

**Document No.**  
**Revision**            1.3

# **PBS Base station BS91/103000**

***Release Date: 17/11/2010***  
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***Distribution (Check all appropriate):***

Precyse Only  Project Team Only  Customer and Supplier  
c:\hardwarews\certification documents\pbs915\bs91510300 user manual.docx

## **Revision Record**

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Rev.	Effective Date	Description
1.0	17/11/2010	1 <sup>st</sup> release
1.1		Changed from EIRP to ERP
1.2	4/6/2012	Added Regulatory disclaimer
1.3	28/10/2013	Updated modulation: 2FSK instead of GFSK, update FCC ID and label.

### Reference documents

#	Doc #	Description
1		

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## Regulatory Information/disclaimers

Installation and use of this Wireless Radio device must be in strict accordance with the instructions included in the user documentation provided with the product. Any changes or modifications made to this device that are not expressly approved by the manufacturer may void the user's authority to operate the equipment. The Manufacturer is not responsible for any radio or television interference caused by unauthorized modification of this device, of the substitution or attachment. Manufacturer and its authorized resellers or distributors will assume no liability for any damage or violation of government regulations arising from failing to comply with these guidelines.

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.

Instructions concerning human exposure to radio frequency electromagnetic fields:

To comply with FCC Section 1.307 (b) (1) for human exposure to radio frequency electromagnetic fields, implement the following instruction:

A distance of at least 20cm. between the equipment and all persons should be maintained during the operation of the equipment. The minimum distance will be determined after testing has been completed.

## The FCC Wants You to Know

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:

- a) Reorient or relocate the receiving antenna.
- b) Increase the separation between the equipment and receiver.
- c) Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- d) Consult the dealer or an experienced radio/TV technician.

## 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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## Abstract

This document describes the iLocate system hardware:

1. PBS base station, Precyse part #BS91/103000, referred to as the PBS.

## Product description

### ***PBS base station:***

The PBS is used to communicate between the asset agents and a personal computer. It also provides synchronization signal for the system.

It uses the iLocate proprietary protocol which provides a 2 way, half duplex communication with the tags and beacons.

The unit is DC powered, 12 Vdc, up to 1A.

## Technical specifications – PBS Base station 915MHz

### ***Compatibility:***

PBS Base Station, 915MHz, versions: BS91/103000

### ***Performance:***

**Read rate:** 250Kbps.

**Write rate:** 250Kbps.

### ***Communication:***

**Frequency:** 902.00 – 928.00 MHz ISM license free band

**Modulation:** 2FSK

**ERP:** Up to 19dBm, digitally controlled

**Communication protocol:** 2WiSAP, optional AES128 Encryption

**Transmission:** Event base and on demand.

**External interfaces:** Ethernet.

**Occupied bandwidth:** 500KHz.

### ***Electrical:***

**Power supply:** 12V DC, up to 1A

**Safety:** CE, UL compatible

***Environmental:***

**Size:** W 180mm X L 165mm X H 32mm

**Operating temperature:** -20°C to +85°C (-5°F to +185°F)

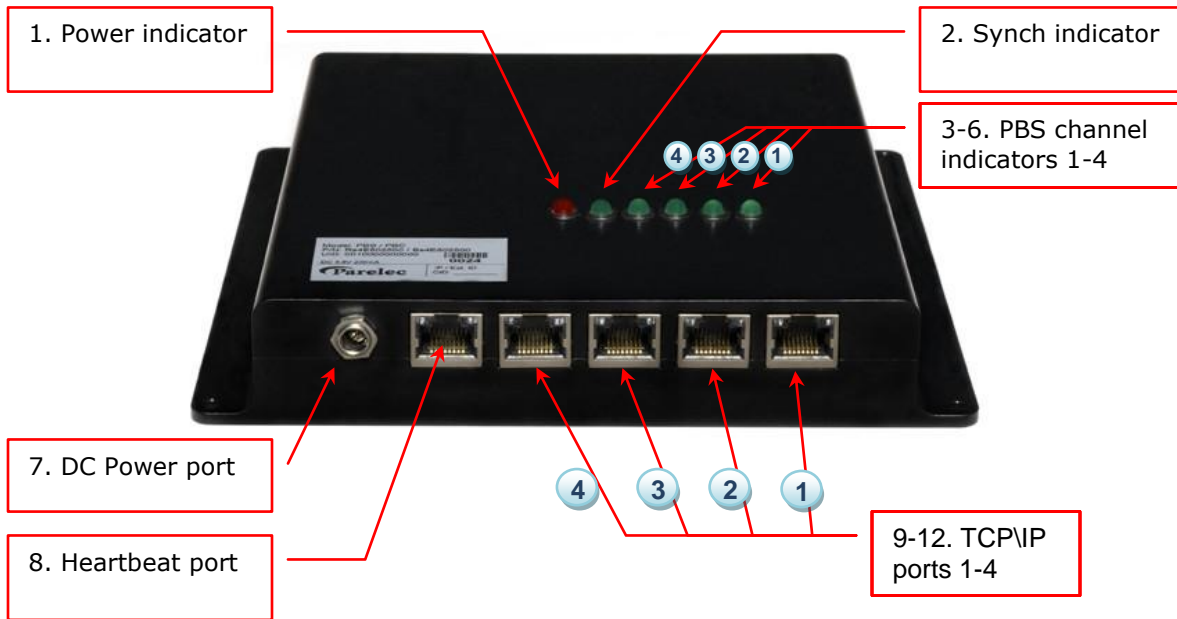
**Humidity:** 90% non-condensing

**Enclosure:** IP54

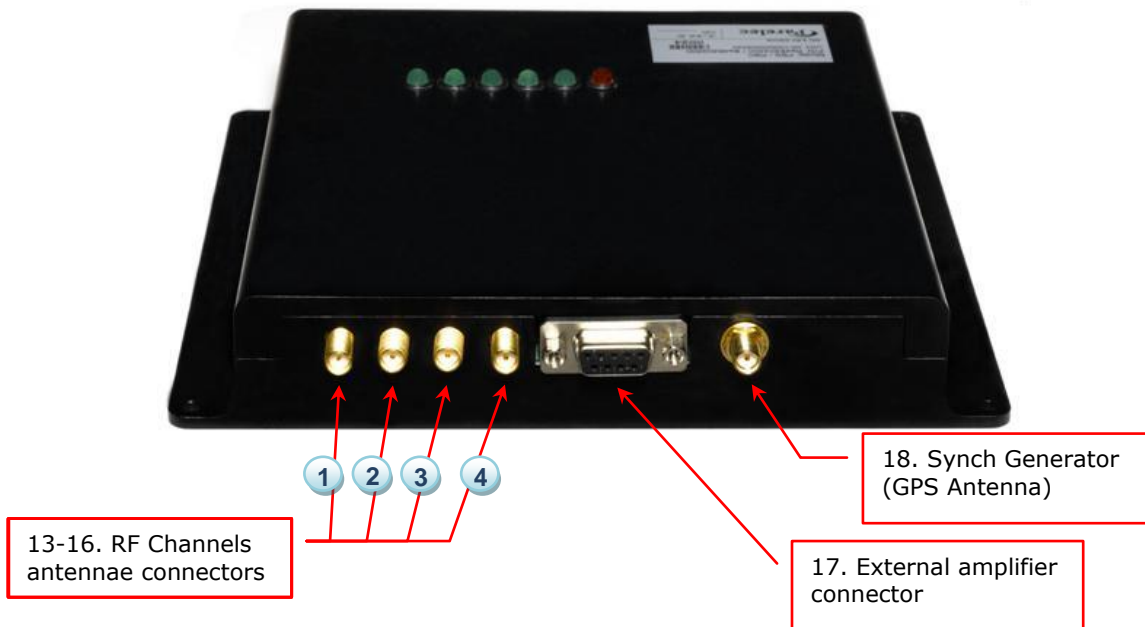
***Certification:***

FCCID: WONBS91103001

## *PBS connectors and indicators*




### **PBS - front view**





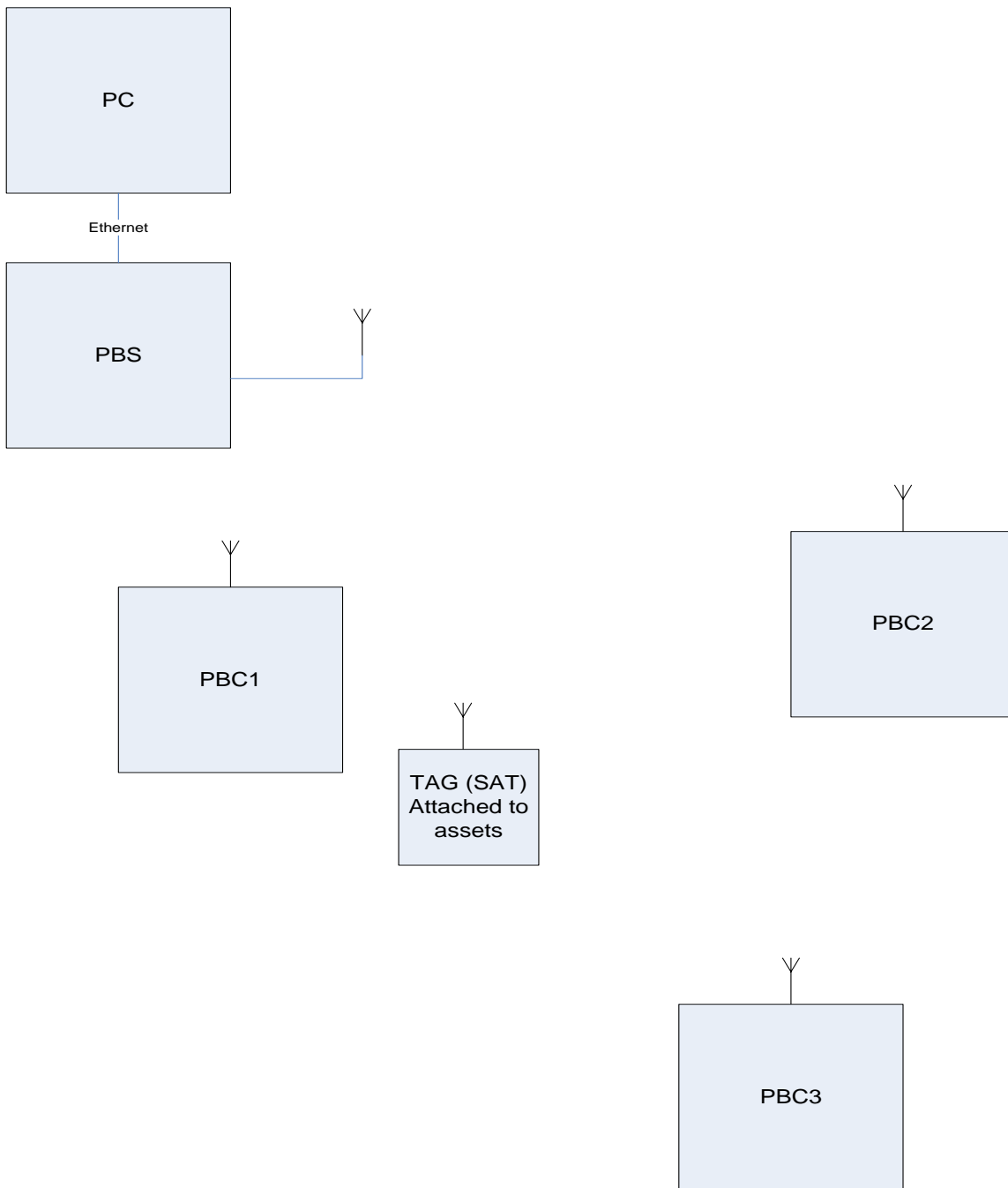
**PBS - rear view**

<b>Connector / indicator</b>	<b>Description</b>
1. Power indicator	LED (red)  On - Power is connected. Flashing - There is a problem with the power supply. Off - power supply not connected.
2. Synch indicator	Synchronization LED (green)- Flashes once a second when the system is active
3-6. PBS channel indicators #1-4	Green LED (green) - flashes when a signal is sent on the corresponding channel
7. DC Power port	DC power port (12V, 1A)
8. Heartbeat port	Not used at this stage
9-12. TCP\IP port 1-4	Network connector for corresponding channel. RJ45 connector.
13,16. RF Channel 1,4 antennae connectors	Disabled RF ports. These ports are disconnected internally.
14, 15	RF transmit, RF receive - Connected to Amplifier unit.
17. External amplifier connector	 A DB9 connector that contains DC voltage supply and control outputs.  <u>Warning:</u> Do not connect this port to a computer or any other RS232 terminal equipment.
18. GPS Antenna connector	GPS input port. Connect the supplied GPS antenna.

## Schematics

Will be provided on demand and under on-disclosure agreement.

## iLocate system block diagram



# Labels

Label:

**FCC ID: WONBS91103001**

**This device complies with Part 15 of the FCC Rules.**

**Operation is subject to the following two conditions:**

**This device may not cause harmful interference and**

**This device must accept any interference received, including interference that may cause undesired operation.**

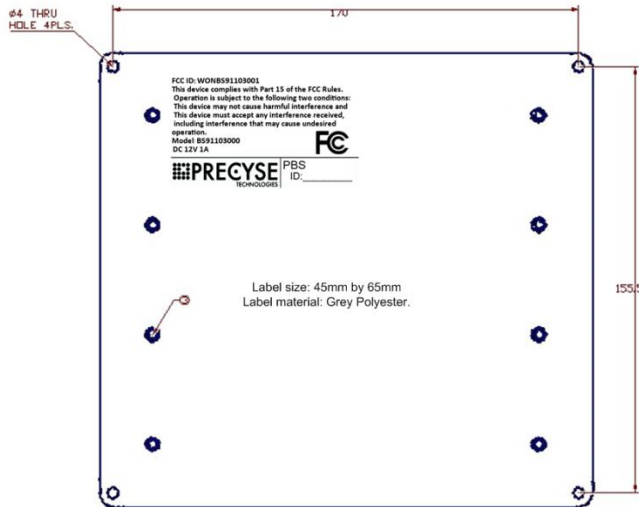
**Model: BS91103000**

**DC 12V 1A**



PBS  
 ID: \_\_\_\_\_

Label placement:



Bottom view

## Unit definitions:

**Base station, referred to as PBS:** A radio device that transmits data to and from the tag (SAT) to a personal computer (PC), also provides synchronization signal. The unit is powered by a DC power supply.

**Beacon, referred to as PBC:** A radio device that defines a location. Location detection can be realized through one or more PBCs. The unit is powered by a DC power supply.

**Tag (SAT):** A radio device that is used to track and monitor assets. It communicates with the PBS and can detect the PBC signals.

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## Antenna

Antenna for the PBS is Pasternack 51028

Specifications:

Type: Half wave dipole

Gain: 5dBi

Impedance: 50Ohm

VSWR: < 2.0:1

Polarization: Vertical

Radiation pattern: Omni

## Appendix A: Marketing and installation

1. The product intended use and application:  
The BS91103000 (PBS) is used as a radio base station for the iLocate system. By transmitting a synchronization signal, and receiving transmissions from other devices on the iLocate network it acts as a bridge between the iLocate hardware and a personal computer.
2. The EUT is installed either indoors or outdoors (inside an appropriate sealed box). The installation requirements are proper site planning, infrastructure (AC supply with an AC to DC adapter or DC supply, mechanical mounting, clearance around it), sealed box (Per Precyse Tech's requirements, an IP55 or equivalent box uninterrupted power supply where required, etc).
3. Marketing:  
The EUT is sold to system integrators only. It is not available for the general public. The product requires non-trivial installation procedures.