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.

Changes or modifications not expressly approved by Alcotek, Inc. for compliance could void the user's authority to operate the equipment.

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 pro-vide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not in-stalled 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.

FCC Radiation Exposure Statement

"This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment is in direct contact with the body of the user under normal operating conditions. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter."

# Operating Manual, Operator Interface:

1.0   INSTRUMENT FEATURES:

1.1 The case is made of a recyclable ABS-PC blended material for high strength.

1.2 The instrument, including the USB port, is rated to IP65 for Ingress Protection from dust and water.

D-001518 rev 00

1.3 The case includes a breathable membrane to avoid any pressurization or condensation within the case while maintaining IP65 protection.

1.4 The instrument is equipped with an internal Lithium-ion rechargeable battery. The battery may be charged through the USB port.

1.5 The instrument may communicate with other devices through the USB port.

1.6 The instrument is equipped with a wireless (BLE) transmit and receive capability, including a built-in antenna.

2.0 FRONT PANEL:
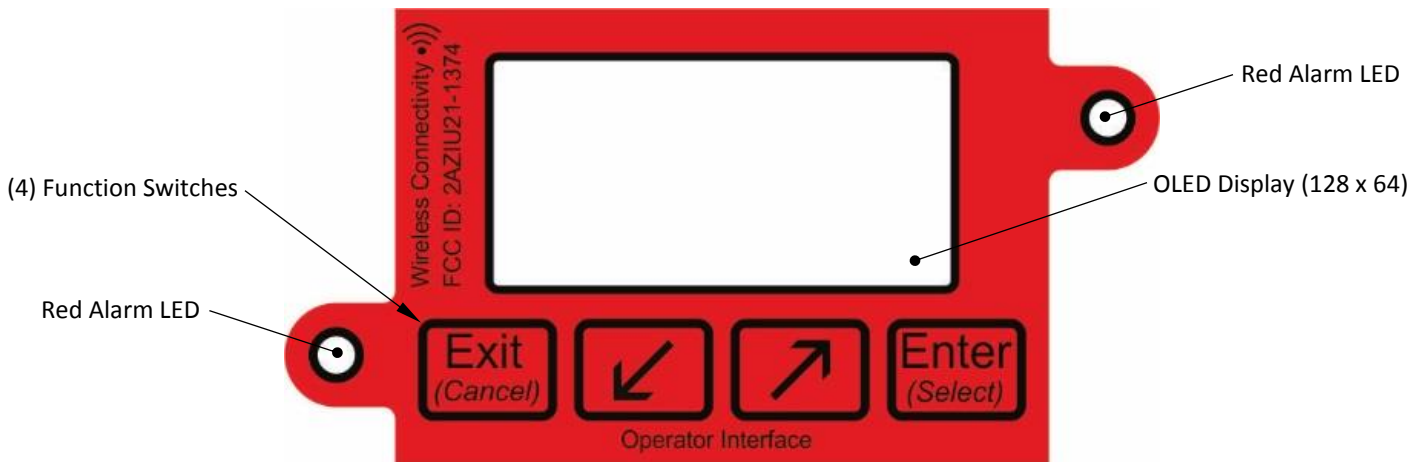
3.0 POWER ON/OFF:

3.1 <u>TURN ON:</u> Hold down **Enter** _(Select)_ momentarily, then release switch.

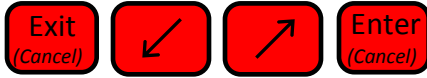3.2 The following screen will appear for approximately one second:

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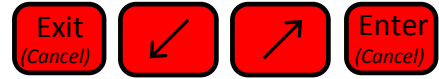Ver.0.7.3

3.3 Followed by the Data Mode screen:

67%

D-001518 rev 00

3.4 TURN OFF:

**1. Hold down Exit switch until a single bar displays above.**

67% 🔋
`---`

Exit *(Cancel)* | ↙ | ↗ | Enter *(Cancel)*

2. Continue to hold down Exit switch until a second bar displays above. Now release switch; unit will power down.

67% 🔋
`===`

Exit *(Cancel)* | ↙ | ↗ | Enter *(Cancel)*

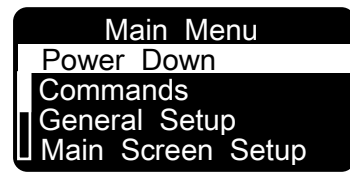### 3.5 ALTERNATE TURN OFF:

Starting with the Data Mode screen mentioned in 3.3 above:

1. Hold down Exit switch until a single bar displays above.

67% 🔋
`---`

Exit *(Cancel)* | ↙ | ↗ | Enter *(Cancel)*
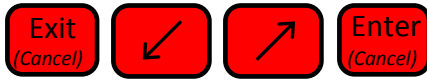
2. Release Exit switch and the screen will change to the Menu Mode screen.

```
        Main  Menu
Power  Down
Commands
General  Setup
Main  Screen  Setup
```

Menu item "POWER DOWN" is highlighted. Press **Enter** *(Select)* momentarily to accept and unit will turn off.

4.0   MENU MODE:

The white portion of the menu bar indicates how much of the current menu is being displayed →

```
        Main  Menu
Power  Down
Commands
General  Setup
Main  Screen  Setup
```
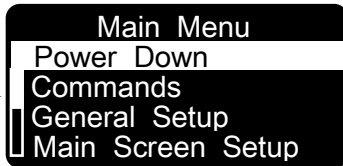
Use ↙ ↗ to navigate up and down the menu.

Use **Enter** *(Select)* to select a highlighted menu item.

4.1 Use ↙ to scroll down to the lower part of this menu:

```
        Main  Menu
Main  Screen  Setup
Warnings
Voltages
Exit Menu
```
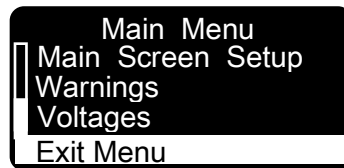
4.2 Press **Exit** *(Cancel)* momentarily to return to Data Mode, as shown below.

67% 🔋 ← Battery Indicator

`---` ← No Tilt Data Indicator
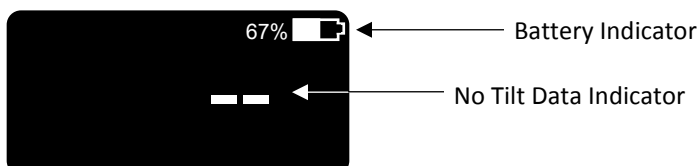
5.0   PAIR THE OPERATOR INTERFACE TO A SENSING UNIT:

5.1 Turn Sensing Unit ON to get a slowly flashing green LED. *See Operating Manual for Sensing Unit for more details.*

5.2 Turn Operator Interface ON as in 3.1 above.

5.3 On Sensing Unit, hold down ⬛ until the red LED flashes once. *This turns on BLE advertising from the Sensing Unit.*

5.4 Press **Enter** *(Select)* on Operator Interface until one line appears above that switch on the display, then release.

5.5 Angles should begin appearing on the Operator Interface that represent the position of the Sensing Unit in real time as shown here.

Sensing Unit battery indicator

NOTE: "U" in the left upper corner of the display indicates the sensor unit is connected as a USB drive to PC.

"F" in upper left corner of the display indicates that the BLE linked Sensing Unit is currently saving data to a file in the Sensing Unit.

"C" in the upper left corner indicates the Sensing Unit is charging.

UFC 🔋 91%   67% 🔋

15⁰   0⁰   ← Tilt Data

← ROLL ←   - PITCH -   ← Data Type
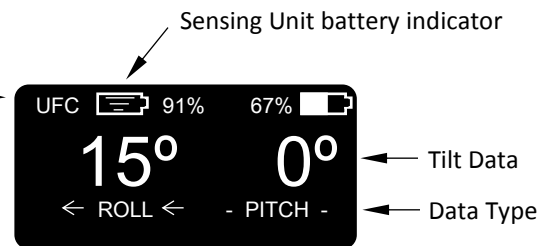
5.6   The Menu Mode may be used to change the characteristics of the display screen i.e. what is displayed and where. An example is shown here:

🔋 91%   67% 🔋

24%

↑ GRADE ↑

6.0   Main Menu MAP:

6.1 Power Down

6.2 Commands

    6.2.1   Scanning

    6.2.2   Disconnect

    6.2.3   Start Filing

    6.2.4   Stop Filing

    6.2.5   Tare

    6.2.6   Save Calibration

    6.2.7   Back

D-001518 rev 00

7.0 Main Menu DETAILS:

7.1 **Power Down** – Turns the Operator Interface off.

7.2 **Commands** – Brings up the following sub-menu.

    7.2.1   **Scanning** – Starts a scan for a Sensing Unit ready to be paired. Displays "Scanning Started." then returns to the previous menu. If pairing is successful, data will be displayed in the Data Mode.

    7.2.2   **Disconnect** – Disconnects the Operator Interface from a paired Sensing Unit. Displays "Disconnecting…" then returns to the previous menu.

D-001518 rev 00

7.2.3 **Start Filing** – Commands the Sensing Unit to begin filing data. Displays "Filing Started." then returns to the previous menu. An "F" will now appear in the top left corner of the display during Data Mode.

7.2.4 **Stop Filing** – Commands the Sensing Unit to quit filing data. Displays "Filing Stopped." then returns to the previous menu. The "F" will no longer appear during Data Mode. *The data previously filed remains stored.*

7.2.5 **Tare** – Commands the Sensing Unit to zero all angles based on the current orientation of the Sensing Unit. Displays "Tare request sent." then returns to the previous menu. Tare survives power down.

7.2.6 **Save Calibration** -

7.2.7 **Back** - Returns to Main Menu.

7.3 **General Setup** – A dot, to the left of the function indicates it is ON. If function is highlighted, then **Enter** *(Select)* will toggle between ON and OFF.

7.3.1 ● Power Up Scan   Defaults to ON. The Operator Interface will begin scanning for a Sensing Unit BLE advertisement @ power-up.

7.3.2   Positive Display   Defaults to OFF.   White lettering on black background.

7.3.3 **Back** – Returns to previous menu.

7.4 **Main Screen Setup**.

7.4.1 **Number of Items** – Only one option may be selected. A dot to the left shows what is selected.

7.4.1.1 **1** – Display only one position angle in Display Mode.

7.4.1.2 **2** – Display two position angles in Display Mode

7.4.1.3 **2 Auto** – Not currently implemented.

7.4.1.4 **Back** – Returns to previous menu.

7.4.2 **Right** - Configure what displays on the right side of the screen.

7.4.2.1 **Items** - Only one option may be selected. A dot to the left shows what is selected.

7.4.2.1.1 **None**

7.4.2.1.2 **Roll**

7.4.2.1.3 **Pitch**

7.4.2.1.4 **Grade**

7.4.2.1.5 **Compass**

7.4.2.1.6 **Back** - Returns to previous menu.

7.4.2.2 **Units of Measure** – Only one option may be selected. A dot to the left shows what is selected.

7.4.2.2.1 **º degree**.

7.4.2.2.2 **% percent**.

7.4.2.2.3 **Back** – Returns to previous menu.

7.4.2.3 **Use sign** – Only one option may be selected. A dot to the left shows what is selected.

7.4.2.3.1 **No** – Minus sign will not be used in position angle displays, only the standard arrows.

7.4.2.3.2 **Yes** – Minus sign will display in addition to the standard arrows in the appropriate direction. *Plus sign is never used*.

7.4.2.3.3 **Back** - Returns to previous menu.

7.4.2.4 **Digits** – Applies to the compass selection only. Only one option for the number of display digits may be selected. A dot to the left shows what is selected.

7.4.2.4.1 **1** - N for example.

7.4.2.4.2 **2** - NW for example.

7.4.2.4.3 **3** – NNW for example.

7.4.2.4.4 **Back** - Returns to previous menu.

7.4.2.5 **Back** - Returns to previous menu.

7.4.3 **Left** - Configure what displays on the left side of the screen.

7.4.3.1 **Items** - Only one option may be selected. A dot to the left shows what is selected.

7.4.3.1.1 **None**

7.4.3.1.2 **Roll**

7.4.3.1.3 **Pitch**

7.4.3.1.4 **Grade**

7.4.3.1.5 **Compass**

7.4.3.1.6 **Back** - Returns to previous menu.

7.4.3.2 **Units of Measure** – Only one option may be selected. A dot to the left shows what is selected.

    7.4.3.2.1 **º degree**.

    7.4.3.2.2 **% percent**.

    7.4.3.2.3 **Back** – Returns to previous menu.

7.4.3.3 **Use sign** – Only one option may be selected. A dot to the left shows what is selected.

    7.4.3.3.1 **No** – Minus sign will not be used in position angle displays, only the standard arrows.

    7.4.3.3.2 **Yes** – Minus sign will display in addition to the standard arrows in the appropriate direction. *Plus sign is never used*.

    7.4.3.3.3 **Back** - Returns to previous menu.

7.4.3.4 **Digits** – Applies to the compass selection only. Only one option for the number of display digits may be selected. A dot to the left shows what is selected.

    7.4.3.4.1 **1** - N for example.

    7.4.3.4.2 **2** - NW for example.

    7.4.3.4.3 **3** – NNW for example.

    7.4.3.4.4 **Back** - Returns to previous menu.

7.4.3.5 **Back** - Returns to previous menu.

7.4.4   **Back** - Returns to previous menu.

7.5 **Warnings** – Not implemented.

7.6 **Voltages** - Shows the current Operating Interface battery voltage and USB charging source. Pressing Enter refreshes the voltages being displayed.

        Battery **:** X.XXX V

        USB   **:** X.XXX V

7.7 **Exit Menu** – Goes to the Data Mode Screen.