



Weir Base Station User Manual



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Overview

The Weir Base Station is the component of the Synertrex hose monitoring system responsible for receiving the sample data from the Sensor Nodes, and passing that on to the Gateway via a RS485 interface. The Gateway passes the data on to the Synertrex cloud dashboard, and also receives configuration updates for the Sensor Nodes from the Cloud Dashboard. The Base Station is powered from a 12V DC source capable of supplying up to 1.5A peak current.



Figure 1 – Base Station IO Options

The microcontroller interfaces with an ultra-low power LoRa radio operating in the 915MHz ISM band, specifically 918MHz – 926MHz, with a 500kHz channel bandwidth. The radio outputs +14dBm and the unit is supplied with a straight RF whip-style antenna 900MHz ~ 935MHz with 1.3dBi antenna gain. The Base Station receives transmissions from the Sensor Nodes, and can accommodate up to 200 nodes, assuming the maximum transmission rate is not exceeded (max once per hour per Sensor Node).

What is in the box?

The Weir Base Station is delivered with:

1. Base Station unit
2. The 1.3dBi straight whip antenna
3. Mounting clamp (optional accessory)
4. User manual



Figure 2 – Base Station Mounting Clamp

Setup and Configuration

The solution has been designed for minimal in-field touch points and effort required for deployment and configuration.

Physical Installation

The Base Station body is secured using the optional mounting clamp or equivalent mechanism. The Base Station is connected to the Gateway via a differential RS485 connection. The interface cable is provided by the customer, based on specification provided.

Installation Notice: Ensure that the Base Station is installed on a permanent structure so that a minimum separation distance of 20cm is maintained at all times between the antenna and all persons.



Figure 3 - Optional Solar Kit

Power On / Off

The Base Station is powered from an external 12V DC source (not provided). A solar power station can optionally be provided for installations where DC power is not available.

Configuration

All relevant configuration settings are made in the factory prior to shipment, and there are no field configurable parameters.

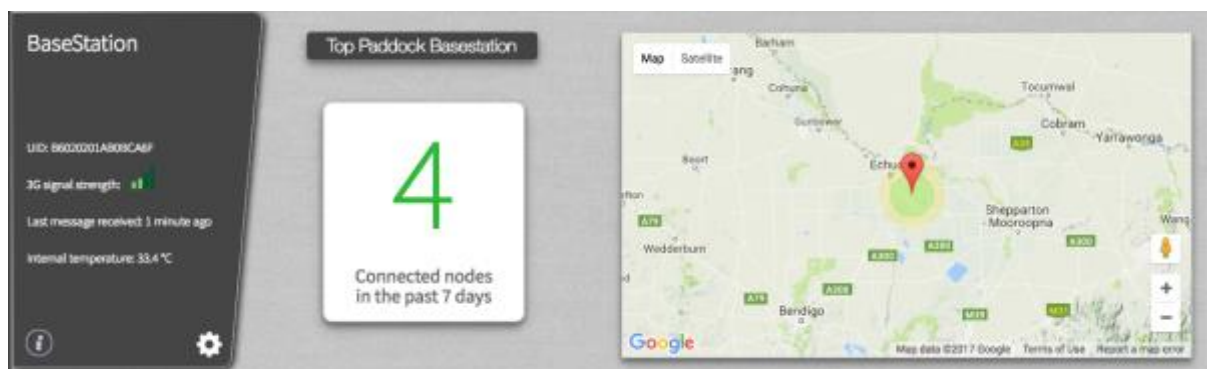


Figure 4 – Base Station Status Dashboard

Specifications

Capability	value	Comment
Maximum # of nodes	200	Reporting once an hour
Radio range (direct line of sight)	15 km 7.5 km	With optimised antenna on node Standard antennae
Power Supply Rating	12V, 1.5A peak	External DC power supply required (not supplied)
Unit mass	400 g	Base only excluding cable and bracket
Ingress protection rating	Designed for IP65	
IK rating	Designed for IK07	IK07 for cylindrical enclosure only
Temperature rating	-20 to +50°C	
Metrics reported (Standard Wear Indicator)	Hose wear status Battery status Internal temperature Signal strength Hose ID	
Regions supported	USA, Canada, Australia	Certified for global regional support.

Figure 5 - System Specifications

Compliance Statement – FCC and ISED (English)

This device complies with Part 15 of the FCC Rules and Innovation, Science and Economic Development (ISED) Canada's licence-exempt RSS standards. 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.*

Note: This equipment has been tested and found to comply with the limits for a Class B 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 into an outlet on a circuit different from that to which the receiver is connected.*
- Consult the dealer or an experienced radio/TV technician for help.*

Compliance Statement – FCC and ISED (French)

Cet appareil est conforme avec Partie 15 des règlements de la FCC et Innovation, Sciences et Développement économique Canada RSS standard exempts de licence(s).

Son utilisation est soumise à Les deux conditions suivantes:

- 1. cet appareil ne peut pas provoquer d'interférences et*
- 2. cet appareil doit accepter Toute interférence, y compris les interférences qui peuvent causer un mauvais fonctionnement du dispositif.*

RF Exposure Statement

To comply with FCC/IC RF exposure limits for general population / uncontrolled exposure, the antenna 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.

Modification Warning

Any changes or modifications not expressly approved by LX, or any of its subsidiaries, or Weir Minerals, or any of its subsidiaries, could void the user's authority to operate this equipment.