

xBR V3 INSTALLATION AND USER GUIDE

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Revision History

Rev	Date	Author	Description
01	07/03/2012	Eric Anderson	Initial release
02	09/25/2012	Eric Anderson	Clarification of section 4.5 UL power supply requirements. Remove references to pending FCC compliance.
03	10/16/2012	Eric Anderson & Andrew Stack	Logo change

Document Approvers & Sign-Off

Date	Approver	Role	Document Accept/Reject
07/03/2012	Larry Kulesa	Project Manager	Rev01- Accepted

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1 Introduction

The Synapse xBR V3 Long Range Reader is part of a proprietary data acquisition and tracking system. It provides a transmitter and multiple receivers to collect data. This data can be then sent over an Ethernet connection to a data collection/concentration object.

1.1 Purpose

This document provides basic installation and user instructions for the Synapse xBR V3 Long Range Reader.

1.2 Definitions

Term	Definition
PoE	Power over Ethernet

2 Safety Warnings

2.1 Important Safety Instructions

When using this device, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to persons.

Do not use this product near water. For example, do not use:

- near a bath tub
- near a wash bowl
- near a kitchen sink or laundry tub
- in a wet basement
- near a swimming pool

2.2 Explosive Safety Warning

Warning! Do not operate this device near explosive devices, unshielded blasting caps or in an otherwise explosive environment unless the device has been approved for such use by qualified personnel.

Warning! Do not disconnect the power or any other cabling in an explosive environment until such qualified personnel, trained specifically in explosive environment handling, have determined it is safe to do so.

Warning! Do not touch or move the access point when the antennas are transmitting or receiving.

2.3 Lightning Warning

Warning! Do not connect or disconnect cables or otherwise work with the access point hardware during periods of lightning activity.

Avoid using this product during an electrical storm. There may be a remote risk of electric shock from lightning.

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3 Regulatory Compliance

3.1 Federal Communications Commission (United States)

Regulatory Compliance Information

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.

RF Exposure Statement

The device has been found to be compliant to the requirements set forth in CFR 47 Sections 2.1091 for an uncontrolled environment. The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 35 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

Caution

Any changes or modifications not expressly approved by Synapse Product Development could void the user's authority to operate this equipment.

3.2 UL Certification

UL permission to list has been applied for, but has not yet been granted.

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4 Specifications

The Synapse xBR Long Range Reader is manufactured to the following specifications:

4.1 Physical

xBR Assembly, PN: 300-001065 (Figure 1)

- **Housing Material:** Noryl EN265
- **Dimensions:**
Length: 146mm (5.74 inches)
Width: 136mm (5.35 inches)
Height: 36mm (1.42 inches)
- **Unit Weight:** 391 grams (0.86 lbs.)

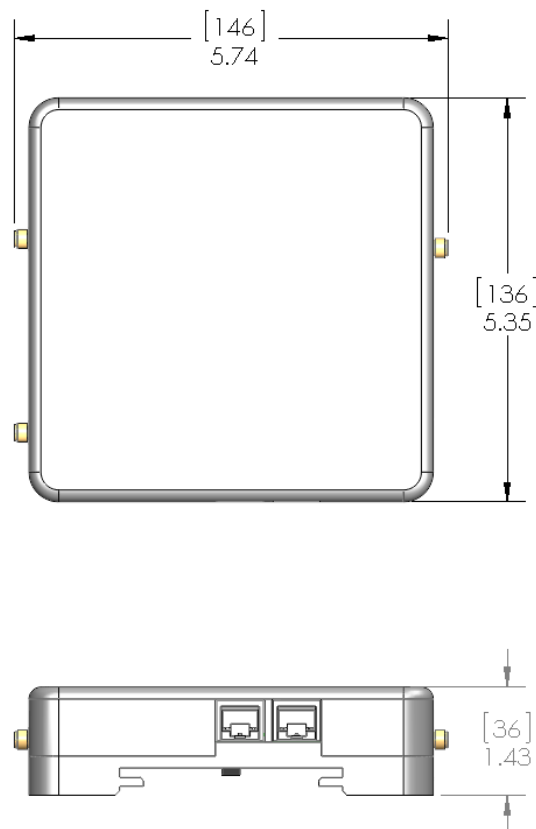


Figure 1 – xBR Module

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Sheet Metal Mount, PN: 310-003470 (Figure 2)

- **Material:** 304 Stainless Steel, Passivated
- **Unit Weight:** 106 grams (0.23 lbs.)
- **Attaching Screw Size:** M5 x 0.8 x 30mm SHCS
- **Attaching Screw Head Height Limit:** 0.303 inches

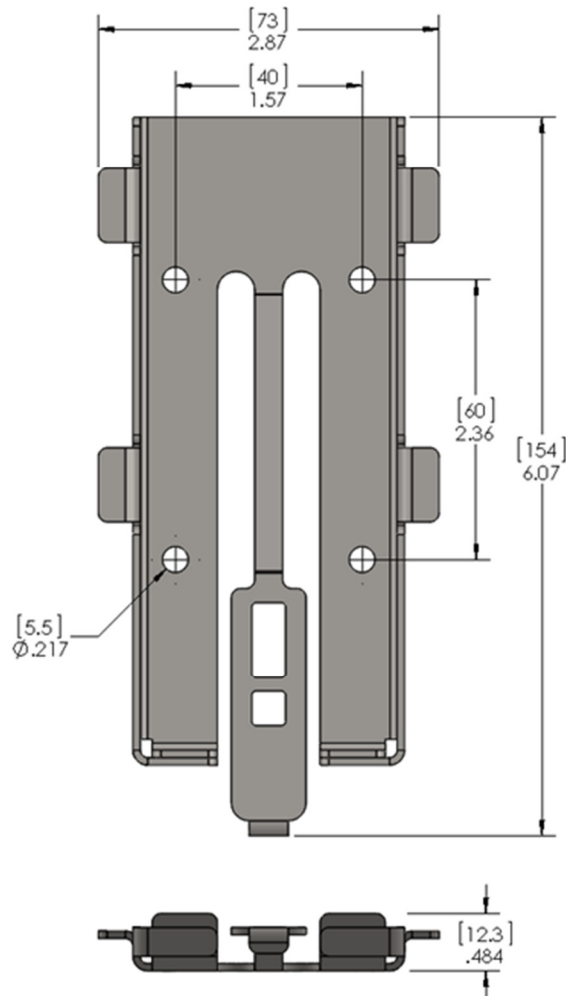


Figure 2- Sheet Metal Mount

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4.2 Connection Ports

- **Ethernet 10/100 RJ-45 (POE):** 100m Max. cable length
- **Ethernet 10/100 RJ-45:** 100m Max. cable length
- **3 SMA Antennal Ports:** (1 transmit, 2 receive)
- **DC Power Jack:** 2.5mm ID, 5.5mm OD, center conductor positive

4.3 RF Frequencies

- **RX:** 2401, 2424, 2450, 2474 MHz
- **TX:** 2482 MHz

4.4 Operating Conditions

Temperature:

- **Operating:** 0°C to 40°C (32°F to 104°F)
- **Storage:** -10°C to 70°C (14°F to 158°F)
- **Relative Humidity:** 5% to 95% non-condensing
- **Altitude:** 8,000 ft @28°C (82.4°F)

4.5 Power

Power over Ethernet (IEEE, 802.3af compliant)

PoE 48V dc, 200 mA

DC Barrel Jack: 20-48Vdc, 300mA

NOTE: If a power adapter other than one provided by Synapse Product Development is used in the US or Canada, it should be cULus (NRTL) Listed, with an output rated 20-48Vdc maximum, minimum 300mA, Marked "LPS" or "Class 2", output rated SELV, non-energy hazardous, and suitable for connection to a standard power receptacle in the US and Canada.

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5 Installation

5.1 Trained Installation and Service Personnel Warning

Warning! Installation and service of this product is to be performed by trained installation and service personnel only. Read and follow all warning notices and instructions marked on the product or included in the documentation. Before installing the product, read the rest of this document and follow specific product instructions.

When installing, the placement of the device must also satisfy the following installation requirements:

- If not operating with PoE (Power over Ethernet), connect the unit's AC adapter to an AC wall outlet (100-240 VAC) using only the standard power cord/adapter provided with the product.
- Placement must allow for easily disconnecting the power cord/adapter of the device from the AC wall-outlet.
- Do not cover the device or block the airflow to the device with any other objects.
- Keep the device away from excessive heat and humidity and keep the device free from vibration and dust.
- Installation must at all times conform to local regulations.
- Connections to Wireless Access Point can be made with either Unshielded Twisted Pair (UTP) or Shielded Twisted Pair (STP) cabling. When using the device in combination with Power over Ethernet, use only STP cabling.

5.2 Electrostatic Discharge Warning

Warning! Wear an anti-static wrist strap or take other suitable measures to prevent electrostatic discharge when handling this equipment.

5.3 Telecom Warning

Note: This unit is intended for local (intra-building) connections only and is not designed or evaluated for direct connections to the public telecommunications/cable distributions systems. Cable and Ethernet connections should be made in accordance to the National Electrical Code (NEC). For example, one of the following should be true*:

- Cable runs are located in the same building as this unit.
- Cable runs through air between buildings are less than 42m (140ft).
- Cable runs between buildings are directly buried.
- Cable runs between buildings are in underground conduit, where a continuous metallic cable shield or a continuous metallic conduit containing the cable is bonded to each building grounding electrode system.

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*These options are from the US National Electrical Code, Sections 800.10, 800.12, 800.13, 800.31, 800.32, 800.33, and 800.40.

5.4 Installation Instructions

This device should be securely mounted to a fixed surface using the Sheet Metal Mount (Synapse PN: 310-003470, Figure 3). The Sheet Metal Mount provides a convenient method of attaching the device while providing the ability to easily remove or replace the device.

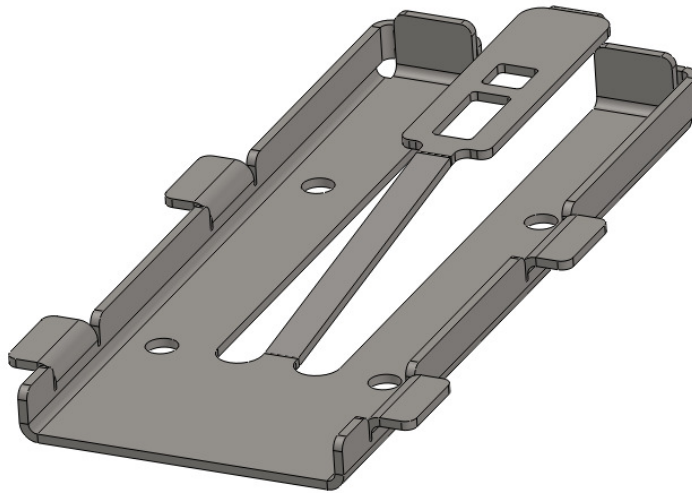


Figure 3 - Sheet Metal Mount

The Sheet Metal Mount must be securely attached to the mounting surface. For example, when mounting on drywall, wall anchors, toggle bolts, or expansion anchors should be used to provide more secure attachment points.

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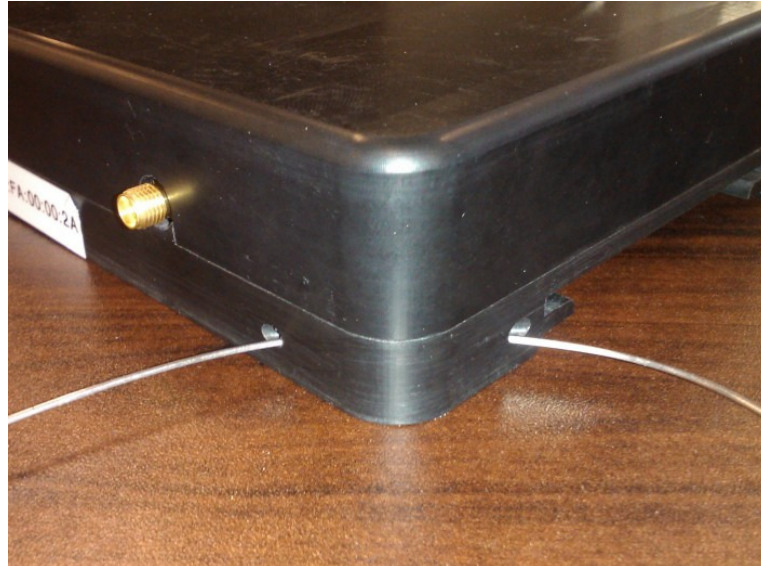


Figure 4 – Safety cable attachment point

The Sheet Metal Mount provides a secure mounting for the xBR. However, as an added safety feature, the xBR housing has a safety cable attachment point for overhead installations or installations where a falling device may cause a hazard (see Figure 4).

Note: This device is not to be installed in air handling spaces (i.e. not plenum rated).

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6 Connection Guide

The xBR V3 Long Range Reader has several connection points as shown in Figure 5 and Figure 6:

Receive Antenna 0 and 1 SMA – These are female SMA connections for the receive antenna(s).

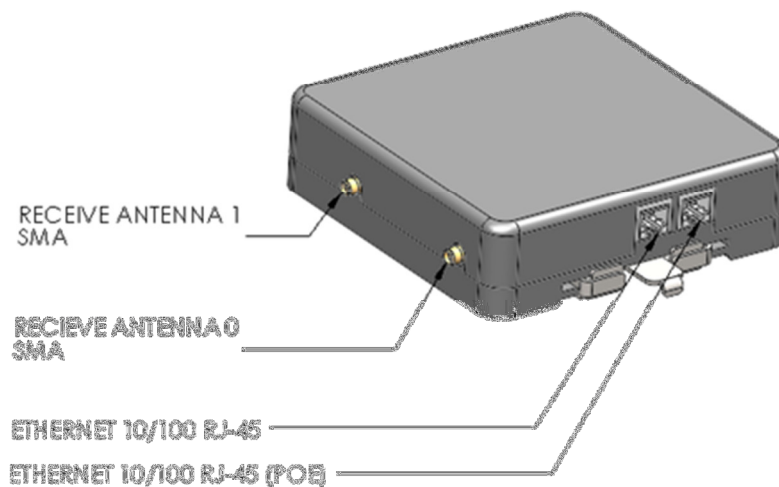
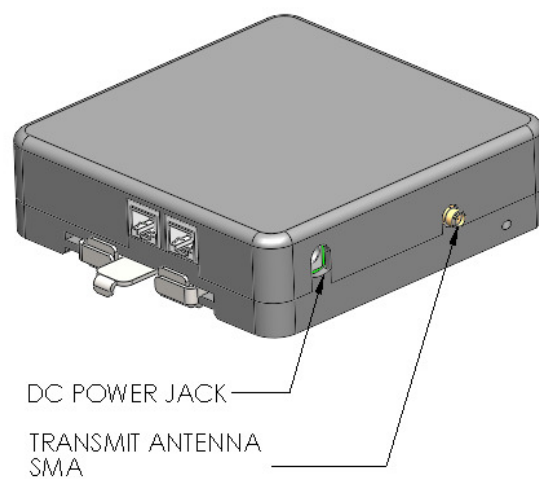


Figure 5 – xBR Connections

Ethernet 10/100 RJ-45 – This is an RJ-45 jack for an Ethernet connection.

Ethernet 10/100 RJ-45 (PoE) – This is an RJ-45 jack for an Ethernet connection with optional Power over Ethernet (PoE).



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Figure 6 – xBR Connections

DC Power Jack – This provides a means of powering the unit if PoE is not available. Connect only a supplied or approved power supply.

Transmit Antenna SMA – This is a female SMA connection for the transmit antenna. The transmit antenna must be installed at all times when the unit is powered up and transmitting. Transmitting without the antenna installed may damage the unit.

This antenna must be of an approved or supplied type. Use of an unauthorized antenna is not allowed.