



WIRELESS

TOBi™ PI Wi-Z

Performance Indicator and Event Logger

Quick Installation Guide

S47-0180 Revised 6/19/2015

Safety Instructions

WARNING

BATTERIES CONTAIN LETHAL VOLTAGE LEVELS. INSTALLATION AND SERVICING MUST BE PERFORMED BY QUALIFIED PERSONNEL.

IMPORTANT: SAVE THESE INSTRUCTIONS!

READ AND FOLLOW ALL INSTRUCTIONS BEFORE INSTALLING, OPERATING, OR SERVICING MODULE.

ANY DEVIATION CAN CAUSE SERIOUS AND PERMANENT DAMAGE. FAILURE TO FOLLOW THE INSTRUCTIONS WILL VOID THE WARRANTY.

Do not touch un-insulated parts of the output connector or battery terminals. A possibility of serious electrical shock exists.

Never smoke, use an open flame, or create sparks in the vicinity of the battery. Ventilate well when the battery is in an enclosed space.

Lead-acid batteries contain sulfuric acid, which is caustic and can cause chemical burns to the skin. Refer to the battery manufacturer's instructions for safe handling of batteries. Use proper personal protective equipment. Do not get in eyes, on skin, or on clothing. In cases of contact with eyes, flush immediately with clean water for 15 minutes. Seek medical attention immediately.

Care should be observed when using tools on or around the battery to avoid shorting the battery. Do not lay tools on top of the battery.

FERRO MAGNETICS CORPORATION

TOBi PI Wi-Z WARRANTY - 1 Year

This Warranty Agreement entered into between Ferro Magnetics Corporation, "Ferro", and the Original End User in respect to Ferro Magnetics battery charger control / retrofit kits for industrial electric truck charger usage.

- 1.0 **GENERAL** Ferro Magnetics Corporation (hereinafter called "Ferro") warrants that each **TOBi PI Wi-Z** supplied is of good workmanship and is free from any inherent mechanical defects, provided:
 - 1.1 The product is installed and operated in accordance with generally accepted industrial standards and in accordance with the printed instructions supplied with the product.
 - 1.2 The product is used under conditions for which it was designed and is not subject to misuse, negligence or accident.
 - 1.3 The product receives proper care, protection, and maintenance under supervision of competent personnel.
 - 1.4 The product is used within the published performance rating for the application involved.
 - 1.5 The product is used exclusively by the original user and by no other persons.
- 2.0 **PERSONS COVERED: TOBi PI Wi-Z** is warranted for 1 year from the date of shipment by Ferro to the original user.
 - 2.1 Primary switch contacts, and fuses, are not warranted unless found to be defective prior to use.
- 3.0 **LIMITATION OF REMEDY** Any claimed defect is subject to Ferro's inspection and judgment, after the defective product has been returned by the original user at its expense to Ferro Magnetics Corporation, St. Louis, MO.
 - 3.1 Ferro's liability is limited to the repair of the defect or, at Ferro's option, the replacement of the defective parts. Ferro will bear costs of parts replacement only; no labor or other services will be provided by Ferro. Ferro shall not be obligated to reimburse the original user or any other person for any work performed.
 - 3.2 Replacement and exchange parts will be warranted for the remainder of the original warranty period, or for a period of thirty (30) days, whichever is greater.
 - 3.3 Ferro shall not be liable for direct or indirect, special or consequential damages in excess of such repair or replacement. In no event shall the original user be entitled to recover for contingent expenses resulting from, but not limited to, telephone calls, telegrams, travel expenses, lodging, duties and taxes, labor, rental of replacement equipment, loss of business or profits or other commercial losses.
- 4.0 **USE OF DEFECTIVE PRODUCT** Continued use of a defective control after discovery of a defect may void all warranties.
- 5.0 **REPAIRED EQUIPMENT** Except as authorized in writing, this warranty does not cover any controls that has been repaired by any party other than Ferro Magnetics.
- 6.0 **MODIFIED EQUIPMENT** This warranty is void if this equipment has been modified without written permission from Ferro Magnetics.

EXCEPT AS STATED ABOVE, ALL OTHER WARRANTIES AND CONDITIONS, EITHER EXPRESS OR IMPLIED, INCLUDING IMPLIED WARRANTIES OR MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE EXCLUDED AND ORIGINAL USER ASSUMES ALL RISK AND LIABILITY RESULTING FROM USE OF THE PRODUCT. FERRO NEITHER ASSUMES NOR AUTHORIZES ANY PERSON TO ASSUME FOR FERRO ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OR USE OF THE PRODUCT AND THERE ARE NO ORAL AGREEMENTS OR WARRANTIES COLLATERAL TO OR AFFECTING THIS WRITTEN WARRANTY.

Package Contents

TOBi™ PI Wi-Z package contains the following items:

- TOBi™ PI Wi-Z battery module
- (4) #10 Self-tapping Stainless Steel Screws
- Cable ties
- Shrink Tubing
- Quick Installation Instructions



Figure 1 Tobi PI Wi-Z Package Contents

Introduction:

This Quick Installation Guide is *for the installation of the Module only*. See the Tobi Wi-Z Software User Guide for instructions on calibrating the module.

The installation of the battery module will require a means to calibrate the current sensor on site. This requires a computer located within 100 feet of the Tobi PI Wi-Z with the TOBi™ Wi-Z software installed and the Tobi Wi-Z USB coordinator.

Additionally, a means to verify charger amperage output is needed to complete current sensor calibration. This can be accomplished by using an accurate digital ammeter on the charger or a handheld amp probe.

Required Tools

Installing the TOBi™ PI Wi-Z battery module will require the following tools:

- Portable drill
- 5/32" drill bit- titanium coated preferred
- 1/2" drill bit
- 5/16" nut driver or socket
- Heat gun
- Side cutters

Hardware Installation

There are 5 leads coming from the Tobi PI Wi-Z:

1. "Negative Post" (**black wire**) ,
 2. "12V Post" (**blue wire**) ,
 3. "Current Sensor" ,(**thick grey wire** with black current sensor at end)
 4. "Thermistor/Water Level Probe" (**thick grey wire** with grommet and water probe on end)
 5. "Positive Post"(**red wire**)
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1. Attach the **BLACK** wire to the negative post of the battery by first drilling a 5/32" pilot hole in the center of the post. Attach the ring terminal of the lead to the battery terminal using one of the provided stainless steel screws and tighten using a 5/16" nut driver or socket.
 2. Attach the **BLUE** wire to the positive post or strap of the 6th battery cell from the negative post of the battery (12V) by first drilling a 5/32" pilot hole in the center of the inter-cell connector strap. Attach the ring terminal of the lead to the strap using one of the provided stainless steel screws and tighten using a 5/16" nut driver or socket.
 3. Attach the **RED** wire to the positive post of the battery by first drilling a 5/32" pilot hole in the center of the post. Attach the ring terminal of the lead to the battery terminal using one of the provided stainless steel screws and tighten using a 5/16" nut driver or socket.

4. Drill a 1/2" hole in the lid of one of the cells near the center of the battery (refer to figure 2). **Ensure the area under the cell lid is clear to the moss shield before drilling.** Trim the probe using wire cutters so that the tip will be approximately 1/8" above the moss shield after installing the probe. Press the probe grommet into the hole.

5. Attach the current sensor to the negative battery cable near the battery post using the shrink tubing by removing the negative cable from the battery DC connector and sliding the shrink tubing over the cable. ***The SENSOR should be pointing TOWARD the battery negative post (SENSOR CABLE pointing AWAY from the battery negative post) and the side of the sensor marked "up" should be away from the cable. Installing the sensor backwards will result in the module reversing charge and discharge events.***

Care should be taken to mount the sensor as far away from any other battery straps, posts, or cables as possible as this can affect current readings.

After placing the current sensor, use a heat gun to shrink the tubing tight around the battery cable and current sensor. The sensor must be attached securely for proper operation. Use a cable tie to secure the sensor cable to the battery cable after installing the sensor.

6. Secure the module to the battery, strap, or cable in a convenient location. The ideal location for the module is set between two inter-cell straps. Secure the module tightly against the inter-cell straps. Tighten the module using two provided cable ties.

7. Use the remaining cable ties to secure any loose wires to prevent damage.

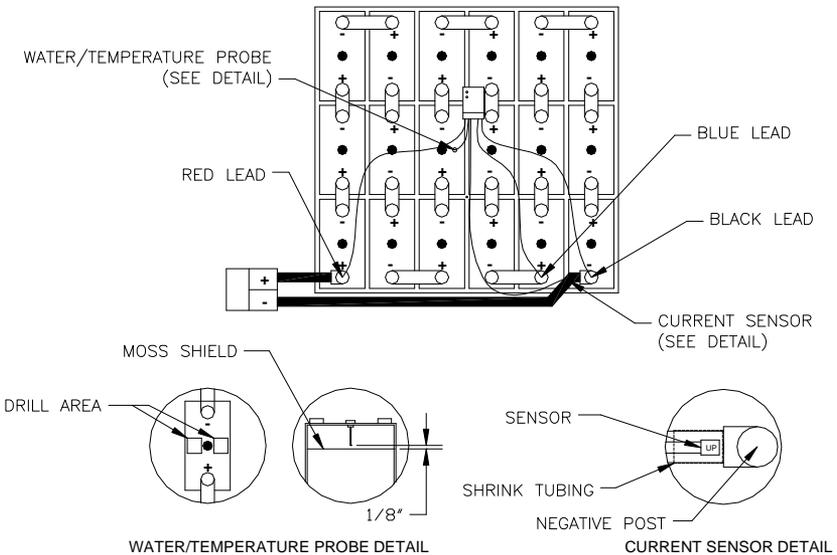


Figure 2 Installation Overview

The battery module transfers data from the module memory to a PC via wireless communication. It operates at 2.4 GHz on 802.15.4 and auto-selects from 16 available channels to set-up a network to communicate with the PC. The Tobi PI Wi-Z works independently of other wireless networks in your facility and will not interfere with existing Wi-Fi networks. The rated distance for data transfer is 100 feet from the Tobi PI Wi-Z module to the PC. Each Tobi PI Wi-Z acts as a wireless router so a daisy-chain effect is possible with multiple Tobi PI Wi-Z modules.

The Tobi PI Wi-Z has 2 indicator LEDs. One for water level and one for temperature.

<u>Indicator</u>	<u>Flashing Green</u>	<u>Flashing Red</u>
Water Level	Water level OK	Water Level Low
Temperature	Temperature OK	Temperature High

The temperature limit is determined by the OK to charge temperature setting in the Tobi. Refer to the Tobi Wi-Z Software User Guide for information on setting the OK to Charge Temperature.

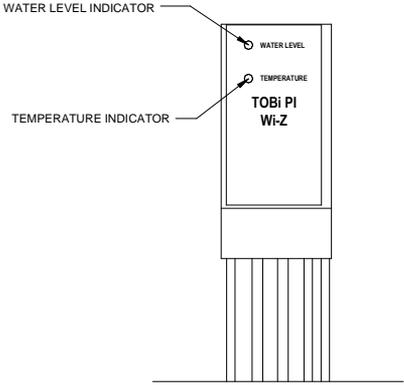


Figure 3 Tobi Layout and Indicators

The mechanical installation of the Tobi PI Wi-Z is now complete. You are ready to calibrate the current sensor and enter battery data into the system. Please refer to the **Tobi Wi-Z Software User Guide** for instructions on calibrating the module and initializing your new Tobi PI Wi-Z.

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. (2) This device must accept any interference received, including interference that may cause undesired operation.

WARNING: To satisfy FCC RF exposure requirements for mobile transmitting devices, a separation distance of 20cm or more should be maintained between the antenna of this device and persons during operation. To ensure compliance, operations at closer distances than this are not recommended.

Contains FCC ID: S4GEM35XA



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