ITS-950 ParQSense Base station Installation Manual

Document number	2018-820-002-ITS-950I
Filename	Installation Manual ITS-950 ParQSense Base Station
Revision number	3.0
Date	2018 July 11
Edited by	BB
Checked by	
Approved by	

Rev.	Description
01 – 01.02.2018	First release version
02 – 20.06.2018	Revised with FCC declarations
03 – 11.07.2018	Revised with ISED declarations

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1 INTRODUCTION

1.1 Scope and purpose

The scope of this document is to provide specifications for the installation and deployment of Q-Free ITS-950 ParQSense Base Station.
For clarification, the following is outside the scope of this document:

- Installation of the ITS-420 ParQSense Standard Outdoor Sensors
- Connectivity of the ITS-420 ParQSense Standard Outdoor Sensors with the ITS-950 ParQSense Base Station
- Site survey for determining installation location of
- Connectivity and functionality testing of the ITS-950 ParQSense Base Station

1.2 Purpose

The purpose of this document is to describe the installation procedure for the ITS-950 Base ParQSense Station at a given site, including preparation and hardware unit installation.

1.3 Document overview

This document contains the following section:

- Section 1, this section, introducing the document.
- Section 2 describes the preparation before the installation on site
- Section 3 describes the mechanical design
- Section 4 describes the installation
- Section 5 describes the installation validation
- Section 6 includes FCC declarations
- Section 7 includes ISED declarations

1.4 Listing of Figures

2 PREPARATION OF THE INSTALLATION

Q-Free recommends the procedure described in this section for preparation of the installation.
There are tasks that must be prepared and ready before the onsite installation work can be initiated. This is important to economize time when the equipment is to be installed at a “live” site. All parts, equipment, and cabling must be procured and available on-site prior to arrival on-site. All local laws and regulations must be followed.

2.1 Overview

The ITS-950 ParQSense Base Station is part of the latest development in on/off-street parking monitoring from Q-Free. Harnessing more than thirty years of experience in design of microwave radios, makes this development unique in the market. The ITS-950 ParQSense Base Station communicates to the ITS-420 ParQSense Standard Outdoor Sensors which combine multiple sensing technologies ensuring maximum detection accuracy. Typical applications are on/off-street monitoring for public, private lots/spaces, Smart City Initiatives, etc.
The Q-Free ITS-950 ParQSense Base Station is of slimline design to be installed onto lighting poles, building roof-tops/sides, etc. The installation process is easy and expected to take about 30 minutes for each ITS-950 ParQSense Base Station.
Connection to the ParQSense Software Engine is easy with:

- Wired Ethernet
- Wireless via 3G cellular connection (project specific SIM card required)

3 MECHANICAL SPECIFICATIONS

The physical dimensions of the Q-Free ITS-950 ParQSense Base Station are:

- Length: 350 mm/13.8 inch
- Depth: 300 mm/ 11.8 inch
- Height: 75 mm/3 inches
- Weight: 2,5 kg/ 5.5 lbs.

Figure 1 ITS-950 Base Station

3.1 System communication

The ITS-950 ParQSense Base Station communicates with the ITS-420 Standard ParQSense Outdoor Sensors via radio link.

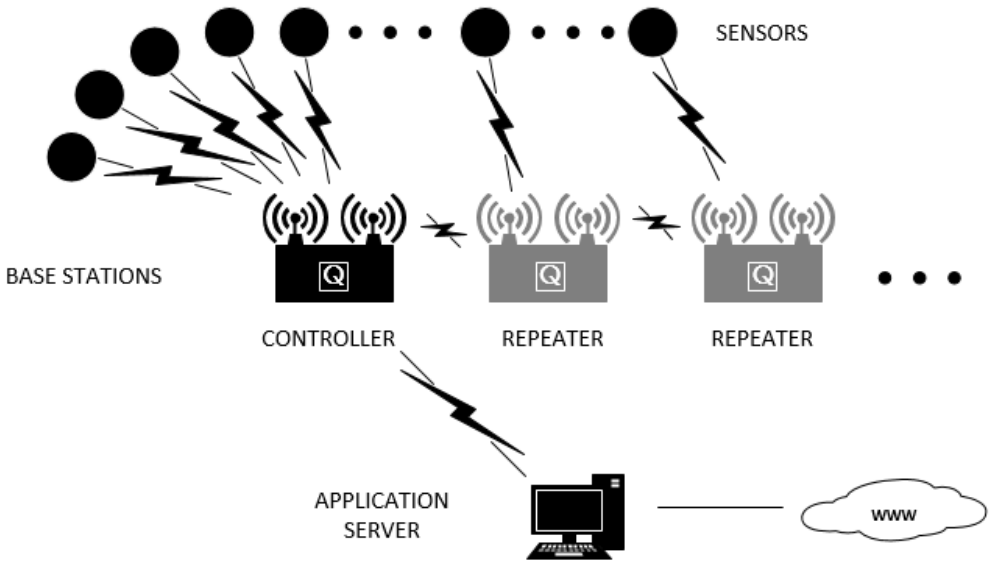

Figure 2 Communication overview ITS-420 ParQSense Sensors

3.2 Cabling pathways and conduit

The main communication method between the ITS-950 ParQSense Base Station and the backend software is the wired Ethernet. Prior to installation on site the following must be complete:

- Source and provide PoE 100Base-TX PD Max 13W device for powering the ITS-950 ParQSense Base Station over Ethernet cable.
- Install PoE device within vicinity of the ITS-950 ParQSense Base Station installation location.
- Provide WAN and establish communication with ISP
- Provide and install outdoor rated Cat5 cable and pathway from WAN location to PoE device.
- Provide and install outdoor rated Cat5 cable and pathway from PoE device to proposed ITS-950 ParQSense Base Station location.

The ITS-950 ParQSense Base Stations may also be connected via cellular communication. The ITS-950 ParQSense Base Stations are equipped with a SIM card slot for mobile SIM card insertion. Details on this communication method will be provided in the next revision to this document.

3.3 Mounting location

The ITS-950 ParQSense Base Station can be pole mounted or wall mounted. Prior to going on site to install the ITS-950 ParQSense Base Station it should be determined where the base station should be installed based on a site survey and direction by a Q-Free representative. In addition, the following should also be complete prior to ITS-950 ParQSense Base Station installation:

- Verify proposed location has the capability to mount the ITS-950 ParQSense Base Station

- Verify cable pathways and lengths of cables to ITS-950 ParQSense Base Station location.
- Attaching the pole mount bracket to the ITS-950 ParQSense Base Station
- Mounting the pole mount bracket with ITS-950 ParQSense Base Station to the chosen pole location
- Connecting the POE cable for power and communication.

3.4 Back end system communication

The ITS-950 ParQSense Base Station will connect to the provided hard wired network connection. The following should be complete prior to installing the Base station on site:

- Provide and verify network connectivity at the PoE device location and at the proposed ITS-950 ParQSense Base Station installation location.

The ITS-950 ParQSense Base Station can optionally use cellular for connection and communication to the back end. If this communication method is specified for project the following should be complete prior to installing the Base station on site:

- Verify cellular provider network has acceptable signal in the proposed ITS-950 ParQSense Base Station installation location.

Details will be provided the next revision to this document.

3.5 Safety guidelines

Always wear proper eye protection when required by local regulations. Always read and follow all instructions and safety precautions provided by manufacturer of all equipment. Verify safe procedures with local authorities. Always be aware and follow safe installation procedures on “live” roads. Check local licensing and documentation requirements prior to any installation. Follow all applicable local laws and regulations.

4 INSTALLATION OF THE EQUIPMENT

The following section describes the installation steps for installing the ITS-950 ParQSense Base Station.

4.1 Pole Mount

The ITS-950 ParQSense Base Station will be provided with a pole mount kit. This can be used for mounting the ITS-950 ParQSense Base Station to the proposed pole location.

Figure 3 Pole Mount Kit

1. Remove ITS-950 ParQSense Base Station back plate from unit.
2. Attach pole mount kit to back panel
3. Mark mounting holes of back plate.
4. Drill holes. Insert anchors.
5. Attach back plate using hardware to installed anchors.
6. Reattach ITS-950 ParQSense Base Station to back plate.
7. Plug in the outdoor rated Cat5 cables using an outdoor rated connected to the ITS-950 ParQSense Base Station
8. Check for connectivity and activity on the Status Lights on the bottom of the unit near the Cat5 connection.

4.2 Wall mount

The ITS-950 ParQSense Base Station can also be wall mounted using the provided wall mounting back plate.

1. Remove ITS-950 ParQSense Base Station back plate from unit.
2. Align and measure location of back plate.
3. Mark mounting holes of back plate.
4. Drill holes. Insert anchors.

5. Attach back plate using hardware to installed anchors.
6. Reattach ITS-950 ParQSense Base Station to back plate.
7. Plug in the outdoor rated Cat5 cables using an outdoor rated connected to the ITS-950 ParQSense Base Station
8. Check for connectivity and activity on the Status Lights on the bottom of the unit near the Cat5 connection.

4.3 Status lights

Indicator	Appearance	State
Power	Red ON	Valid power level on secondary side
PHY connection status	Green ON	External network wiring OK
Network communication status	Red flash	Cellular activity
	Green flash	Ethernet activity
	Blue flash	Bluetooth activity
Device health status	Blue flash	Bootloader is running
	Yellow ON	Hardware is initialized
	Yellow flash (0.5 second)	Firmware is being initialized
	Yellow flash (1 second)	Firmware is running normally
	Alternating red/green flash	Ethernet driver failed to initialize

5 INSTALLATION VALIDATION

5.1 Testing

For testing of the ITS-420 ParQSense Standard Outdoor Sensors communication to the ITS-950 ParQSense Base Station, refer to the ITS-420/421 ParQSense Outdoor Sensor Installation Manual.

Any necessary adjustments to the default settings of the ITS-950 ParQSense Base Station can be made in the ParQSense backend software system.

6 FCC DECLARATIONS

6.1 Modification Statement (§15.21)

Changes or modifications to the equipment not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

6.2 Compliance Statement (§15.19)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

6.3 RF exposure statement, for outdoor Mobile device (§2.1091)

To comply with FCC/IC RF exposure limits for general population / uncontrolled exposure, the antenna(s) used for this transmitter must be installed on outdoor permanent structures to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

6.4 FCC Class A Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This equipment is not intended for residentiual use and shall only to be sold to professional customers.

6.5 Modular devices

This device contains:

FCC ID: XPY1CGM5NNN
FCC ID: T7VPAN10

7 ISED DECLARATIONS

7.1 Interference Statement (RSS-GEN, Section 8.4):

This Device complies with Industry Canada License-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage ; (2) l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

7.2 Modular devices

This device contains/content:

IC:8595A-1CGM5NNN
IC:216Q-EBMU

7.3 Antenna information to user (RSS-Gen Issue 5 section 6.8)

This radio transmitter 3610A-950A has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Le présent émetteur radio 3610A-950A a été approuvé par Innovation, Sciences et Développement économique Canada pour fonctionner avec les types d'antenne énumérés ci dessous et ayant un gain admissible maximal. Les types d'antenne non inclus dans cette liste, et dont le gain est supérieur au gain maximal indiqué pour tout type figurant sur la liste, sont strictement interdits pour l'exploitation de l'émetteur.

Approved antennas:

Antenna	Brand	Type	Gain
1	Laird	FG9023	5,14 dBi

This device and it's antennas(s) must not be co-located or operating in conjunction with any other antenna or transmitter except inaccordance with IC multi-transmitter product procedures.

Cet appareil et son antenne (s) ne doit pas être co-localisésou fonctionnement en association avec une autre antenne outransmetteur.

7.1 RF exposure statement, for outdoor Mobile device)

This equipment complies with IC RSS-102 radiation exposurelimits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Cet équipement est conforme aux limites d'exposition auxrayonnements IC établies pour un environnement non contrôlé.Cet équipement doit être installé et utilisé avec un minimum de 20cm de distance entre la source de rayonnement et votre corps.