Power cable.
   a. Using a step drill bit, drill a 22.5mm / 0.885" hole in diameter for the large knockout plate and a 12.5mm / 0.492" hole in diameter for the small knockout plate (if needed)
   b. Thread the cables through a PG-16 gland (large knockout) and a PG-7 gland (small knockout)
   c. Tighten the glands to the box in order to prevent the intrusion of water or gases
3. Place the unit vertically with cable entry openings facing down.
4. Secure the unit to a flat surface by inserting four screws in the mounting openings located at the four corners of the unit (see Figure 12, Figure 13)
5. Connect power supply:

   For units equipped with integrated P/S: Connect AC P/S to the AC terminal
   For units without integrated P/S: connect a 12-28 VDC (stabilized),0.5A power supply to the Power Connector
   Use an external AC to DC or DC to DC switching power supply transformer approved according to the local regulations. Use an AC to DC Limited Power Source (marked "LPS") or NEC Class 2 power supply, low voltage and low current maximum 100 VA even under fault conditions. The power supply can be installed in the office, in the pedestal, in the tanker truck cabin (DC to DC power supply), or in a separate box

6. Wireless Gateway (Master) only: Connect a shielded S-CAT5E cable to the RJ45 Ethernet connector
7. Replace the front panel and secure it using the four coarse thread plastic screws

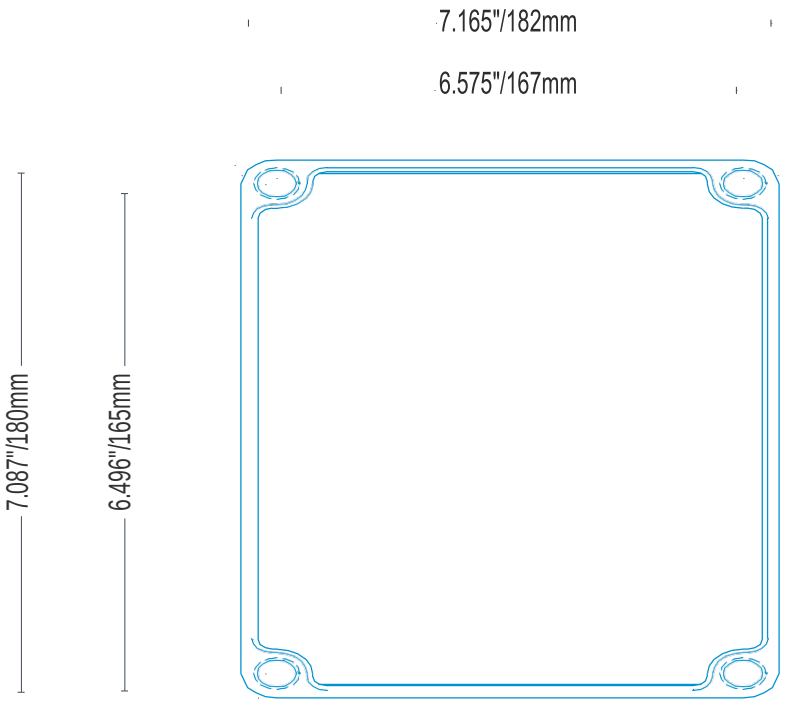

Figure 12 - Compact Outdoor Housing Dimensions

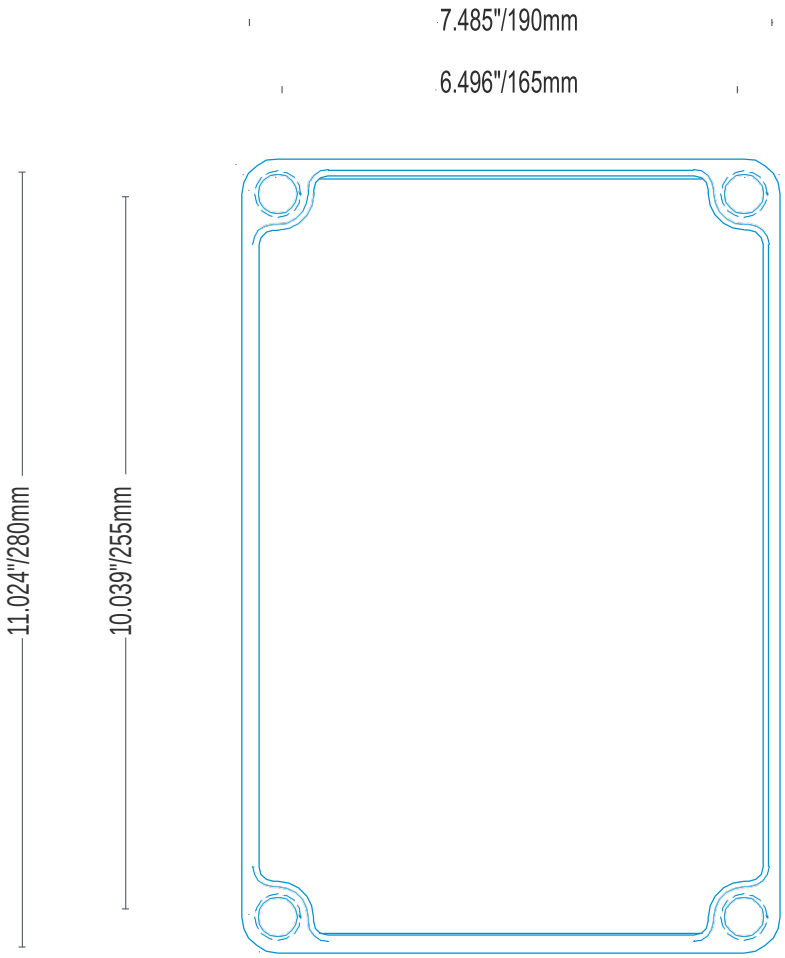

Figure 13 - Outdoor Housing Dimensions

Note: If power supply is installed far from the Wireless Gateway unit, verify that there is no power line leakage and that the unit receives correct voltage.

Note:

Thread the cables through UL listed glands or appropriate metal tubing.

The large opening can host a gland for cables of a diameter between 5.8mm/0.230” to 13.9 mm/0.530”, while the small openings are suitable for a diameter between 2.9mm/0.114” to 6.4mm/0.250”. Tighten the glands in order to prevent the intrusion of water or gases through conduits, cables and conductors

Do not damage unit sealing (IP66 protection)

2.5.5. Connectors & Indicators

Figure 14 shows the Wireless Gateway main components.

Figure 14 - Wireless Gateway Components

2.5.5.1. DC Power Input CN8 Molex Connector

(See Table 8)

Table 8 - DC Power Input Connector Pinout

Pin. #	Description	Wire Color	Notes
4	DC INPUT +V	Red	
2	DC INPUT -V	Black	
1	GND	Yellow/Green	Connect to nearest ground
3	PF		Not in use

2.5.5.2. RS-485 Communication CN12 D9P Connector

(See Table 9)

Table 9 - RS-485 Communication Connector Pinout

Pin. #	Description
Channel 1	
1	+485
2	-485
6	G485
Channel	
3	+485
4	-485
8	G485
7,9, case	GND
5	N.C.

2.5.5.3. RS-232 Communication CN11 D9S Connector

(See Table 10)

Table 10 - RS-232 Communication Connector Pinout

Pin. #	Description	Notes
2	TXD_232	
3	RXD_232	
5	Ground_232	
8	MONITOR	Refer to monitor jumpers (Rev C only)
4	MONITOR	Refer to monitor jumpers (Rev D only)
7	CAN_H	(Rev D only)
8	CAN_L	(Rev D only)
9	CAN_Ground	(Rev D only)
4,6,9	N.C.	(Rev C only)
1	N.C.	

2.5.5.4. Factory Default Jumper Settings

The unit includes the following jumpers (see Table 11) that enable to reset the unit and change SAM card voltage. Do not short the J3 Reset jumper and do not change J4 default settings unless otherwise specified.

Table 11 - Jumper Settings

Caution: Only authorized technicians are allowed to modify jumper default settings.

Jumper #	Name	Description
J3		Reset
J4 (Pins 1-2)	3.3.V	SAM power 3.3V
J4 (Pins 2-3)	5V	SAM power 5V

2.5.5.5. LED Indicators

(See Table 12 and Table 13)

Table 12 - Ethernet LEDs - PCB Left Side

LED #	Name	Description
DL2	100	Indicates Ethernet communication rate: Lit: 100 BPS Off: 10 BPS
DL3	ACT	Blinks during active Ethernet communication
DL4	LNK	Constantly lit when Ethernet is connected

Table 13 - LEDs - PCB Right Side

LED #	Name	Description
DL9	GP	Blinks when functioning properly
	TAG	Not used
	RST	Lights during reset
	5V	Indicates that +5V is active (SAM & CAN)
DL7	3V	Indicates that +3.3V is active (All digital & analog circuits)
DL8	1.8V	Indicates that +1.8V is active CPU (in addition to the 3.3V)

2.6. Setting the Network

You can easily set-up the Wireless Network using the Admin Site. This site also gives you full access to all Fuel Point PLUS components in the forecourt: Wireless Gateway, nNR as well as DP vehicle data units for setup, remote software updates, and remote maintenance tasks.

Browse to the Wireless Gateway Admin Site as described below and then proceed to set up the Wireless Gateway (Master).

Best Practice: Since most Wireless Network settings are done via Wireless Gateway (Master), it's highly recommended to set the Wireless Gateway (Master) first and then proceed to set a few parameters in each Wireless Gateway unit.

2.6.1. Logging In

After the Wireless Gateway (Master) and Wireless Gateway units have been connected, proceed to connect your PC:

1. Connect your PC to the unit's RJ-45 connector using a LAN cable (see Figure 15)

Figure 15 - Wireless Gateway LAN Connectors

2. Set your PC's IP to 192.168.1.XXX
3. Type this IP address in the browser's address box: http://192.168.1.170. The Home Page is displayed. It includes navigation buttons (see Table 14) and the unit details (see Table 15). Below are two homepages: one for the Wireless Gateway (Master) unit (see Figure 16) and the second for the Wireless Gateway unit (see Figure 17)

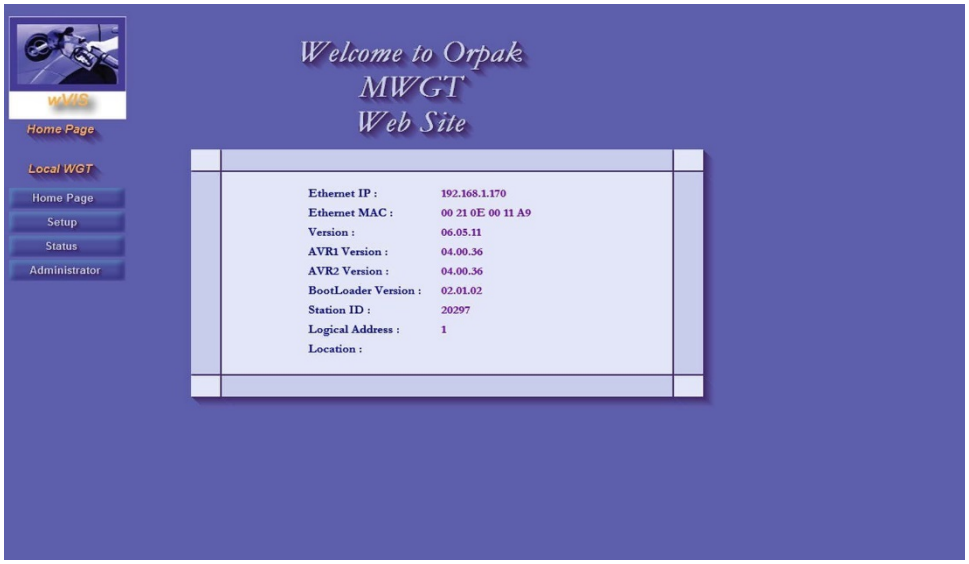

Figure 16 - Wireless Gateway (Master) Home Page

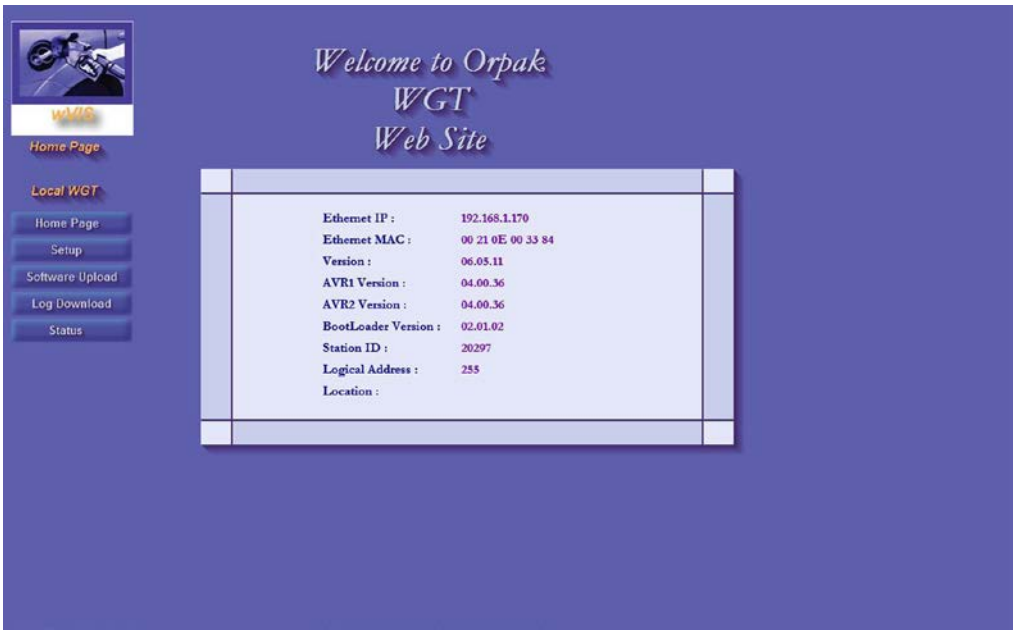

Figure 17 - Wireless Gateway Home Page

4. Click Setup. A login dialog opens (see Figure 18). Enter your user credentials. Default username is advanced

Figure 18 - Wireless Gateway Admin Site Login Dialog Box

5. Proceed to setup the units. See Setting the Wireless Gateway (Master) and Setting the Wireless Gateway Units

Table 14 - Home Page - Navigation Buttons

Button	Description
Home Page	Returns to the Home Page
Setup	See Setting the Wireless Gateway (Master) and Setting the Wireless Gateway Units
Status	See Viewing Network Status
Administrator	See Viewing Network Status
Software Upload	Available in Wireless Gateway units only. See Updating Software Versions Locally
Log Download	Currently N/A

Table 15 - Home Page - Wireless Gateway Details

Parameter	Description
Ethernet IP	Unit's IP address. Default: 192.168.170
Ethernet MAC	Media Access Control address
Version	Application version
AVR1 Version	AVR1 transmitting antenna version
AVR2 Version	AVR2 transmitting antenna version
BootLoader Version	Current boot loader version
Station ID	ID number of the station. Must be identical for Wireless Gateway (Master) and all Wireless Gateway units
Logical Address	Unique logical address that identifies the unit within the network. Wireless Gateway (Master) default is 1 and cannot be changed. Wireless Gateway can be set to any number between 3 and 254
Location	Descriptive free text to easily identify the unit

2.7. Setting the Wireless Gateway (Master)

After logging into the Wireless Gateway (Master) and clicking Setup, the Wireless Gateway Map screen opens (see Figure 19).

Figure 19 - Wireless Gateway Map Screen

This screen displays a button for each unit in the network. At this stage, only the Wireless Gateway (Master) is shown since Wireless Gateway units haven't been defined yet.

Click on the MWGT button.

The Setup screen opens. (see Figure 20)

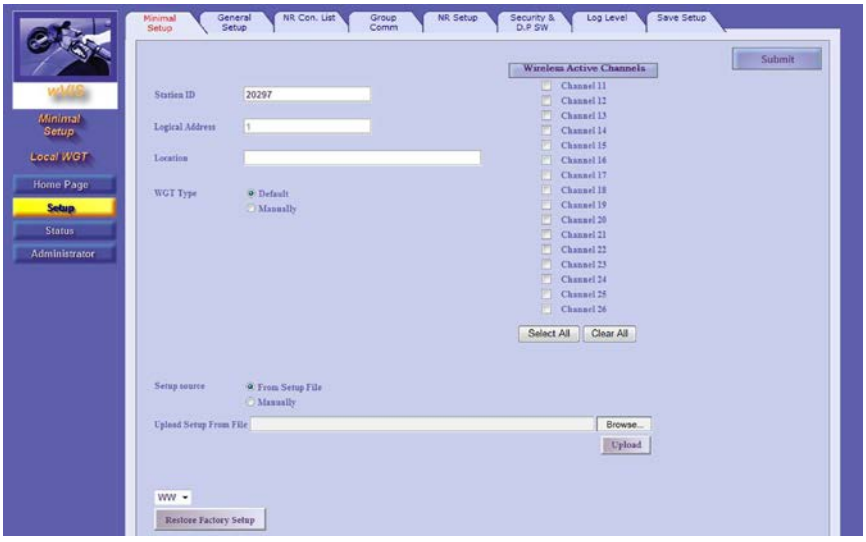

Figure 20 - Setup Screen

Wireless Gateway (Master) setup is performed by simply going through the following tabs and then applying the changes in the Save Setup tab.

2.7.1. Minimal Setup

This tab enables you to set the necessary parameters for establishing the Wireless Network (see Figure 21, Table 16).

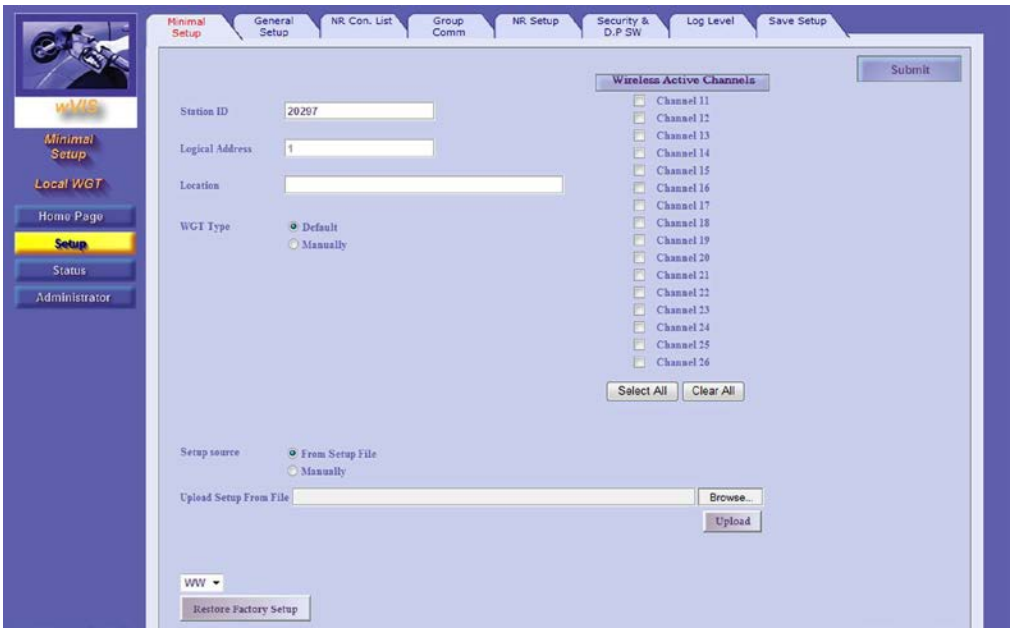

Figure 21 - Minimal Setup

1. In the Station ID field, enter the ID number of the station. This code must be identical for all the Wireless Gateway units in the station
2. (Optional) In the Location field, enter a descriptive free-text to easily identify the unit
3. In the Wireless Active Channels section, select two nonconsecutive channels
4. Click Submit

Notes:

Select the same channels for each Wireless Gateway unit in the station

If there is another station with Wireless Network in the proximity, make sure to select different channels

Also, verify that these frequencies do not cause interference to other equipment in the station

Note: When setting up a unit for the first time, you must always click Submit before continuing to the next tab. If not, the following message displays (see Figure 22):

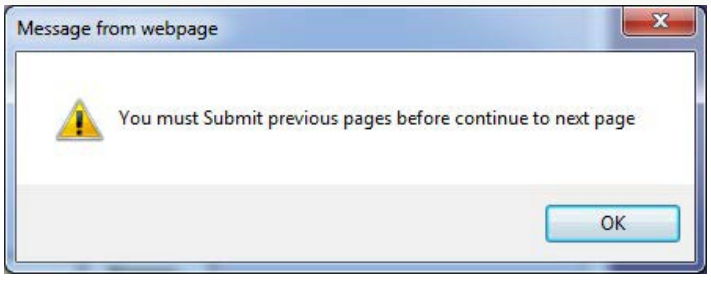

Figure 22 - Submit Button Warning

Table 16 - Minimal Setup Parameters

Parameter	Description
Station ID	ID number of the station. Must be identical for Wireless Gateway (Master) and all Wireless Gateway units
Logical Address	Unique logical address that identifies the unit within the network. Wireless Gateway (Master) default is 1 and cannot be changed, so this field is disabled
Location	Descriptive free text to easily identify the unit
Wireless Gateway Type	Select Default for Wireless Gateway (Master) Select Manually for a Wireless Gateway unit
Wireless Active Channels	Wireless channels for network communication between the units. Select two nonconsecutive channels
Setup Source	Enables importing a setup file. Select From Setup File to import an .XML file (see below). The Manually option is currently N/A
Submit	Saves the settings of the current tab. To apply the changes, after going through the Setup tabs, see 2.7.8
Restore Factory Setup	Restores factory default settings by selecting the default version from the drop-down list (WW, unless otherwise specified by Professional Services) and then clicking on the Restore Factory Setup button

2.7.1.1. Importing Setup

Once you have setup a network, you can save the .XML setup file instead of manually setting up the Wireless Network. See 2.7.8.1.

Then you may import those settings and override the parameters as needed (i.e. Wireless Channels, nNR settings, etc.) to match the configuration of the station.

1. Before proceeding, make sure that ActiveX controls and plugins are enabled in your browser (see below)
2. Select the From Setup File radio button
3. Click Browse. A file selection dialog box opens
4. Select the .XML file and click Open
5. Click Upload
6. Click Submit
7. Override the network settings as needed
8. Apply the changes. See 2.7.8

2.7.1.1.1. Enabling ActiveX Controls

To enable ActiveX controls and pluggins in your browser, proceed as follows:

1. Click the Tools menu, then click Internet Options
2. Select the Security tab (see Figure 23)

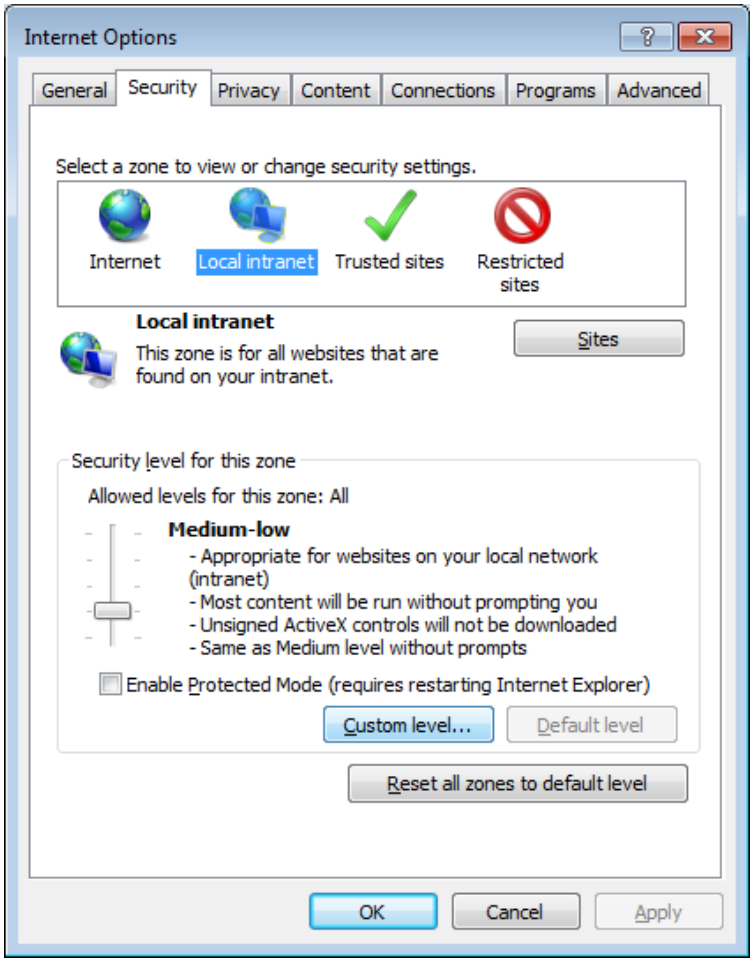

Figure 23 - Internet Options - Security Tab

3. Click the Custom level button. The Security Settings dialog box opens.

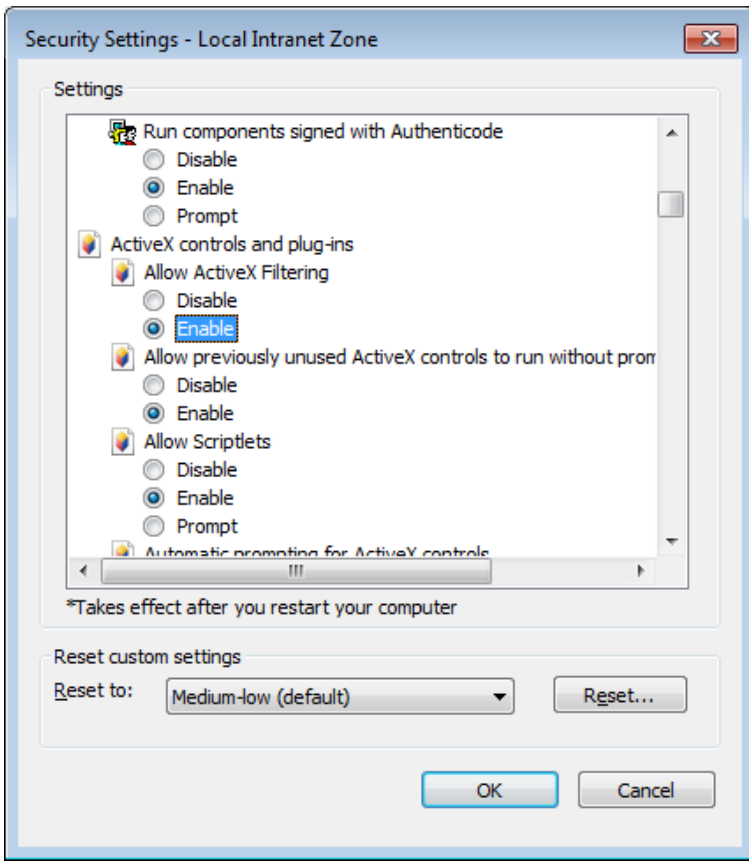

Figure 24 - Security Settings

4. Scroll down the Security Settings list until you see ActiveX controls and plug-ins
5. Click Enable in all ActiveX-related settings
6. Click OK, then click OK again

2.7.2. General Setup

This tab enables you to set the general Wireless Network parameters (see Figure 24, Table 17). Set the parameters as needed and then click Submit.

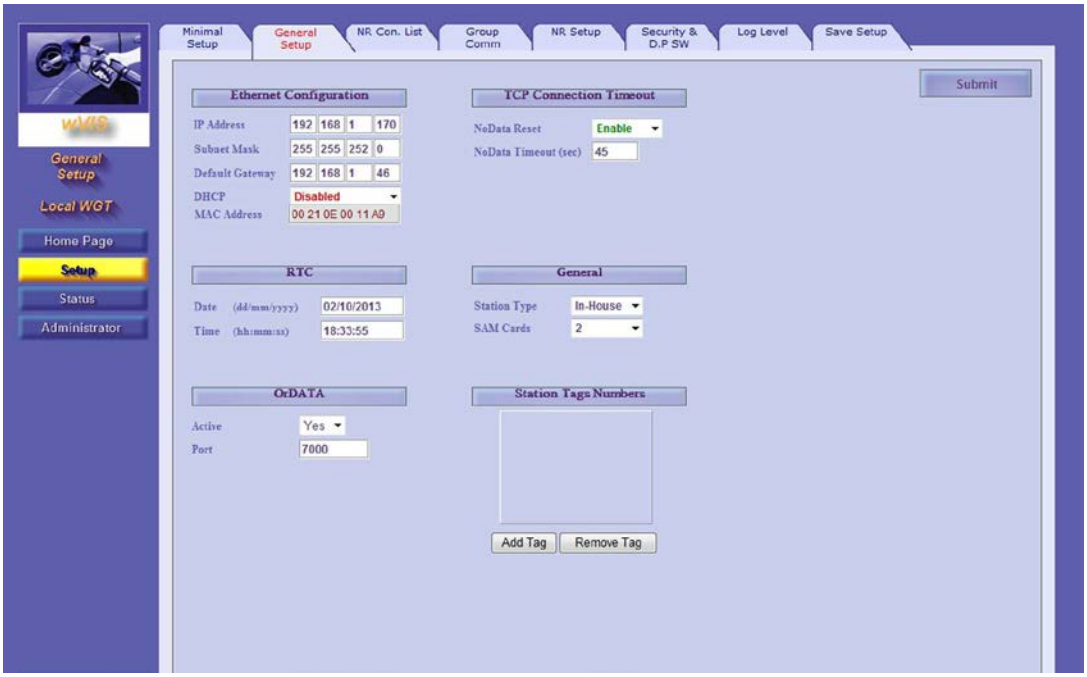

Figure 25 - General Setup

Table 17 - General Setup Parameters

Parameter	Description
Ethernet Configuration	
IP Address	Wireless Gateway (Master) IP address
Subnet Mask	IP network mask
Default Gateway	Router IP (in cases where a router is connected to the network)
DHCP	Currently not in use
MAC Address	Device MAC address
RTC	
Date	Real time clock - date
Time	Real time clock - time
OrData	
Active	Select Yes if the station is equipped with and OrData system. This component receives the vehicle data unit's which collects On-Board Diagnostics error codes and additional vehicle parameters

Parameter	Description
Port	When OrData is enabled, this field is displayed. Enter the number of the port for communication between Wireless Gateway (Master) and OrData. Default: 7000
TCP Communication Timeout	
No Data Reset	Enables to reset the unit in case of no communication to the Controller, after the timeout set in the field below
NoData Timeout	Maximum waiting time for connection to the Controller, before the Wireless Gateway (Master) resets
General	
Station Type	Enables reading retail or homebase vehicle ID units. Select the relevant type from the drop-down list: Retail or In-House
SAM Cards	Select according to the number of SAM cards installed in the unit. The SAM card securely stores the unique security data used by the system to read vehicle ID units
Station Tag Numbers	
	The Station Manager tag is used for reactivating deactivated nNR units. Up to 5 Station Manager Tags can be defined.
Add Tag	Click Add Tag to enter the string of the tag to be used in the station
Remove Tag	Click Remove Tag to delete an already defined tag
Submit	Saves the settings of the current tab. To apply the changes, after going through the Setup tabs, see 2.7.8

2.7.3. NR Configuration List

This tab enables you to associate the nNR with the Wireless Gateway unit (Wireless Gateway (Master) or Wireless Gateway) (see Figure 26, Table 18).

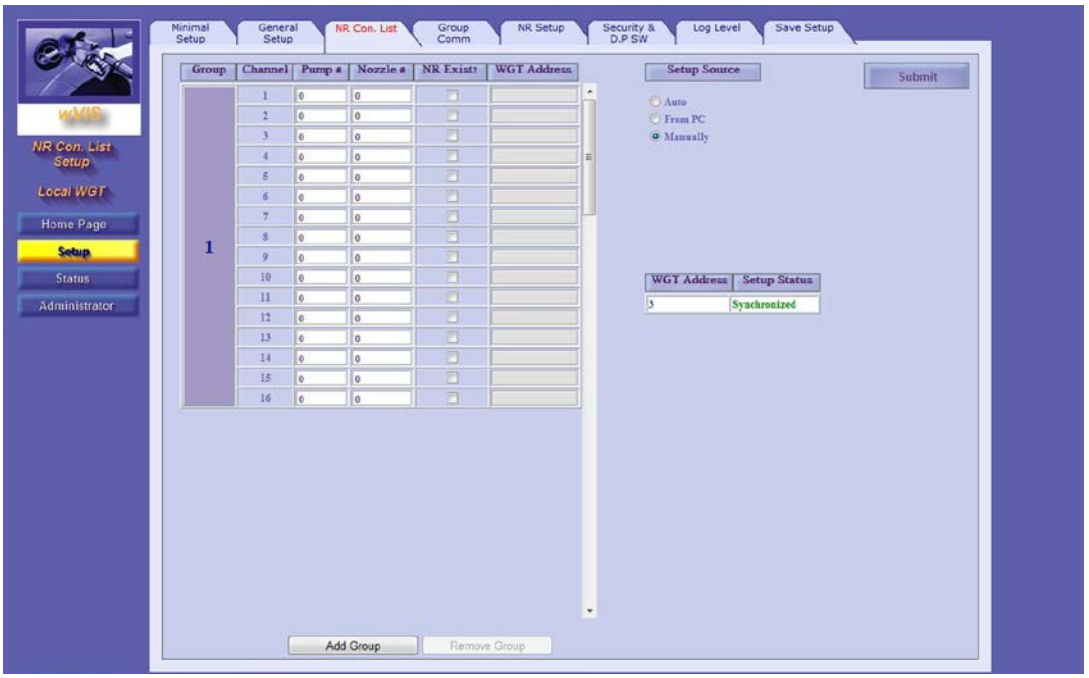

Figure 26 - NR Configuration List

1. In the Pump# field, enter the number of the pump to which the nNR is associated
2. In the Nozzle# field, enter the number of the nozzle on which the nNR is installed
3. Select the NR Exist? checkbox
4. In the Wireless Gateway Address field, enter the logical address of the Wireless Gateway to which the nNR is routed
5. Repeat Steps 1-4 for each nNR in the station
6. Click Submit

Note: Pump# and Nozzle# must match the nNR settings done while programming the unit. See

Table 18 - NR Configuration List Parameters

Parameter	Description
Group	As part of Wireless Gateway-Station Controller protocol, Wireless Nozzle Readers are grouped into a group of 16 units. Each unit is assigned a Channel number. If the station is equipped with more than 16 Wireless Nozzle Readers, you may add groups as needed, by clicking Add Group. Up to 7 groups can be defined (112 Wireless Nozzle Readers)
Channel	Logical channel for communication with the controller
Pump #	Number of the pump to which the Wireless Nozzle Reader is associated. This number must match Wireless Nozzle Reader settings
Nozzle #	Number of the nozzle on which the Wireless Nozzle Reader is installed. This number must match Wireless Nozzle Reader settings

Parameter	Description
NR Exist?	Specifies whether the nozzle is equipped with a Wireless Nozzle Reader. This checkbox must be selected
WGT Address	Logical address of the Wireless Gateway to which the Wireless Nozzle Reader is routed Note: A Wireless Gateway (Master)/WGT unit can support up to 16 Wireless Nozzle Readers
Setup Source	Enables importing a Wireless Nozzle Readers setup file : Leave the default option selected - Manually to manually fill in the fields in this screen Select From Setup File to import an .XML file The Auto option is currently N/A
Status Table	Once Wireless Gateway (Master) and the Wireless Gateway units have been set-up, this table (see Figure 27) shows the status of the Wireless Gateways. Verify that the status of all the units is Synchronized. Nevertheless, at this point the table should be empty
Submit	Saves the settings of the current tab. To apply the changes, after going through the Setup tabs, see 2.7.8

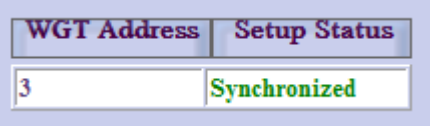

Figure 27 - Status Table

2.7.4. Group Communication

This tab enables you to set the communication channels between the groups of Wireless Nozzle Readers set in the previous tab and the Station Controller (see Figure 28, Table 19).

> Note: These parameters must match the Station Controller. If you are using SiteOmat Station Controller, see Setting the Station Controller.

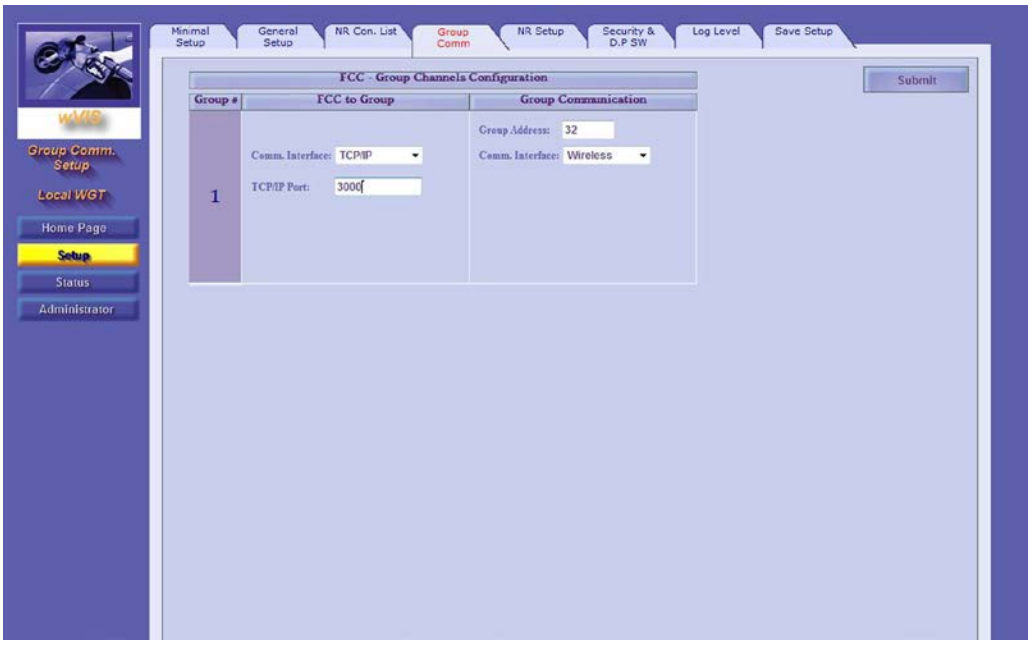

Figure 28 - Group Comm

1. In the FCC to Group section, in the Comm. Interface drop-down, select TCP/IP. Once this option is selected the TCP/IP Port field is displayed
2. In the FCC to Group section, in the TCP/IP Port field enter the port number (between 3000 and 4000)
3. In the Group Communication section, in the Group Address field, enter the RS-485 address of the group (between 31 and 39)
4. In the Group Communication section, in the Comm. Interface drop-down, select Wireless
5. Repeat Steps 1-4 for each Group defined in the NR Configuration List tab
6. Click Submit

Table 19 - Group Communication Parameters

Parameter	Description
FCC to Group	
Comm. Interface	Communication interface between the Station Controller and the group. Usually, the Wireless Gateway (Master) is connected to the Station Controller via Ethernet and therefore TCP/IP option should be selected Note: Serial communication interfaces are also available for backward compatibility to wired legacy systems.
TCP/IP Port	Port as defined in Station Controller (between 3000 and 4000)
Group Communication	

Parameter	Description
Group Address	RS-485 address of the group (between 31 and 39). Despite the fact that Wireless Gateway (Master) is connected to Station Controller via Ethernet, this parameter should be set since it is part of Wireless Gateway-SC protocol messages. If using SiteOmat, this parameter should match the Hex Address field defined in VIS Setup dialog. See Setting the Wireless Gateway (Master).
Comm. Interface	Communication interface between the Wireless Gateway (Master) and the other components in the group. Since Wireless Gateway (Master) communicates to other Wireless Gateway units and Wireless Nozzle Readers via a wireless link, the Wireless option should be selected
Submit	Saves the settings of the current tab. To apply the changes, after going through the Setup tabs, see 2.7.8

2.7.5. NR Setup

This tab enables you to change advanced settings for the Wireless Nozzle Readers (see Figure 29, Table 20).

Set the parameters as needed and then click Submit.

Figure 29 - NR Setup

Table 20 - NR Setup Parameters

Parameter	Description
Vehicle Units List	Sets which vehicle units should be read at the station. Select All: selects all the units Clear all: deselects all the units
RSSI Nominal /Special Levels	Note: These fields are relevant for backward compatibility to VIU 3/35/4/45 legacy vehicle units.
nNR base sample rate	Sets the interval for sampling the vehicle ID unit while refueling to ensure that the nozzle is not removed while the pump is dispensing. Default: 15 seconds
Continue looking for VID after Authorizer was used	Enables reading the vehicle ID unit, even after the transaction was authorized using the attendant's Authorizer device. Once this feature has been enabled, Number of retries to search for VID option becomes available, allowing you to define the number of times that the Wireless Nozzle Reader will search for a vehicle ID unit after the Authorizer device was used
Status Table	Once Wireless Gateway (Master) and the Wireless Gateway units have been set-up, this table (see Figure 30) shows the status of the Wireless Gateways. Verify that the status of all the units is Synchronized. Nevertheless, at this point the table should be empty
Submit	Saves the settings of the current tab. To apply the changes, after going through the Setup tabs, see 2.7.8

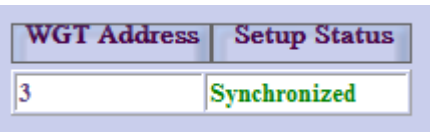

Figure 30 - Status Table

2.7.6. Security and DP SW

The system enables you to remotely upgrade software versions of all wireless network components via Wireless Gateway (Master).

From this tab (see Figure 31, Table 21) you can define whether to upgrade DP vehicle data unit firmware with the latest version stored in Wireless Gateway (Master), as soon as the vehicle arrives the station. In addition, you may define various security settings

If your system is not equipped with DP units, or you'd like to leave these settings as is, click Submit

Click on drop-down menu and select Yes to enable remote upgrade of DP units

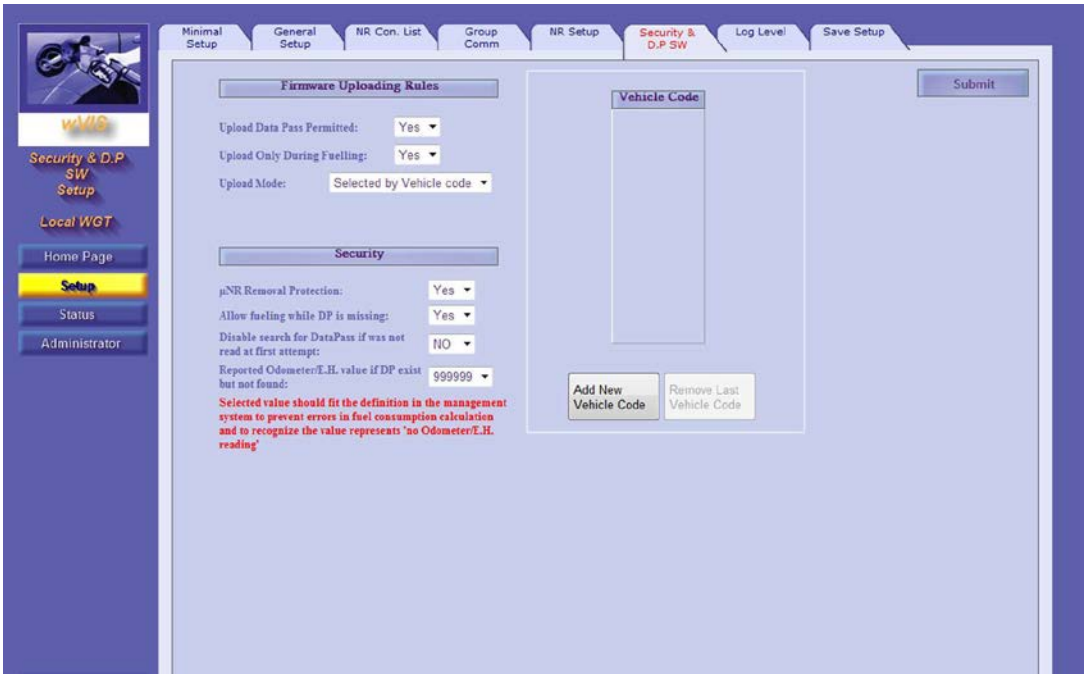

Figure 31 - Security & DP SW

1. In the Upload DP Permitted drop-down, select Yes. Once this feature has been enabled, more options become available
2. In the Upload During Fueling drop-down, select whether to upgrade DP firmware only during refueling or also when the vehicle arrives at the station
3. In the Upload Mode drop-down, select Any to upgrade any DP identified by the network or Selected by Vehicle Code to upgrade predefined vehicles
4. If the latter was selected, click Add New Vehicle Code and enter the code in the table
5. Click Submit

Note: If the system is installed at a gas station, it's highly recommended to upgrade DP units during refueling only to prevent overload.

Table 21 - Security & DP SW Parameters

Parameter	Description
Upload DP Permitted	Yes: Allows remote upgrade of DP units No: disables remote upgrade
Upload Only During Fueling	Yes: Allows remote upgrade only during refueling No: Allows remote upgrade as soon as the vehicle is identified by the system
Upload Mode	Any: Enables remote upgrade for any DP unit Selected by Vehicle Code: restricts remote upgrade to specific vehicles. A unique Vehicle Code that represents the make, model and year is assigned while programming the DP units.
Add New Vehicle Code	Adds a text box to the Vehicle Code table
Remove Last Vehicle Code	Removes the last entered vehicle code from the table
nNR Removal Protection	Enables/disables tamper resistant feature that prevents unauthorized removal. If disabled, nNR units will not be deactivated also if an attempt to remove the unit was made (i.e. removal protection ring was taken off)
Allow fueling while DP is missing	Allows fueling also when a vehicle ID unit is correlated with DP, but DP was not found by the network. If set to Yes, the following two options become available
Disable search for DP if was not read at first attempt	If disabled, and DP unit was not found while nNR is reading the vehicle ID unit, the network will search again for the DP unit for 15 seconds and only then refueling will start If enabled, the network will not search again for the DP unit and refueling will start automatically
Reported Odometer/E.H. Value if DP exist but not found	Select the value to be reported for both Odometer and Engine Hour parameters when DP was not found. Select 000000 when using FHO. FHO will search database records for the last known odometer and update accordingly.
Submit	Saves the settings of the current tab. To apply the changes, after going through the Setup tabs, see 2.7.8

2.7.7. Log Level

In this tab (see Figure 32, Table 22), you can set what type of information is gathered in logs and how to collect these logs files, as it may be required for maintenance and troubleshooting purposes.

You will be able to receive these logs by connecting your PC to the Wireless Gateway (Master) via LAN, using a terminal application (such as HyperTerminal).

Figure 32 - Log Level

1. In the In the Debug Port Interface drop-down, select TCP/IP. The Debug Port field is auto-populated with default port: 5000. There is no need to change this port
2. Choose which logs you want to collect and the level of detail, by selecting the checkboxes in the row of the log source:

   Data: Only data sent

   Debug: Additional debug info
3. Select the logging level:

   Info: Detailed logs

   Error: Error logs only
4. Click Submit

Example:
The system keeps logs from all sources at error level, as a default. You may want to get detailed data on **VIT** (Communication between Wireless Gateway and the Wireless Nozzle Reader and on **VIU** (Vehicle units' data received during refueling).
To do so, select Data, Debug, and Info in both VIT and VIU rows.

Note: Log Events (Flash) section is currently not available.

Note: The Advanced tab is applicable to specific configurations only. Do not change its default parameters

Table 22 - Log Sources

Source	Information
TcpS	Server communication with the FCC (Forecourt Controller)
TcpC	Client communication with the FCC
VIT	Communication between Wireless Gateway and Wireless Nozzle Reader
FCC	Communication with the FCC
VISP	RF communication between Wireless Gateway (Master) and the Wireless Gateway units
DIAG	Internal system diagnosis processes
AUTH	Authorization processes
MAIN	Internal system processes (written into Flash memory)
DP	Communication with DP units
VIU	Vehicle units' data received during refueling
LOG	Logs and events
WEB	Changes made to network using this Admin Site
COM0	COM0 device's serial port
COM1	COM1 device's serial port
CWGT	Communication with the router
ADMIN	Administration tasks, station management, data distributed from Wireless Gateway (Master) to the Wireless Gateway unis
OrData	Communication with OrData system

2.7.8. Saving Setup

After finishing setting up the unit, click Apply on the Save Setup tab (see Figure 33) to save the changes into the device's Flash memory. From this tab you may also save the settings into an .XML file for reuse in similar stations.

> Note: This step is essential! If this step is skipped, all settings will be lost even if you clicked on the Submit button on each tab.

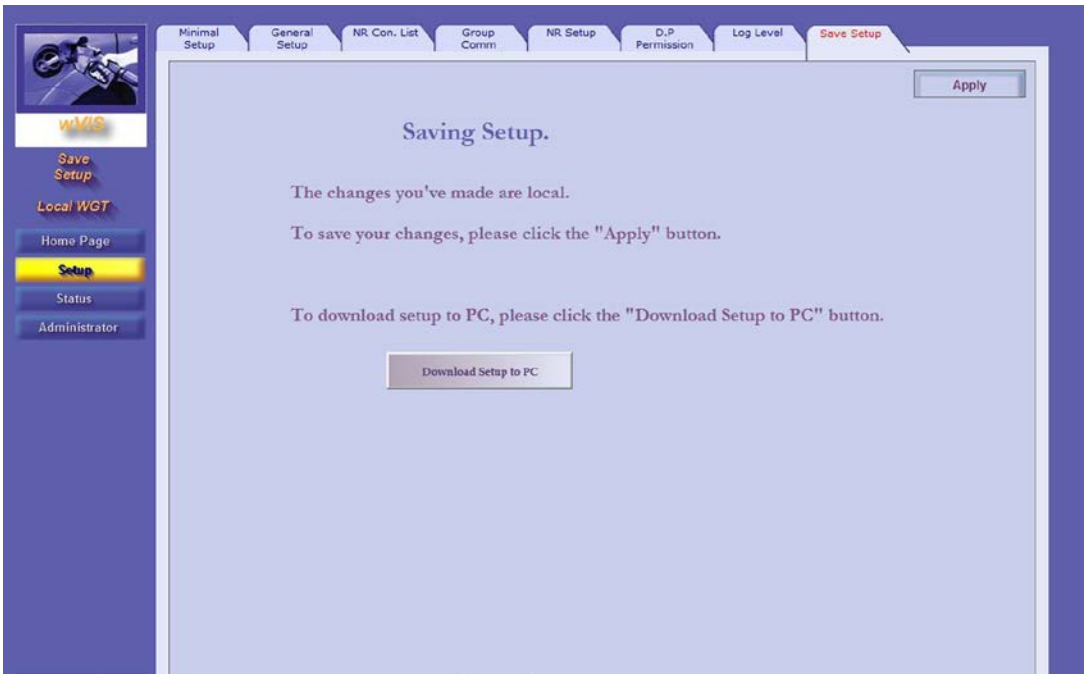

Figure 33 - Save Setup

1. Click Apply. The confirmation message below displays (see Figure 34)

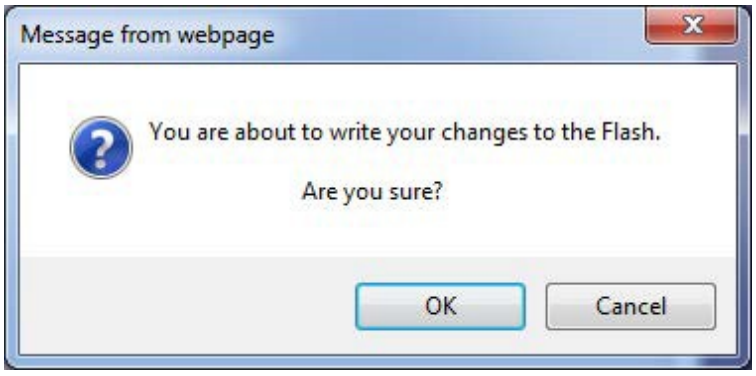

Figure 34 - Flash Memory Confirmation Message

2. Click OK. A new message is displayed (see Figure 35)

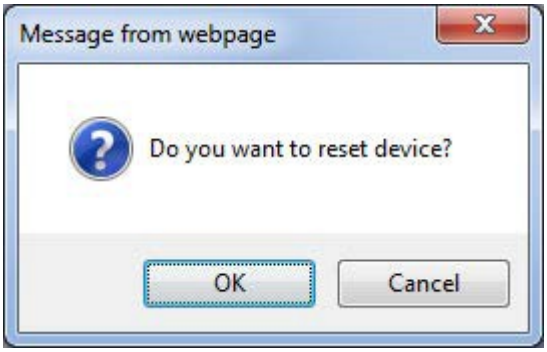

Figure 35 - Reset Confirmation Message

If changing settings of a working station, wait until the station is idle. The network can't be reset while a vehicle is refueling (see Figure 36).

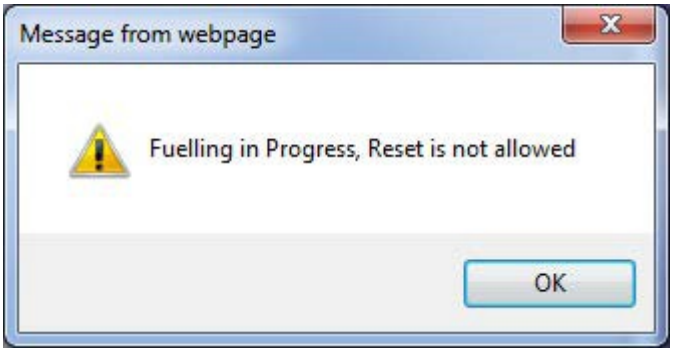

Figure 36 - Reset not Allowed while Fueling Warning

3. Click OK. The notification below will also be shown (see Figure 37)

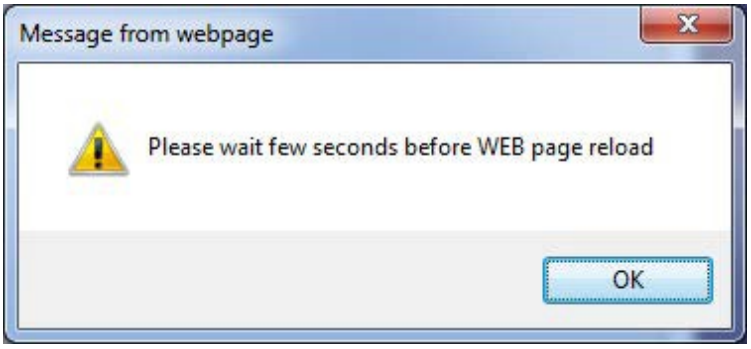

Figure 37 - Page Reload Message

4. Click OK.

2.7.8.1. Exporting Setup

1. Click Download Setup to PC. The message below displays (see Figure 38)

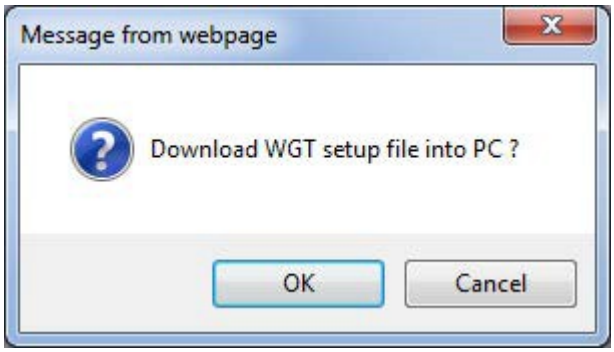

Figure 38 - Download Setup Confirmation Message

2. Click OK. A file download prompt displays. Click Save or click Save As to rename the .XML file, or to select the location where you want to save your file

> Note: You may reuse these settings in other similar stations. See 2.7.1.1.

After finishing Wireless Gateway (Master) setup, proceed to set up the Wireless Gateway units deployed at the station.

2.8. Setting the Wireless Gateway Units

In order to establish the network, login into each Wireless Gateway unit deployed at the station, click Setup and perform the following settings in the Minimal Setup tab (see Figure 39).

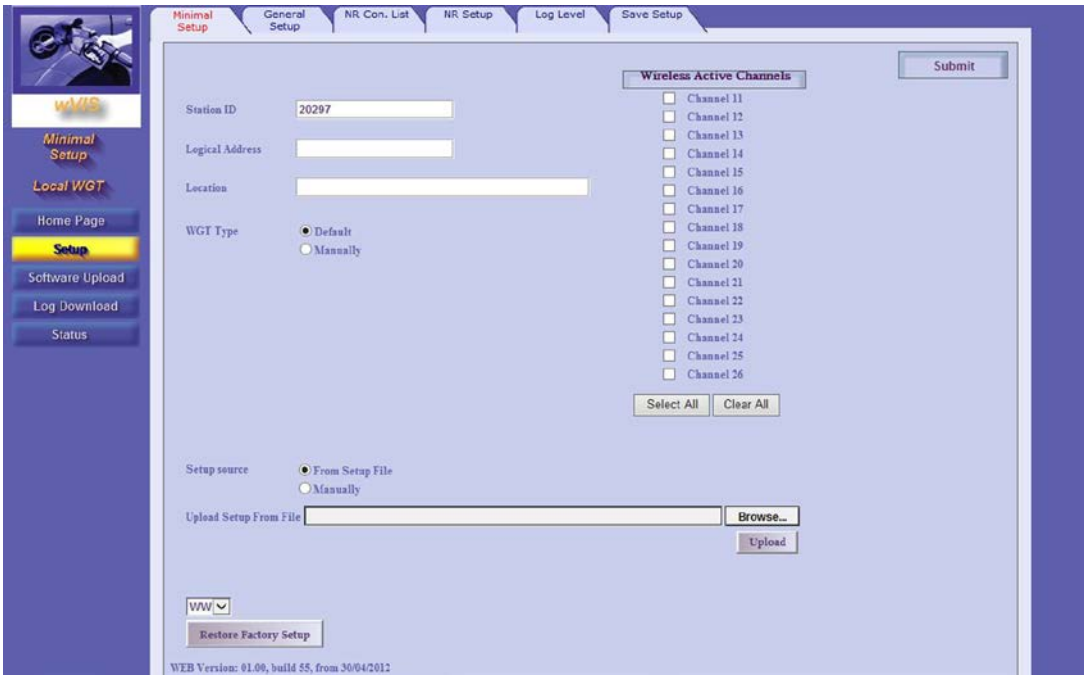

Figure 39 - Minimal Setup - Wireless Gateway Units

1. In the Station ID field, enter the same ID used for the Wireless Gateway (Master)
2. In the Logical Address field, enter a unique address for the Wireless Gateway unit, between 3 and 254. Each Wireless Gateway must have a different logical address
3. (Optional) In the Location field, enter a descriptive free-text to easily identify the unit
4. In the Wireless Active Channels section, select the same channels used for Wireless Gateway (Master) to establish the network
5. Click Submit
6. Optional: In the General Setup tab, in the IP Address field, modify the factory set IP address of the unit and then click Submit. For example, you may want to change the IP from 192.168.1.170 to 192.168.1.17X (to match the unit's logical address) so the next time you browse to the unit locally (and not via Wireless Gateway (Master)), you will use this IP
7. Apply the changes, see 2.7.8

Notes:

Station ID and Wireless Active Channels parameters must be identical for Wireless Gateway (Master) and all Wireless Gateway units. See 2.7.1

Logical Address must match settings done in Wireless Gateway (Master), while associating nNR to Wireless Gateways. See 2.7.3

Note: When setting up a unit for the first time, you must click Submit before continuing to the next tab. If not, the following message displays (see Figure 40). Go through the remaining tabs and click Submit on each tab until reaching the Save Settings tab.

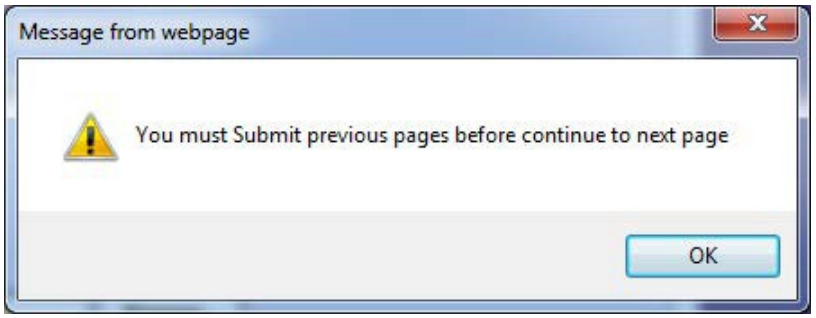

Figure 40 - Submit Button Warning

Caution: After setting all the terminals, verify their link quality. Link quality must be **Excellent** for all the units. Otherwise, the installation is incorrect and should be checked (Wireless Gateway (Master) location, Wireless Gateway units location).

2.8.1. Updating Software Versions Locally

You can locally upload software versions to a Wireless Gateway unit.

1. In Wireless Gateway Admin Site, click Software Upload. The following screen opens (see Figure 41):

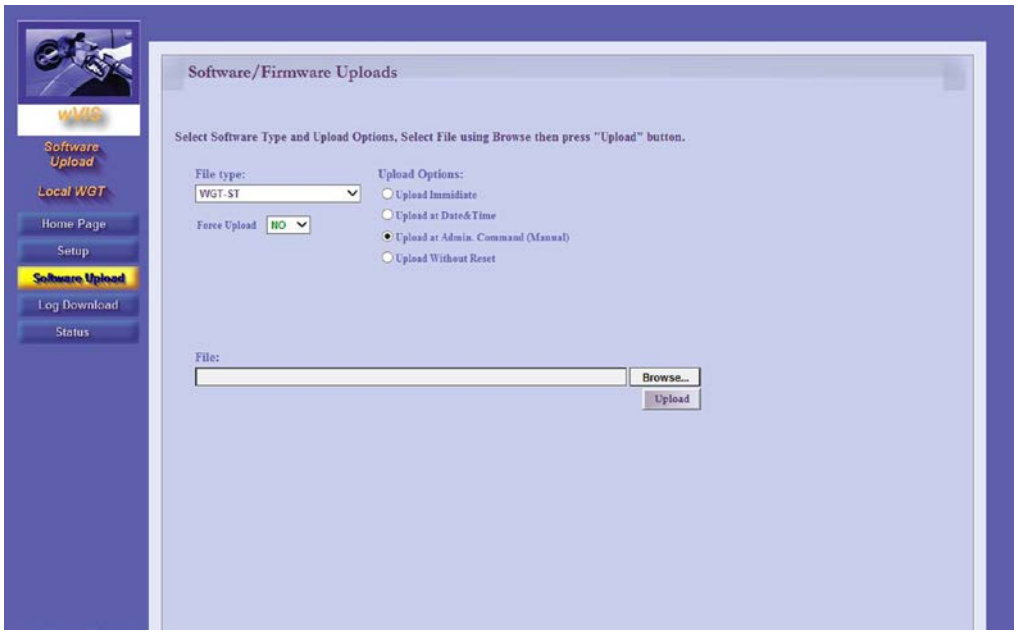

Figure 41 - Software Upload Screen

2. In the File Type drop-down, select the type of software component
3. Click on the Browse button on the bottom screen. A file selection dialog box opens
4. (Optional) In the Force Upload drop-down, change default to YES to enforce uploading a version older than the current version installed in the system.

   Note: use this option only when a previous software version must be installed.

5. Select the file and click Upload. The file is uploaded to the Wireless Gateway
6. Define how to execute the update. Select one of the following:

   Update Immediate: The update is executed immediately after the component was received by the Wireless Gateway

   Update at Date & Time: The update is executed at a specific time. When this option is selected, Update Time fields are displayed. Enter the updated Date and Time

   Update without Reset: Update is executed immediately, but new version takes effect after the network is manually reset

   Update at Admin Command (Manual): The update is executed only after reset is manually initiated by the user

Best Practice: It is highly recommended to update all units remotely via Wireless Gateway (Master) to ensure all units are synchronized with the same software versions. See Updating Software Versions.

2.9. Viewing Network Status

You can monitor the status of all Wireless Network components in the station using the Admin Site's Status features. In addition, you may also remotely reactivate nNR units.

Click on the Status navigation button to access Status screens.

2.9.1. Monitoring Vehicle Data Units

The Fueling screen displays data on all vehicles equipped with DataPass units found within the station in a table, for view only purposes (see Figure 42, Table 23). It is automatically refreshed every 15 minutes.

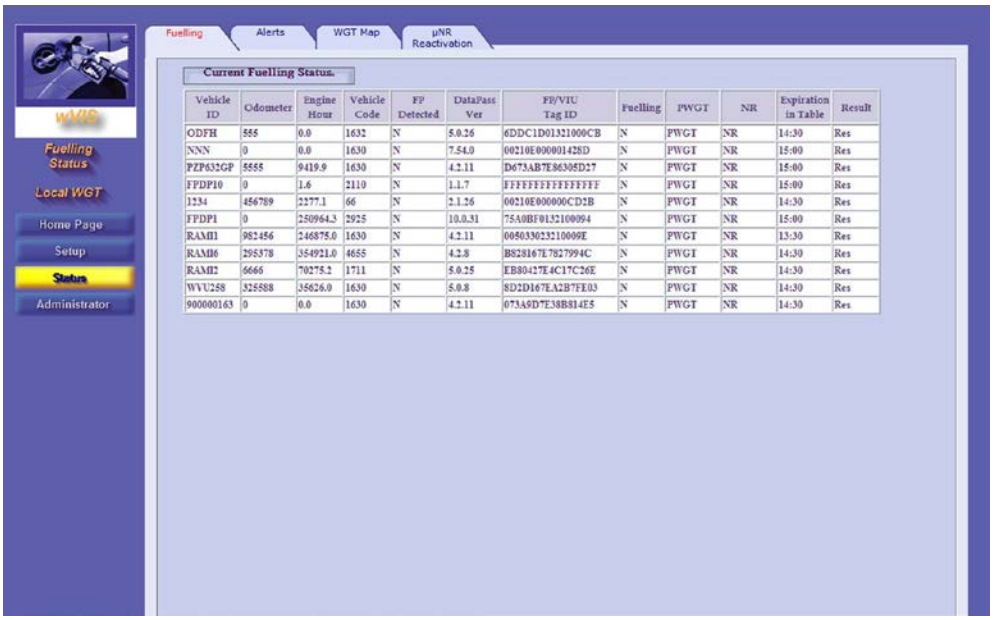

Figure 42 - Status - Fueling Tab

Table 23 - Fueling Status Table Fields

Parameter	Description
Vehicle ID	Vehicle's plate number
Odometer	Vehicle's odometer reading
Engine Hour	Vehicle's engine hours reading
Vehicle Code	Unique Vehicle Code that represents make, model and year
FP Detected	Indicates that a vehicle ID unit was detected (vehicles equipped with both ID and data units only)
DP Ver	DP current version
FP/VIU Tag ID	DP unit ID
Fueling	Indicates that vehicle ID and data was sent to the Station Controller. This option is currently available for vehicles equipped with both ID and Data units
PWireless Gateway	Currently N/A
NR	Currently N/A
Expiration in Table	Remaining time in the network. A DP unit is considered active for 15 minutes since it was found by the Network. After refueling is completed, it is active for an extra two minutes.
Result	N/A

2.9.2. Monitoring Alerts

The Alerts screen displays Wireless Network and authorization related alerts (see Figure 43) in a table, for view only. These alerts are saved and stored also after the unit was reset.

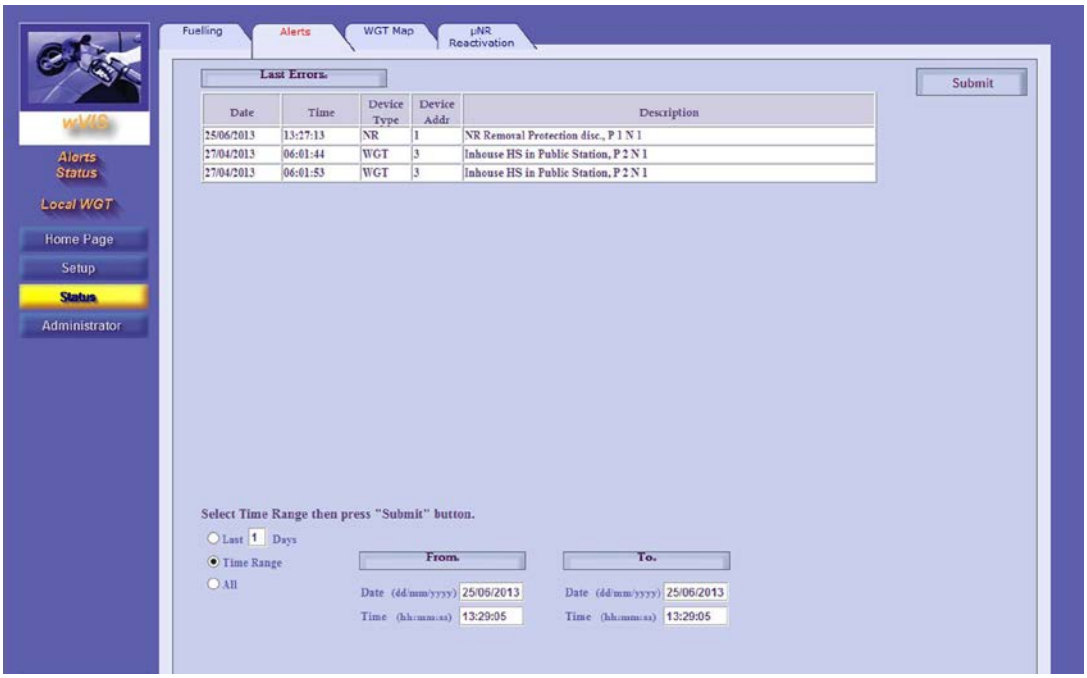

Figure 43 - Status - Alerts Tab

This includes:

- Date and time of the event
- The type of device involved in the event
- The Logical Address of the Wireless Gateway unit associated to the event
- A brief description of the event

You can filter the data by date and time. Do one of the following:

- Select the Last X Days radio button and enter the number of days
- Select the Time Range radio button and then enter the time range in the From and To fields
- Select the All radio button to display all the alerts found without filtering

Click Submit to apply the filter.

2.9.3. Monitoring Station Equipment

The WGT Map screen displays data on the station equipment: Wireless Gateway (Master), Wireless Gateway units and nNR units in a hierarchical tree structure (see Figure 44, Table 24) that you may expand up to battery level indication.

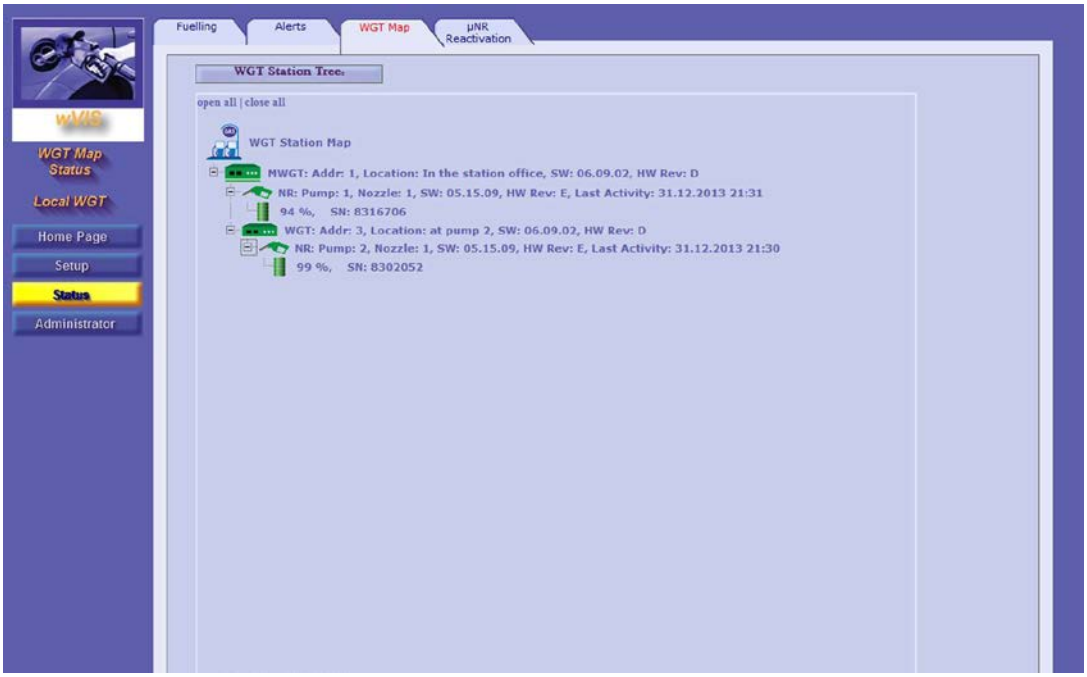

Figure 44 - Status - Wireless Gateway Map Tab

The status of each component is indicated by the color of the icon (seeTable 24):

Table 24 - WGT Map Icons

Icon	Description
Wireless Gateway	
	Unit is active and connected to Wireless Gateway (Master)
	Unit is not active / No communication to Wireless Gateway (Master)
Wireless Nozzle Readers	
	Unit is active and communicating
	Unit has not communicated for more than 2.5 hours
	Unit is deactivated
	Unit's battery percentage is at 1%-20% or at Replace Battery state
Nozzle Reader's Battery Status	

Icon	Description
	Unit's battery percentage is at 81%-100%
	Unit's battery percentage is at 61%-80%
	Unit's battery percentage is at 41%-60%
	Unit's battery percentage is at 21%-40%
	Unit's battery percentage is at 1%-20%
	Replace battery mode. nNR enters this mode when measured voltage drops down to 3.2V. Estimated battery level at this point is 4%. The unit is fully functional but LED will blink 5 times every 5 seconds to indicate battery should be replaced within 1 to 2 weeks depending on workload
	Unit's battery is empty

Table 25 - Wireless Gateway Map Parameters

Parameter	Description
Wireless Gateway (Master)/Wireless Gateway	
Addr	Logical Address
Location	Unit's location
SW	Software version
HW Rev	Hardware revision
nNR	
Pump	Number of the pump to which the unit is associated
Nozzle	Number of the nozzle on which the unit is installed
SW	Software version
Fueling	Indicates whether the vehicle is currently fueling
HW Rev	Hardware revision
Last Activity	Date and time of last recorded activity
Battery Status	Percentage of battery life remaining
S/N	Unit's serial number

2.9.4. Reactivating Wireless Nozzle Readers Remotely

The nNR is tamper-protected by a dedicated mechanism that detects unauthorized removal, deactivating the unit when such an attempt is made. See more in Reactivating the nNR.

Deactivated nNR units can be remotely reactivated from this tab (see Figure 45, Table 26).

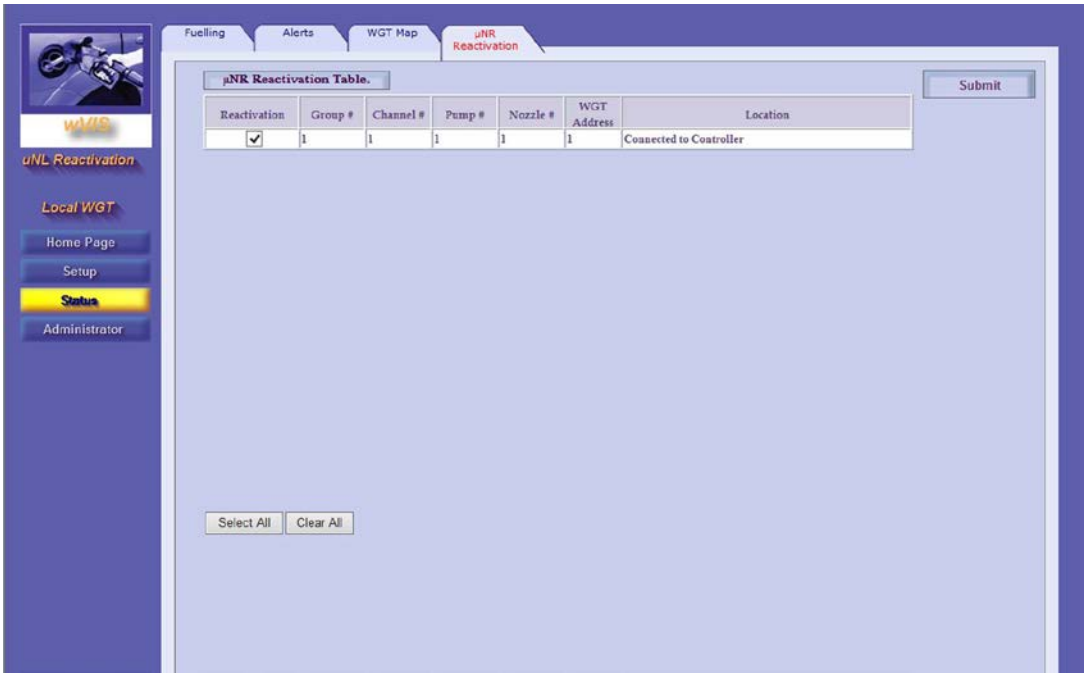

Figure 45 - Status - nNR Reactivation

Do one of the following:

To reactivate a specific nNR: In the Reactivation column, select the checkbox in the corresponding row and then click Submit

To reactivate all deactivated units: Click Select All and then click Submit

Note: When reactivating the nNR unit from the Admin Site, the unit becomes fully functional after next fueling. Simulate refueling (tilt the unit and attach to a vehicle ID unit to apply reactivation.

Table 26 - Reactivation Table Fields

Field	Description
Reactivation	Select this checkbox to reactivate the unit
Group#	Unit's group (for communication with Station Controller)
Channel#	Logical channel for communication with the controller
Pump#	Number of the pump to which the unit is associated
Nozzle#	Number of the nozzle on which the unit is installed
Wireless Gateway Address	Logical address of the Wireless Gateway to which the nNR is routed
Location	Wireless Gateway's location

2.10. Performing Administrator Tasks

You can remotely manage all Fuel Point PLUS Wireless Network components in the station using the Admin Site's Administrator features.

Click on the Administrator navigation button to access Administration screens.

2.10.1. Viewing Wireless Gateway Units Status

The Wireless Gateway Map screen in the Administrator section displays a table of the Wireless Gateway units connected in the station (see Figure 46, Table 27). You may do the following:

View the status and the link quality of each Wireless Gateway unit in the network

Rebuild the table to get an updated picture (e.g. when Wireless Gateway units were replaced)

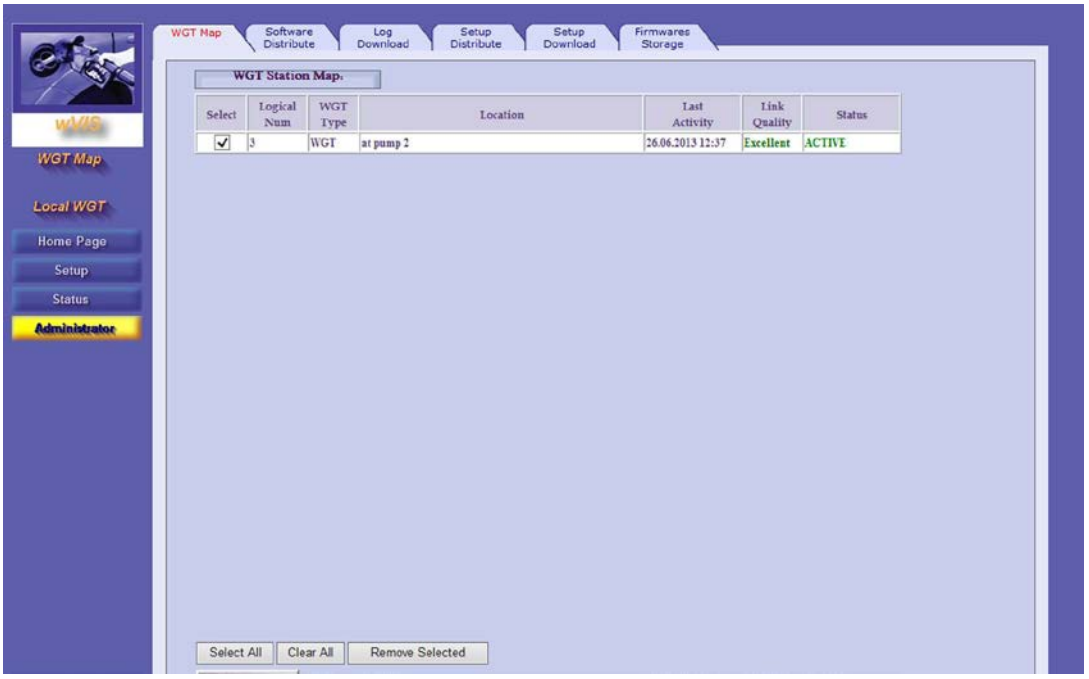

Figure 46 - Administrator - Wireless Gateway Map Tab

Table 27 - Wireless Gateway Map Table Parameters

Parameter	Description
Select	Select this checkbox in the corresponding row to choose the Wireless Gateway unit
Logical Num	Unit's logical address
WGT Type	Wireless Gateway/Wireless Gateway (Master)
Location	Unit's location
Last Activity	Date and time of last recorded activity
Link Quality	Signal strength: Excellent / Good / Fair / Poor / N/A
Status	Unit status: Active / Inactive / Pending

2.10.1.1. Rebuilding Tables

1. First, clear the existing table: click Select All and then Remove Selected
2. Click Rebuild Table. A confirmation message opens (see Figure 47)

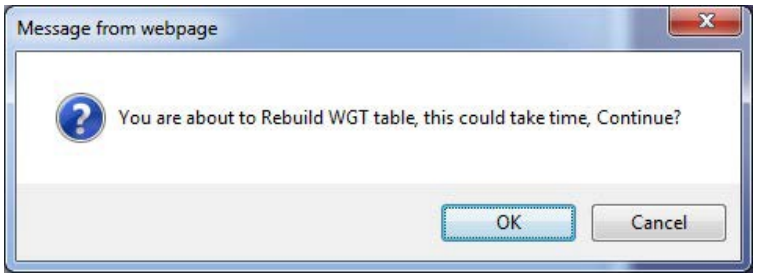

Figure 47 - Table Rebuilding Confirmation Message

3. Click OK
4. Refresh the page, by clicking on the Wireless Gateway Map tab

> Note: You can manually remove a Wireless Gateway from the table: select the unit and then click Remove Selected.

> Note: The network can't be rebuilt while a vehicle is refueling (see Figure 48).

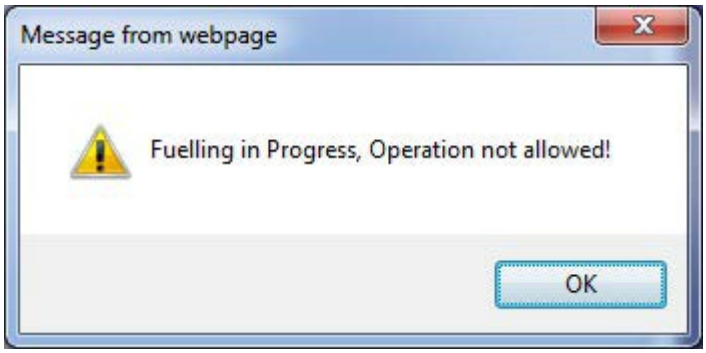

Figure 48 - Table Rebuilding not Allowed while Fueling Warning

2.10.2. Updating Software Versions

You can remotely update the software versions of all station equipment from the Wireless Gateway (Master) and view a list of currently installed and stored software components (see Figure 49, Table 28)

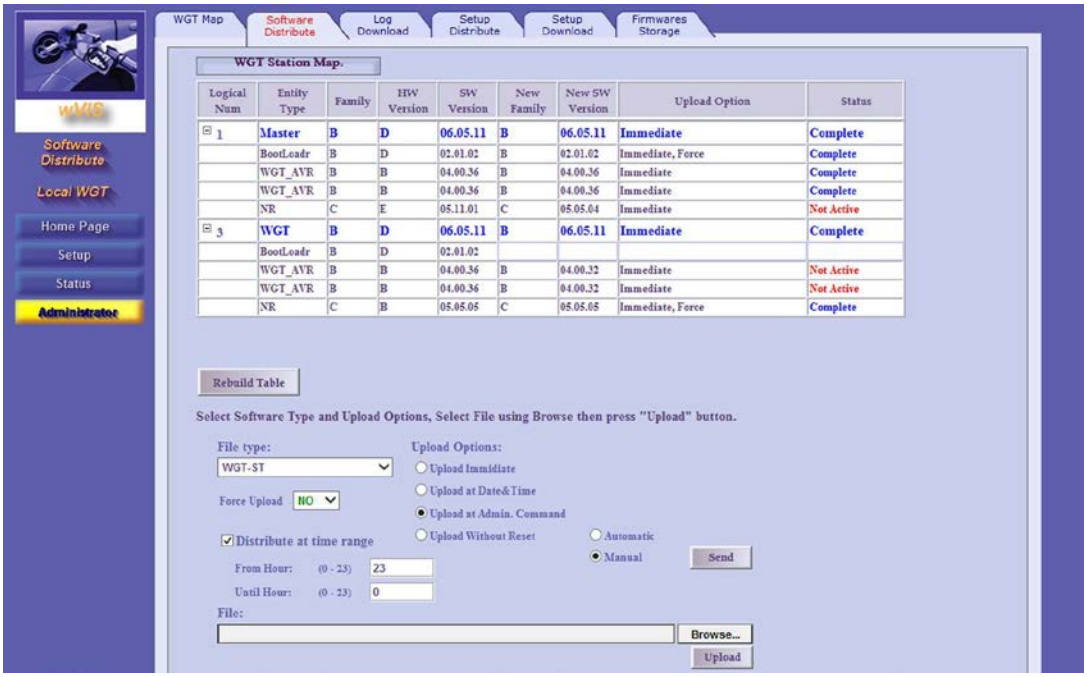

Figure 49 - Administrator - Software Distribute Tab

2.10.2.1. Software Update Process

a. A software version is uploaded to the Wireless Gateway (Master) and saved in its Flash memory (Status: In Progress)

b. The Wireless Gateway (Master) then sends this version to the other Wireless Gateway units. The new version is stored in each Wireless Gateway memory. At this stage, the status can be:

   Pending: The new version was stored but not yet implemented

   Inactive: S/W version does not match the Wireless Gateway type, or is older than the current version. Updates in Inactive status will not be executed

c. Update is executed. New version takes effect after update is finished and the network is reset (Status: Complete)

To update a software version, proceed as follows:

1. In the File Type drop-down, select the type of software component
2. Click on the Browse button on the bottom screen. A file selection dialog box opens
3. (Optional) In the Force Upload drop-down, change default to YES to enforce uploading a version older than the current version installed in the system.

> Note: use this option only when a previous software version must be installed.

4. Select the file and click Upload. The file is uploaded to the Wireless Gateway (Master)
5. (Optional) You can schedule when the Wireless Gateway (Master) will send the uploaded version to the Wireless Gateway units in the network during the day (otherwise the component is immediately sent). To do so:
    a. Select the Distribute at time range checkbox. Time range fields are displayed
    b. Enter the start and end hour in the From Time and Until Time fields
6. Define how the execute the update. Select one of the following:

    Update Immediate: The update is executed immediately after the component was received by the Wireless Gateway

    Update at Date & Time: The update is executed at a specific time. When this option is selected, Update Time fields are displayed. Enter the update Date and Time

    Update at Admin Command: The update is executed only after all the Wireless Gateway units received the component. When this option is selected, additional options appear:

        Automatic: When this option is selected, the network is automatically reset

        Manual: (default). Reset is manually initiated by the user by clicking Send

    Update without Reset: Update is executed immediately, but new version takes effect after the network is manually reset

Best Practice: It is highly recommended to use **Update at Admin Command - Manual.** Verify that the status off all the units in the table is **Pending** and it remains so for about 10 minutes and then reset the network (by clicking **Send**). Please remind that the network can only be reset when the station is idle (there is no refueling).

Table 28 - Wireless Gateway Station Map Table Parameters

Parameter	Description
Logical Num	Unit's logical address. Click on the plus sign at the left side to expand and view the software components included in the unit
Entity Type	Unit type: Wireless Gateway (Master) (Master Wireless Gateway) or Wireless Gateway and the software components included in the unit
Family	Hardware versions are grouped into Families. Software versions can be installed on specific hardware families. When a new version is uploaded, it will activated only in units that pertain to the proper family
HW Version	Unit's hardware version
SW Version	Currently running software version
New SW Version	Stored software version
Update Option	Selected Update option (see Step 6)
Status	Software update status: In Progress → Pending → Complete

Note: The Log Download feature is currently N/A.

2.10.2.1.1. Rebuilding Tables

You can rebuild the Wireless Gateway Station Map table to get an updated picture of the status of the units

1. Click Rebuild Table. A confirmation message opens (see Figure 50)

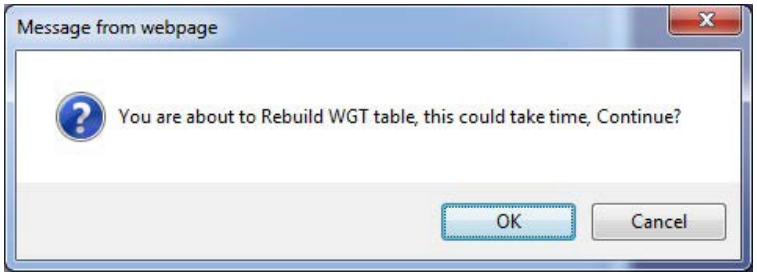

Figure 50 - Table Rebuilding Confirmation Message

2. Click OK
3. Refresh the page, by clicking on the Software Distribute tab

Note: The network can't be rebuilt while a vehicle is refueling (see Figure 51).

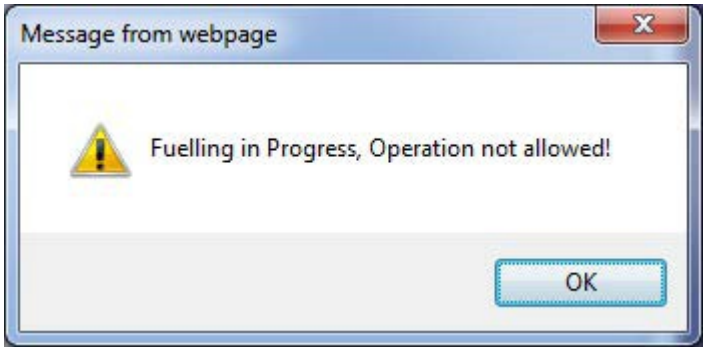

Figure 51 - Table Rebuilding not Allowed while Fueling Warning

2.10.3. Importing Network Setup

You can import previously saved setup files and then send them to all the units at the station remotely from the Wireless Gateway (Master) (see Figure 52, Table 29).

The setup files are first uploaded to the Wireless Gateway (Master) and then sent to the other Wireless Gateway units. Setup takes effect after update is finished and the network is reset (Status: Complete).

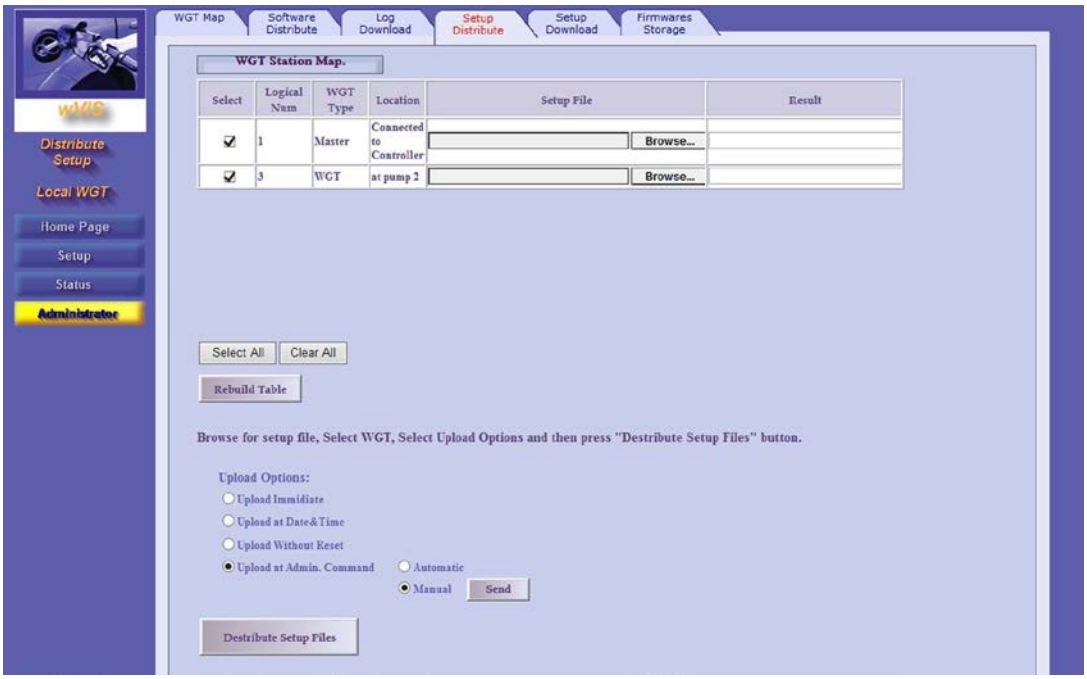

Figure 52 - Administrator - Setup Distribute Tab

Proceed as follows:

1. Click on the Browse button the in the unit row. A file selection dialog box opens
2. Select the previously saved .XML file and click Upload. The file is uploaded to the Wireless Gateway (Master)
3. Repeat these steps for every unit you want to remotely set up
4. In the Select column, select the checkbox in the corresponding row or click Select All to select all the units
5. Define how the execute the update. Select one of the following:

   Update Immediate: The update is executed immediately after the file was received by the Wireless Gateway

   Update at Date & Time: The update is executed at a specific time. When this option is selected, Update Time fields are displayed. Enter the update Date and Time

   Update at Admin Command: The update is executed only after all the Wireless Gateway units received the files. When this option is selected, additional options appear:

      Automatic: When this option is selected, the network is automatically reset

      Manual: (default). Reset is manually initiated by the user by clicking Send

   Update without Reset: Update is executed immediately, but new setup takes effect after the network is manually reset
6. Click Distribute Setup Files

Best Practice: It is highly recommended to use **Update at Admin Command - Manual**. Verify that the status off all the units in the table is **Pending** and it remains so for about 10 minutes

and then reset the network (by clicking **Send**). Please remind that the network can only be reset when the station is idle (there is no refueling).

Table 29 - Setup Distribute Table Parameters

Column	Description
Select	Selects the unit
Logical Num	Unit's logical address
Wireless Gateway Type	Unit type: Wireless Gateway (Master) (Master Wireless Gateway) or Wireless Gateway
Location	Wireless Gateway's location
Setup File	Selects the .XML setup file
Status	Setup update status: In Progress → Pending → Complete

2.10.3.1. Rebuilding Tables

See 2.10.2.1.1.

2.10.4. Exporting Network Setup

You can export setup files from Wireless Gateway (Master) and Wireless Gateway units to reuse in other similar stations (See Figure 53, Table 30).

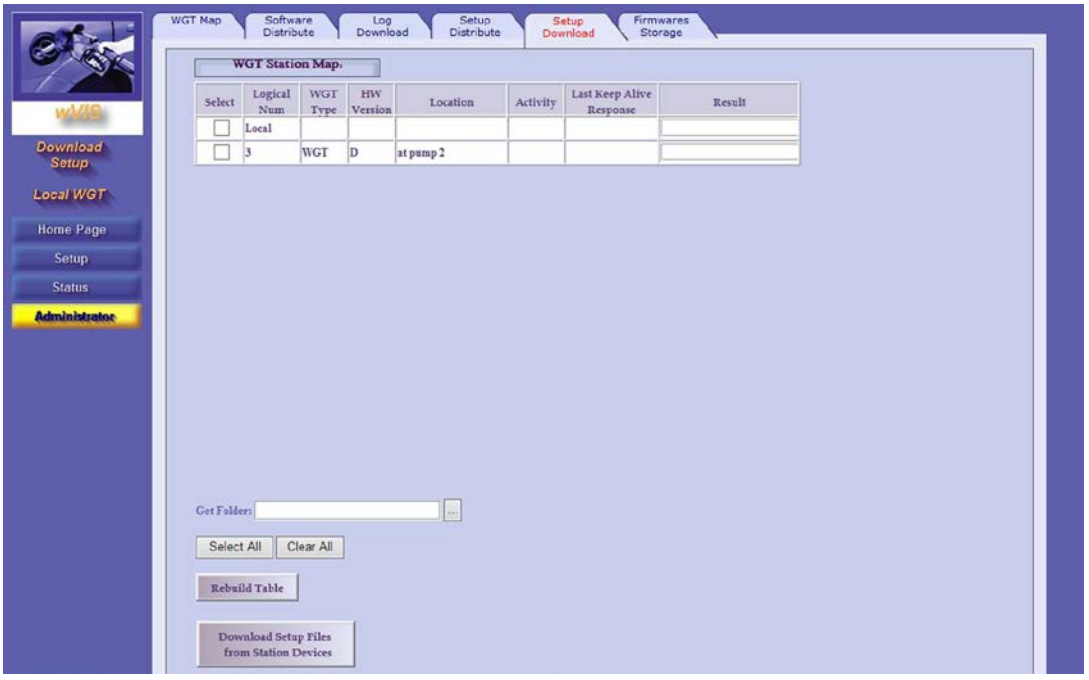

Figure 53 - Administrator - Setup Download Tab

1. In the Select column, select the checkbox in the corresponding row or click Select All to select all the unit
2. Click on ellipsis button (...) next to the Get Folder field to select a destination folder
3. Click Download Setup Files From Station Devices

Table 30 - Wireless Gateway Station Map Table Parameters

Column	Description
Select	Selects the unit
Logical Num	Unit's logical address
Wireless Gateway Type	Unit type: Wireless Gateway (Master) (Master Wireless Gateway) or Wireless Gateway
HW Version	Unit's hardware version
Location	Wireless Gateway's location
Activity	Date and time of last recorded activity
Last Keep Alive Response	Last Keep Alive check reply sent by the unit
Status	Download status: Completed or Error

2.10.4.1. Rebuilding Tables

See 2.10.2.1.1.

2.10.5. Managing Firmware

You can view a list of software versions stored in the Wireless Gateway (Master) Flash memory and clean the memory if necessary. (see Figure 54)

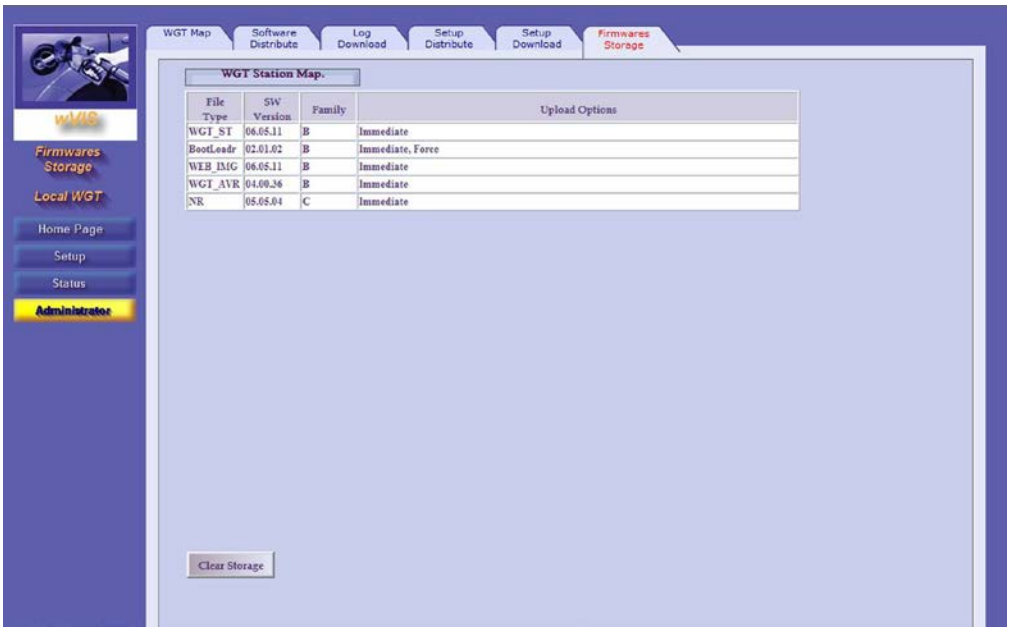

Figure 54 - Administrator - Firmware Storage Tab

The Wireless Gateway Station Map in the upper part of the screen displays:

File Type

SW Version

Family

Upload Options

To clean the memory, click Clear Storage.

2.11. Setting the Station Controller

Follow the guidelines below in order to set the communication interface between Gasboy's SiteOmat Station Controller and the Wireless Gateway (Master).

The process consists of three main steps:

1. Defining the Wireless Gateway (Master) - Station Controller communication channel
2. Defining the Wireless Gateway (Master) in the system
3. Assigning nNR to the nozzles

> Note: In cases where other FCC/POS applications are used, please refer to the manufacturer's instructions.

> **Note**: If the station is equipped with more than 16 nNR units (more than one group, see Group Communication) you will need to create a communication channel for each group with the correct Port# and then define a virtual Wireless Gateway (Master) (.i.e. Wireless Gateway (Master)2, Wireless Gateway (Master)3) that uses this bus.

> Note: The settings below maybe also done when setting up the SiteOmat application using the Setup Wizard. For further information, please refer to SiteOmat Station Controller Setup and Maintenance Manual.

2.11.1. Getting Started

1. Log in to SiteOmat application as Administrator. The following screen is displayed (see Figure 55).

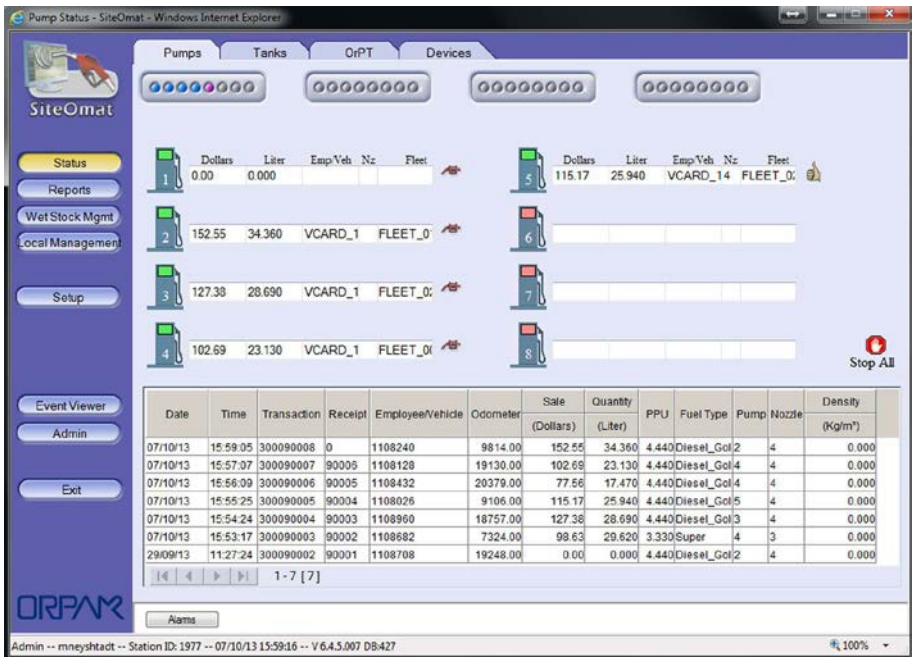

Figure 55 - SiteOmatPumps Status Screen

2. Click on the Setup navigation button. The following screen is displayed (see Figure 56).

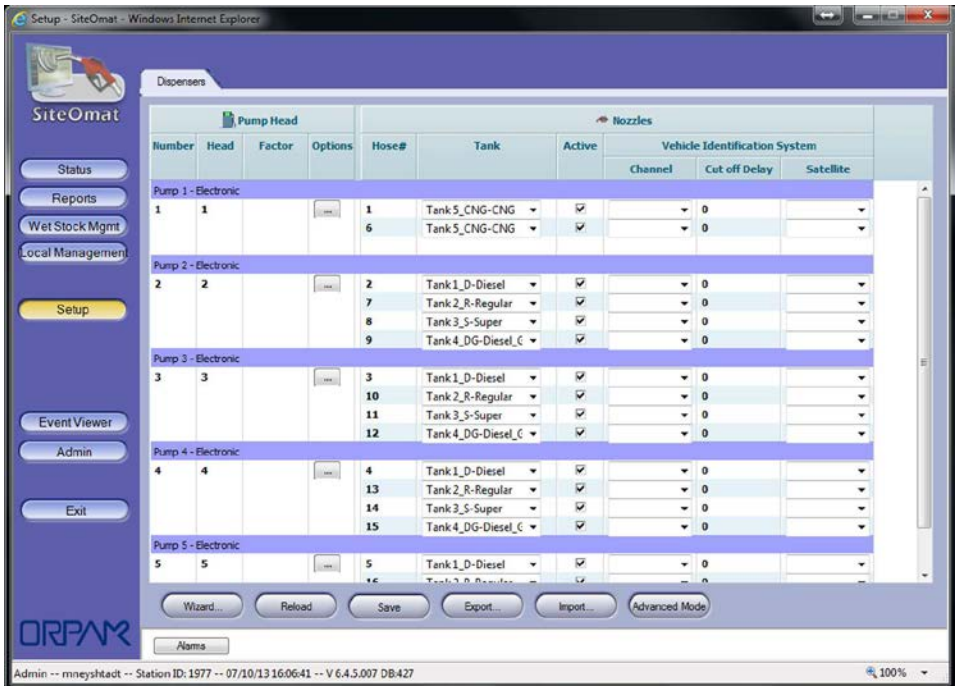

Figure 56 - Setup - Basic Mode Screen

3. Click Advance Mode. The Advanced Setup screen is displayed (see Figure 57).

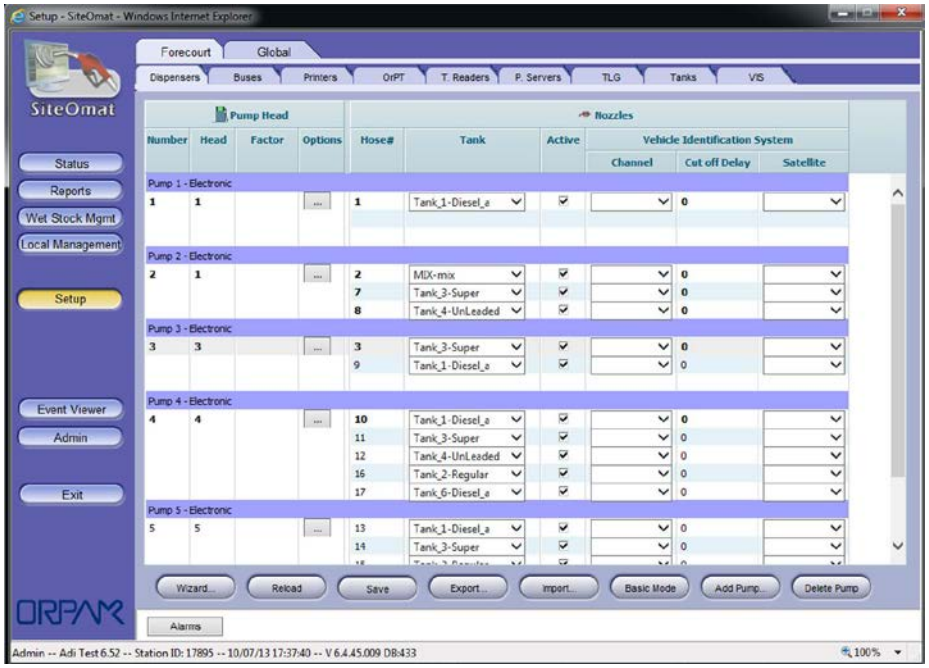

Figure 57 - Advanced Setup Screen

2.11.2. Setting the Communication Channel

1. Select the Buses tab. The Buses dialog box opens (see Figure 58). In this dialog box, you can define or update existing communication channels that transport data to/from the peripheral devices

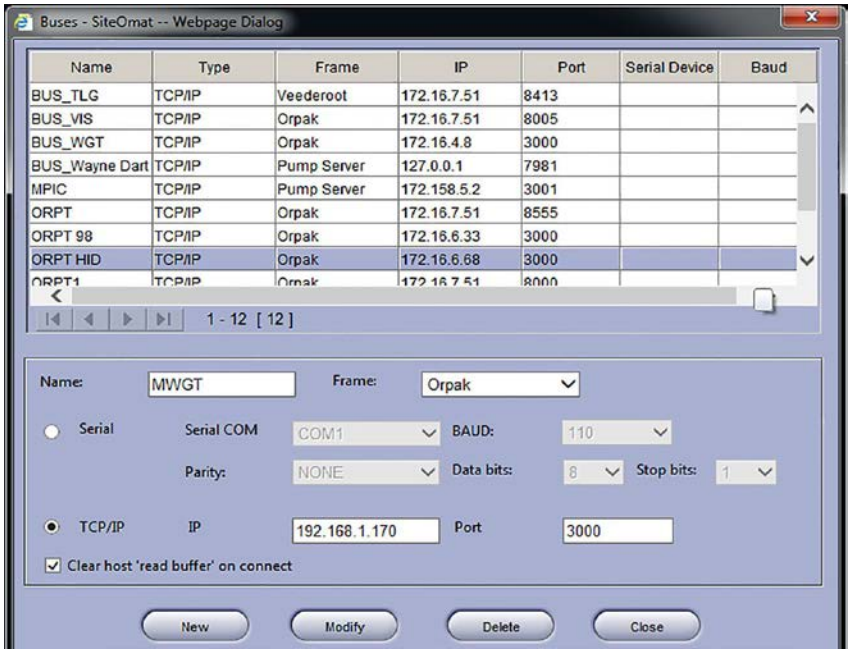

Figure 58 - Buses Dialog Box

2. In the Name field, enter a name to identify the bus (.i.e. Wireless Gateway (Master))
3. In the Frame drop-down, select Orpak

4. Select the TCP/IP radio button
5. In the IP field, enter the Wireless Gateway (Master) IP address. Default IP is 192.168.1.170. It can be changed in Wireless Gateway (Master) Admin Site, see General Setup
6. In the Port field, enter port number (between 3000 and 4000). It must match the TCP/IP Port defined in Wireless Gateway (Master) Admin Site, see Group Communication
7. Click New. The new bus is added to the grid at the top of the dialog
8. Click Close

2.11.3. Setting the Wireless Gateway (Master)

1. Select the VIS (Vehicle Identification System) tab. The VIS dialog box opens (see Figure 59).

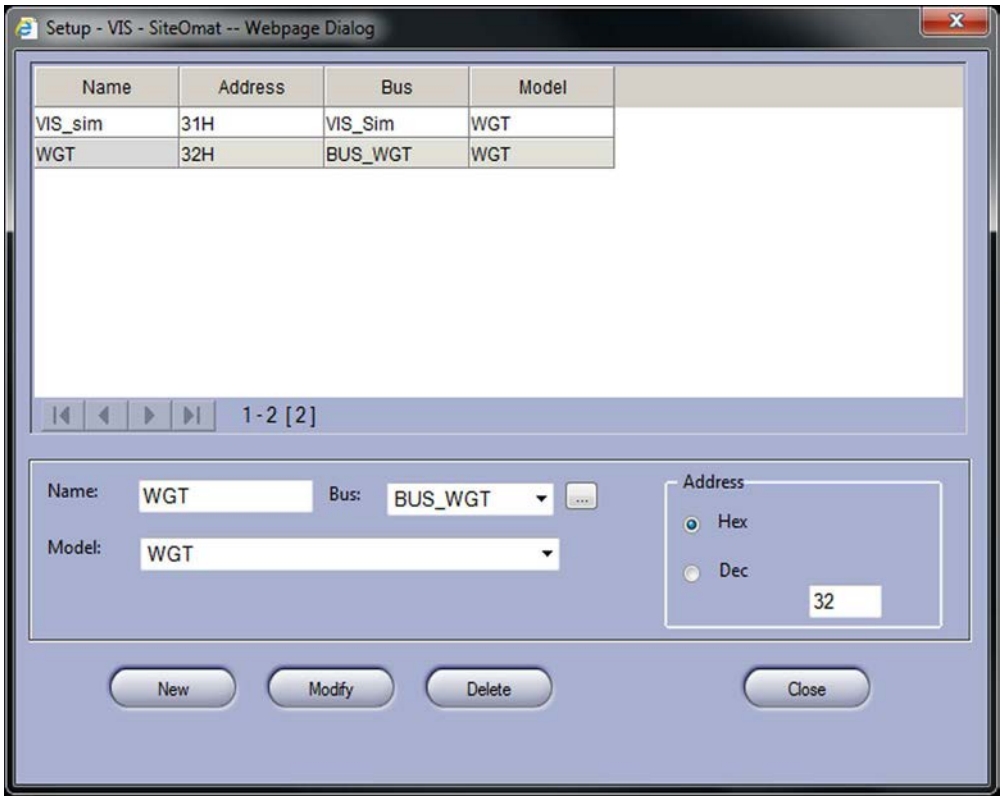

Figure 59 - VIS Dialog Box

2. In the Name field, enter a name to identify the unit
3. In the Bus drop-down, select the bus you've created before
4. In the Model drop-down, select Wireless Gateway
5. In the Address section, select the HEX radio button and then enter the RS-485 address of the group (between 31 and 39). It must match the Group Address defined in Wireless Gateway (Master) Admin Site, see Group Communication
6. Click New. The new item is added to the grid at the top of the dialog
7. If the station is equipped with more than 16 Nozzle Readers: Repeat steps 2-6 while changing the Address field to match the Group Address defined in Wireless Gateway (Master) for each group
8. Click Close

2.11.4. Assigning Channels to Nozzles and Applying Changes

1. In the Setup Screen (see Figure 60), in the Channel drop-down, select the Wireless Gateway (Master)'s (or the Group's if working with more than 16 nozzles) channel (1 to 16 as set in Wireless Gateway (Master) Admin Site, see NR Configuration List) to associate the nNR to the nozzle

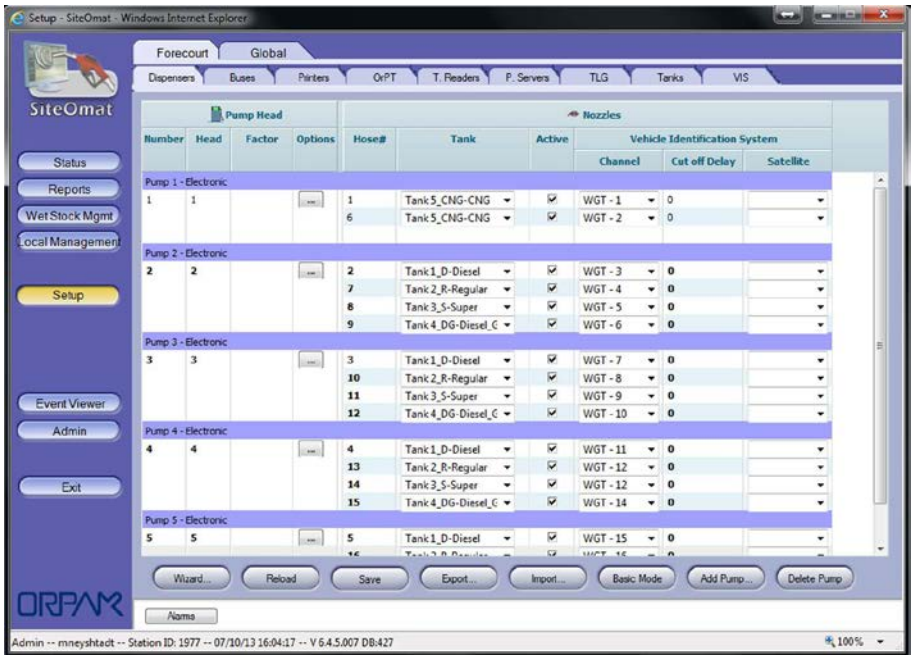

Figure 60 - Advanced Setup Screen

2. Click Save
3. Click Reload.

2.12. Wireless Gateway Maintenance

The following are general maintenance guidelines for Wireless Gateway units.

2.12.1. Cleaning

The Wireless Gateway does not require any cleaning or lubrication

Inspect regularly for any visible damages

2.12.2. Replacing Wireless Gateway Battery

The Wireless Gateway includes a Lithium battery (BT1) for RTC backup (P/N 812502030).

Note: Opening of the units by Service Personnel must not be done at the location of installation.

Note: Discharged Lithium and Lithium Ion batteries are currently designated to be disposed of in normal trash. However, users should contact their municipal waste disposal facility prior to discarding any used battery in normal trash.

1. Read and follow any recycling / disposal instructions provided by the battery manufacturer
2. Make sure that the Wireless Gateway is disconnected from power before removing the battery
3. Remove the Wireless Gateway front panel
4. Remove the battery from the socket and replace it with a new one. New batteries must be approved by Gasboy ("2032" type is recommended)
5. Replace the front panel and secure it using the four coarse thread plastic screws.

2.12.3. Wireless Gateway Troubleshooting

Table 31 provides troubleshooting guidelines intended to assist the technician in solving common issues related to Wireless Gateway units.

Table 31 - Wireless Gateway Troubleshooting

Symptom	Probable Cause	Corrective Action
LEDs are OFF	No AC power input	1. Verify that the AC power cord is correctly plugged in to both the AC-output wall outlet and in to the AC-input 2. Verify that the power socket you are plugged into is in working condition
	No DC power output	1. Verify that the DC power supply cable is not damaged. If, yes replace the cable. 2. Connect the power supply to a different power source with a new power cord. If the problem persists, the power supply is the source of the problem. Replace the power supply with a spare
Communication LEDs are OFF	Damaged CAT-5E cable	Replace LAN cable
	Defective LAN switch	Replace LAN switch
	Defective LAN connector in Station Controller	Repair/replace Station Controller
	Incorrect Wireless Gateway (Master)-Station Controller communication channel settings	Review the settings to ensure both Wireless Gateway (Master) and Station Controller match
No communication to nNR	Incorrect nNR settings	Verify that nNR settings (Station ID, Pump# and Nozzle# match Wireless Gateway (Master) settings
	Defective nNR unit	Replace nNR
Incorrect date and time in logs after power failure	Internal battery is drained	Replace Wireless Gateway internal battery

Section 3 nNR

3.1. General

This chapter provides a description of the nano Nozzle Reader units (nNR), as well as installation, setup, and maintenance guidelines.

3.2. nNR Description

The nano Nozzle Reader (nNR, see Figure 61) reads Gasboy's Fuel Point PLUS AVI vehicle ID units using contactless technology. It then uploads the encrypted data over Wireless Gateway wireless mesh network to the Station Controller and Head Office for refueling authorization.

Designed to withstand harsh environments and resist mechanical impacts, this self-contained unit fits directly onto the fueling nozzle and requires no wiring or external power source. With a universal installation kit that fits all common fueling nozzles - reducing installation and maintenance efforts - the nNR also maintains a clean industrial design that seamlessly blends into the fuel dispenser.

Figure 61 - nano Nozzle Reader - General View

The nano Nozzle Reader is easy to install and transparent to the customer: it is automatically activated when the nozzle is removed from the cradle, initiating a search for vehicle ID units. During the course of the transaction, the nNR continuously monitors the vehicle ID device to ensure that the nozzle is not removed while the pump is dispensing, preventing fraud and misuse.

Similar to all other Fuel Point PLUS components, the nNR is a secure device tamper-protected by a dedicated mechanism that detects unauthorized removal, deactivating the unit when such an attempt is made.

3.2.1. Main Features

nNR's main features include:

- Reliable and robust
- Easytoinstall andservice
- Tamper-proof and secure
- Advanced power management capabilities
- Self-contained with replaceable batteries
- Certifications: Ex Zone 1, FCC, CE, cLCus

3.3. Available Configurations

nNR are available in three different sizes, designed to fit all common nozzle models.

Additionally, there are units equipped with an activation switch in order to prevent unnecessary activations of the unit, such as in tanker truck installations (see Table 32).

Table 32 - Available Configurations

Model type	GVR P/N	Nozzle type	Orpak P/N
NR	M09677B035	NANO STD FLOW	800960000
NR	M09677B037	NANO TOG STD FLOW	800960100
NR	M09677B036	NANO HIGH FLOW	800960050
NR	M09677B038	NANO TOG HIGH FLOW	800960150
NR	M09677B041	NANO XL	800960060
NR	M09677B042	NANO, TOG, XL	800960160
NR-B	M09677B040	NANO, POSILOCK	800960268
nNR-B	M09677B044	B OPW 1290	800960208
nNR-T	M09677B045	T OPW 1290	800960258
nNR-B	M09677B046	B Healy 400-900	800960209
nNR-B	M09677B047	V34 Husky Vac	800960216
nNR-B	M09677B048	11VF VST Vac	800960217
NR-T	M09677B049	WIGGINS	800960260

3.4. Technical Specifications

(See Table 33).

Table 33 - nNRSpecifications

Parameter	Value
Supply Voltage	3.6 internal battery pack P/N 812560010
Power Consumption	Active Mode: 160mA Standby Mode 20 µA
Operating Temperature	-40°to+60°C
Storage Temperature	-40°to+85°C
IP Rating	IP 67
Dimensions (HxWxD mm)	» nNR: 81x41x60.5 » nNR Large: 86x53.5x60.5 » nNR XL: 101.5x66x60.5
Weight	» nNR: 132g » nNR Large: 151g » nNR XL: 173g
Communication Interface	RF to Wireless Gateway: 2.405-2.480GHz Typical transmission power: 3dbm (2mW) RFID to ID unit: 108-131 kHz
Hazardous Area	Zone 1 Explosive atmosphere (Ex) Exi/Exia: IntrinsicallySafe/ Sécurité Intrinsèque Group IIB type product Temperature Class: T3 Rated Temperatures: -40°≤T'amb≤+60°C

3.5. Installing the nNR

The following provides instructions for installing nNR units. The procedure is identical for all nNR configurations.

Watch the nNR Installation Tutorial

3.5.1. Required Tools

The following tools are required to install and service the nNR:

3mm Allen head ratchet (not ball ended)

2mm standard Allen key (not ball ended)

Loctite 222/Holdtite T43 glue

3.5.2. Installation Notes

Please read the following notes carefully before installing the nNR:

Note: Apply glue to all of the screws

Note: Unit should be serviced only by an authorized service personnel.

Note: Opening of the unit by Service Personnel must not be done at the location of installation.

Note: When replacing the battery, use P/N M09680B148 only. Please see Replacing nNR Battery

3.5.3. Installation Procedure

1. Slide the adaptor over the spout. Place it as close as possible to the nozzle's body with the rectangle shape inside the adaptor facing down and backwards (see Figure 62)

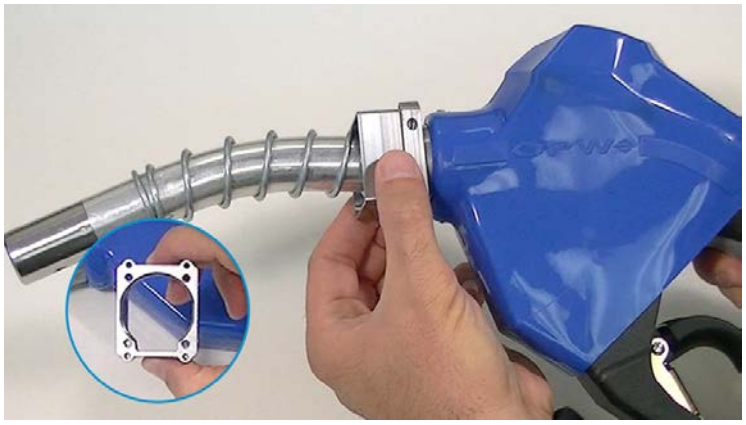

Figure 62 - Placing the Adaptor

2. Choose the proper grip kit for the nozzle (see above) and place inside the adaptor:
    a. First, place a lid (see Figure 63)

Figure 63 - Placing the Bottom Lid

b. Insert the rubber filler (see Figure 64)

Figure 64 - Placing the Filler

c. Place the other lid on top of the filler (see Figure 65)

Figure 65 - Placing the Top Lid

> Note: If using the 32mm (nNR) or the 38mm (nNR Large) grip kits, place the two-piece rubber filler and then the two-piece top lid.

3. Secure the grip kit with the M4 screws, using a 3mm head ratchet (see Figure 66)

Figure 66- Securing the Grip Kit

4. Tighten the screws in stages and in a diagonal sequence until they don't stick out (see Figure 67)

Figure 67 - Secured Grip Kit

5. Place the set screws in the adaptor's corners. Use a 2mm Allen key (see Figure 68)

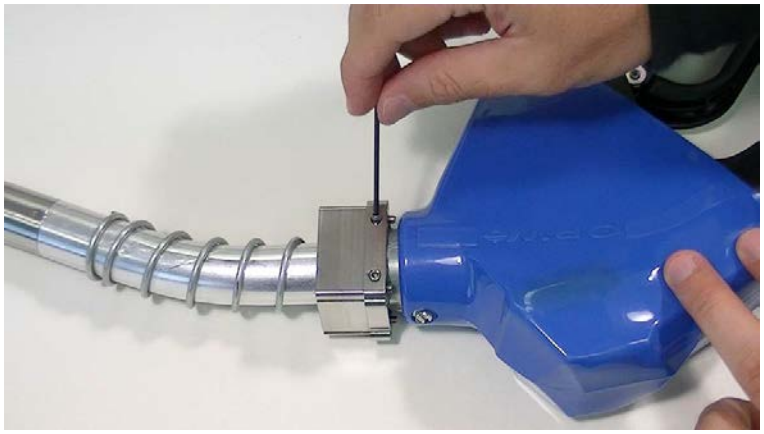

Figure 68 - Securing the Adaptor

6. Slide the nNR assembly over the spout (see Figure 69)

Figure 69 - Placing the nNR Assembly

7. Secure the nNR to the adaptor with the M3 screws. Use a 2mm Allen key (see Figure 70)

Figure 70 - Securing the nNR to the Adaptor

8. Place the nNR front cover on top of the assembly(see Figure 71)

Figure 71 - Placing the Front Cover

9. Secure the cover with the M3 screws, using a 2mm Allen key. Use 2 screws for nNR and nNR L; use 5 screws for XL (see Figure 72)

Figure 72 - Securing the Front Cover

3.6. Programming the nNR

The following provides instructions for programming the nNR units.

Warning: Nozzle Reader programming must be done in a safe area, since the Wireless Programmer is not designed for use in Hazardous Locations.

To program the units, you simply need to set three parameters:

Station ID

Pump #

Nozzle #

Note: Station ID, Pump#, and Nozzle# must match the settings done in Wireless Gateway (Master). Please see NR Configuration List.

3.6.1. Programming Sequence - Retail Solution

Turn on the Wireless Programmer and follow the instructions that appear on the display, described below (see Table 34). Use the ENTER key to select the options and advance to next screen.

Table 34 - Programming Sequence - Retail

Step	Display	Description
1	Enter User Name	Enter your username
2	Enter Password	Enter your password
3	>Program String Read String >Initialize NR Calibrate DP	The main menu is displayed. Use the UP/DOWN arrow keys to scroll-down to select Initialize NR option and press ENTER
4	>Init NR Read Init Param	Press ENTER to select the Init NR option
5	Attach NR and Press SEND!	Shake the Wireless Nozzle Reader lightly (or press the nNR + Switch activation switch) and hold up against the rear cover of the Programmer. Press SEND
6	Wait...	Wait a few seconds while the programmer identifies the unit
7	SXXXXX PYYY NZZZ Change? Y/N	The unit's default parameters are displayed. Press Y to set the unit with your own station's parameters

Step	Display	Description
8	Station ID:	Enter the Station ID as set in Wireless Gateway (Master)
9	Pump Num:	Enter the number of the pump as set in Wireless Gateway (Master)
10	Nozzle Num:	Enter the number of the nozzle on which the unit is installed as set in Wireless Gateway (Master)
11		Do one of the following: Press Y for a brand new unit, or for a reprogrammed unit after battery replacement Press N if the unit is reprogrammed but the battery wasn't replaced

Step	Display	Description
11	New Battery was Inserted? Y/N	
12	SXXXXX PYYY NZZZ Press SEND!	Verify that all the parameters are correct and press SEND
13	Attach NR to WP Then tilt NR	Shake the Wireless Nozzle Reader lightly (or press the nNR + Switch activation switch) and hold up against the rear cover of the Programmer. Press SEND
14	Programmed OK!	A success message is displayed

3.6.2. Programming Sequence - Homebase Solution

Turn on the Wireless Programmer and follow the instructions that appear on the display, described below (see Table 35). Use the ENTER key to select the options and advance to next screen.

Table 35 - Programming Sequence - Homebase

Step	Display	Description
1	Enter User Name	Enter your username
2	Enter Password	Enter your password
3	>Prog FP/FP+DP Read FP/FP+DP >Initialize NR Calibrate DP	The main menu is displayed. Use the UP/DOWN arrow keys to scroll-down to select Initialize NR option and press ENTER
4	>Init NR Read Init Param	Press ENTER to select the Init NR option
5	Attach NR and Press SEND!	Shake the Wireless Nozzle Reader lightly (or press the nNR + Switch activation switch) and hold up against the rear cover of the Programmer. Press SEND
6	Wait...	Wait a few seconds while the programmer identifies the unit
7	SXXXXX PYYY NZZZ Change? Y/N	The unit's default parameters are displayed. Press Y to set the unit with your own station's parameters
8	Station ID:	Enter the Station ID as set in Wireless Gateway (Master)
9	Pump Num:	Enter the number of the pump as set in Wireless Gateway (Master)
10	Nozzle Num:	Enter the number of the nozzle on which the unit is installed as set in Wireless Gateway (Master)

Step	Display	Description
11	New Battery was Inserted? Y/N	Do one of the following: Press Y for a brand new unit, or for a reprogrammed unit after battery replacement Press N if the unit is reprogrammed but the battery wasn't replaced
12	SXXXXX PYYY NZZZ Press SEND!	Verify that all the parameters are correct and press SEND
13	Attach NR to WP Then tilt NR	Shake the Wireless Nozzle Reader lightly (or press the nNR + Switch activation switch) and hold up against the rear cover of the Programmer. Press SEND
14	Programmed OK!	A success message is displayed

3.7. Reactivating the nNR

The nNR units are tamper-protected by a dedicated mechanism that detects unauthorized removal, deactivating the unit when such an attempt is made.

There are two possible triggers that can cause the units to enter into deactivation mode:

An attempt to remove the nNR from the nozzle occurred

Battery was removed / battery is fully drained

Once a unit is deactivated, you'll be notified as follows:

The nNR LED indicator blinks three times

In Status → Alerts screen (see Monitoring Alerts)

In Status → WGT Map screen, the nNR is colored in gray (see Monitoring Station Equipment)

3.7.1. Reactivation Methods

There are three ways to reactivate nNR units:

Using the Station Manager Tag:

1. Hold up the Station Manager Tag against the deactivated unit
2. Shake the unit lightly to ensure it wakes up. The LED indicates that the unit is blocked, blinking three times
3. The Station Manager Tag reactivates the unit. The unit becomes operational and the LED blinks twice (as it is reactivated and the tag was recognized)

Sending a reactivation command from the Admin Site. See Reactivating Wireless Nozzle Readers Remotely

> Note: When reactivating the nNR unit from the Admin Site, the unit becomes fully functional after next fueling. Simulate refueling (shake the unit lightly and place it up against a vehicle ID unit) to apply reactivation.

Reprogramming the nNR (setting Station ID, Pump#, Nozzle# anew) using the Wireless Programmer. See Programming the nNR

3.8. nNR Maintenance

Following are general maintenance guidelines for nNR units.

3.8.1. Cleaning

The nNR does not require any cleaning or lubrication

Inspect regularly for any visible damages

3.8.2. Viewing nNR Battery Status

nNR includes an internal battery pack. The unit features the following power management modes to ensure proper operation:

Operating Mode: Fully functional. In operating mode, nNR's battery level is constantly calculated based on unit operation

Replace Battery Mode: nNR enters this mode when measured voltage drops down to 3.2V. At this point the estimated battery level is 4%. The unit is fully functional but the unit's LED light will blink 5 times every 5 seconds to indicate that the battery should be replaced with a new internal battery pack within 1 to 2 weeks depending on workload

Cut-Off: Unit is not functional, battery is fully drained

The system features various options to check current battery status:

Wireless Gateway Admin Site: In Status → WGT Map screen, expand the Wireless Nozzle Reader icon you'd like to check. Calculated battery left in percentage is provided along with the following battery status icons

Station Manager Card: Hold the Station Manager Card against the nNR. The number of times that the LED light blinks represents calculated battery left in percentage (see Table 36)

Wireless Programmer: See below.

Table 36 - Battery Status Indicators

Icon	Description	SMC Card - # of Blinks	Measurement Method
	Unit's battery percentage is at 81%-100%	5	Calculated
	Unit's battery percentage is at 61%-80%	4	Calculated
	Unit's battery percentage is at 41%-60%	3	Calculated
	Unit's battery percentage is at 21%-40%	2	Calculated
	Unit's battery percentage is at 1%-20%	1	Calculated
	Replace battery mode. nNR enters this mode when measured voltage drops down to 3.2V. Estimated battery level at this point is 4%. The unit is fully functional but LED will blink 5 times every 5 seconds to indicate battery should be replaced within 1 to 2 weeks depending on workload	5 blinks every 5 seconds 1	Measured
	Unit's battery is empty		Measured

3.8.2.1. Checking nNR Battery Status using the Wireless Programmer

Turn on the Wireless Programmer and follow the instructions that appear on the display as described below (see Table 37). Use the ENTER key to select the options and advance to next screen:

> This feature is currently not supported in Wireless Programmer-Retail.

[1]No need to hold the Station Manager Card against the nNR.

Table 37 - Checking Battery Status

Step	Display	Description
1	Enter User Name	Enter your username
2	Enter Password	Enter your password
3	>Prog FP/FP+DP Read FP/FP+DP >Initialize NR Calibrate DP	The main menu is displayed. Use the UP/DOWN arrow keys to scroll-down to select Initialize NR option and press ENTER
4	>Init NR Read Init Param >Read Info Param Init NR	Scroll-down to select the Read Info Param option
5	Reading NR Press SEND!	Press SEND
6	Attach NR to WP Then tilt NR	Shake the Wireless Nozzle Reader lightly (or press the nNR + Switch activation switch) and hold up against the rear cover of the Programmer
7	>Addr: XXXXXXXX SN: XXXXXXXXX	Wireless Nozzle Reader MAC address and Serial Number are displayed. Scroll-down to view the parameters below:
8	>Battery: 3.64 Ver: XX.XX.XX	Measured battery voltage and SW version are displayed
9	>FWU: XX Back Tilt: ---	False Wake Up counter displays the number of times that the Wireless Nozzle Reader was activated in vain (no RFID vehicle unit was identified). Back tilt option is available for µWireless Nozzle Reader units only.

Step	Display	Description
10	>Hardware Rev:XX Batt Level: 100%	Hardware version and calculated battery left in percentage are displayed

3.8.3. Replacing nNR Battery

The nNR includes an internal battery pack (P/N M09680B148).

To replace the battery pack proceed as follows:

1. Remove the unit from the nozzle (see Installing the nNR for more details):
   a. Remove the M3 screws that secure the front cover to the nNR assembly and detach the cover
   b. Remove the four M3 screws that secure the nNR assembly to the spout adaptor
   c. Take the nNR assembly out from the nozzle.

   Note: Opening the units by Service Personnel must not be done at the location of installation.
2. Remove the two M3 screws that secure the top cover to the nNR assembly (see Figure 73)

Figure 73 - Removing the Top Cover Screws

3. Take the cover out. The battery pack is located on the inner side of the top cover (see Figure 74)

Figure 74 - Removing the Top Cover

4. Disconnect the battery pack and discard the old pack (see Figure 75)

Figure 75 - Disconnecting the Battery Pack

> Note: Discharged Lithium and Lithium Ion batteries are currently designated to be disposed of in normal trash. However, users should contact their municipal waste disposal facility prior to discarding any used battery in normal trash.

5. Connect a new battery pack. Place it on the inner side of the top cover and push the cable in between the battery pack and the plastic piece as shown below (see Figure 76)

Figure 76 - Connecting a New Battery

6. Replace the top lid onto the nNR assembly. Verify that the rubber gasket is in place
7. Secure the top lid using the two M3 screws
8. Reinstall the unit onto the nozzle
    a. Slide the nNR assembly over the spout and place onto the spout adaptor
    b. Secure the nNR assembly to the spout adaptor using the four M3 screws previously removed
    c. Replace the front cover and secure it using the previously removed M3 screws.

3.8.4. Resetting nNR Battery Status

After the battery was replaced with a new pack, use the Wireless Programmer to reset the battery status.

3.8.4.1. Resetting nNR Battery Status - Retail Solution

Turn on the Wireless Programmer and follow the instructions that appear on the display as described below (see Table 38). Use the ENTER key to select the options and advance to next screen.

Table 38 - Resetting Battery Status - Retail

Step	Display	Description
1	Enter User Name	Enter your username
2	Enter Password	Enter your password
3	>Program String Read String >Initialize NR Calibrate DP	The main menu is displayed. Use the UP/DOWN arrow keys to scroll-down to select Initialize NR option and press ENTER
4	>Init NR Read Init Param	Press ENTER to select the Init NR option
5	Attach NR and Press SEND!	Shake the Wireless Nozzle Reader lightly (or press the nNR + Switch activation switch) and hold up against the rear cover of the Programmer. Press SEND
6	Wait...	Wait a few seconds while the programmer identifies the unit
7	SXXXXX PYYY NZZZ Change? Y/N	The unit's parameters are displayed. Press N
8	New Battery was Inserted? Y/N	Press Y
9	Change Bat Level to 100%? Y/N	Press Y
10	SXXXXX PYYY NZZZ Press SEND!	Verify that all the parameters are correct and press SEND
11	Attach NR to WP Then tilt NR	Shake the Wireless Nozzle Reader lightly (or press the nNR + Switch activation switch) and hold up against the rear cover of the Programmer. Press SEND

Step	Display	Description
12	Programmed OK!	A success message is displayed

3.8.4.2. Resetting nNR Battery Status - Homebase Solution

Turn on the Wireless Programmer and follow the instructions that appear on the display, described below (see Table 39). Use the ENTER key to select the options and advance to next screen.

Table 39 - Resetting Battery Status - Homebase

Step	Display	Description
1	Enter User Name	Enter your username
2	Enter Password	Enter your password
3	>Prog FP/FP+DP Read FP/FP+DP >Initialize NR Calibrate DP	The main menu is displayed. Use the UP/DOWN arrow keys to scroll-down to select Initialize NR option and press ENTER
4	>Init NR Read Init Param	Press ENTER to select the Init NR option
5	Attach NR and Press SEND!	Shake the Wireless Nozzle Reader lightly (or press the nNR + Switch activation switch) and hold up against the rear cover of the Programmer. Press SEND
6	Wait...	Wait a few seconds while the programmer identifies the unit
7	SXXXXX PYYY NZZZ Change? Y/N	The unit's parameters are displayed. Press N
8	New Battery was Inserted? Y/N	Press Y
9	Change Bat Level to 100%? Y/N	Press Y
10	SXXXXX PYYY NZZZ Press SEND!	Verify that all the parameters are correct and press SEND
11	Attach NR to WP Then tilt NR	Shake the Wireless Nozzle Reader lightly (or press the nNR + Switch activation switch) and hold up against the rear cover of the Programmer. Press SEND

Step	Display	Description
12	Programmed OK!	A success message is displayed

3.8.5. nNR Troubleshooting

Table 40 provides troubleshooting guidelines intended to assist the technician in solving common issues related to nNR units.

Table 40 - nNR Troubleshooting

Symptom	Probable Cause	Corrective Action
LED does not blink when the unit is titled	Defective nNR	Replace nNR unit
	Drained battery	Replace battery
LED does not blink twice when placed up against an ID unit	nNR was removed during refueling and then inserted into another vehicle's fuel filler	Resume refueling the first vehicle before reuse
	nNR antenna is disconnected from nNR assembly	Replace nNR unit
	Drained battery	Replace battery
	Defective ID unit	1. Verify that the vehicle Id unit is valid and readable 2. Reprogram / replace ID unit
LED blinks twice but fueling does not start	ID unit is restricted	Verify that the vehicle is allowed to refuel according to rules / restrictions applied
	Defective ID unit	1. Verify that the ID unit is valid and readable 2. Reprogram / replace ID unit
LED blinks three times	nNR is deactivated	Reactivate the unit. See Reactivating the nNR