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LEAP WIRELESS SENSOR SYSTEM

USER MANUAL

FOR THE PEEK +125C HIGH TEMP-WAFER

USE OF THIS PRODUCT SHOULD NEVER BE USED OUTSIDE OF ITS SPECIFIED OPERATING RANGE, AND DOING SO WILL VOID THE WARRANTY

Document# 53-100214-00

Revision 1.0

Contents

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1. Operating specifications

1.1 About this Manual

This user manual supplements standard Phase IV manuals and contains only specifics about the wafer sensor's high-temp enclosure.

1.1.1 Audience

This manual assumes that you are familiar with the Thermal Analysis report and Windows operating system and are responsible for installing and monitoring the test system. An experienced electrical technician can execute proper soldering techniques for battery replacement.

1.2 Turn system ON/OFF

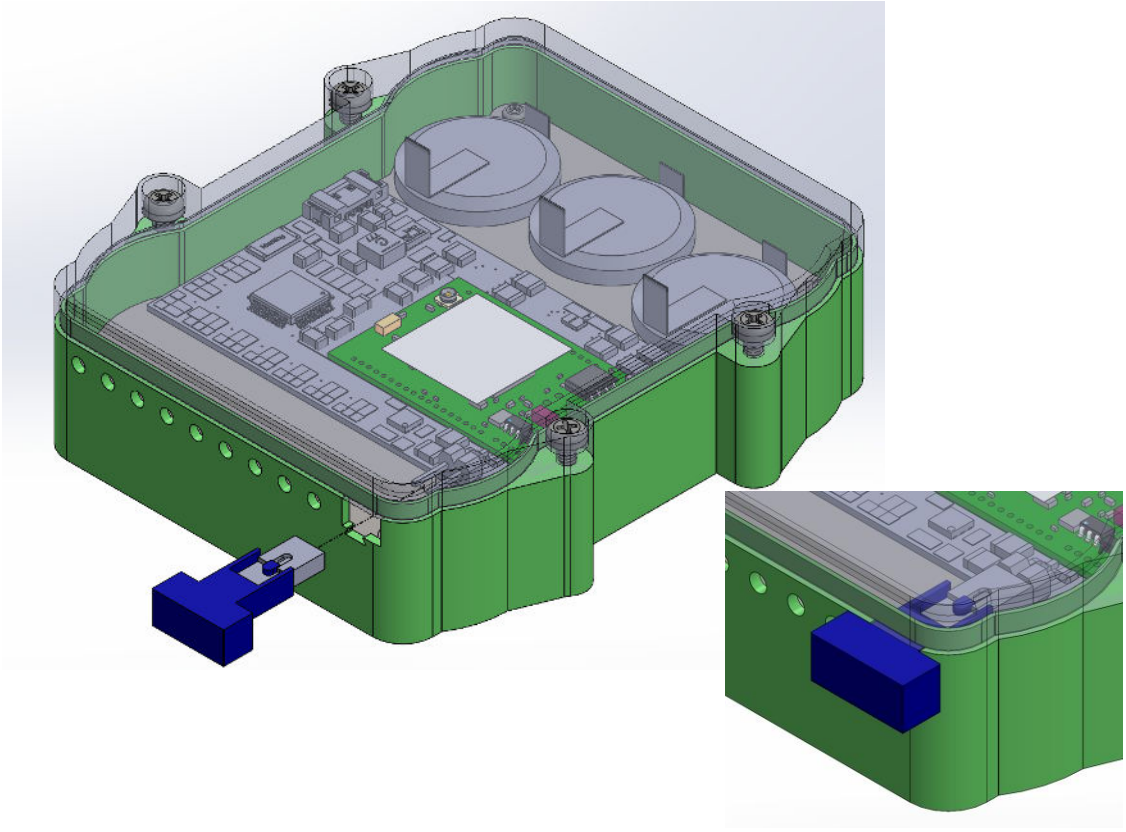
1.2.1 PEEK Slide Switch

The system contains one customized ON/OFF switch that functions as an electrical jumper. When this connector is disengaged, the electrical assembly is "OFF" because it has an open circuit; with this jumper engaged, the system is "ON." Below is the assembly with the ON/OFF switch in an exploded state.

When not using the sensor, disengage the ON/OFF switch to conserve battery life.

Please note:

1. Ideally, the switch should be flush with the enclosure housing for full engagement.
2. In case of a small gap or if there are any difficulties engaging the switch, it is recommended that the lid be removed from the sensor enclosure to ensure proper alignment between the jumper and two-pin header on the circuit board.



1.3 Removing and re-installing the enclosure lid

1.3.1 Four PEEK Screws

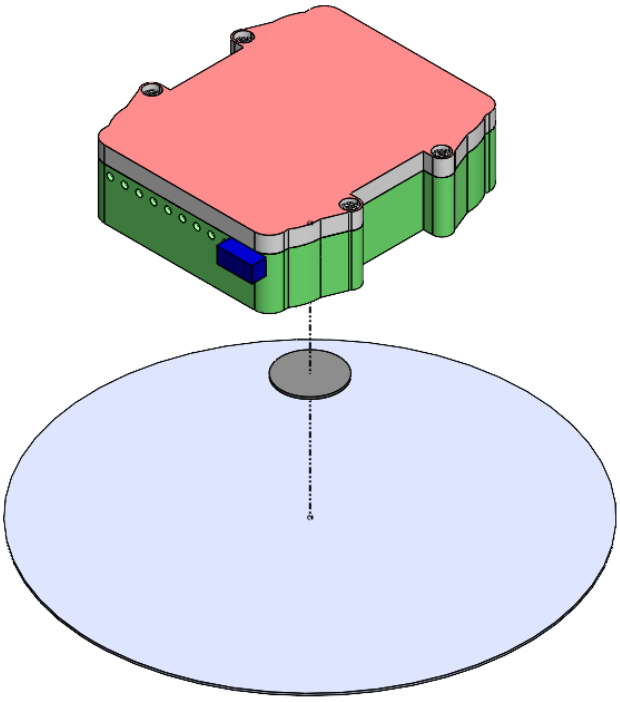
Use drive size No. 1, and do not overtighten screws because the head will shear.

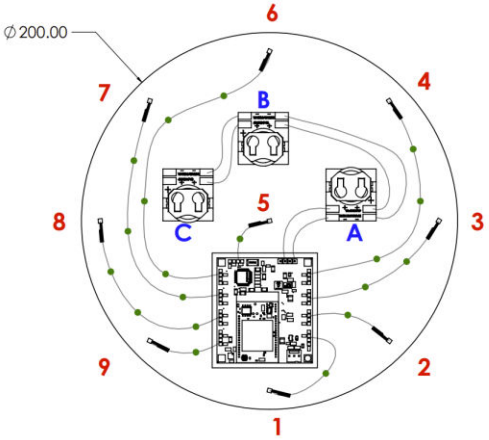
Four external PEEK screws fixture the lid to the base of the enclosure. When reinstalling the lid, make sure it fits tight between the lid and the base of the enclosure. It's critical to minimize any air gaps when reassembling the sensor. The enclosure holes are tapped for 2-56 PEEK screws. Do not replace or substitute these with metal screws.

1.4 Customer install

It is recommended the customer use the provided epoxy or VHB tape (shown as a grey circle below) to bond the sensor housing to the wafer. Circular pieces of Kapton are included with the shipment and will be used to adhere the RTDs to the customer's wafer. These shall be used for wire management.

If the installation is not on a wafer, the installation method is up to the customer.





USE KAPTON TAPE TO SECURE THE LOOSE RTD WIRES.

KAPTON TAPE SHALL BE PLACED
EVERY ONE TO TWO INCHES FROM SECURED LOCATION.

SEE GREEN CIRCLES AS EXAMPLE. EXACT PLACEMENT/LOCATION IS NOT CRITICAL

1.5 Replacing the batteries

Before replacing any hardware, ensure the ON/OFF switch is disengaged so the sensor.

1.5.1 Battery replacement – assembly from PhaseIV

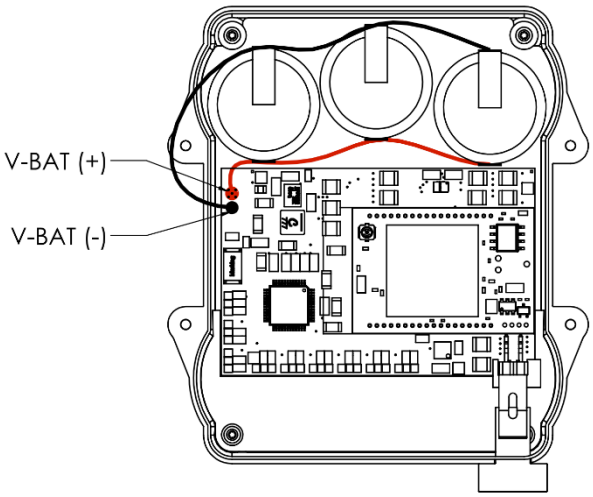
You can request a replacement assembly from PhaseIV Engineering to replace the batteries. This will require a field technician to make a solder-spliced connection. See the Appendix for assembly instructions. The installation bracket(s) are not intended for use in the final product. Bracket(s) must be uninstalled before use.

1.5.2 Battery replacement – assembly and parts from Customer

To replace the three batteries (tab batteries are preferred), you will need three new high-temperature coin cell batteries (CR2032W). Cut the black and red wire between the circuit board and the current battery assembly. Using 24AWG stranded wire, solder the three positive tabs together and the three negative tabs together. This will make a parallel connection between all three batteries. Make a solder splice connection to the two wires on the circuit board. Cover this with heat shrink so no conductive components are shorted together.

Battery negative should go to the black wire, V-Batt (-).

Battery positive should go to the red wire, V-Batt (+).



1.6 Verified operating conditions

1.6.1 Thermal Report (PhaseIV internal PN 55-100325-00)

For more details about the three operating cases, refer to the "Thermal Analysis of Protective Housing for Wafer Temperature Sensor" report.

The enclosure is designed to ensure the electrical components operate within their manufacturer specifications, meaning it can withstand 125C for simulated durations (see Thermal Report, doc. 55-100325-00), but the system is not designed to stay at high temperatures for prolonged periods (days, weeks, etc.).

Long cooldown times may be recommended depending on the application. Refer to the report about the specifics of your application.

1.7 Connecting to Leap Sensor Manager

1.7.1 Gateway connection

Many users of the Leap wireless sensor system start with a small system where the gateway is connected to a personal computer via a USB cable. This configuration allows for quick and easy initial proof of concept testing. Once the system has proven effective, many clients want to migrate to a network configuration that allows everyone in the company to access it.

1.7.2 Node connection

The serial number is located inside the enclosure. The serial number and join key are attached to the calibration documents that accompany the shipment.

1.8 Technical Support

For more information about our products and services, or for technical assistance:
Visit us at: www.phaseivengr.com
Tel: +(303) 443 6611 (USA – MST 8:00 a.m. to 5:00 p.m., Mon.-Fri.)
E-Mail: support@phaseivengr.com
If you need assistance, please provide the product part number, serial number, and version.

2. Appendix A

2.1.1 Installing battery replacement – assembly from PhaseIV

This will require a field technician to make a solder-spliced connection.

1. Receive replacement battery assembly.
2. Disconnect the power switch. THE BOARD MUST BE POWERED OFF!
3. Desolder the red and black wire from the circuit board
4. Remove the pre-existing battery assembly from the sensor, being careful not to damage the circuit board.
    a. Use isopropyl alcohol or WD-40 on the edge of the tape to lubricate the cutting blade.
    b. Use a thinking tool like a knife to get under the tape and lift it away. Apply more solvent if needed.
    c. Please properly dispose of the batteries.
5. Before installing the new assembly, ensure the surface has been cleaned of any remaining residue.
6. Gently remove the new battery assembly from the carrier using the pull tab.
7. Remove the protective film from the bottom of the VHB tape on all three batteries. This tape electrically isolates the batteries from the steel plate. BE CAREFUL NOT TO LET THE BLACK AND RED WIRE TOUCH - THIS WILL SHORT AND DAMAGE THE BATTERIES!
8. Solder the new lead wires onto the circuit board. Note the polarity and orientation of the battery assembly in the sensor.
    a. Make sure heat shrink is already slid over the wire. You cannot install heat shrink after wires are soldered together.
9. To aid in realignment, use the additionally provided bracket. This bracket can be temporarily screwed into the enclosure with the existing screws. Remove this bracket before installing the lid.

2.1.1.1 Removing old batteries from the enclosure

Use isopropyl alcohol or WD-40 on the edge of the tape to lubricate the cutting blade. Use a thin tool like knife to get under the tape and lift it away. Apply more solvent if needed.

2.1.1.2 Adding additional wire

If additional wire is needed to extend the length between the PCBA and the batteries, use 24awg 7/32 200C.

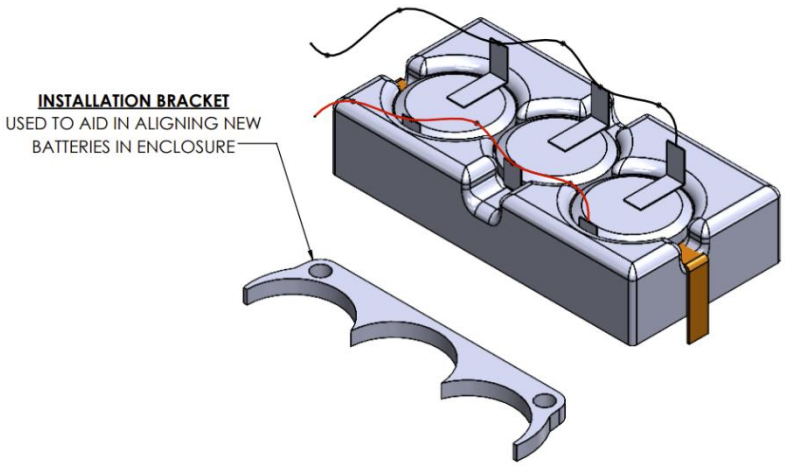
Wire:

A58547R-100-ND

A58547B-100-ND

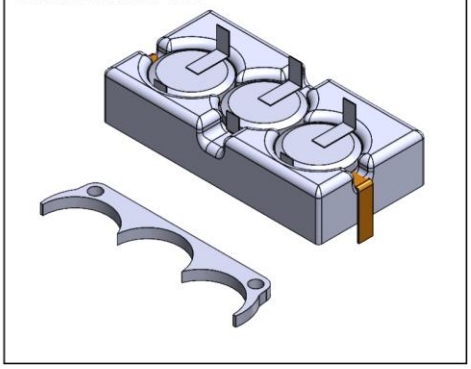
Heat Shrink: HS3A-0125-SP

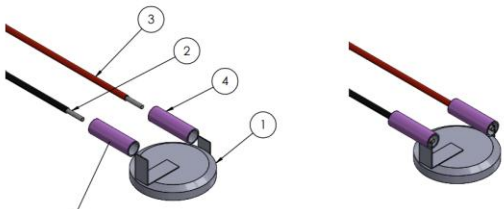
3:1 Adhesive Lined Heat Shrink Tubing | BuyHeatShrink®



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	21-100171-01	Battery, 3V, 20mm, COIN, high temp, CR2032W tabs	1
2	28-100230-00	WIRE_24AWG 7/32 BLACK 105C MIL-W-16878E Type B	1
3	28-100232-00	WIRE_24AWG 7/32 RED 105C MIL-W-16878E Type B	1
4	28-100996-00	Heat_Shrink_Polyolefin_3/32_2:1_UL VW-1	2

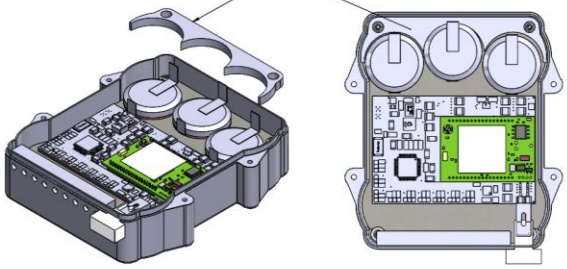
REPLACEMENT KIT:

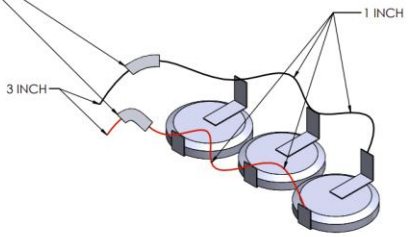




MAKE SURE TO INSTALL HEAT SHRINK ON WIRES BEFORE MAKING FINAL SOLDERING CONNECTION!

ALIGNMENT BRACKET
FOR REINSTALLATION ONLY
REMOVE AFTER BATTERIES ARE INSTALLED





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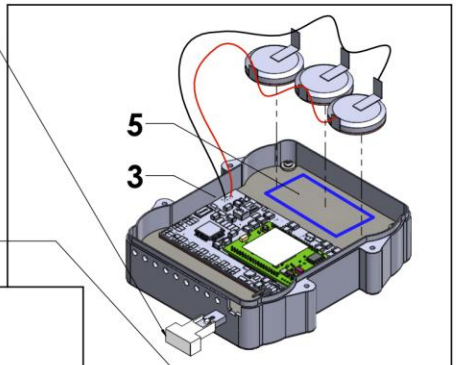
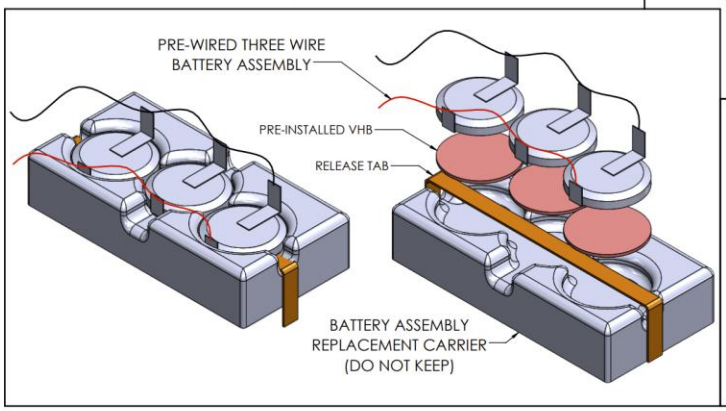
SCALE: 1:1	REVISION: 01	SHEET 2 OF 3

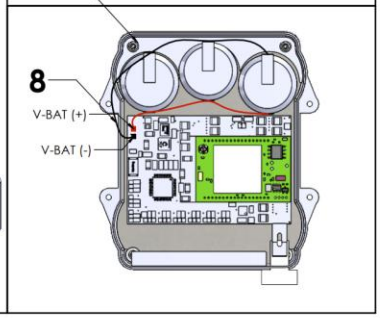
BATTERY ASSEMBLY REPLACEMENT

A FIELD TECHNICIAN REQUIRED TO MAKE A SOLDER-SPLICED CONNECTION

1. RECEIVE REPLACEMENT BATTERY ASSEMBLY
2. DISCONNECT THE POWER SWITCH. THE BOARD MUST BE POWERED OFF!
3. DE-SOLDER THE RED AND BLACK WIRE FROM THE CIRCUIT BOARD
4. REMOVE PRE-EXISTING BATTERY ASSEMBLY FROM THE SENSOR, BEING CAREFUL TO NOT DAMAGE THE CIRCUIT BOARD.
   1. USE ISOPROPYL ALCOHOL OR WD-40 ON THE EDGE OF THE TAPE TO LUBRICATE THE CUTTING BLADE. USE A THIN TOOL LIKE KNIFE TO GET UNDER THE TAPE AND LIFT IT AWAY. APPLY MORE SOLVENT IF NEEDED.
   2. PLEASE PROPERLY DISPOSE THE BATTERIES
5. BEFORE INSTALLING THE NEW ASSEMBLY, MAKE SURE THE SURFACE HAS BEEN CLEANED OF ANY REMAINING RESIDUE
6. GENTLY REMOVE THE NEW BATTERY ASSEMBLY FROM THE CARRIER
7. REMOVE THE PROTECTIVE FILM FROM THE BOTTOM OF THE VHB TAPE ON ALL THREE BATTERIES. THIS TAPE ELECTRICALLY ISOLATES THE BATTERIES FROM THE STEEL PLATE. **BE CAREFUL NOT TO LET THE BLACK AND RED WIRE TOUCH - THIS WILL SHORT AND DAMAGE THE BATTERIES!**
8. SOLDER THE NEW LEAD WIRES ONTO THE CIRCUIT BOARD. NOTE THE POLARITY AND ORIENTATION OF THE BATTERY ASSEMBLY IN THE SENSOR
9. TO AID IN REALIGNMENT, USE THE ADDITIONALLY PROVIDED BRACKET. THIS BRACKET CAN BE TEMPORARILY SCREWED INTO THE ENCLOSURE WITH THE EXISTING SCREWS.







NOTE:
- ROHS, HIGH-TEMPERATURE, LEAD-FREE SOLDER TO BE USED.
- SOLDERING PROCESS SHALL FOLLOW CLASSIFICATION J-STD-001.

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