



MDE-4815B

WGT Outdoor Unit

INSTALLATION MANUAL

This document is based on Orpak's WGT outdoor unit installation manual P/N 817439300



SAFETY CONSIDERATIONS

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

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

WARNING - EXPLOSION HAZARD

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

Install the Product only in the non-hazardous area of the fuel station.

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

In the installation and maintenance of the Product, comply with all applicable requirements of the National Fire Protection Association 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 Product. Always disconnect power before starting any work. The Product has more than one power supply connection port. Disconnect all power before servicing.

WARNING – PASSING VEHICLES

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

WARNING

**Components substitutions could impair intrinsic safety.
Attaching unauthorized components or equipment will void your warranties.**

CAUTION

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

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DISCLAIMER

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SECTION 1 GENERAL DESCRIPTION

1-1. WGT – WIRELESS GATEWAY TERMINAL

The Wireless Gateway Terminal (WGT) is an electronic unit, part of FuelPoint PLUS Solution for vehicle identification based fueling solution for gas stations.

As part of the solution, one or several WGT units are installed in gas stations to form a wireless network communication data from the vehicle units to the station controller through short range RF communication (very low power) in the ISM 2.4 GHz band. The number of WGT units mainly depends on station size and number of dispensers covered. In each station one of the WGTs is set to be Master WGT and it will be connected to the forecourt controller (FCC) via LAN. The rest of the WGTs in the station will be “routers” with no LAN connection.

The WGT can be installed in several locations:

- In enclosed and non explosive environment inside the station controller box (Islander PLUS or ICR PLUS) or in the station office.
- On a pole or wall mounted configuration which requires using the WGT outdoor box.

This guide describes in details the second option- outdoor installation.

1-2. WGT OUTDOOR BOX

The WGT outdoor box is made of plastic to allow for uninterrupted passage of the RF signal.

The WGT outdoor box includes the WGT as shown in Figure 1-1.

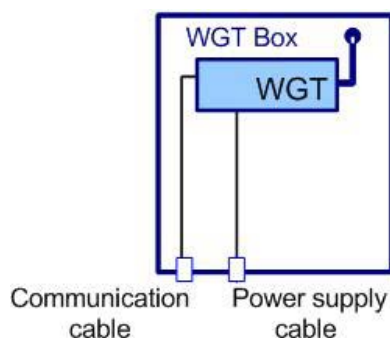


Figure 1-1. WGT - General View

1-3. **INSTALLATION OPTIONS**

The preferred installation method depends on the layout and configuration of the gas station.

There are three installation options for the WGT Box:

1. Unit mounted on a wall or a pole in the island
2. On a dedicated pole or pedestal
3. Under the station roof (not recommended due to maintenance convenience).

Any of the above selected methods must comply with UL and EU requirements.

1-4. **INSTALLATION REQUIREMENTS**

Due to safety requirements, it is not allowed to install a WGT box within hazardous location as shown in the control drawing (see Figure 1-2).

1-4.1. **INSTALLATION LOCATION**

The WGT box must be installed at non hazardous area / non classified area, which means:

1. Above 18" (0.5 meter) from the island floor
2. At least 18" (0.5 meter) away from the dispenser

Figure 1-2 presents various possible WGT Box installation locations.

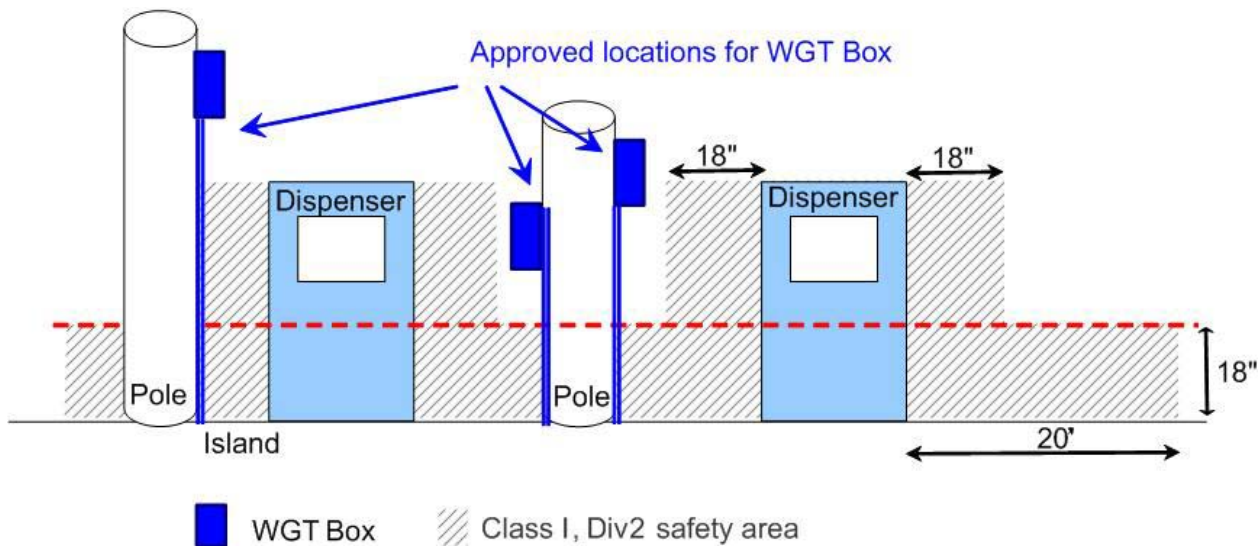


Figure 1-2. WGT, Outdoor Installation Control Drawing

1-4.2. INSTALLATION INSTRUCTIONS

The following paragraph provides step by step instructions for installation of the outdoor WGT.

- a. Install the WGT in a non hazardous area according to Figure 1-2 .
- b. Install a Master WGT and a Router WGT (one or more) in each station according to station topology.
 - The Master WGT, as opposed to the Router WGT, is connected to the FCC controller using shielded S-CAT5E LAN cable. Install the master WGT as close as possible to the FCC controller.
 - Install the Router(s) WGT in a line of sight with the Master WGT, within a distance not exceeding 15 meters (approximately 50 feet).
 - The Master unit and the Router unit activate the RF mesh network in the station.
 - For ease of maintenance, it is recommended not to install the WGT higher than two meters from the ground. However, the higher will be the unit, the better will be the RF cover.
 - The installation procedures must meet all safety regulations according to local state regulations.
 - Mechanical Installation
 - Remove the WGT cover and install the unit on a smooth surface using four screws via holes located at the four corners of the unit.
 - Refer to Figure 1-4 for the location of the four holes.
 - Install the WGT vertically where the two cable holes are located at the bottom section of the unit (see Figure 1-5).
 - Connect a 12-28 VDC (stabilized), 500 mA (maximum) power supply, for the Master and Router WGTs.
 - For the master WGT, connect a shielded S-CAT5E cable using RJ-45 connector.
 - Connect the wiring through UL listed glands or appropriate metal tubing. The large hole can host a gland for cables in diameter between 0.230” to 0.530” (5.8 to 13.9 mm) and the small hole can host a gland for cables in diameter between 0.114” to 0.250” (2.9 to 6.4 mm). Tighten the glands in order to prevent leak of water or gasses through conduits, cables and conductors.
 - In case you are not using one of the two wiring holes be sure to seal it properly.
 - When installing cables into the WGT box, do not damage unit sealing (IP66 protection).
 - Assemble the unit cover using the four coarse pitch screws and than install the four screw clip-on knobs.
 - Perform Router and Master unit setup prior to installation according to instructions provided in the Setup Sections.

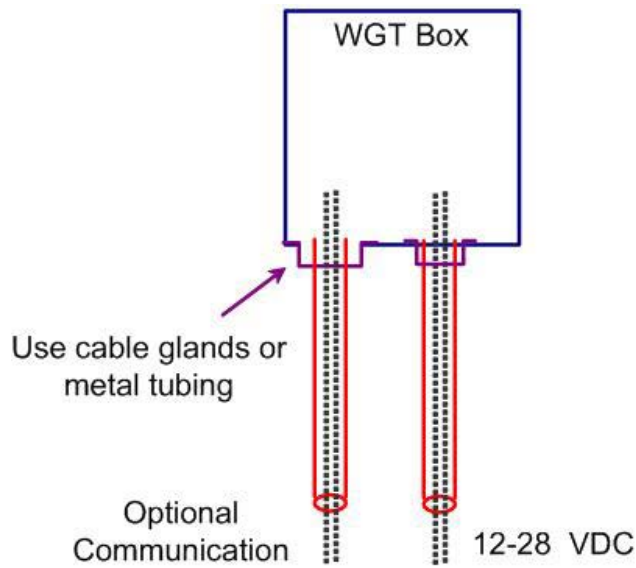


Figure 1-3. WGT Box Cable Installation

1-4.3. POWER SUPPLY

An external AC to DC or DC to DC switching power supply shall be used to operate the WGT. This power supply should be 12V to 28V DC output. The adaptor should be approved according to the local regulation. In North America use a AC to DC 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. DC cable will be connected to the DC input in the WGT box.

Note: If power supply installed far from WGT box, make sure the WGT get a correct voltage due to power fail on the lines!

1-4.4. CABLE INSTALLATIONS

The WGT Box has power input and optional data (LAN or other) input/output. The LAN cable will be connected to the station network LAN only in case the WGT is a master WGT. The other I/O plugs (RS-232 and RS-485) will be connected only by certified technician for maintenance use only.

The cables must be placed in dedicated tubes which comply with UL/EU regulations and any other local regulations. The cables enter the WGT box from the sealing adapters which used to ensure the box sealing as shown in Figure 1-3.

Table 1-1. Pin Assignment for Input Power - CN8, 4 pin connector, Molex

<i>Pin No.</i>	<i>Assignment</i>	<i>Wire color</i>	<i>Remarks</i>
4	DC INPUT +V	Red	
2	DC INPUT -V	Black	
1	Ground	Yellow/Green	Ground connection to be connected to nearest ground.
3	PF		Not used

Table 1-2. Pin Assignment for RS485 Communication connector – CN12, CONN, type D9P male

<i>Pin No.</i>	<i>Assignment</i>
	Channel 1
1	+485
2	-485
6	G485
	Channel 2
3	+485
4	-485
8	G485
7,9, case	Ground
5	N.C.

**Table 1-3. Pin number assignment, Communication LAN – CN2
CONN.RJ45**

<i>Pin No.</i>	<i>Assignment</i>	<i>Wire color</i>	<i>Remarks</i>
Standard cable S-CAT5E			For master WGT application only

**Table 1-4. Pin assignment for RS232 Communication connector – CN11
CONN, TYPE D9S female**

<i>Pin No.</i>	<i>Assignment</i>	<i>Remarks</i>
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.	

Table 1-5. Jumpers (Factory assembly)

<i>Jumper No.</i>	<i>Name</i>	<i>Description</i>
J4		
Pins1-2	3.3V	SAM power is 3.3V
Pins2-3	5V	SAM power is 5V
J6		Switches the battery (BT1) to circuit

Table 1-6. Indication LEDs on the Left side of PCB (left to right)

<i>LED No.</i>	<i>Name</i>	<i>Description</i>
DL2	100	Indicates communication rate: Light on: 100 BPS

		Light off: 10 BPS
DL3	ACT	Blinks during active communication
DL4	LNK	Illuminates constantly when Ethernet communication is connected

Table 1-7. Indication LEDs on the Right side of PCB (left to right)

<i>LED No.</i>	<i>Name</i>	<i>Description</i>
DL9	GP	Illuminates constantly. Blinks during data transfer via external communication (Ethernet, RS-232 or RS-485)
DL(not shown)	TAG	Not used
DL(not shown)	RST	Reset LED. Illuminates during reset.
DL(not shown)	5V	Indicates +5V active
DL7	3V	Indicates +3.3V active
DL8	1V8	Indicates +1.8V active

1-4.5. DEDICATED POLE OR PEDESTAL

If no suitable walls or poles are available, the WGT can be placed on a dedicated pole. In that case, setting the pole in the island must comply with the UL/EU or any local regulations requirements - cementing the pole to the island floor, cable laying and keeping the WGT Box outside Class I zone, as described in the “installation location” section.

1-4.6. BATTERY

The WGT includes Lithium battery (BT1) for RTC backup. (Orpak P/N 812502030).

To remove battery for disposal:

- WGT's battery is designed for easy removal and replacement by customers.
- Read and use any precautions published by battery manufacturer in datasheet/website concerning battery storage, use and disposal.

- Make sure the POWER is in OFF position before removing battery.
- Remove WGT cover by loosening the screws.
- Remove the battery from the socket and replace it with a new one. New batteries must be approved by Gasboy or Orpak.
- Discharged Lithium and Lithium Ion batteries are currently designated to be disposed off in normal trash.
- However, users should contact their municipal waste disposal facility prior to discarding any used battery in normal trash.

1-5. WGT OUTDOOR BOX SPECIFICATIONS

Physical

- Height – 241 mm
- Width – 194 mm
- Depth – 87 mm
- Weight – 815 gram

Power

- Operating voltage - 12 - 28 V DC.
- Operating current - 0.5 A

Environmental

- Operating temperature : -13 °F to +158 °F (-25° C- +70° C)
- Storage temperature : -13 °F to +158 °F (-25° C- +70° C)
- Humidity – 95% RH
- Degrees of Protection - IP66

Communication

- AES 128 for RF Network Communication
- TCP/IP over Ethernet
- EIA 802.15.4

Order information

- P/N – 800939351
- Name – WGT outdoor unit

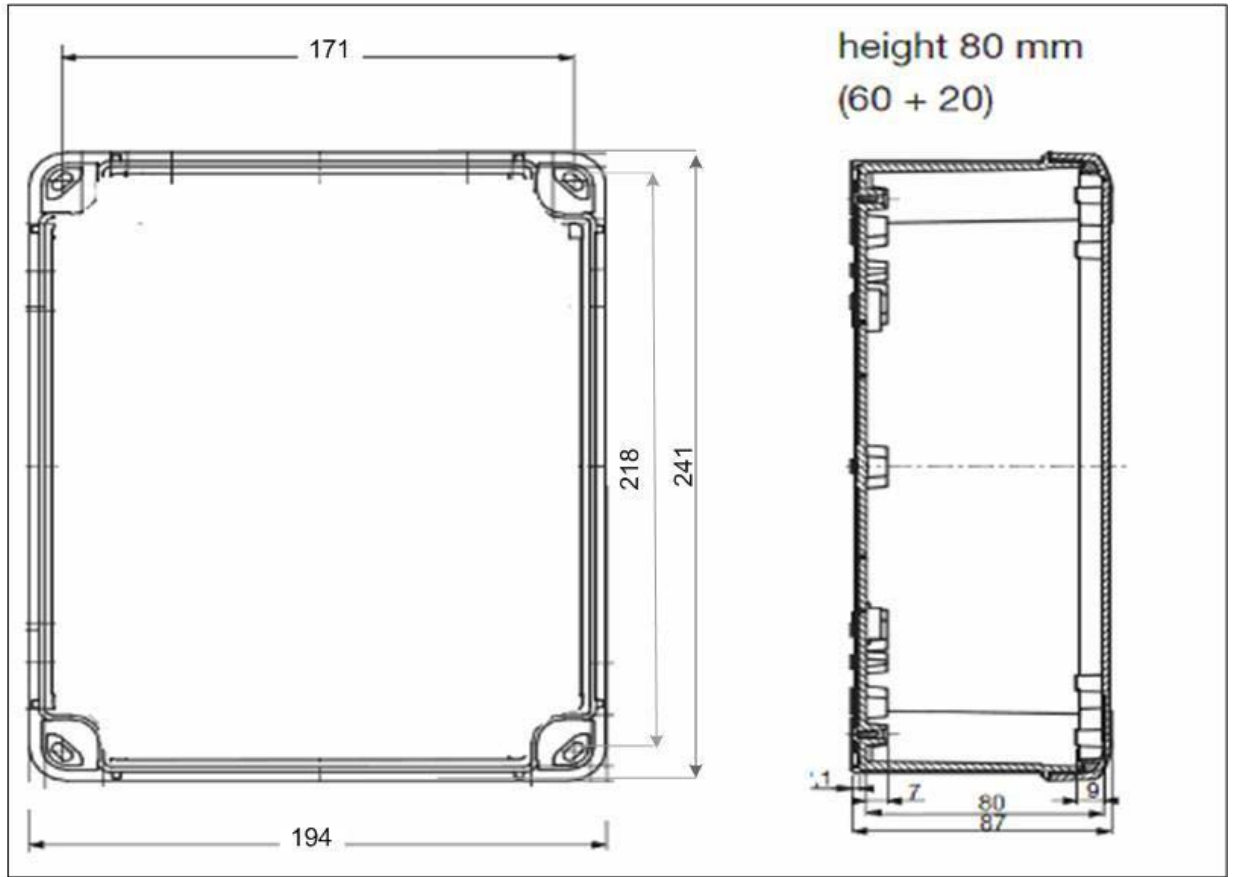


Figure 1-4. WGT Outdoor Box Dimensions

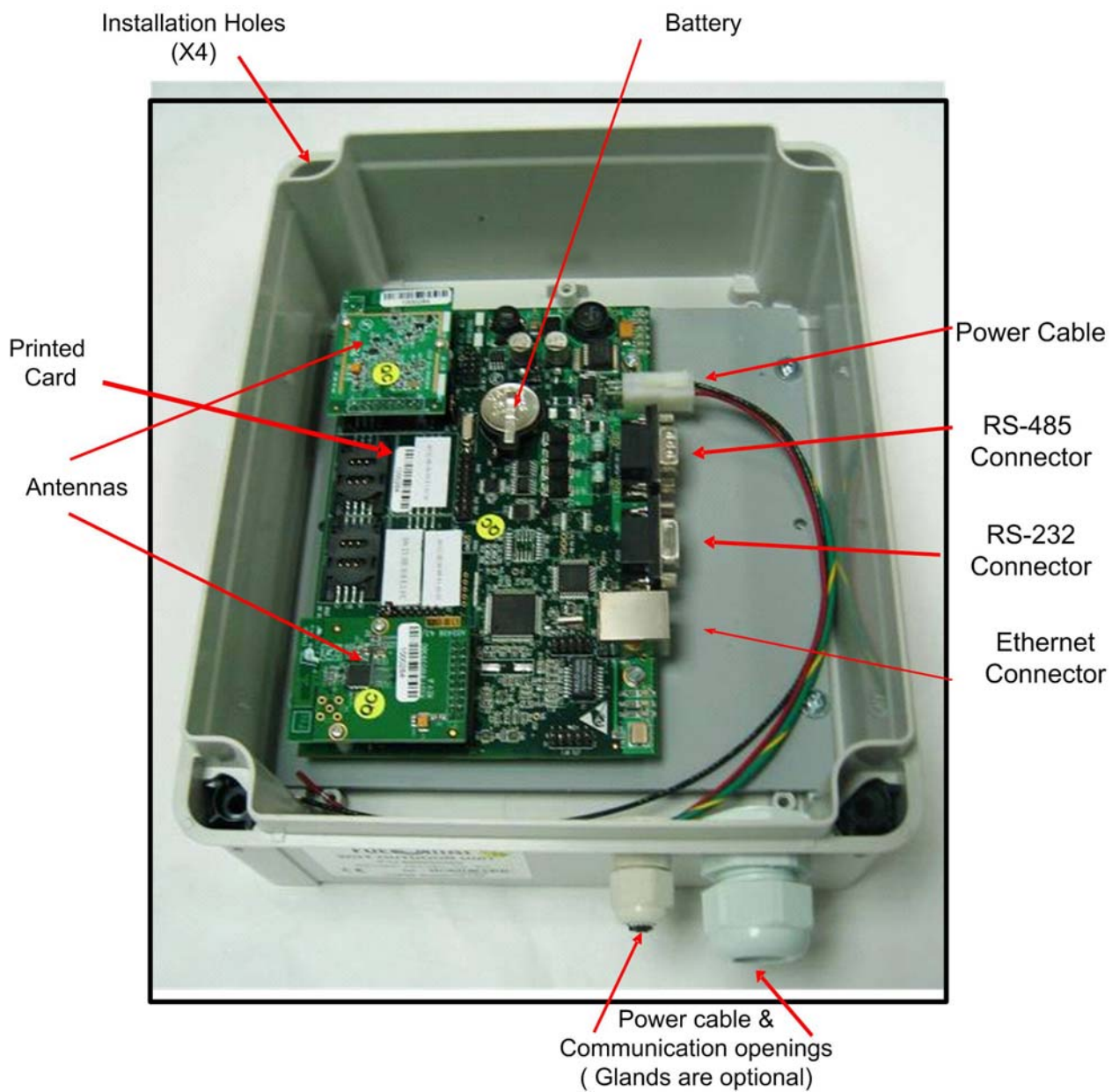


Figure 1-5. WGT Outdoor Box, Inside View



Figure 1-6. WGT Outdoor Box, External View (Glands are optional)

1-6. TROUBLESHOOTING

Table 1-8 lists the recommended procedures for troubleshooting the WGT.

<i>Table 1-8. WGT, Troubleshooting Procedures</i>			
<i>No.</i>	<i>Symptom</i>	<i>Troubleshooting Procedure</i>	<i>Recommended Action</i>
1	LEDs are inactive	Check DC Voltage power supply output	Replace DC Voltage power supply
		Check AC and DC output	Replace power supply
		Check the proper connection between the Power Supply and the WGT	Wire the units anew.
2	No communication between the Master WGT and the FCC	Check CAT-5E cable connection between the Master WGT and the FCC	Replace one unit, then other units if necessary
3	No RF communication	Check Nozzle Reader setup	Replace Nozzle Reader
		Check WGT setup	Set WGT anew
4	Wrong date and time in log's after electricity failure.	Check WGT battery	Replace battery as describe in paragraph 1-4.6.