



# **Payment** Solutions

## nWGT Installation Manual

P/N: 817427300

Revision A

### **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.

#### **PROPRIETARY NOTICE**

The information contained in this guide is confidential and proprietary to Orpak Systems Ltd. No part of this guide may be disclosed or reproduced in any form without written permission of Orpak Systems Ltd. The information provided in this document is current as of the date of its publication, and it may be changed at any time without notice.

#### **DISCLAIMER**

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

#### **FCC COMPLIANCE STATEMENT**

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 receiver 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.

A distance of at least 20cm. between the equipment and all persons should be maintained during the operation of the equipment.

#### WARNING

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to two conditions:

*[Le present appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes]*

1. This device may not cause harmful interference

*[L'appareil ne doit pas produire de brouillage.]*

2. This device must accept any interference that may be received or that may cause undesired operation

*[L'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.]*

3. A distance of at least 20cm. between the equipment and all persons should be maintained during the operation of the equipment.

*[Une distance d'au moins 20cm. entre l'équipement et toutes les personnes devraient être maintenues pendant le fonctionnement de l'équipement]*

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# Section 1 Introduction

## 1.1. General

This manual provides instructions on how to install and configure the nWGT, part of Orpak's Wireless Forecourt Payment Solution.

## 1.2. Product Description

nWGT units are installed in the forecourt, typically one per dispenser, and create the forecourt mesh wireless network that covers the entire station. Each of the forecourt devices (dispensers, OPTs, printers) is physically connected to the nWGT unit. The unit can be also installed anywhere in the island, on a wall, or on a pole.

The Wireless Forecourt network is based on mesh network topology uses IEEE 802.15.4 replacing the cable infrastructure and provides full and robust wireless coverage throughout the station forecourt between the FCC / POS (through the CnWGT) and the dispensers and other forecourt devices. The wireless network is encrypted by AES-128 to provide high security for the data over the air.

The CnWGT is the access point to the wireless network from the station office. This unit is typically connected to the FCC (or POS) using LAN to provide the access between the FCC / POS and the forecourt devices for authorization and service. The nWGT can be operated as a converter unit, from wireless network to serial channels, such as RS485 or with an add-on dispenser interface.

### 1.2.1. Wireless Forecourt

Wire infrastructure at a gas station's forecourt increases the cost of automating existing stations or building new ones and the TCO for the oil company and station owners.

Orpak offers a solution for a fully wireless forecourt connecting the controller and the dispensers via Orpak's highly robust wireless network. The Wireless Forecourt is specially designed for the gas station environment and uses unlicensed frequency band in mesh configuration with strong redundancy and encryption.

## 1.3. System Architecture

Figure 1-1 shows a basic diagram of the Wireless Forecourt system architecture:

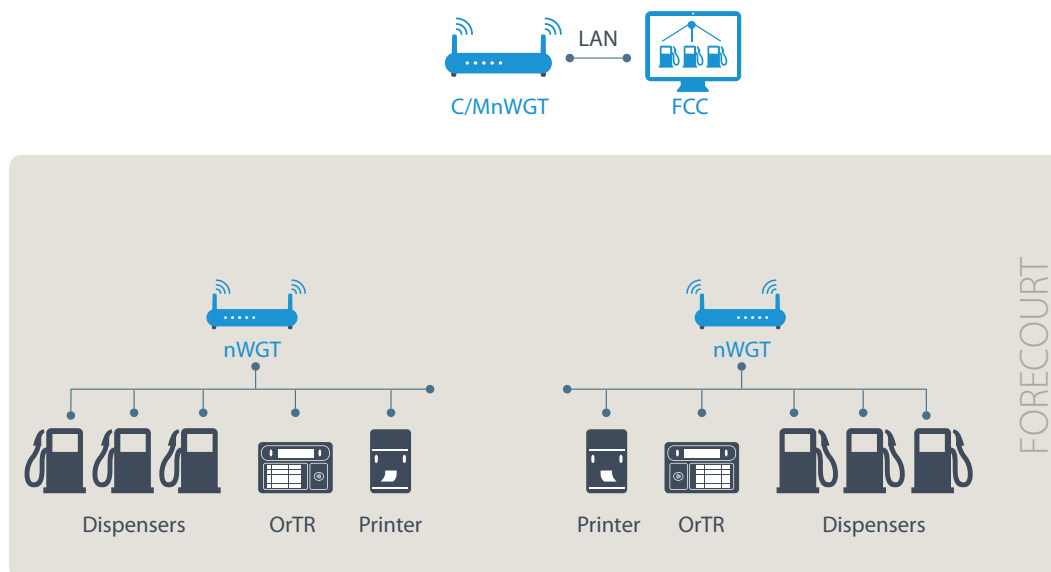


Figure 1-1 - Wireless Forecourt - System Architecture

## 1.4. Manual Structure

### Section 1: Introduction

This section provides a general description of the system.

### Section 2: System Overview

This section provides a technical description of the nWGT including specifications, dimensions, and available configurations.

### Section 3: Preliminary Considerations

This section provides location, logistical, and safety guidelines to prepare for the installation.

### Section 4: Installation

This section provides instructions for installing the nWGT at the station.

### Appendix A: Installation In-Dispenser

This section describes how to install the nWGT unit inside of a dispenser.

### Appendix B: Installation On-Dispenser

This section describes how to install the nWGT unit on top of or on the side of a dispenser.

## 1.5. 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 System Overview

## 2.1. General

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

## 2.2. Technical Specifications

The following table details the technical specifications for the White and the Compact nWGT units (see [Table 2-1](#)):

Table 2-1 - nWGT - Technical Specifications

Parameter	Value
<b>PHYSICAL</b>	
Dimensions (H x W x D)	» <b>White Box:</b> 184mm x 109mm x 36mm (without bracket) » <b>Compact:</b> 182mm x 180mm x 61.6mm
Weight	» <b>Compact With PS:</b> 850 gr. » <b>Compact Without PS:</b> 650 gr.
Mounting (White nWGT only)	Bracket for wall mount or desktop mount
<b>ELECTRICAL</b>	
Input Voltage	» <b>Compact With PS:</b> 100-240VAC, 50/60Hz, 0.35A » <b>Compact Without PS:</b> 10-32VDC, 1A
Power Consumption	» <b>Compact With PS:</b> 100 - 240VAC, 50/60Hz, 0.35A » <b>Compact Without PS:</b> 10-32VDC, 1A » <b>White Box:</b> 10-32VDC, 1A
<b>ENVIRONMENTAL</b>	
Operating Temperature	» <b>No dispenser interface:</b> -40°C to +80°C » <b>Current loop interface:</b> -40°C to +60°C » <b>Compact AC units (with internal PS):</b> -40°C to +50°C
Storage Temperature	-40°C to +80°C
Vandal Resistant	IK8
Humidity	95% non-condensing
UV	MIL-STD-810F

Parameter	Value
Vibration	<ul style="list-style-type: none"> <li>» IEC 60068-2-64 Test Fh(4M3)</li> <li>» IEC 60068-2-6 Test Fc(4M3)</li> </ul>
Ingress Protection	IP66
<b>COMMUNICATION</b>	
Ethernet	» 1 x LAN (10/100 baseT)
RF	» 2 x 802.15.4 RF, Frequency 2.4GHz
Antenna Gain	2.3dBi
Typical Transmit Power	<ul style="list-style-type: none"> <li>» For Europe - 8.5dbm; EIRP 11.8dbm/ 0.015W</li> <li>» For US – 16.8dbm; EIRP 20.1dbm/ 0.102W</li> </ul>
Pump Interfaces	<ul style="list-style-type: none"> <li>» 1 x TX, RX RS-232</li> <li>» 1 x Debug RS-232</li> <li>» 1 x Non-Isolated RS-485</li> <li>» 1 x Isolated RS-485</li> <li>» 1 x Tokheim</li> <li>» 1 x Current Loop</li> </ul>
Indicators	Internal LEDs
RF Antenna	2 x Inverted F integrated on board antennae
<b>CERTIFICATIONS</b>	
	FCC, CE, cITLus

## 2.3. Layout & Dimensions

The following details the nWGT's layout and dimensions (see [Figure 2-1](#)):

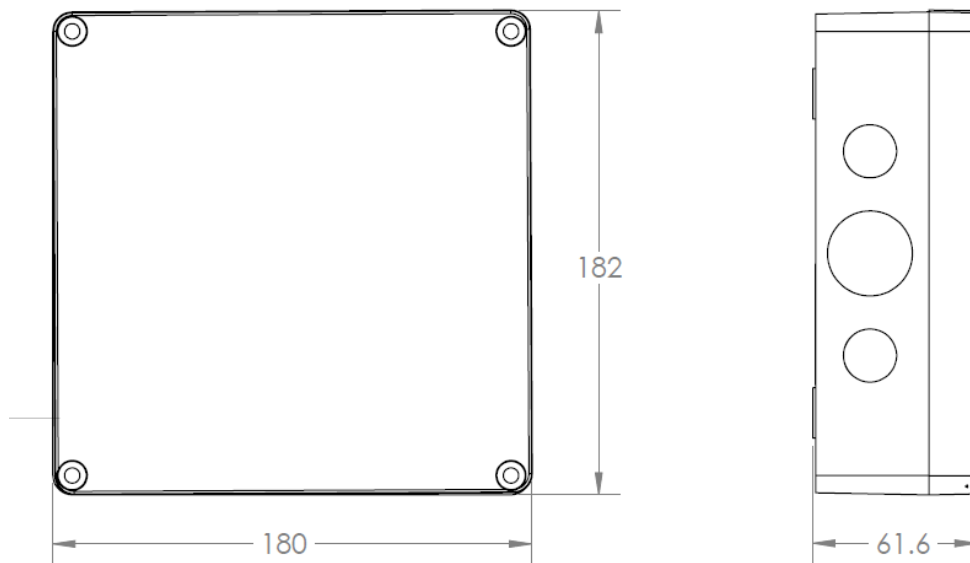


Figure 2-1 - nWGT Dimensions

## 2.4. Product Label

The following details the nWGT's product labels (see [Figure 2-2](#), [Figure 2-3](#), [Figure 2-4](#)):



Figure 2-2 - Product Label - nWGT-W OUTDOOR COMPACT WITH PS



Figure 2-3 - Product Label - nWGT-W OUTDOOR COMPACT WITHOUT PS

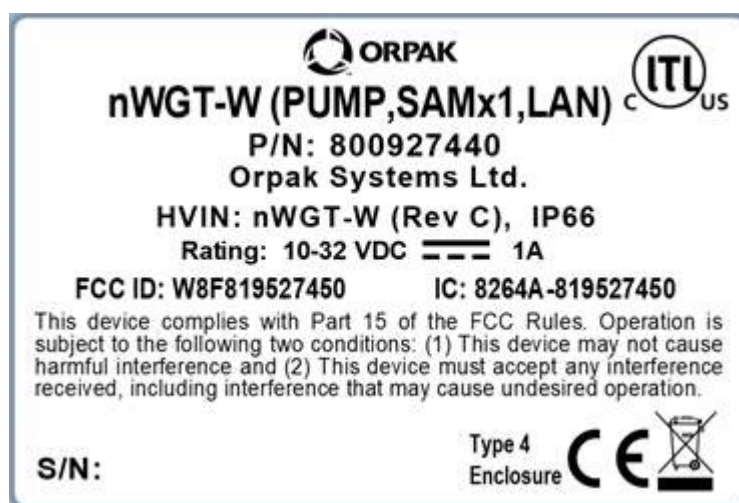


Figure 2-4 - Product Label - nWGT-W (PUMP, SAMx1, LAN)



## 2.5. Available Configurations

The nWGT is available in three configurations:

- » nWGT-W OUTDOOR COMPACT WITH PS (includes power supply)
- » nWGT-W OUTDOOR COMPACT WITHOUT PS (does not include power supply)
- » nWGT-W (PUMP, SAMx1, LAN)

Each unit houses the nWGT-W (wide) board (see [Figure 2-5](#)):



Figure 2-5 - nWGT-W Board

The nWGT units at the forecourt have several possible interfaces for the various dispenser types and other devices. One unit can support several dispensers when installing an nWGT per island.

nWGT units are equipped with LAN, RS-232, and a RS-485 interface with 3 channels (2 isolated). A standard unit (RS-485) can be connected to several dispensers depending on the dispenser protocol and interface. The following optional dispenser interface configurations are available, using Orpak's dispenser interface boards (see [Figure 2-6](#)):

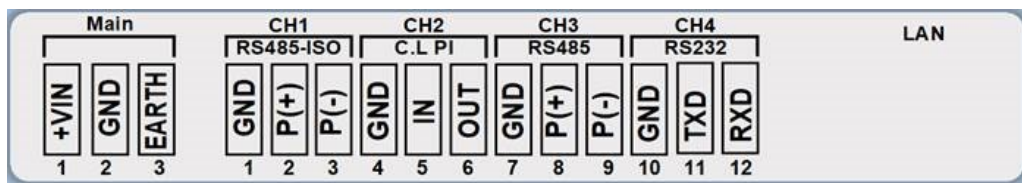


Figure 2-6 - Dispenser Interface Configuration

# Section 3 Preliminary Considerations

## 3.1. General

This section describes preliminary considerations when preparing to install the nWGT. Before performing the installation, read this section and verify that all considerations described in this section have been addressed.

### Manufacturer and Limitation of Liability Disclaimer:



Users (all parties involved in designing, preparing, or implementing the nWGT installation process, and excludes Orpak and any party representing Orpak) are responsible for following all guidelines and regulations regarding the installation conditions, including those which apply to other products installed in the gas station (whether Orpak's or not). Installation of the nWGT in/on a dispenser is prohibited unless the dispenser's manufacturer written permission to do so was received in advance.

In no event shall Orpak be liable for any damage caused to the pump, dispenser, or any internal components due to improper compliance with this manual or the manual of any related products. Any direct, indirect, or incidental damages are the sole responsibility of the user.

## 3.2. Precautions & Safety Information

The following details precautions and safety information associated with this product:

### Power Source

The power source should be limited to max current breaking capacity of 50Amax.

*La source d'alimentation doit être limitée à une capacité maximale de coupure de courant de 50Amax.*

### Protection

The nWGT does not provide protection from lighting or telecommunication networks.

*Le nWGT ne protège pas des réseaux d'éclairage ou de télécommunication.*

### Temperature

The maximum ambient temperature of the unit is 80°C (50°C for units with internal power supply).

*La valeur maximale de Température ambiante de l'unité est 80 degrés (50 degrés pour les unités avec alimentation interne).*

### Battery Replacement

The certified battery must be provided by Orpak and replaced by service personnel only.

*La batterie certifiée doit être fournie par Orpak et remplacée uniquement par le personnel de service.*

### 3.3. Compliance

The following must be followed when installing nWGT.

- » Install the nWGT in a non-hazardous location
- » The installation procedure must meet all safety measures in accordance with local and state regulations

### 3.4. Drilling

The following drilling instruction must be followed when installing nWGT.

- » In case any drilling is needed on-site, it must be performed away from hazardous locations and comply with all local and safety regulations

### 3.5. Location Guidelines

The recommended location to install the nWGT is on the station's support pillars, 3-4 meters above the ground so that the signal cannot be obstructed by dispensers or large vehicles. Installing nWGT units on the canopy is not recommended, as that height would make unit maintenance more difficult.

- » **Reflections & blocking:** Maintain a clear line of sight between the nWGT units and the C/MWGT
- » **Max coverage/range:** Maximum distance between units (between C/MWGT and the closest nWGT and between each nWGT unit) should not exceed 20m
- » **Orientation:** nWGT units must be oriented such that their signals reach the C/MWGT
- » **Optional signal paths:** If some nWGTs can't directly communicate with the C/MWGT, additional units can function as repeaters to allow communication between the nWGT and the C/MWGT
  - » RF signals may be relayed via up to three devices in order to reach the C/MWGT
- » **Dispenser type (material):** Different materials can affect how signals are conveyed and reflected, note the dispenser materials when designing the installation (relevant only for in-dispenser installations)
- » **Station topology:** Design the wireless mesh to account for station topology

# Section 4 Installation

## 4.1. General

The following provides instructions for installing the nWGT unit.

There are two different installation units:

- » [Compact Unit Installation](#)
- » [White Box Unit Installation](#)

## 4.2. Compact Unit Installation

The following provides instructions for installing the Compact nWGT Unit.

### 4.2.1. Installation Instructions

To install Compact nWGT Unit, proceed as follows:

1. Remove the nWGT front panel
2. Remove the cable entry knockout plates:
  - » For the DC unit, remove two panels in left side (one for LAN and one for Power cables)
  - » For the AC unit remove one panel in the right side for the LAN cable (see [Figure 4-1](#)):



Figure 4-1 - Knockout Plates

- a. Using a step drill bit, drill a 22.5 mm / 0.885" hole in diameter for the large knockout plate and a 12.5 mm / 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, inserting four screws in the mounting openings located at the four corners of the unit (see [Figure 4-2](#))



**Warning:** This is the only method to secure the unit. Installing in any other way causes damage to the unit's sealing.

5. Connect power supply:
  - » **For units equipped with internal P/S:** Connect AC P/S to the AC terminal
  - » **For units without internal 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 a 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. Reattach the front panel and secure it using the four coarse thread plastic screws

#### 4.2.2. Outdoor Housing Dimensions

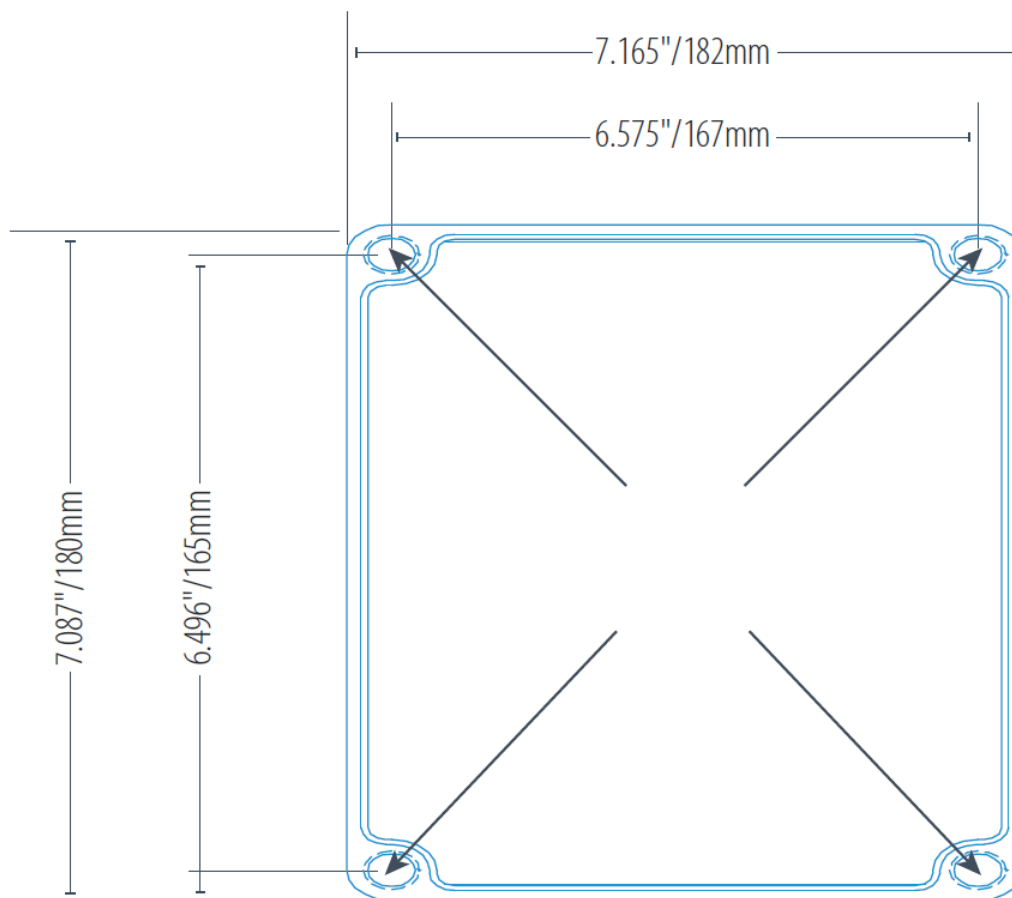


Figure 4-2 - Compact Outdoor Housing Dimensions



**Note:** The arrows in the illustration above indicate the openings for the mounting screws.



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

**Notes:**



- » Thread the cables through UL listed glands or appropriate metal tubing.
- » The large opening can host a gland for cables of a diameter between 5.8 mm / 0.230" to 13.9 mm / 0.530", while the small openings are suitable for a diameter between 2.9 mm / 0.114" to 6.4 mm / 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).

### 4.3. White Box Unit Installation

The following provides instructions for installing the nWGT White Box Unit.

### 4.3.1. Installation Kit

Orpak provides an installation kit for the nWGT in two different configurations, bracket installation and wall mounted.

#### 4.3.1.1. Bracket Installation Kit

For Bracket installations, the following kit is provided (see [Table 4-1](#), [Figure 4-3](#))

Table 4-1 - Bracket Installation Kit

Parameter	P/N	Quantity
Mounting Bracket	814984800	1
Screw, M4x20 + SPRING + FLAT, SST	814984800	2
Screw with seal washer	N/A	2



Figure 4-3 - Mounting Bracket

#### 4.3.1.2. Wall Mounting Installation Kit

For Wall Mounting installations, the following kit is provided (see [Table 4-2](#), [Figure 4-4](#), [Figure 4-5](#)):

Table 4-2 - Wall Installation Kit

Parameter	P/N	Quantity
Rubber Seal	814927400	1
Mounting SEMS Screws	815226500	4

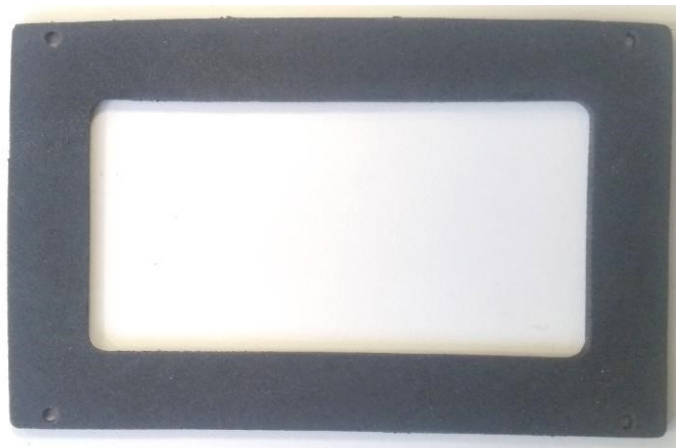


Figure 4-4 - Rubber Seal



Figure 4-5 - Mounting Screws

### 4.3.2. Pre-Installation Steps

1. Remove the four M4x16 screws from the rear panel and keep for reuse
2. Remove the front panel
3. Connect the board to the CN8 and CN7 connectors in the PCB (see [Figure 4-6](#), [Figure 4-7](#)):



Figure 4-6 - Optional Dispenser Interface Board Connectors





Figure 4-7 - Current Loop Dispenser Interface Connected to nWGT Unit

4. Connect the harness to the required connector
5. Replace the front panel
6. Secure the front panel to the rear panel using the previously removed screws

### 4.3.3. Wall-Mounted Bracket Installation

This section describes how to install the nWGT unit on a solid wall such as a canopy support column. Solid wall installation is Orpak's recommended configuration. In cases where wall mounted bracket installation is not possible, the nWGT may be installed on top, on the side, or inside of a dispenser if all conditions are complied with. In-dispenser and On-dispenser installations are strongly not recommended by Orpak.

To install the nWGT on a wall with a mounting bracket, proceed as follows:

1. Connect the harness to the required connector (see [Figure 4-8](#)):



*Figure 4-8 - Bracket Attached for Wall-Mounting*

2. Secure the bracket to the wall using two M4-20 screws, flat washers, and dibbles (see [Figure 4-9](#)):



*Figure 4-9 - Wall-Mounted nWGT with Bracket Secured to Wall*

3. Connect the unit to power supply
4. Connect the unit to the dispenser heads and/or peripherals

The completed nWGT solid wall-mounted installation appears as follows (see [Figure 4-10](#), [Figure 4-11](#)):



*Figure 4-10 - nWGT System Deployed at a Station (1)*



*Figure 4-11 - nWGT System Deployed at a Station (2)*

# Appendix A Installation In-Dispenser

## A.1. General

This section describes how to install the nWGT unit inside of a dispenser.

### MANUFACTURER AND LIMITATION OF LIABILITY DISCLAIMER:



Users (all parties involved in designing, preparing, or implementing the nWGT installation process, and excludes Orpak and any party representing Orpak) are responsible for following all guidelines and regulations regarding the installation conditions, including those which apply to other products installed in the gas station (whether Orpak's or not). Installation of the nWGT in/on a dispenser is prohibited unless the dispenser's manufacturer written permission to do so was received in advance.

In no event shall Orpak be liable for any damage caused to the pump, dispenser, or any internal components due to improper compliance with this manual or the manual of any related products. Any direct, indirect, or incidental damages are the sole responsibility of the user.



**CAUTION:** Installation inside of a dispenser is not recommended by Orpak, and must be performed in compliance with all standards, precautions, and guidelines detailed Preliminary Considerations.

## A.2. In-Dispenser Installation Guidelines

For in-dispenser nWGT installations, adhere to the following guidelines:

- » When installing the nWGT in a dispenser, follow all relevant guidelines from the dispenser manufacturer. Guidelines may vary according to dispenser model and manufacturer.
- » Install the nWGT in a vacant area within the dispenser head; make sure it is at least 25x25cm
- » In cases where the nWGT functions as the Master nWGT, it should be connected to the FCC controller using shielded S-CAT5E LAN or an RS485 cable. Install the master nWGT as close as possible to the FCC controller
- » Verify that the dispenser head enclosure is not made completely of metal as it will block the RF transmissions
- » For ease of maintenance, it is recommended not to install the nWGT higher than two meters from the ground. However, the higher will be the unit; the better will be the RF coverage
- » The installation procedures must meet all safety measures according to local state regulations
- » Locate a 110-240 VAC power source for the nWGT's power supply
- » Prior to installation procedures turn off all dispenser head (CPU) power sources
- » UL listed nWGT boxes are provided with provisions for conduit connection allowing using UL approved tubes for power lines. The conduits grips/fittings are not sufficient for this purpose
- » For non-UL nWGT, couplers are provided for the power and data holes

- » Use a pneumatic (non-electric) drill for all necessary drilling
- » If no pneumatic drill is available, remove the section of the dispenser where the nWGT will be installed, and perform the installation offsite in a safe location away from fire hazards

### A.3. In-Dispenser Installation

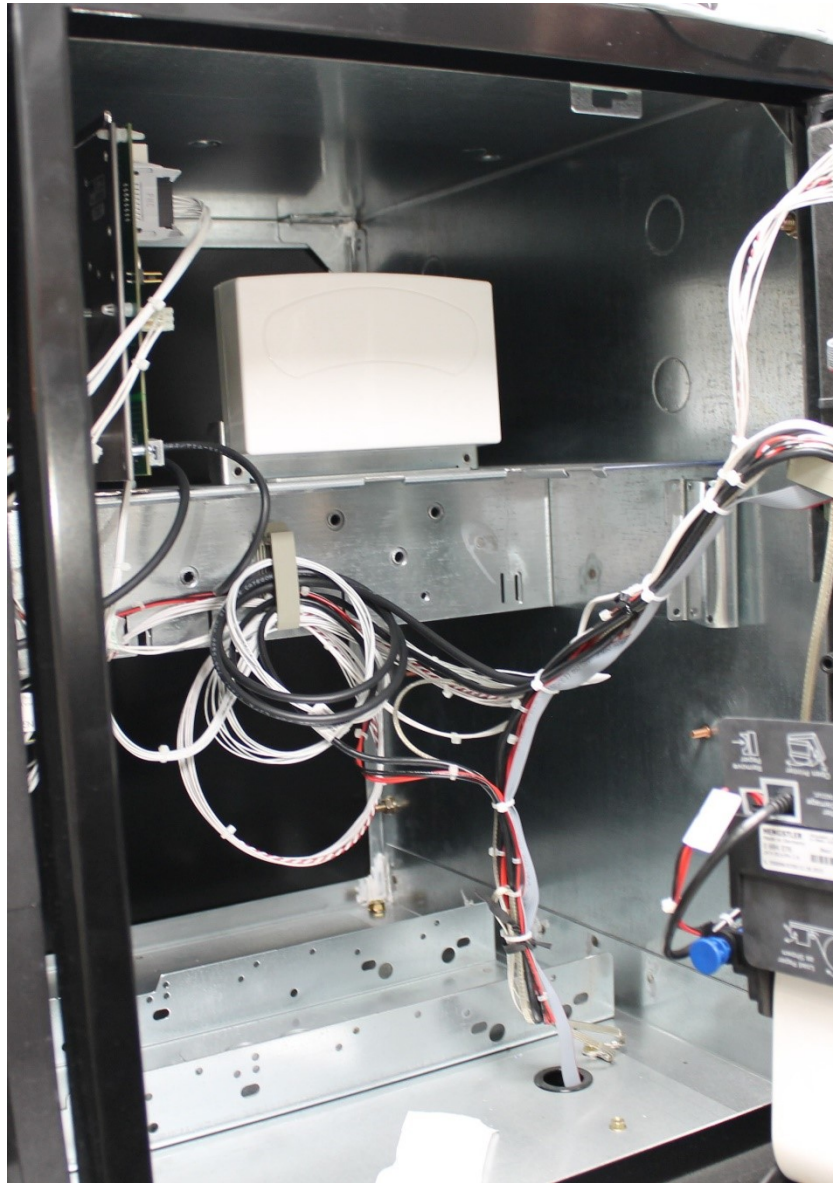


**CAUTION:** Verify that the dispenser head enclosure is not made completely of metal as it will block the RF transmissions. Ensure that there exists a gap of non-metal material to allow transmissions to reach outside the dispenser head.

The nWGT unit is installed inside a dispenser with a bracket, and it can be installed in either a vertical position (for bracket installation details, [Top-Mounted Bracket Installation](#)) or a horizontal position (for bracket installation details, see section [Wall-Mounted Bracket Installation](#)). To install the nWGT inside of a dispenser, proceed as follows:



1. Affix the nWGT to a smooth surface (see [Figure A-1](#)):



*Figure A-1 - nWGT Unit Inside Dispenser*

2. Connect a 15-32 VDC (stabilized), 1000 mA (maximum) AC adaptor to the nWGT
3. For the master nWGT, connect a shielded S-CAT5E cable using a RJ-45 connector, or connect an RS-485 cable to the RS-485 connector
4. Activate the main power source – 110-240 VAC
5. Close the dispenser head cover

# Appendix B Installation On-Dispenser

## B.1. General

This section describes how to install the nWGT unit on top of or on the side of a dispenser.

### MANUFACTURER AND LIMITATION OF LIABILITY DISCLAIMER:



Users (all parties involved in designing, preparing, or implementing the nWGT installation process, and excludes Orpak' and any party representing Orpak) are responsible for following all guidelines and regulations regarding the installation conditions, including those which apply to other products installed in the gas station (whether Orpak's or not). Installation of the nWGT in/on a dispenser is prohibited unless the dispenser's manufacturer written permission to do so was received in advance.

In no event shall Orpak be liable for any damage caused to the pump, dispenser, or any internal components due to improper compliance with this manual or the manual of any related products. Any direct, indirect, or incidental damages are the sole responsibility of the user.



**CAUTION:** Installation inside of a dispenser is not recommended by Orpak', and must be performed in compliance with all standards, precautions, and guidelines detailed Preliminary Considerations.

## B.2. In-Dispenser Installation Guidelines

- » When installing the nWGT on a dispenser, follow all relevant guidelines from the dispenser manufacturer. Guidelines may vary according to dispenser model and manufacturer
- » Use a pneumatic (non-electric) drill for all necessary drilling
- » If no pneumatic drill is available, remove the section of the dispenser where the nWGT will be installed, and perform the installation offsite in a safe location away from fire hazards

### B.2.1. Damage Prevention

If the installation requires drilling a hole in the dispenser, use a dedicated protective conduit for each cable bundle to ensure that the installation is completely watertight (see section Cable Gland and Conduit Installation). This will prevent damage to the dispenser and its internal components from water or other external elements.

1. Install an explosion proof gland in the drilled hole
2. Use protective tubing to cover the cable bundle from the nWGT to the dispenser unit



**Note:** If possible within model/manufacturer guidelines, drill a hole in the side of the dispenser rather than on top. When connecting between the nWGT and the dispenser, position the cable tubing such that any water from rain or condensation will flow towards the ground and not towards the opening in the dispenser.

3. Use watertight sealing washers (neo bonded galvanized washers) to install the nWGT on the dispenser (see [Figure B-1](#)):



*Figure B-1 - Sealing Washer Example*

### **B.3. Top-Mounted Bracket Installation**

To install the nWGT on top of a dispenser in an upright position using a bracket, proceed as follows:



1. Attach the metal bracket to the nWGT unit using two M4-20 screws (see [Figure B-2](#)):



*Figure B-2 - Bracket Attached for Installation for Top Mounting*

2. Secure the bracket to the dispenser using two M4-20 screws (see [Figure B-3](#)):

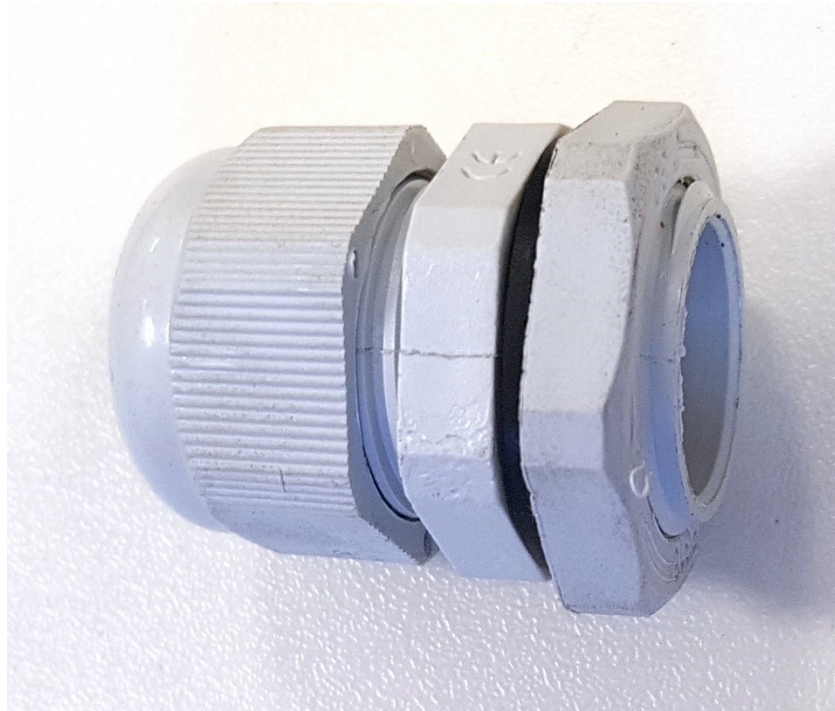


*Figure B-3 - Top-Mounted nWGT with Bracket Secured to Dispenser*

3. Connect the unit to power supply
4. Connect the unit to the dispenser heads and/or peripherals

### B.3.1. Cable Gland and Conduit Installation

When mounting the nWGT on top of a dispenser, insert a cable gland in the hole drilled into the dispenser for the cables (see [Figure B-4](#)) and use a PG Flex Tube protective conduit to cover the cable bundle. This protects the internal components in the dispenser from water damage and other external factors.



*Figure B-4 - Cable Gland*

To install a cable gland, proceed as follows:

1. Drill a 22.5mm diameter hole for the gland (PG-16 / LTF16) (see [Figure B-5](#)):

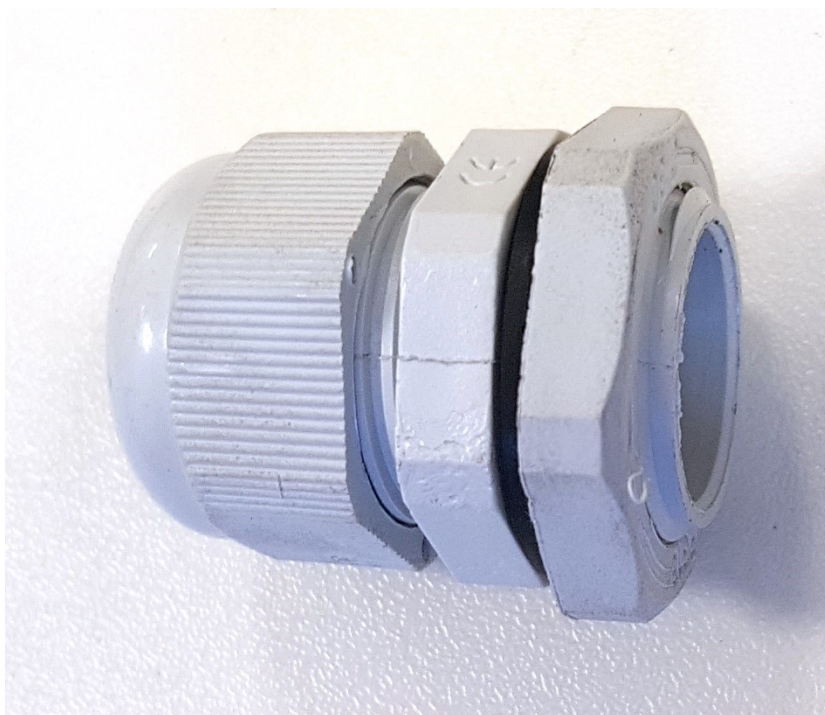


Figure B-5 - Cable Gland Hole

- » For other cable gland sizes, refer to the following dimension table (see [Figure B-6](#)):

CABLE DIA. RANGE				PART NO.		DESCRIPTION	PART DIMENSIONS									
Min. Dia.		Max. Dia.		Black	Gray		A Clearance Hole		B Max. O.A. Length		C Thread Length		D Wrenching Nut Thk.		E Wrenching Flats	
in.	mm.	in.	mm.				in.	mm.	in.	mm.	in.	mm.	in.	mm.	in.	mm.
.064	1,6	.210	5,3	3444	3445	RLTF 7										
.114	2,9	.250	6,4	3207	3208	LTF 7	.492	12,5	1.17	29,7	.33	8,4	.20	5,1	.59	15,0
.069	1,8	.187	4,7	3446	3447	RLTF 9										
.181	4,6	.312	7,9	3210	3211	LTF 9	.599	15,2	1.30	33,0	.34	8,6	.20	5,1	.75	19,1
.069	1,8	.250	6,6	3448	3449	RLTF 11										
.230	5,8	.395	10,0	3213	3214	LTF 11	.733	18,6	1.46	37,1	.39	9,9	.20	5,1	.86	21,8
.170	4,3	.450	11,9	3216	3217	* LTF 13.5	.804	20,4	1.53	38,9	.41	10,4	.20	5,1	.95	24,1
.230	5,8	.530	13,9	3219	3220	* LTF 16	.886	22,5	1.66	42,2	.45	11,4	.23	5,8	1.05	26,7
.250	6,4	.490	12,3	3454	3455	* RLTF 21	1.115	28,3	1.87	47,5	.52	13,2	.23	5,8	1.30	33,0
.450	11,4	.705	18,0	3222	3223	* LTF 21										
.590	15,0	.990	25,4	3225	3226	* LTF 29	1.470	37,3	2.23	56,6	.59	15,0	.28	7,1	1.66	42,2
.787	20,0	1.020	26,0	M3206	M3205	* RLTCG 36	1.850	47,0	2.52	64,0	.51	12,9	.32	8,1	2.09	53,1
.875	22,0	1.260	32,0	M3204	M3203	* LTCG 36										
1.230	31,2	1.560	39,6	M3212	M3209	LTCG 42	2.130	54,1	2.50	63,5	.45	11,4	.36	9,1	2.48	63,0
1.000	25,4	1.240	31,5	M3218	M3215	RLTCG 42										
1.450	36,8	1.730	44,0	M3281	M3282	LTCG 48	2.340	59,4	2.63	66,7	.49	12,4	.42	10,7	2.75	69,9
1.160	29,5	1.350	34,3	M3283	M3284	RLTCG 48										

Figure B-6 - Cable Gland Dimensions

- » Best practice: Use a conic drill (see [Figure B-7](#)) or a hole punch (see [Figure B-8](#)) to create the hole for the cable gland



*Figure B-7 - Conic Drill*



*Figure B-8 - Hole Punch*

2. Install the gland body and the seal in the hole (see [Figure B-9](#)):



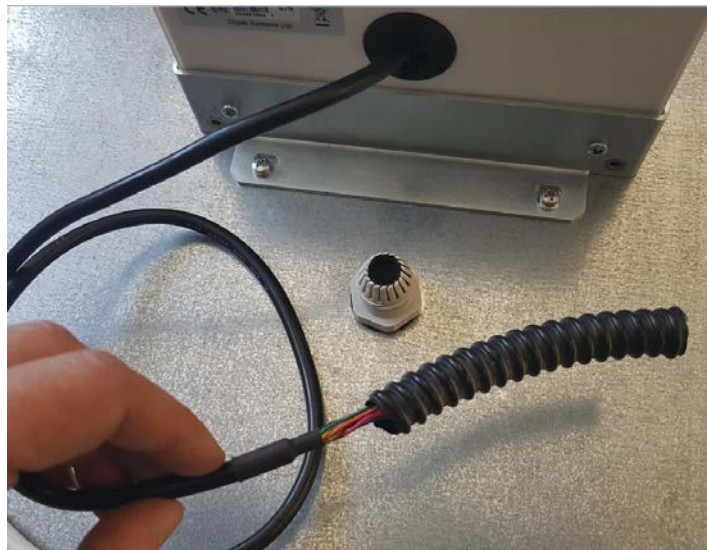
*Figure B-9 - Cable Gland Components*

3. On the side of the gland inside the dispenser, use the nut to secure the gland (see [Figure B-10](#)):



*Figure B-10 - Secure Cable Gland with Nut*

4. On the side of the gland outside of the dispenser, route the cable harness through the conduit and the cup (see [Figure B-11](#), [Figure B-12](#)):



*Figure B-11 - Cable Harness Routed Through Protective Conduit*





Figure B-12 - Cable Harness Routed Through Gland Cup

5. Rout the cable harness through the gland body to the inside of the dispenser (see [Figure B-13](#)):

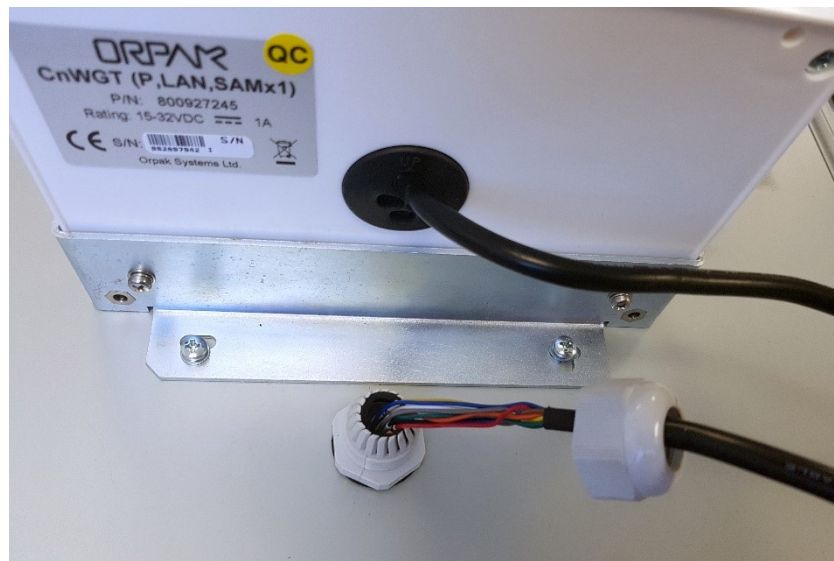


Figure B-13 - Cable Harness Routed Through Gland Body

6. Screw the cap on to the gland body by hand (see [Figure B-14](#)):



*Figure B-14 - Closing the Gland Cup*

7. Use an open-end key to tighten the cap (see [Figure B-15](#)):



*Figure B-15 - Tightening the Gland Cup*



8. The final installation appears as follows (see [Figure B-16](#)):



*Figure B-16 - Cable Gland Completed Installation*

## B.4. Top/Side-Mounted Flat Installation

To install the nWGT lying flat against the top/side of a dispenser without a bracket, proceed as follows:

1. Drill a 22.5mm hole in the surface and route the cable bundle through the hole, and use the rubber seal to determine where to drill holes for the four screws (see [Figure B-17](#)):



*Figure B-17 - Flat Installation - Drilling placement*



**Note:** The rubber seal is curved on one side to match the curved shape of the top of the nWGT unit. Make sure that the curved sides are aligned with each other.

2. Use the screws to secure the back panel of the nWGT to the surface, with the rubber seal in between the nWGT unit and the installation surface (see [Figure B-18](#)):



*Figure B-18 - Flat Top/Side-Mounted Installation - Securing the nWGT*

3. The final installation appears as follows (see [Figure B-19](#)):



*Figure B-19 - Top/Side-Mounted Flat Installation Completed*



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