



**MHL
MHL-158-8**

**MHL
WITH ADAPTER**
(Only included in MHL Adapter Kit)

**BLUETOOTH
MODULE**
(Only included in MHL Adapter Kit)

INTRODUCTION

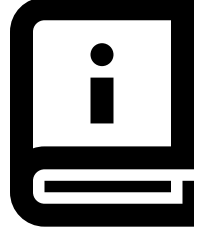
Thank you for choosing the Miners Helpers (MHL) system, a single-point rock movement monitor from Simplified Mine Instruments. This manual provides step-by-step instructions for installing the MHL, MHL Adapter, and Bluetooth Data Logger. Please read this manual carefully before beginning installation to ensure proper setup and optimal performance.

For technical support, contact brankin@minershelpers.com or call customer service at 906-214-8175.

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SAFETY INFORMATION

-  Read all instructions before starting installation.
-  Ensure the installation area is clear of obstacles and hazards.
-  If you are unsure about any step, consult a professional or contact technical support.

TOOLS & MATERIALS REQUIRED

Crimping tool for rod sets	Smartphone or device with Bluetooth capability (for data logger setup)
¼” Allen wrench	Dead blow hammer (optional, for rod insertion)
5/64" Allen wrench (for MHL Adapter only)	Dial gauge (sold separately, Optional: Used for local mechanical measurements)

PACKAGE CONTENTS

Ensure all components are included before starting:
MHL Roof Monitoring Unit (with 12” reflectorized drop flag)
MHL Rod Set
MHL Adapter (Only included in MHL Adapter Kit)
Bluetooth Data Logger (Only included in MHL Adapter Kit)
Extension data cables (Only included in MHL Adapter Kit)



INSTALLATION OVERVIEW

Estimated installation time: **10-20 minutes**

The installation process involves three main steps:

1. Mounting the MHL in the desired location.
2. Attaching and configuring the MHL Adapter.
3. Installing and pairing the Bluetooth Data Logger for wireless data collection.

STEP-BY-STEP INSTALLATION INSTRUCTIONS

INSTALLING THE MHL

1. Determine Anchor Depth: Measure the required depth from the mine roof to the anchor point.
2. Prepare Rods: Lay out the MHL collar device and rods on a flat surface and cut the fiberglass rod to the required length if different from the ordered length.
3. Check Anchor Size: Ensure the flat anchor is $\frac{1}{4}$ " longer than the drill hole diameter (e.g., a 1-5/8" diameter hole requires a 1-7/8" long flat anchor).
4. Assemble Rods: Crimp the rods together and attach them to the collar device.
5. Insert into Borehole: Insert the unit anchor-first into the borehole (minimum 1-1/2" diameter). Push until the thrust pins are inside the borehole.
6. Extend Thrust Pins: Use a $\frac{1}{4}$ " Allen wrench in the middle hole to turn clockwise and extend the thrust pins.
7. Remove Stop Collar: Remove the silver stop collar on the red slotted rod.
8. Set Drop Flag Trip: Adjust the red slotted rod to set the desired drop flag trip distance (see Figure 1).
9. Record Initial Reading: Take an initial base reading with the dial gauge (sold separately) or Bluetooth data logger and keep it in your records.

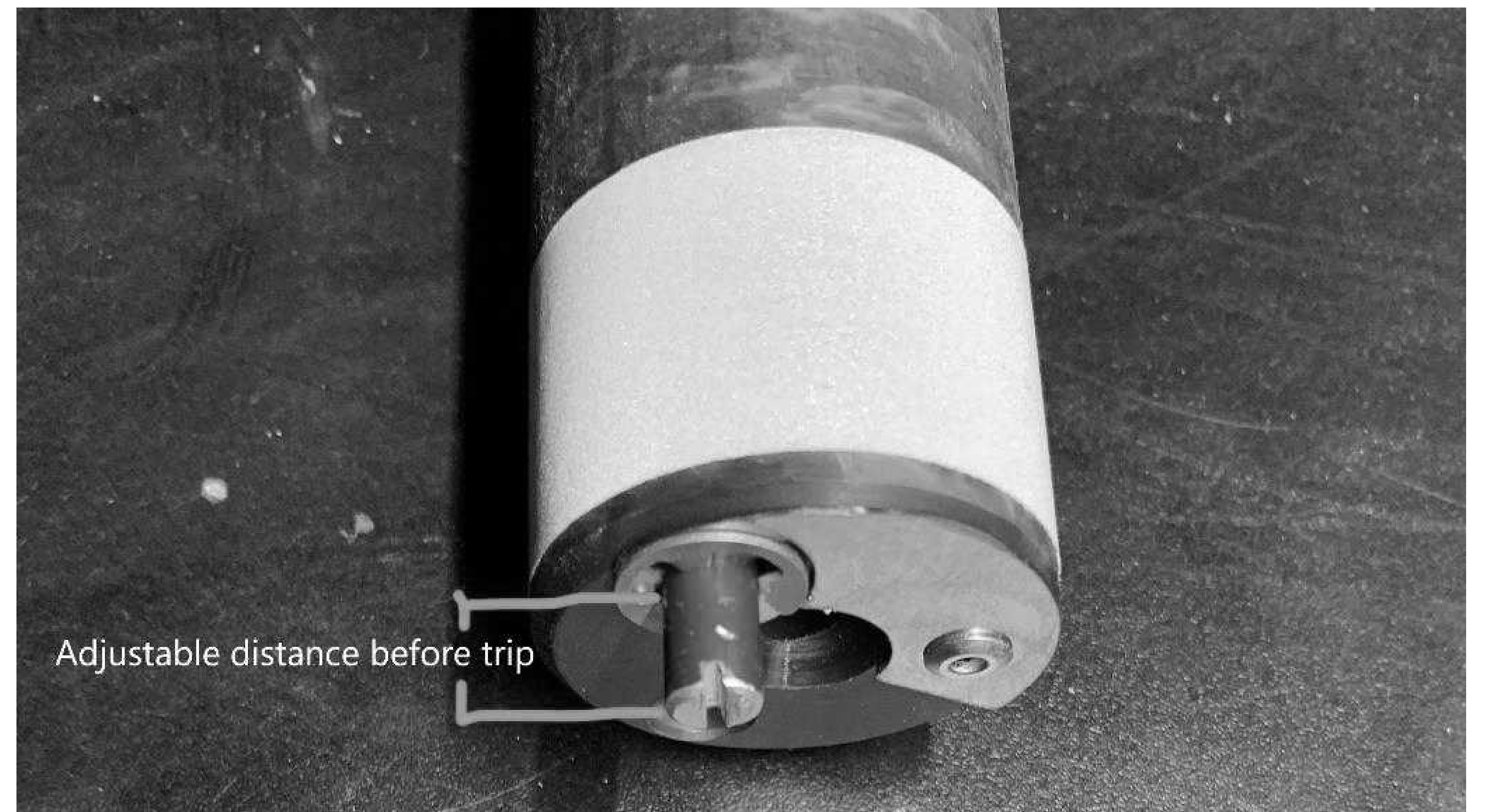


Figure 1

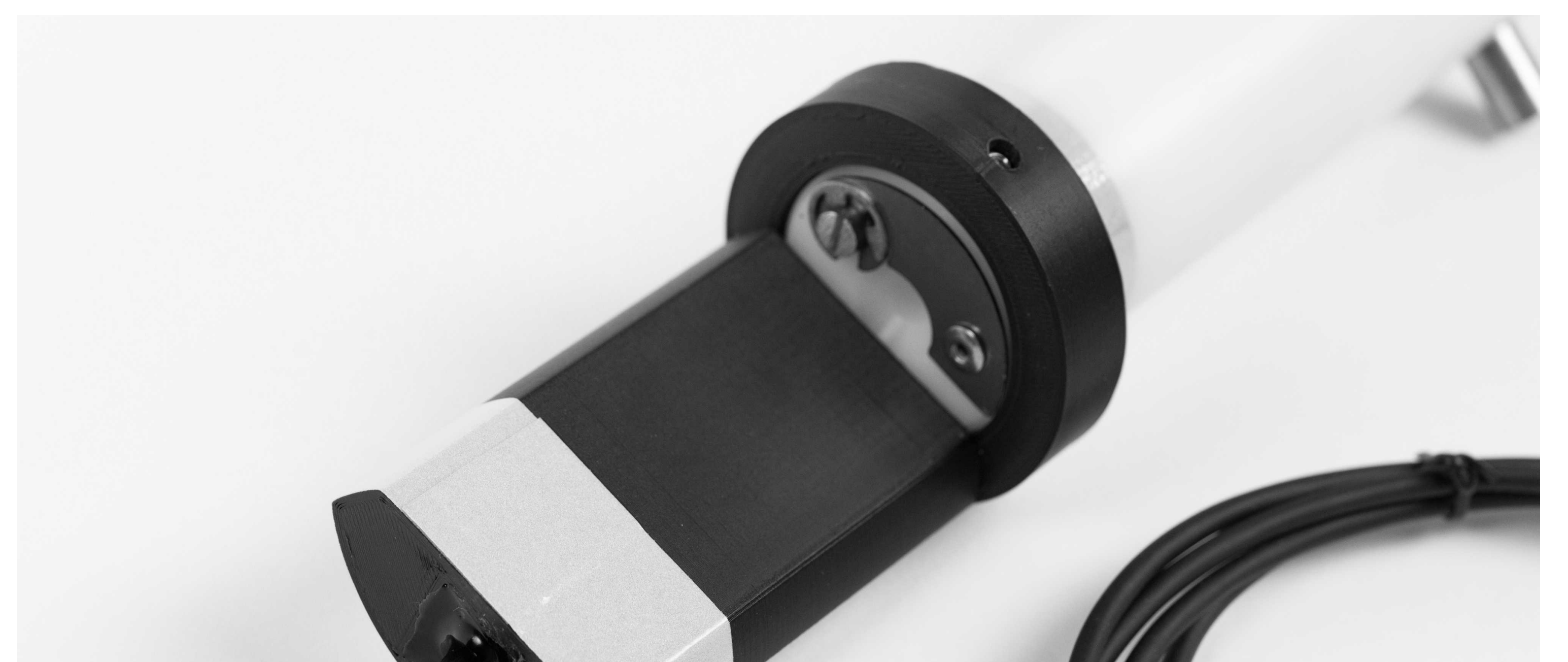
BEST PRACTICES

- Drill 1-2 feet past your desired monitoring distance to prevent clay packing or other issues.
- Anchor in solid rock. If anchoring in a clay seam or loose shale, contact SMI for solutions.
- If the monitoring rod is difficult to push, lightly tap the end with a dead blow hammer.

INSTALLING THE MHL ADAPTER

(Only included in MHL Adapter Kit)

1. Align the MHL Adapter so the black sensor rod is positioned in line with the White rod hole.
2. Securely connect the adapter, ensuring a tight connection to prevent disconnection during operation.
3. Tighten the allen screw on the adapter until it is snug against the MHL collar.

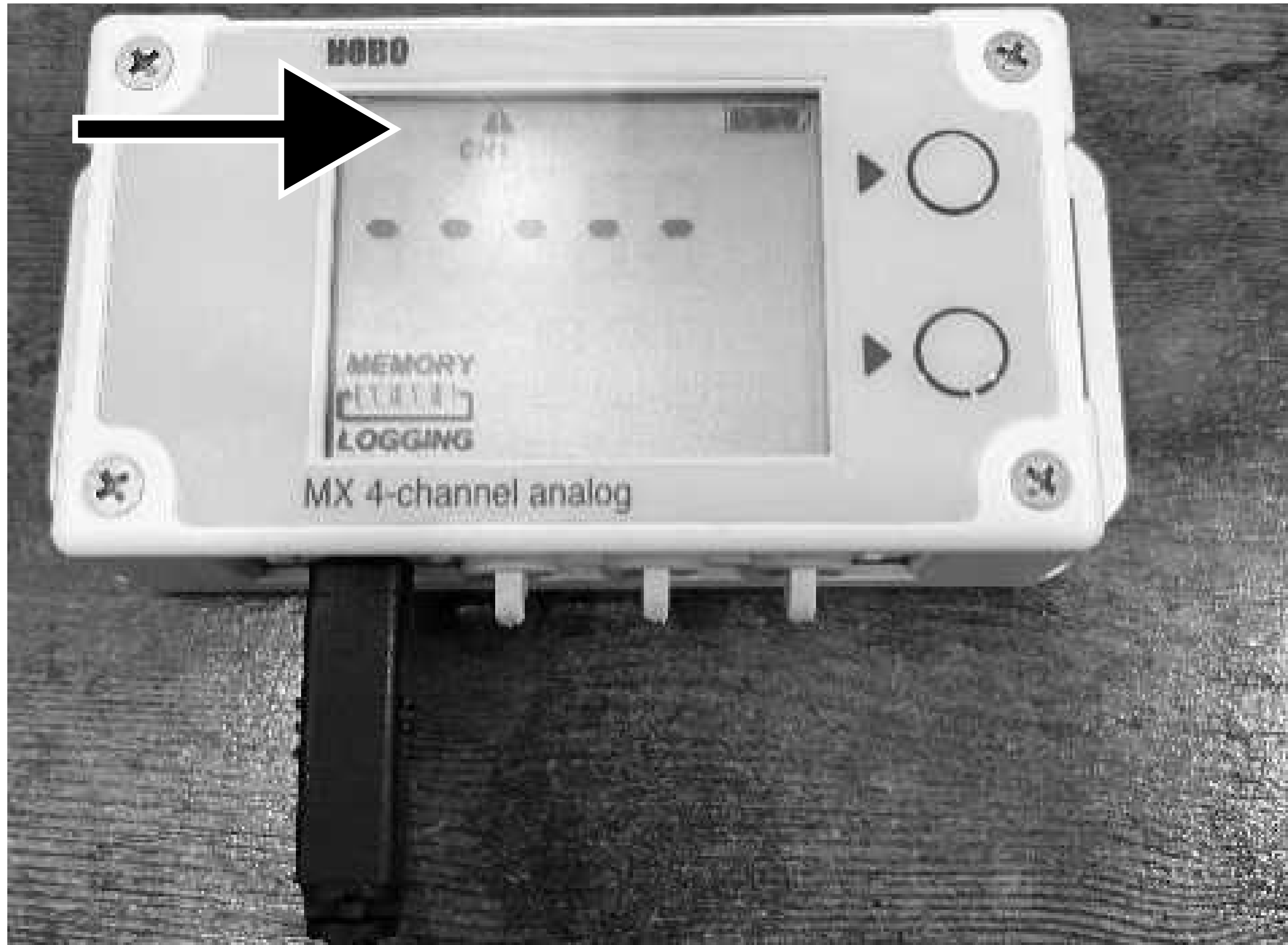


STEP-BY-STEP INSTALLATION INSTRUCTIONS CONT.

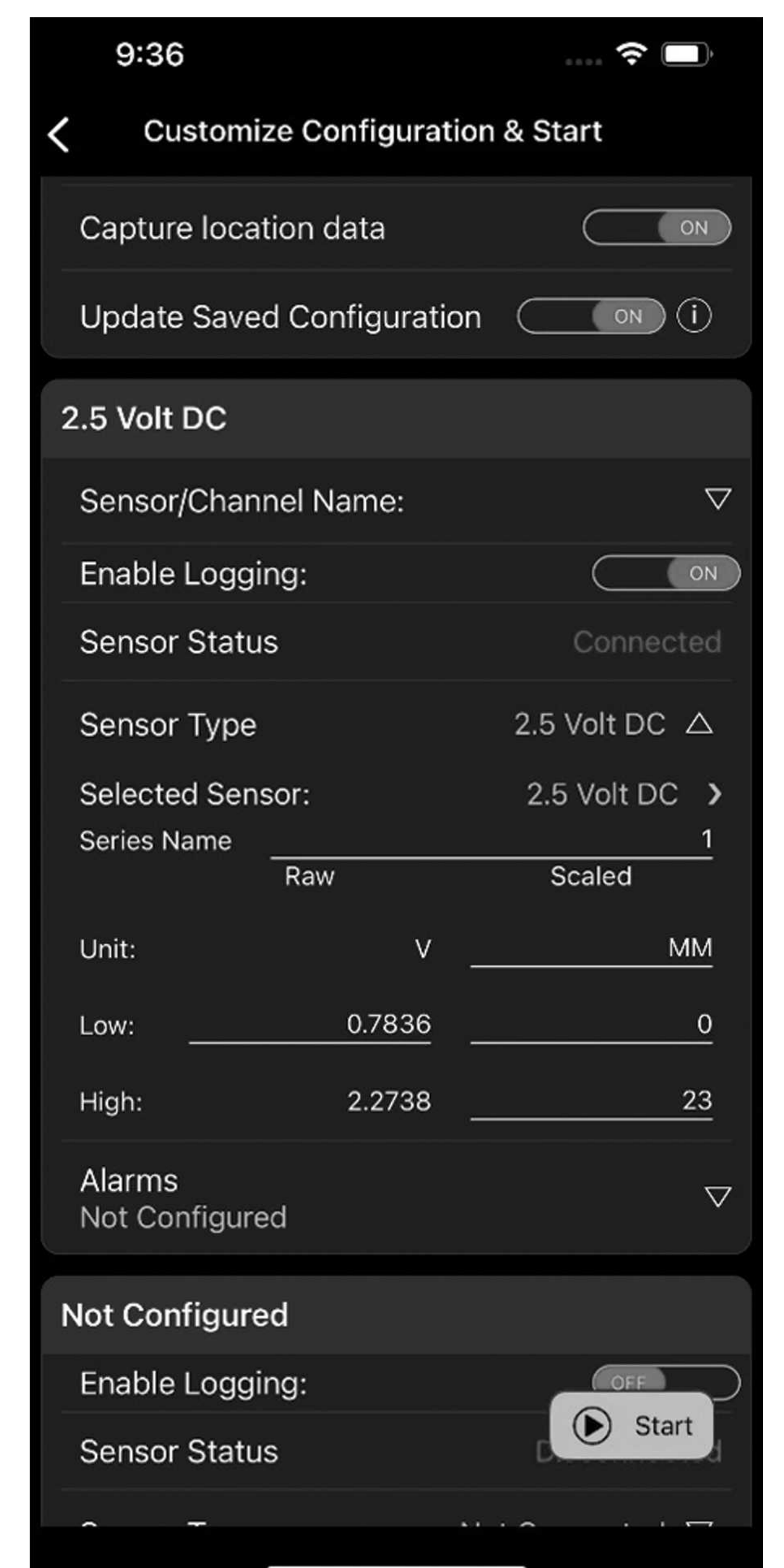
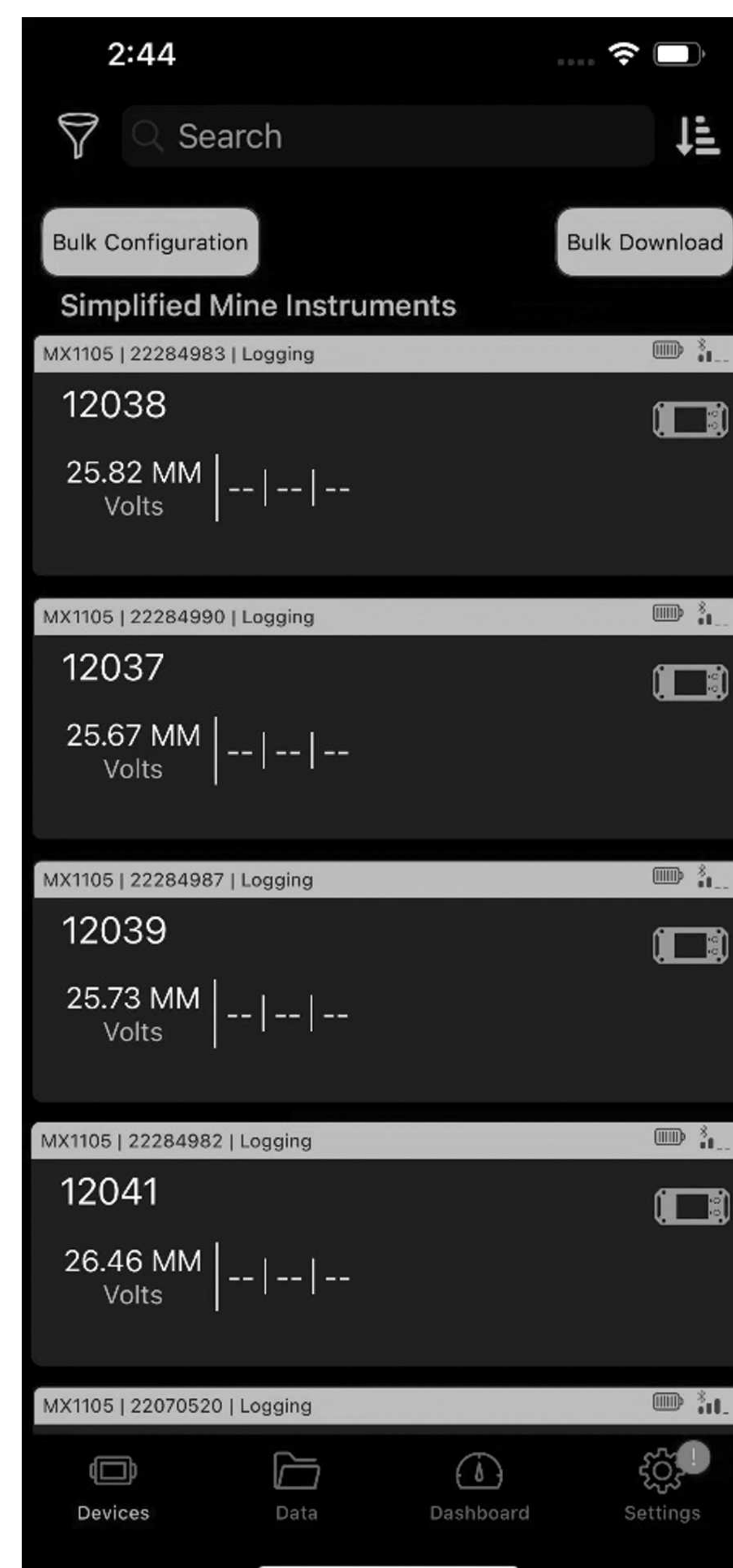
INSTALLING AND PAIRING THE BLUETOOTH MODULE

(Only included in MHL Adapter Kit)

1. Plug the MHL Adapter into the Bluetooth Data Logger's position/channel 1.
2. Download Hobo Data logger app from the App Store or Google Play.



3. Enable Bluetooth on your smartphone or device.
4. Open the app and look for the data logger (it will display an 8 digit number which is also on the box the data logger comes in or on the back of the physical data logger. Once paired it will display the SN on the parts bag this comes in. You can change the name from there.
5. The logging interval comes preset at 12 hours and the linear scaling is preset as well. Tested at SMI in Shop conditions. If readings deviate from the dial gauge (within 0.01"), rescale.
6. To rescale, set data logger to 1 second logging, change both the voltage and scaled sides to 2.5. Record reading with the dial gauge at 0 (no movement), apply maximum movement (e.g., 38.1 mm) and record the reading. Input the first reading in the top Voltage box in app. Input the second reading in the bottom Voltage box in app. Move to the right, label the scaled portion "mm." Enter 0 in the top right scaled box and 38.1 mm in the bottom right scaled box. Change logging interval back to previous value.
7. See Video: <https://www.youtube.com/watch?v=cW0SbOXJ3vk> for full overview.
8. Test the connection by taking an initial reading by hitting the download data button on the data logger main screen. Export or save it locally to the phone or tablet being used.



For detailed information on the Hobo data logger see the installation manual here: **[Hobo MX1104 & MX1105 Manual](#)**

SPECIFICATIONS

MHL

Made in the USA
Single-point rock movement monitor with a 12” reflectorized drop flag, visible from great distances.
Thousandths of an inch measurements retrievable at the instrument with the use of a dial gauge.
Non corrosive materials
Designed to install quickly and is easy to use by all.
1-1/2” diameter hole minimum.
Unlimited monitoring depth.
User set trips, Resettable and adjustable

DATA LOGGER

Resolution Accuracy	.001”
Operating Range	20° to 70°C (-4° to 158°F)
Operating Range	mW (0 dBm)
Radio Power 1	Approximately 30.5 m (100ft) line of-site
Transmission Range	Bluetooth Low Energy (Bluetooth Smart)
Wireless Data Standard	1 second to 18 hours
Logging Rate	Fixed interval (normal, statistics) or burst
Memory Modes	Wrap when full or stop when full
Start Modes	Immediate, push button, date & time, or next interval
Stop Modes	When Memory full, push button, date & time, or after a set of logging period
Time Accuracy	± minute per month at 25°C (77°F)
Battery Type	Two AAA 1.5 V alkaline batteries, user replaceable
Battery Life	1 year, typical with logging interval of 1 minute and Bluetooth Always On enabled; 2 years, typical with logging interval of 1 minute and Bluetooth Always On disabled; and temperatures between 0° and 50°C (32" and 122°F). Faster logging intervals and statistics sampling intervals, burst logging, remaining connected with the app, excessive downloads, and paging may impact battery life. Memory 4 MB (1.9 million measurements, maximum)
Memory	4MB
Full Memory Down Time	Approximately 4 to 15 minutes depending on the mobile device; may take longer the further the device is

PART NUMBER EXPLANATIONS

Product Name	First 3 Characters	Next 3 Characters	Last 1 Character
MHL Roof Monitor MHL-158-8	MHL = MHL Roof Monitor	158 = Hole Diameter = 1-5/8”	8 = Desired Monitoring Depth = 8’

SIMPLIFIED MINE INSTRUMENTS
Iron River, MI
minershellers.com