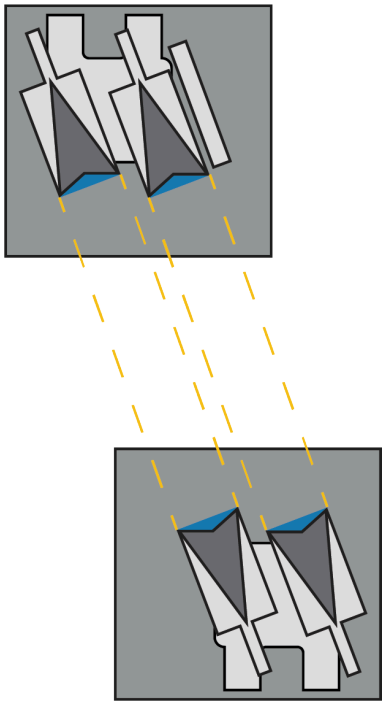
RAUTE
METRIGUARD

MVA3 User Manual



Part Number: MVA3-FCC-Manual

Revision: 1.2
December 5, 2023

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NOTICE OF PROPRIETARY INFORMATION

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Chapter 1. Declarations of Compliance

FCC Approval Statements

For FCC ID: 2BCZ5-MVA3

> **Note**
> These sensors have no data inputs and therefore FCC rule part 15.212(a)(1) Condition (ii) does not apply.

This device complies with Part 15 of 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 Metriguard Technologies Inc. could void the user's authority to operate the equipment.

To comply with FCC's RF radiation exposure requirements, the antenna(s) used for this transmitter must be installed such that a minimum separation distance of 20 cm is maintained between the radiating element (antenna) & any user's or bystander at all times and must not be co-located or operating in conjunction with any other antenna or transmitter.

> **Note**
> This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Canadian ISED Compliance Statements

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

The installation of the LPR/TLPR device shall be done by trained installers, in strict compliance with the manufacturer's instructions.

The use of this device is on a "no-interference, no-protection" basis. That is, the user shall accept operations of high-powered radar in the same frequency band which may interfere with or damage this device.

However, devices found to interfere with primary licensing operations will be required to be removed at the user's expense.

US Declaration of Conformity

Model: MVA3

US Representative:

Metriguard Technologies Inc.
2465 NE Hopkins Ct
Pullman, WA 99163
(509) 332-7526
https://www.raute.com/

This device complies with Part 15 of 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.

Approved Use

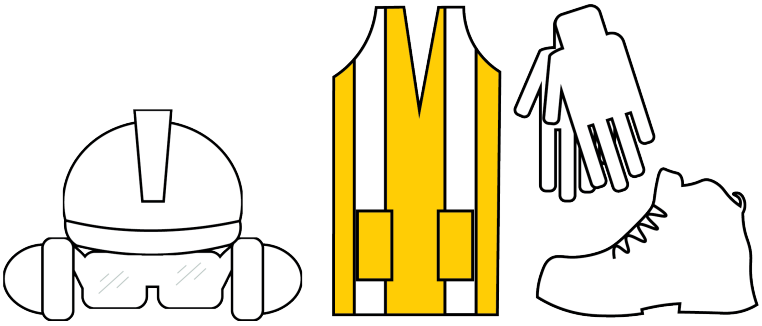
> **Important**
> The MVA3 sensors are designed for use in Raute's Veneer Moisture Analyzer R7. Any other use must receive advance approval by Metriguard Technologies Inc..

Table 1.1. Approved Antenna

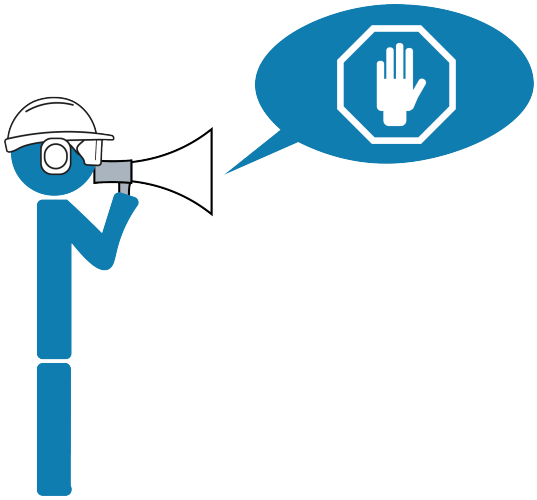
Antenna	Peak Gain (dBi)	Antenna Type	Manufacturer
MVA3 Top Sensor	25.7	Horn	Senfit Oy
MVA3 Bottom Sensor	25.7	Horn	Senfit Oy

Chapter 2. Safety

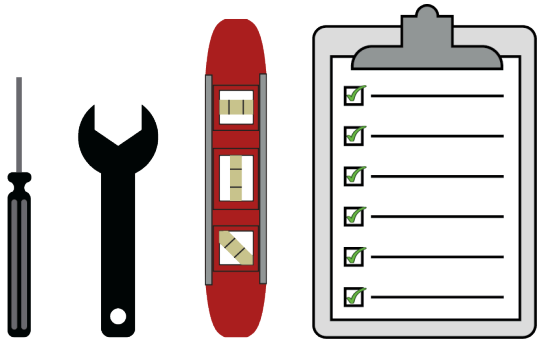
Always wear the mill's required personal protective equipment.



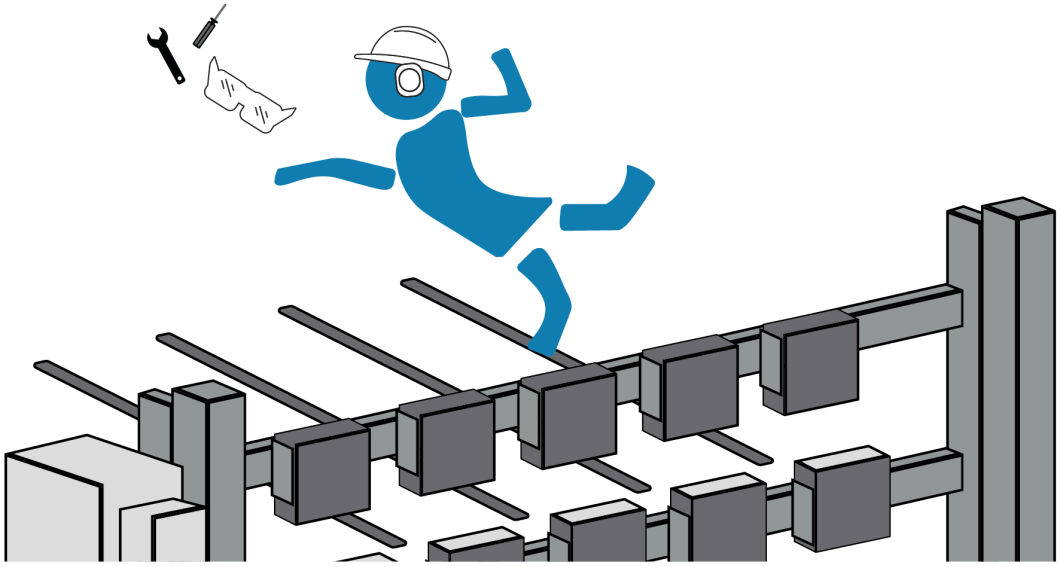
Always communicate with your coworkers to prevent accidents.



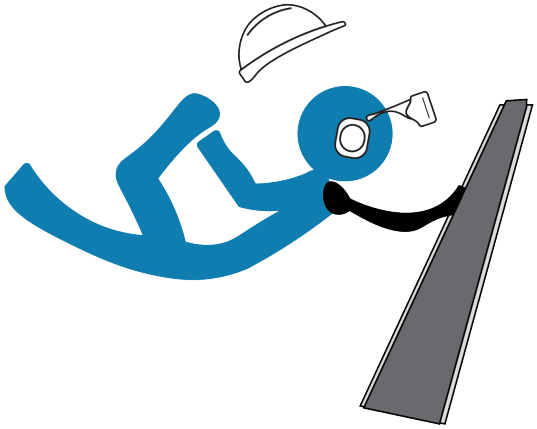
Inspect and maintain the system regularly.



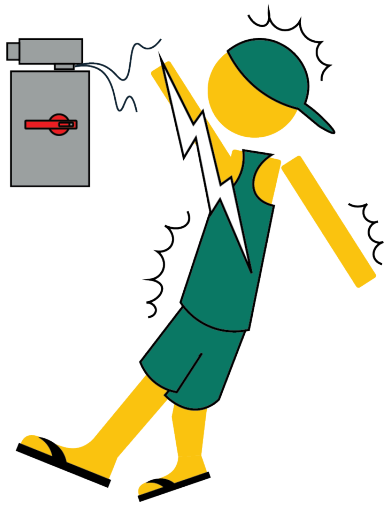
Always lock out the conveyor to do maintenance on the MVA3.



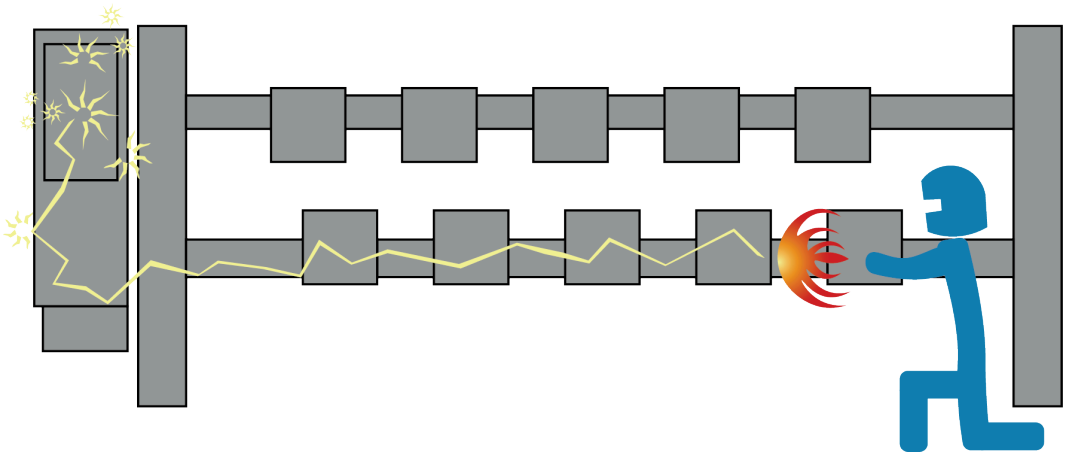
Never wear neckties, jewelery, or baggy clothes.



Never let unqualified people work on the electronics.



Do not weld.



Chapter 3. Labels

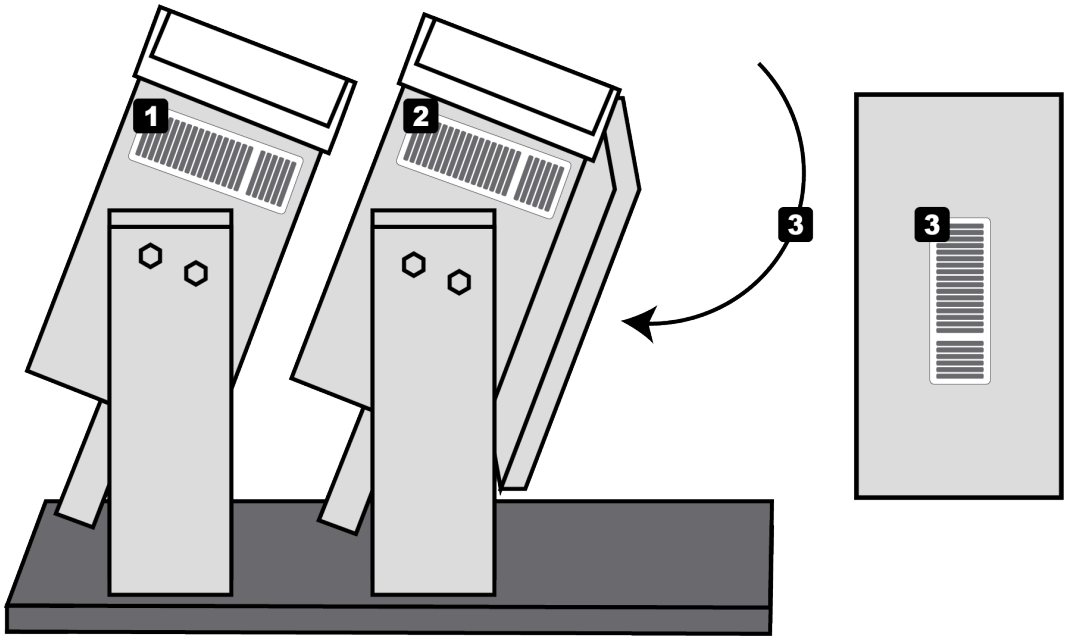
This label must be on the horns and card cage of every sensor.

Model MVA3
FCC ID: 2BCZ5-MVA3
IC: 31390-MVA3
This device complies with Part 15 of 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.

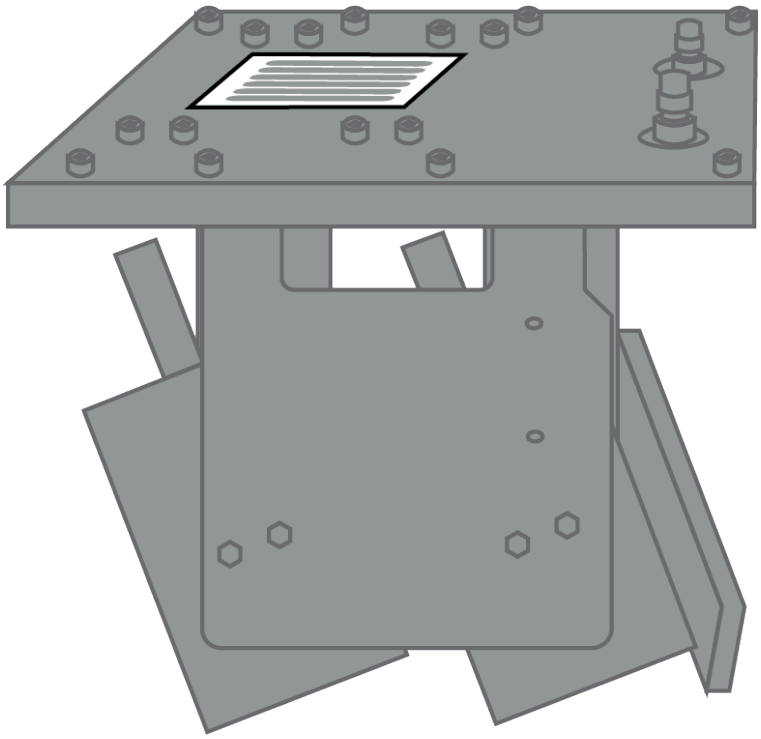
This label must be on the outside of every sensor.

Model MVA3
Contains FCC ID: 2BCZ5-MVA3
Contains IC: 31390-MVA3
This device complies with Part 15 of 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.

1. Label each horn and card cage.



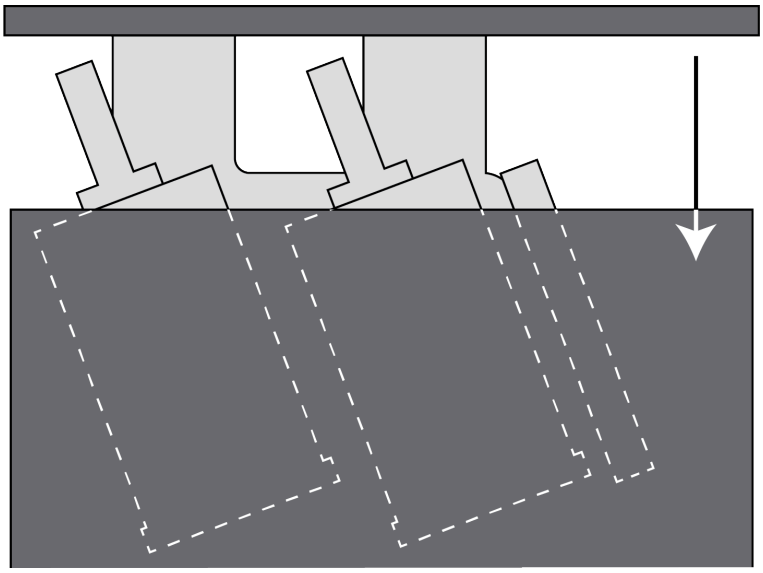
2. Label each sensor.



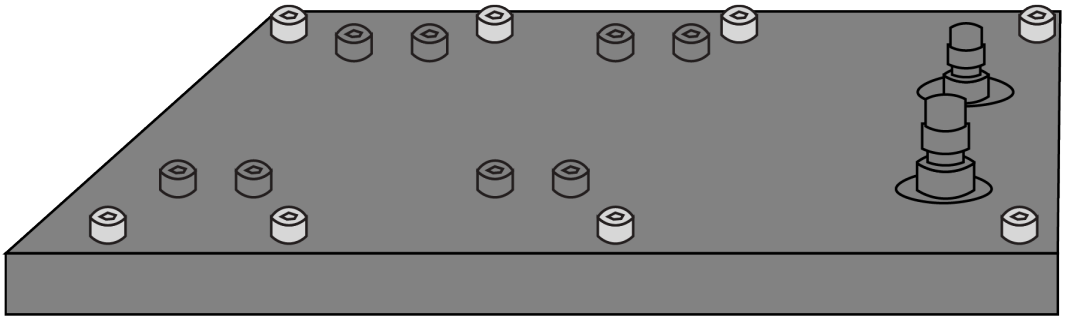
3. Place the sensor in the box.

Caution

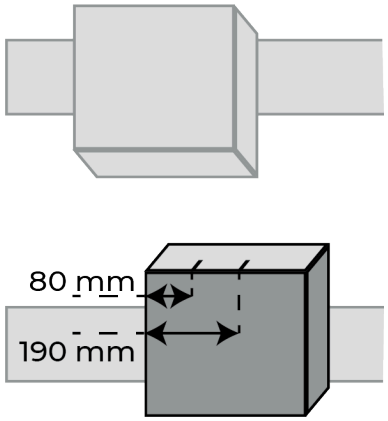
The wires inside the sensor are fragile. Do not bump the wires as you insert the sensor.



4. Use a 4 mm Allen wrench to screw on the 8 bolts.



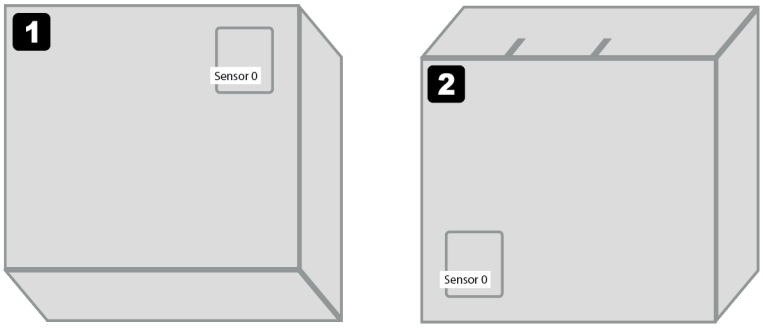
5. Make sure each bottom face plate is marked at 80 mm (3.15 inches) and 190 mm (7.48 inches).



6. Label the sensor boxes.

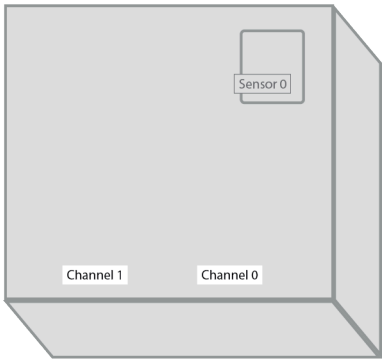
   a. Label the top (1) and bottom (2)sensors with their sensor number.

   > **Tip**
   >
   > Sensor 0 is on the right when facing upstream and on the left when facing downstream.

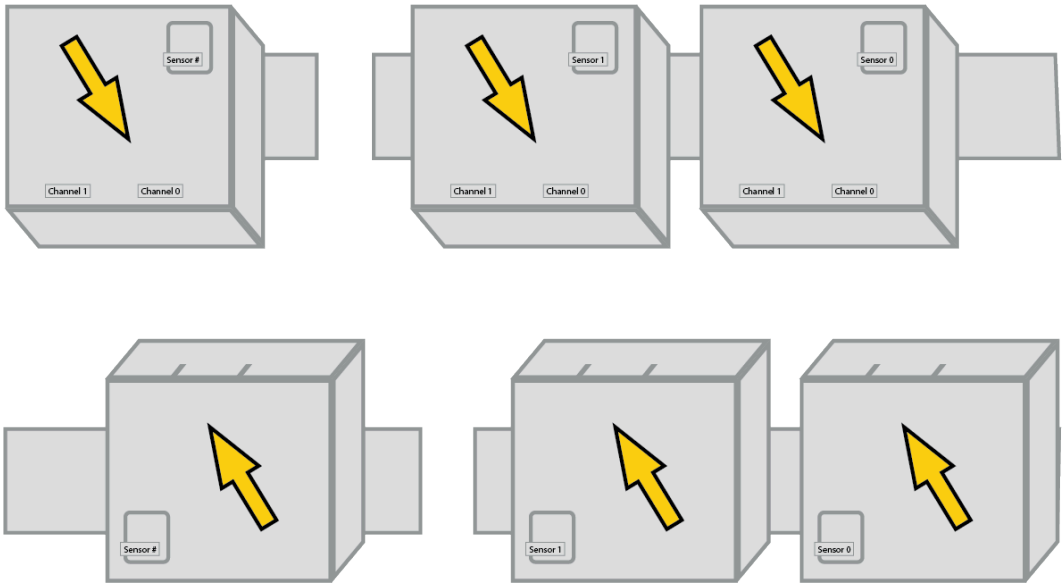


   b. Label each sensor to identify the interior channels.

   > **Tip**
   >
   > Inside the sensors, channel 0 is on the right when looking upstream and on the left when looking downstream.



c. Add arrows to show the horn direction.



7. See Chapter 4 (p. 13) to wire the sensors.

8. Calibrate the MVA3 for moisture and density before grading.

Chapter 4. Cables

Danger

Turn off and lock out the conveyor for this procedure.

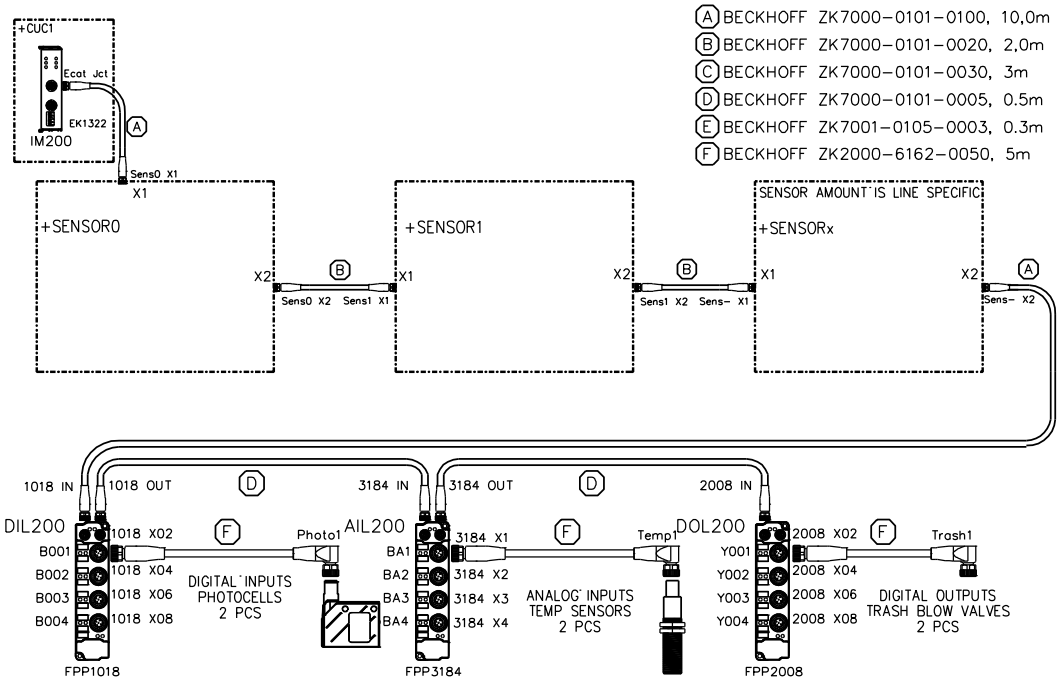


Figure 4.1. Cable Wiring Diagram

1. Make sure each sensor cable is connected as shown in Figure 4.1 (p. 13).
2. Make sure each sensor cable is labelled on both ends as shown in Figure 4.1 (p. 13).

Chapter 5. Alignment

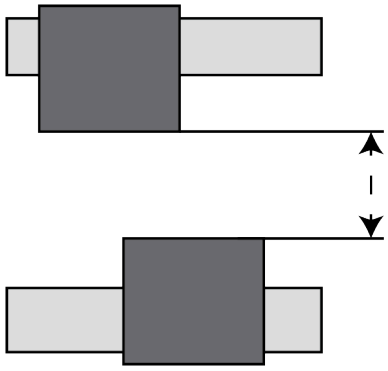
Make sure the sensors are properly aligned. The sensors must be aligned for proper measurement of moisture and density.

This procedure requires the following:

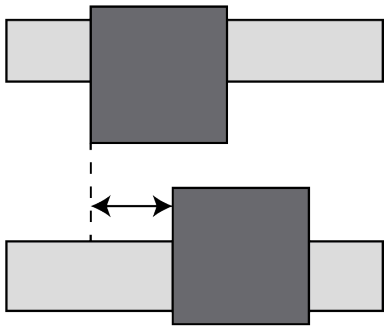
- 3/16 inch Allen wrench
- Metric tape measure
- Level

1. Measure the distance between sensors.

> **Important**
>
> There must be a 221 mm (8.7 inches) gap between the top and bottom sensors.



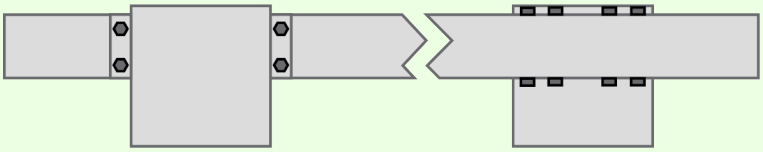
2. Measure the offset between the paired top and bottom sensors.



3. Move the top sensor until it is about 140 mm (5.5 inches) offset from the bottom sensor.

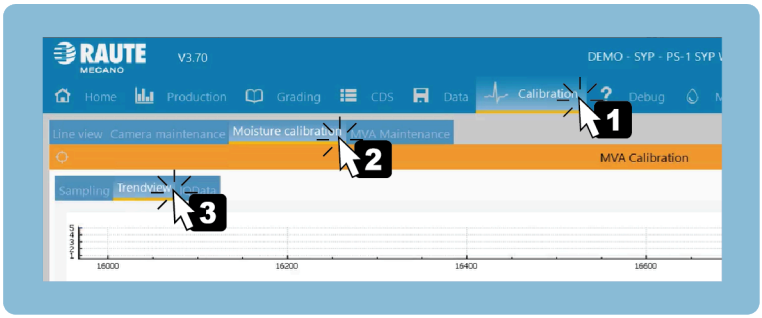
Tip

Use your 3/16 inch Allen wrench to loosen the bolts holding the top sensor to the rail.



Do not tighten the bolts until Step 10 (p. 17).

4. Open the UI software.
5. Log into the software.
6. Navigate to the **Trendview** tab.



a. Click **Calibration**. 1

b. Click **Moisture Calibration**. 2

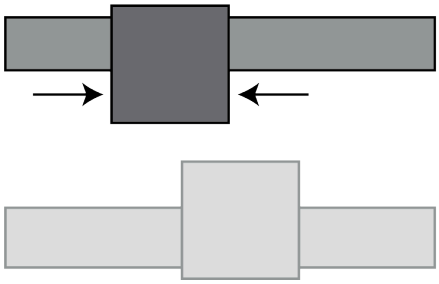
c. Click **Trendview**. 3

7. Select your sensor. 4

8. Select the signal quality for both channels. 5

9. Tap the top sensor to the left or to the right until the sensor quality is as high as possible for both channels.

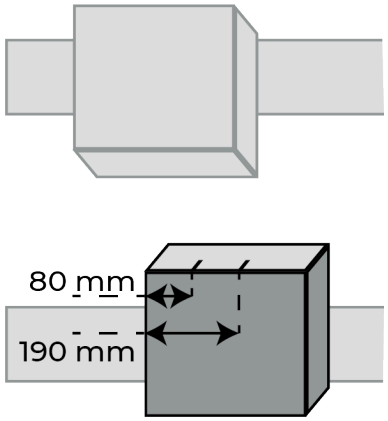
> **Important**
>
> The signal quality should be over 25 db for each channel.



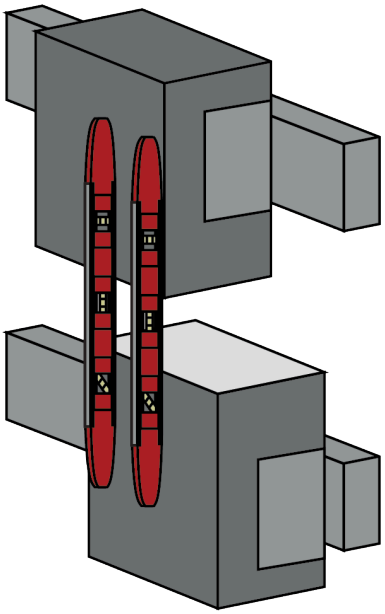
> **Tip**
>
> The sensor quality may go up for one channel and down for the other channel. Adjust the sensor until both signal qualities are as high as possible at the same time.

10. Tighten the sensor bolts.

11. Mark the bottom face plate at 80 mm (3. 15 inches) and 190 mm (7.48 inches).

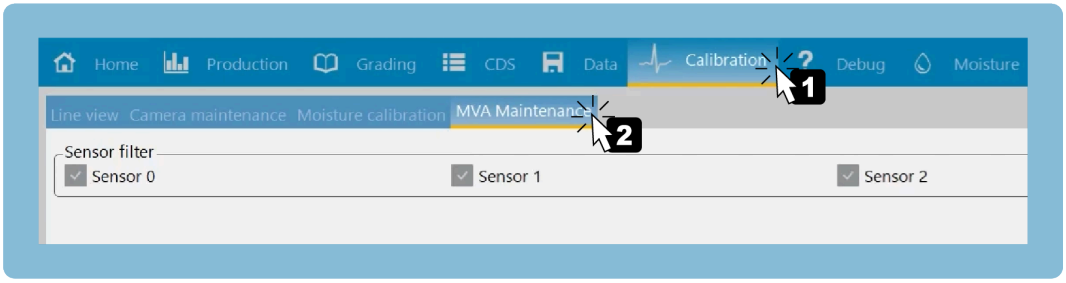


12. Use a level to make sure each sensor pair is aligned.



Chapter 6. Channel Identification

1. Log into the software.
2. Click **Calibration**. 1

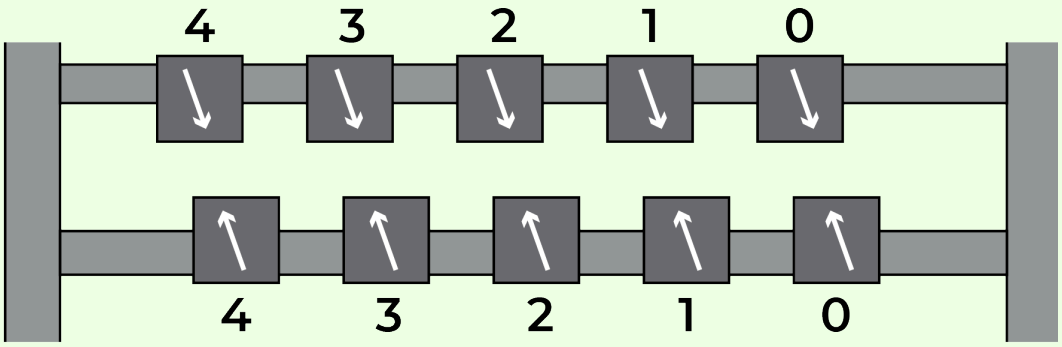


3. Click **MVA Maintenance**. 2
4. Put something under sensor 0 channel 0.

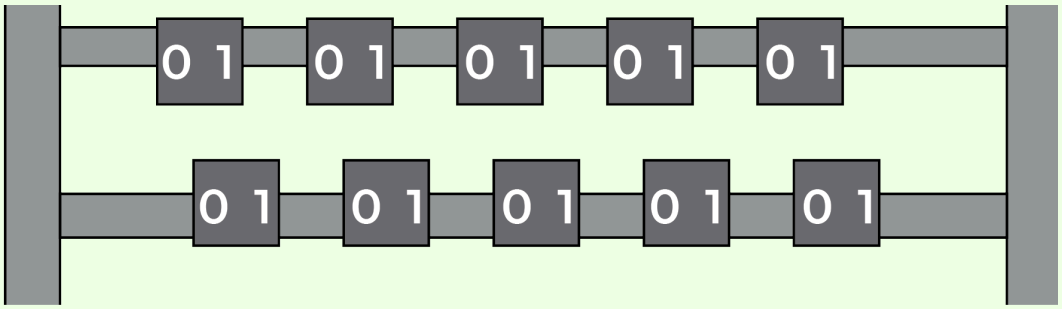
Tip

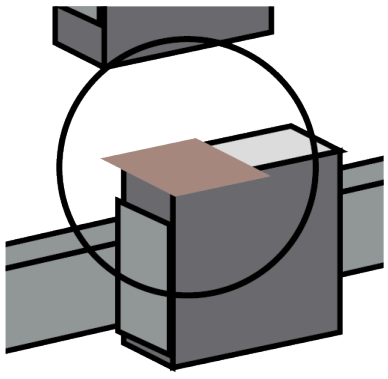
Sensor 0 is on the right when you are looking upstream and on the left when looking downstream.

The arrows should always point toward the matching sensor.

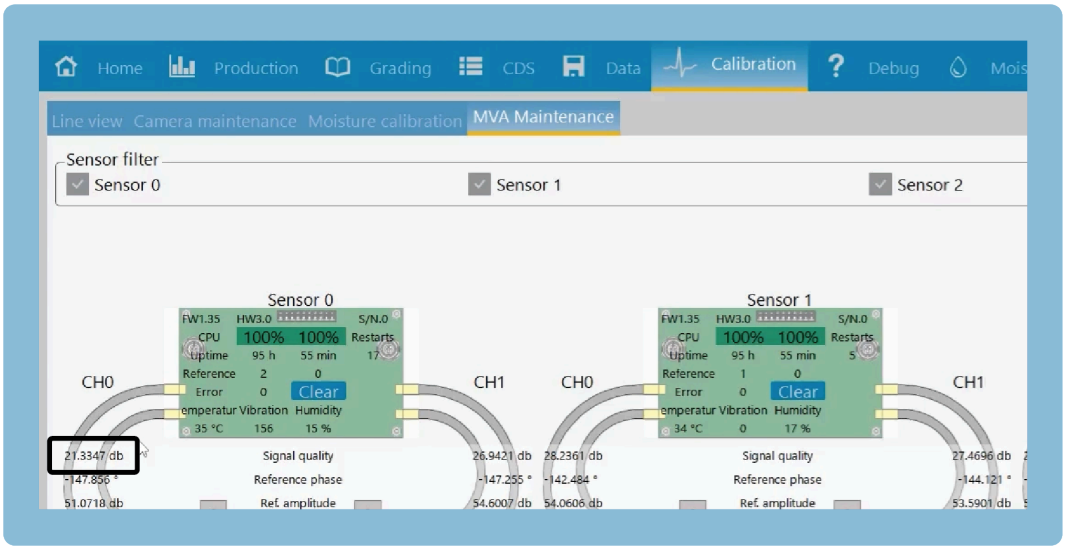


Inside the sensors, channel 0 is on the left when looking upstream and on the right when looking downstream.





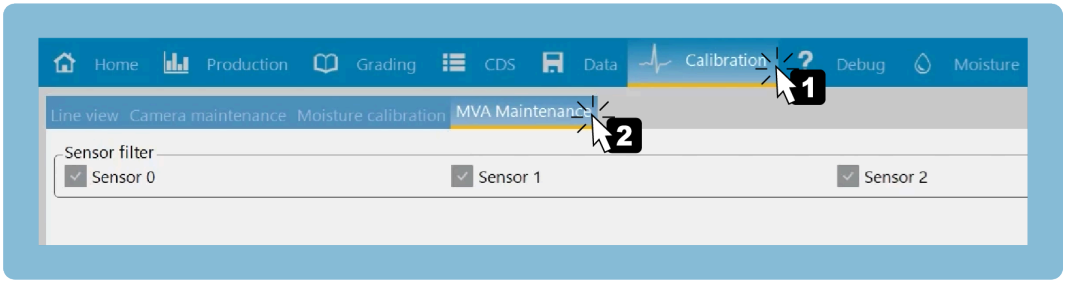
5. The signal quality drops for sensor 0 channel 0.


Home
Production
Grading
CDS
Data
Calibration
Debug
Line view
Camera maintenance
Moisture calibration
MVA Maintenance
Sensor filter
Sensor 0
Sensor 1
Sensor 2
Sensor 0
Sensor 1
CH0
CH1
Clear
Signal quality
Reference phase
Ref. amplitude

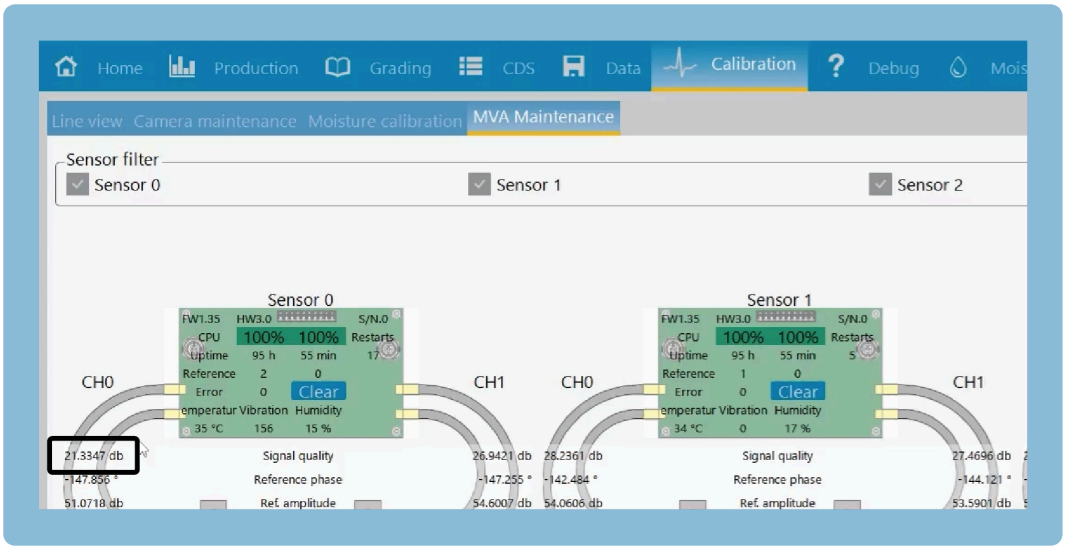
Chapter 7. Sensor Monitoring

7.1 Signal Monitoring

1. Log into the software.
2. Click **Calibration**. 1

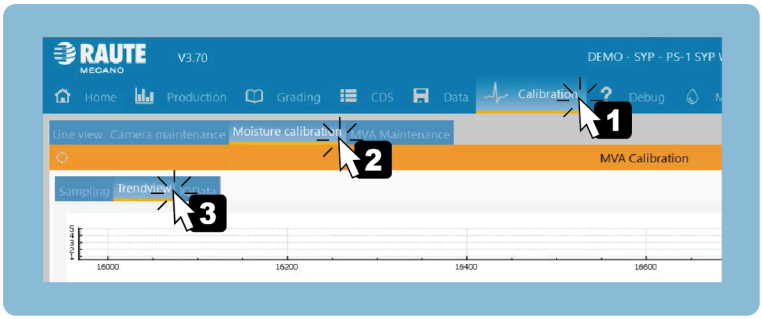


3. Click **MVA Maintenance**. 2
4. Check the **Signal Quality**. This number is a live reading from the system.



7.2 Moisture and Density Monitoring

1. Open the UI software.
2. Log into the software.
3. Navigate to the **Trendview** tab.

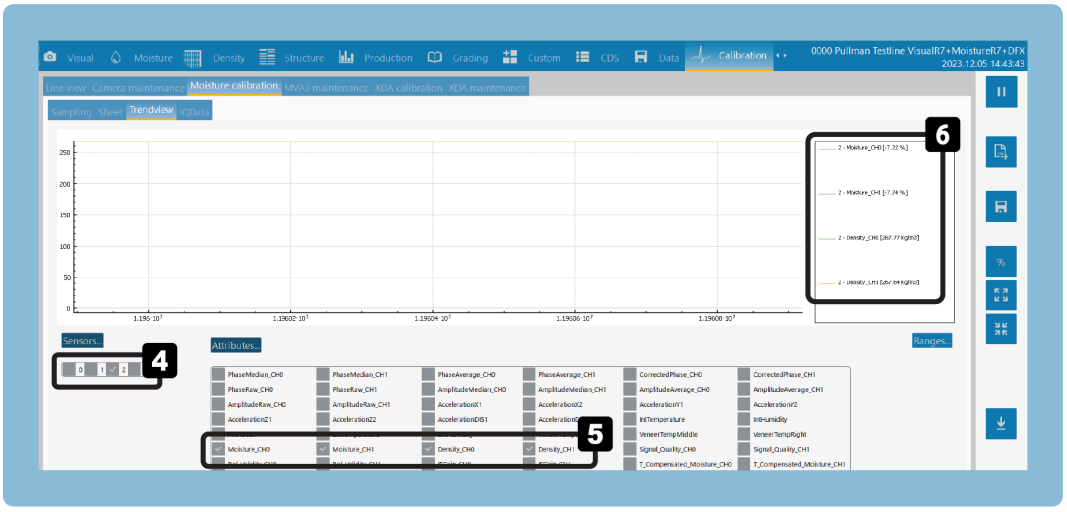


a. Click **Calibration**. 1

b. Click **Moisture Calibration**. 2

c. Click **Trendview**. 3

4. Select your sensor. 4



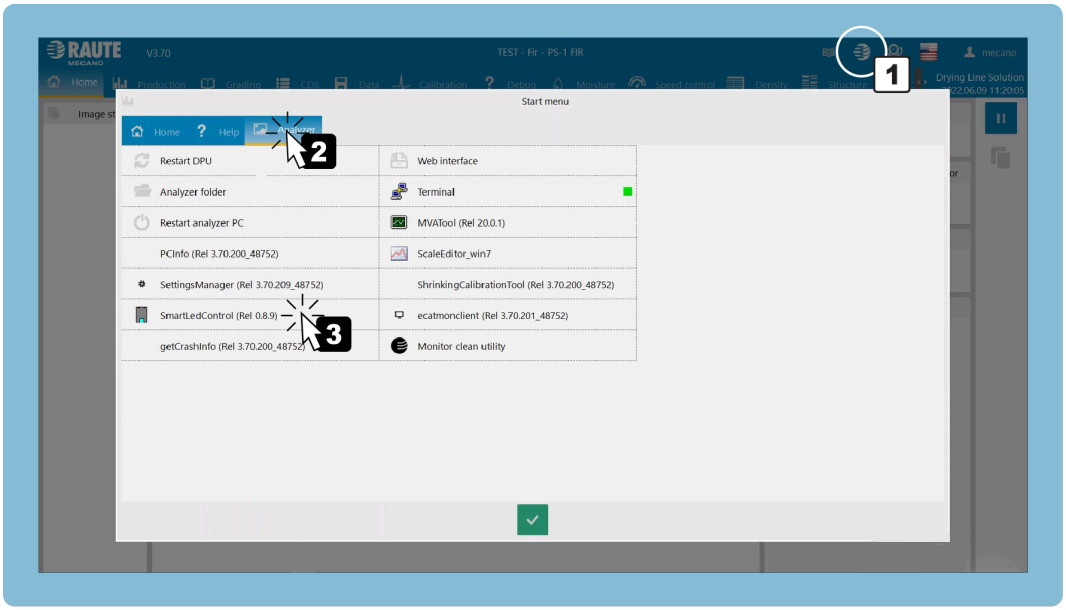
5. Select the moisture and density for both channels. 5
6. Read the moisture and density from the side panel. 6

> **Tip**
> The system only shows live readings if the calibration switch is on or if the software is in continuous free run mode. See Section 7.3 (p. 26) if the readings are frozen.

7.3 Continuous Free Run – Turn On

> **Tip**
>
> The calibration switch is the same as continuous free run. Systems with a calibration switch do not need to use continuous free run.

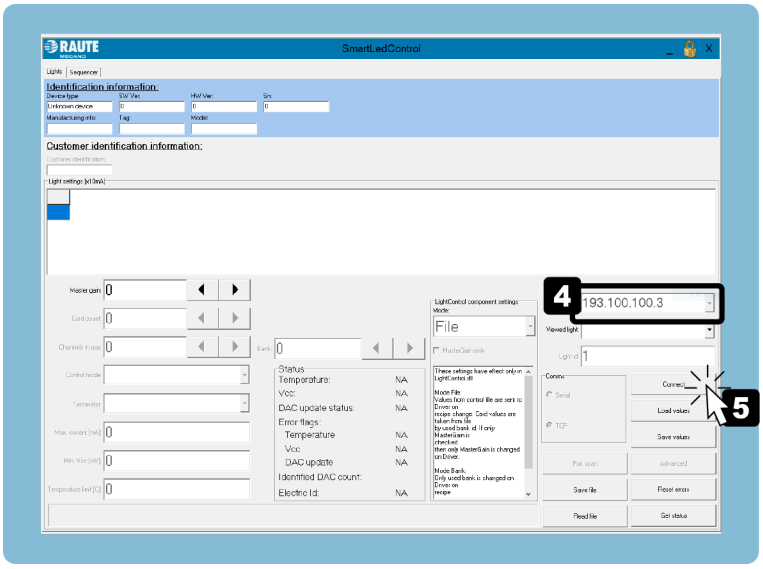
1. Click the Raute logo. 1



2. Click **Analyzer**. 2

3. Click **SmartLedControl**. 3

4. Enter the IP Address **193.100.100.3** in the box 4 and click **Connect**. 5

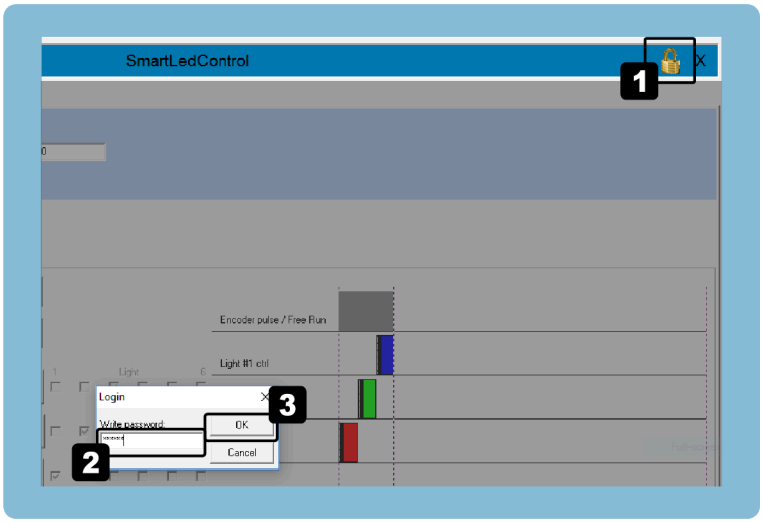


> **Note**
>
> Once connected, the screen will show non-zero values.

> **Tip**
>
> Connect to the IP Address from either the **Lights** tab or the **Sequencer** tab.

5. Click **Yes** if a window asks to load light values.

6. Log in.



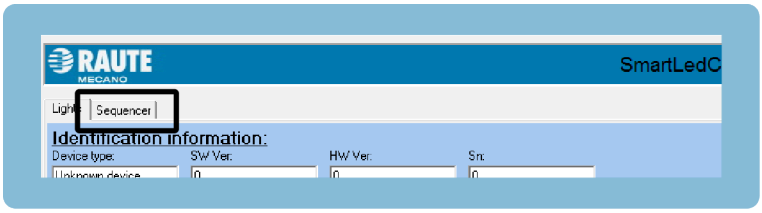
a. Click the lock in the upper right hand corner. 1

b. Enter your password. 2

c. Click **OK**. 3

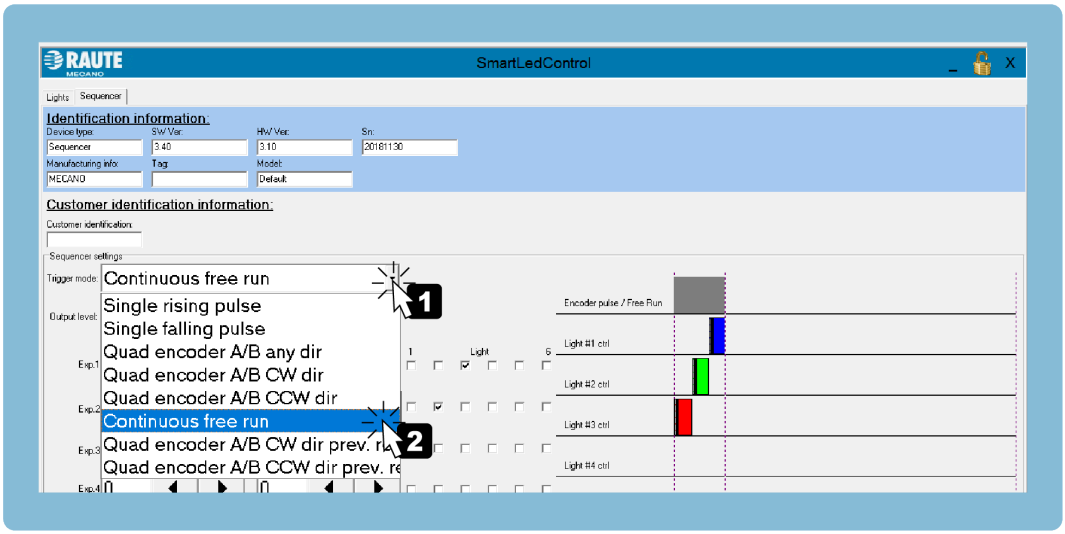
> **Tip**
> Log in from either the **Lights** tab or the **Sequencer** tab.

7. Click **Sequencer**.



> **Note**
> The sequencer tab takes several seconds to load.

8. Change **Trigger mode** to **Continuous free run**.

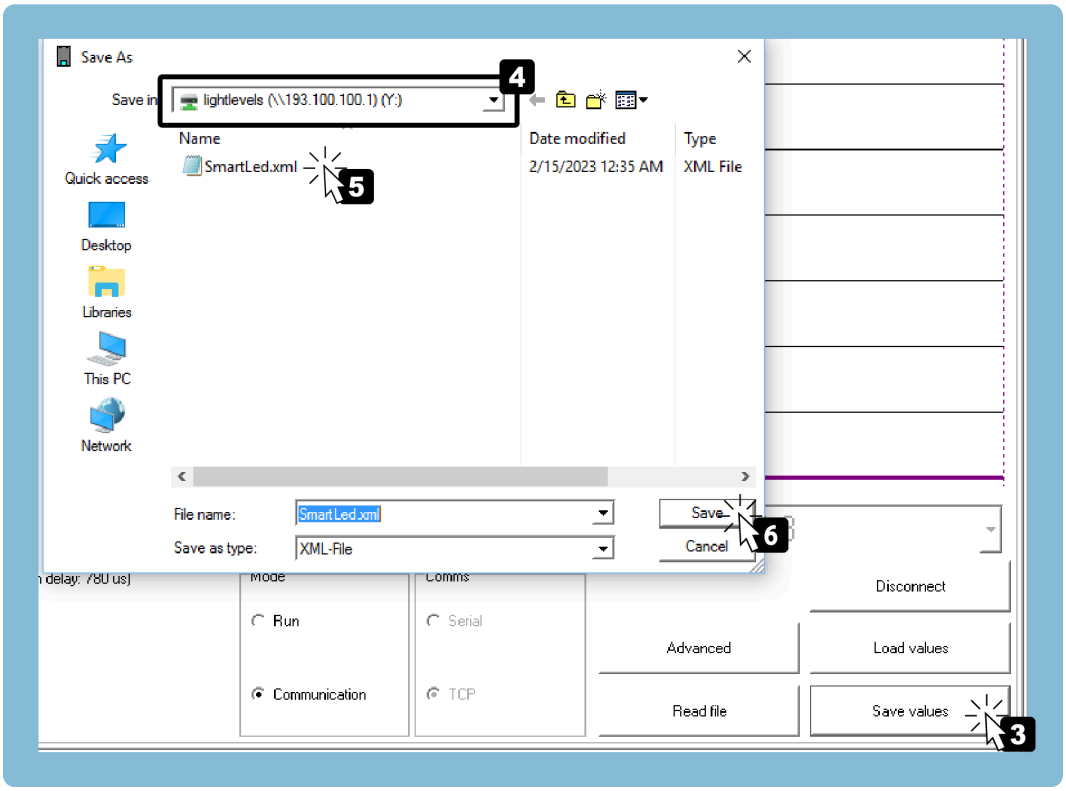


a. Click the arrow to expand the **Trigger mode** options. 1

b. Click **Continuous free run**. 2

9. Save the values.

> **Tip**
>
> The calibration switch must be off to save.



a. Click **Save Values**. 3

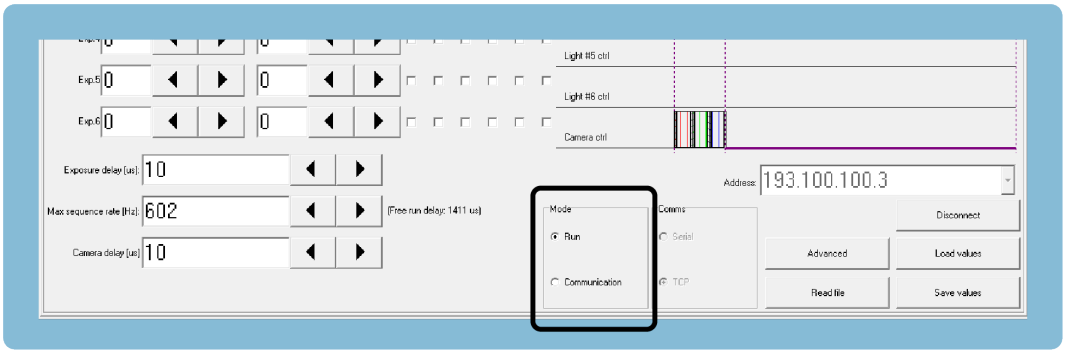
b. Locate **lightlevels**. 4

c. Click **SmartLed.xml**. 5

d. Click **Save**. 6

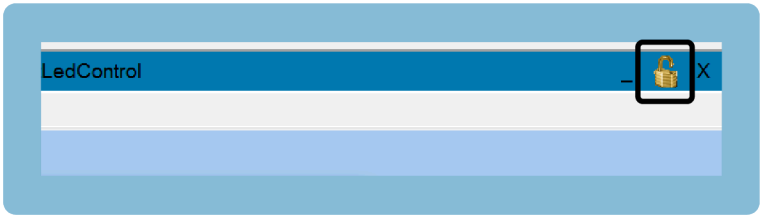
10. Make sure that **Mode** is set to **Run**.

> **Important**
>
> The **Mode** must be **Run** for simulation.



11. Press the lock in the upper right corner to lock the selections.

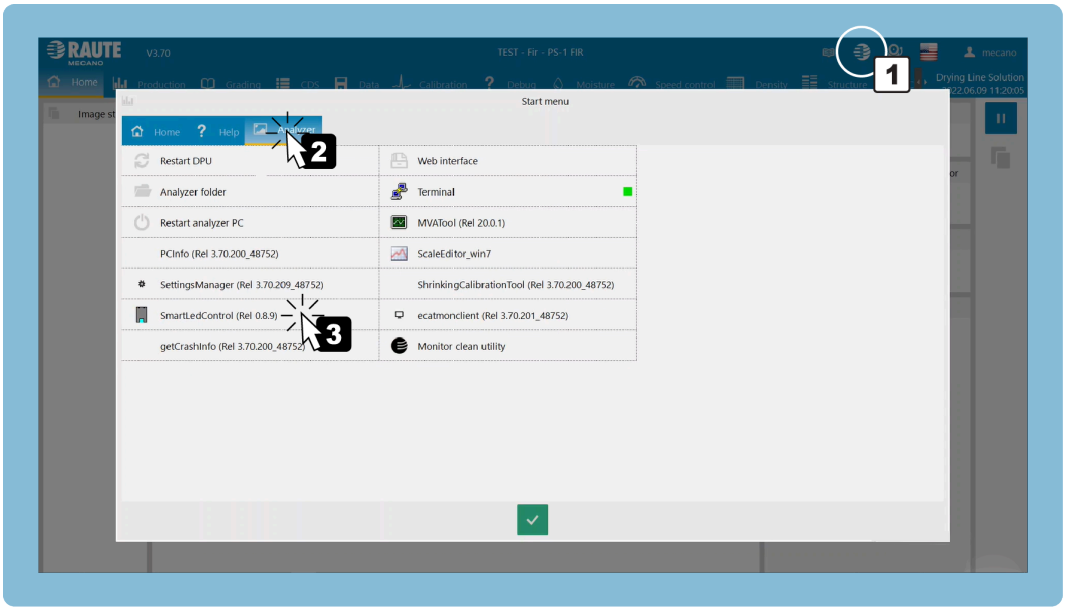
> **Important**
> The mode may change unexpectedly if the screen is not locked.



7.4 Continuous Free Run – Turn Off

> **Tip**
>
> The calibration switch is the same as continuous free run. Systems with a calibration switch do not need to use continuous free run.

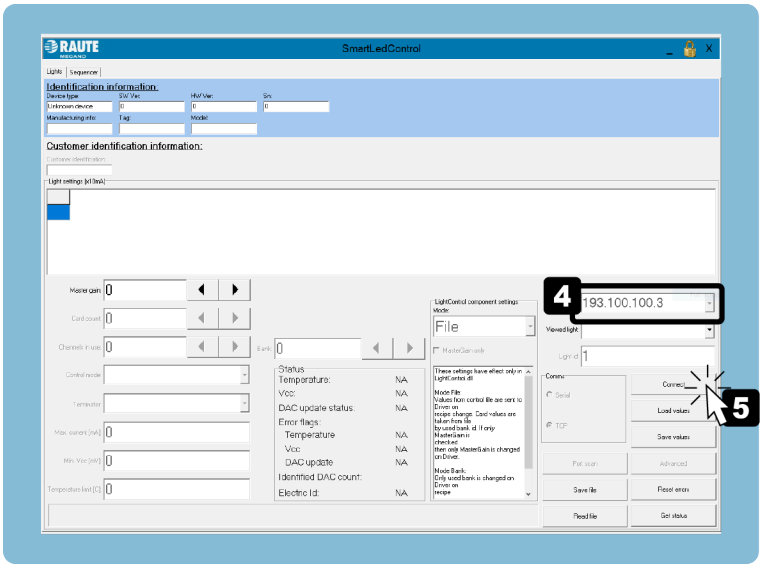
1. Click the Raute logo. 1



2. Click **Analyzer**. 2

3. Click **SmartLedControl**. 3

4. Enter the IP Address **193.100.100.3** in the box 4 and click **Connect**. 5

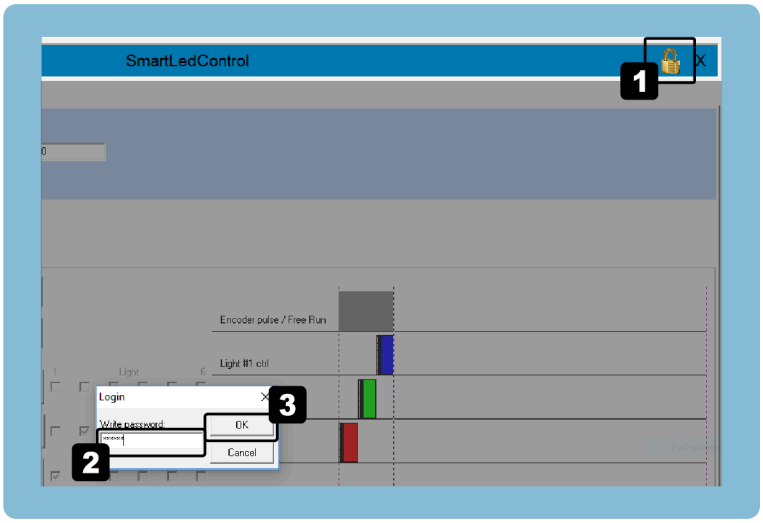


> **Note**
>
> Once connected, the screen will show non-zero values.

> **Tip**
>
> Connect to the IP Address from either the **Lights** tab or the **Sequencer** tab.

5. Click **Yes** if a window asks to load light values.

6. Log in.



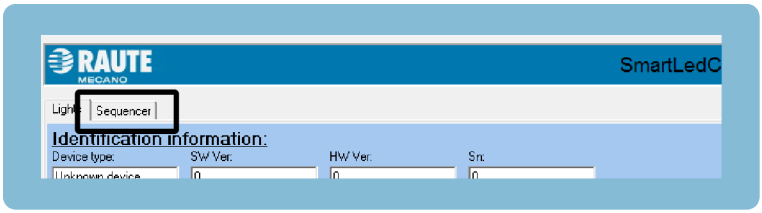
a. Click the lock in the upper right hand corner. 1

b. Enter your password. 2

c. Click **OK**. 3

> **Tip**
>
> Log in from either the **Lights** tab or the **Sequencer** tab.

7. Click **Sequencer**.

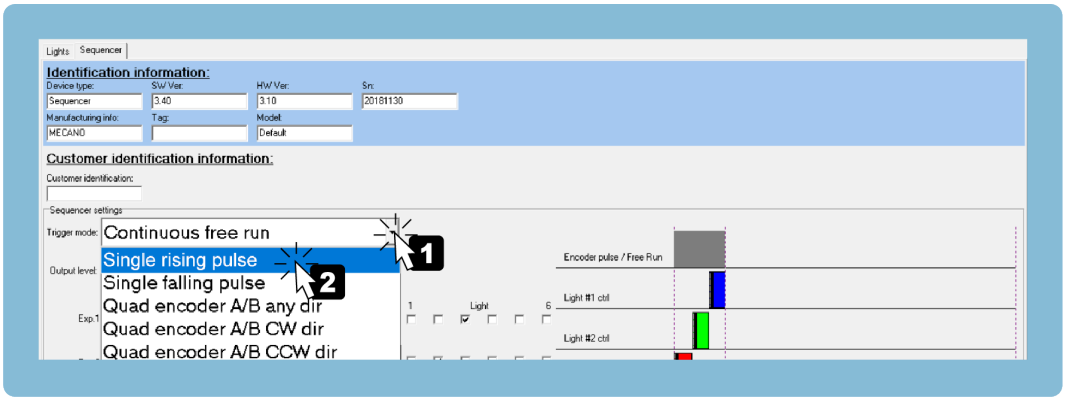


> **Note**
>
> The sequencer tab takes several seconds to load.

8. Change **Continuous free run** to any other option.

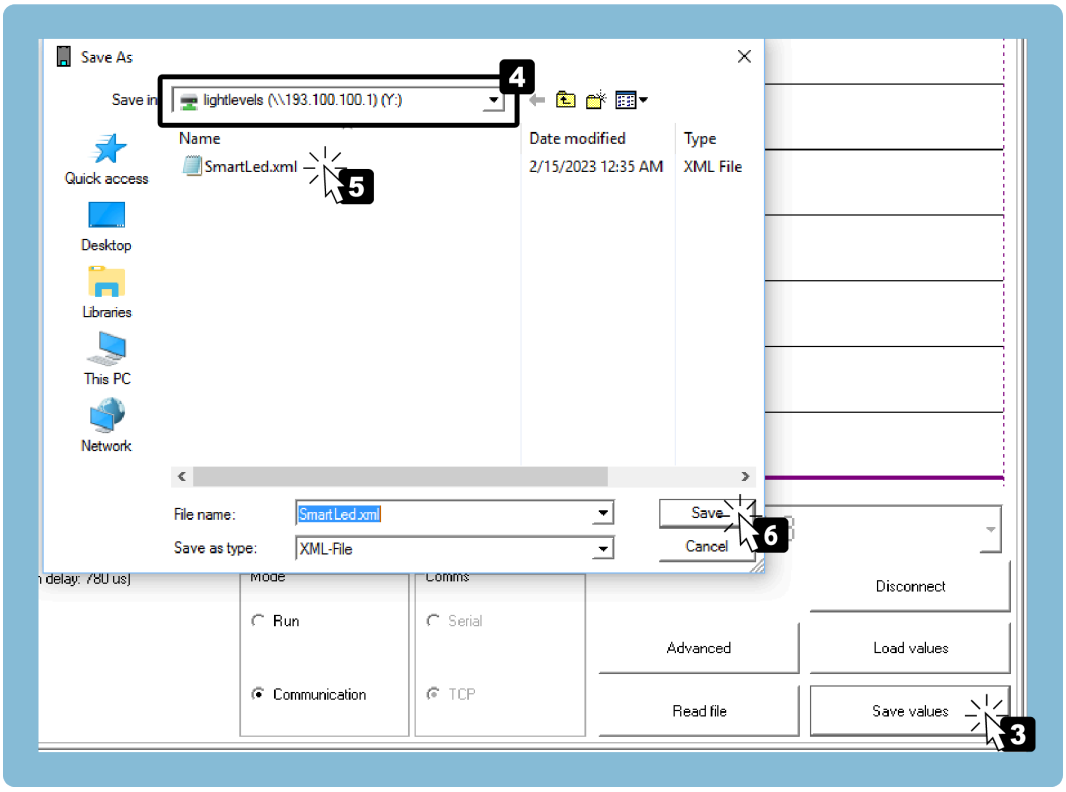
> **Tip**
>
> Use this chart to set **trigger mode** based on the encoder's rotational direction.

Encoder Setting	When to Use
Continuous free run	For sheet simulation.
Quad encoder A/B any dir	For any encoder rotation.
Quad encoder A/B CW dir	When the encoder spins clockwise.
Quad encoder A/B CCW dir	When the encoder spins counter clockwise.



9. Save the values.

> **Tip**
>
> The calibration switch must be off to save.



a. Click **Save Values**. 3

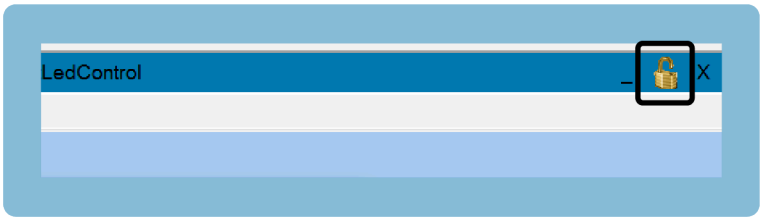
b. Locate **lightlevels**. 4

c. Click **SmartLed.xml**. 5

d. Click **Save**. 6

10. Press the lock in the upper right corner to lock the selections.

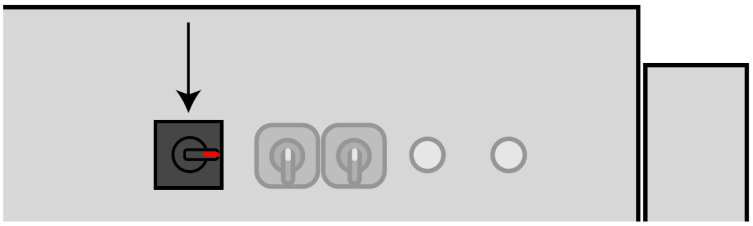
> **Important**
> The mode may change unexpectedly if the screen is not locked.



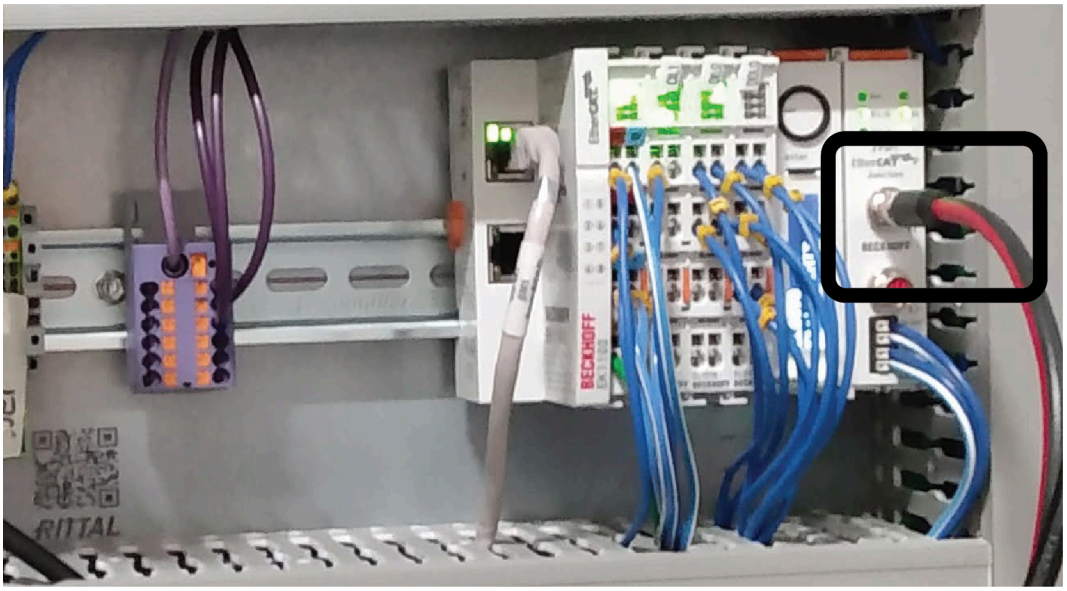
Chapter 8. Disable a Channel

Channels always transmit a signal when powered. To disable a channel, remove power with one of the following methods:

1. Turn off power to the entire system.



2. Disconnect the sensor cable from the central unit cabinet.



Revision History
MVA3 User Manual

Date	Rev	Author	Remark
December 5, 2023	1.2	BV	Added moisture and density reading chapter. Added information about how to turn on and off continuous free run mode. Added note that it must be installed by a trained technician. Added note that the end user is responsible for removing any device that interferes with the sensors.
October 9, 2023	1.1	BV	Added the FCC ID to the declarations chapter.
October 4, 2023	1.0	BV	Completed the first version of the FCC MVA3 user manual.
July 13, 2023	0.1	BV	Initial draft of FCC MVA3 sensor user manual.