

RWS200

Preventive maintenance

VAISALA

Maintenance

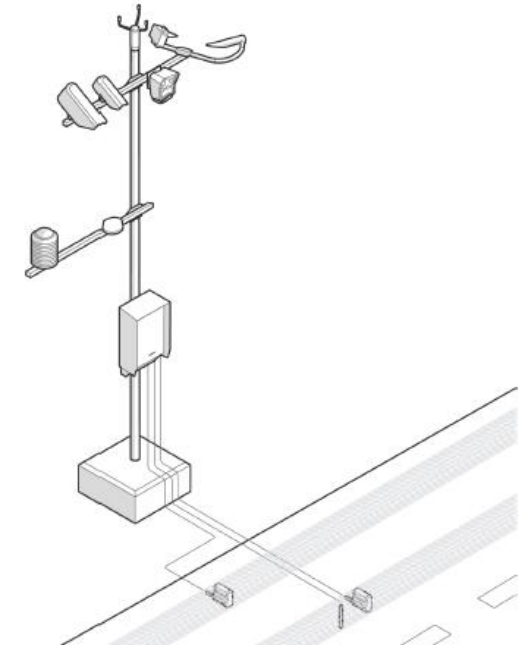
Preventive maintenance

- Station maintenance
- Sensor maintenance

RWS200 Maintenance

Preventive maintenance

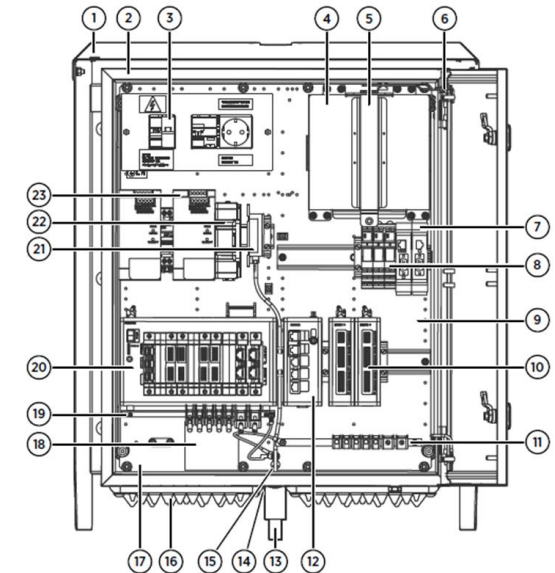
- Check that all parts of the weather station are working and in good condition
- Checking and cleaning of the equipment cabinet and radiation shield
- Check and grease locks and hinges
- Check battery condition
- Check that the station grounding is in order
- Check station, router and sensor software's (update if needed)
- Check that vegetation does not interfere with measurements



Maintenance time for enclosure: ~5-10min

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PMU701		PMU701	
PMU701 serial number	K4420023	PMU701 serial number	K4420023
PMU701 hardware	D	PMU701 hardware	D
PMU701 software	2.0.4	PMU701 software	2.0.4
PMU701 bootloader	1.4.8	PMU701 bootloader	1.4.8
PMU701 MAC	0050c2f879c8	PMU701 MAC	0050c2f879c8
PMU701 Internally supplied DC voltage	24.14 V	PMU701 Internally supplied DC voltage	24.16 V
PMU701 Externally supplied DC voltage	0.00 V	PMU701 Externally supplied DC voltage	0.00 V
Solar panel voltage	0.00 V	Solar panel voltage	0.00 V
24 VDC operating voltage	24.13 V	24 VDC operating voltage	24.16 V
24 VDC operating current	1.004 A	24 VDC operating current	0.755 A
12 VDC operating voltage	12.50 V	12 VDC operating voltage	12.50 V
Battery voltage	13.63 V	Battery voltage	11.16 V
24 VDC heating voltage	23.97 V	24 VDC heating voltage	23.99 V
24 VDC heating current	0.000 A	24 VDC heating current	0.001 A
Battery 1 level	Full	Battery 1 level	Full
Battery 1 charging voltage	13.63 V	Battery 1 charging voltage	13.63 V
Battery 1 charging current	0.296 A	Battery 1 charging current	0.296 A
Battery 1 condition	OK	Battery 1 condition	OK
Battery 2 level	Empty	Battery 2 level	Empty
Battery 2 charging voltage	13.69 V	Battery 2 charging voltage	13.73 V
Battery 2 charging current	0.000 A	Battery 2 charging current	0.000 A
Battery 2 condition	Not ch.	Battery 2 condition	Not OK, not charging
Internal temperature	26.52 °C	Internal temperature	75.66 °C
Hardware status	OK	Hardware status	Battery 2 fails in testing
SU701 serial number	K4140015	SU701 serial number	K4140015
SU701 hardware	C	SU701 hardware	C



Internal

HMP155 Maintenance

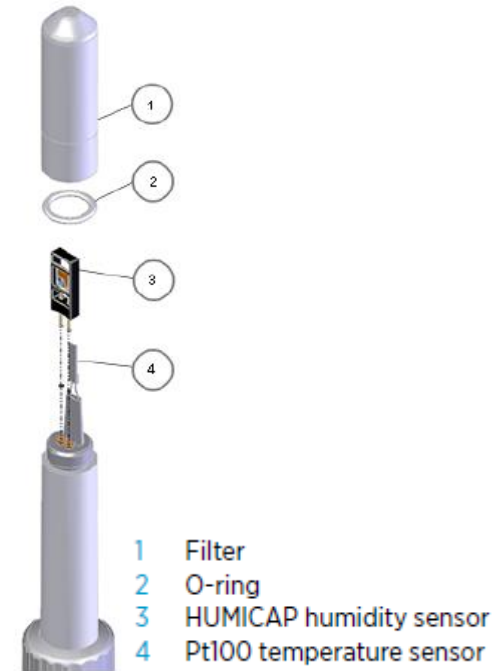
Periodic maintenance for HMP155:

- Change to a factory calibrated HMP155 sensor
- Or changing only HMP155 Probe Filter
- Always clean the DTR13 radiation shield

Sending HMP155 for Calibration

- Recommendations
 - Standard HMP155 once a year.
 - Advanced HMP155 up to every third year.

Maintenance time for HMP155: ~4-5min



Radiation shield DTR13

PWD22 Maintenance

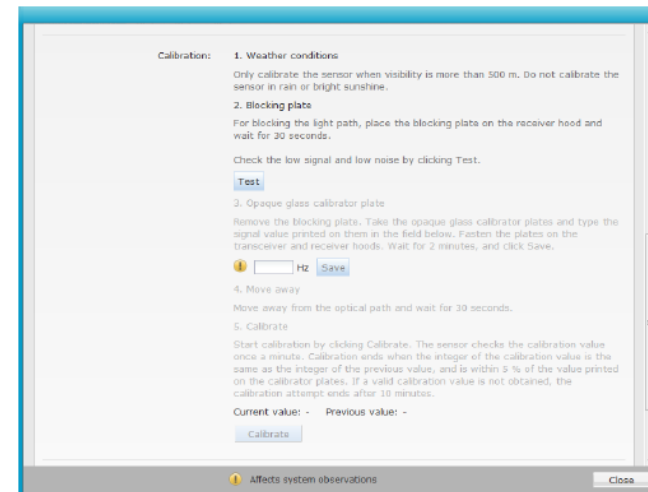
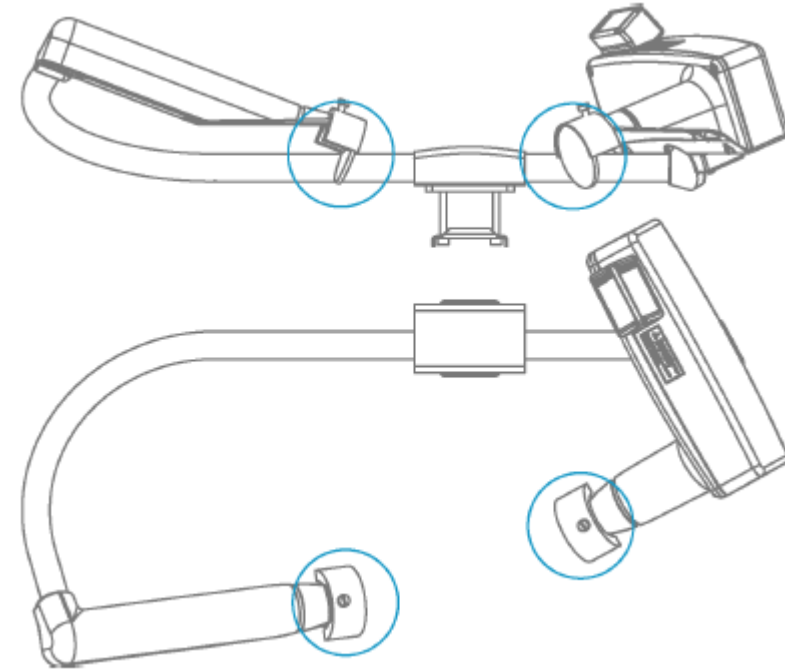
Periodic maintenance for PWD:

- Cleaning the transmitter and receiver lenses and hoods.
- Cleaning the RAINCAP rain sensor.
- Calibrating PWD yearly (Vaisala recommendation)



- Soft, lint-free cloth
- Mild detergent, foaming glass cleaner or 50% isopropyl alcohol
- PWA12 calibration kit

Maintenance time for PWD22: ~15-20min



DSC211 Maintenance

Periodic maintenance for DSC211:

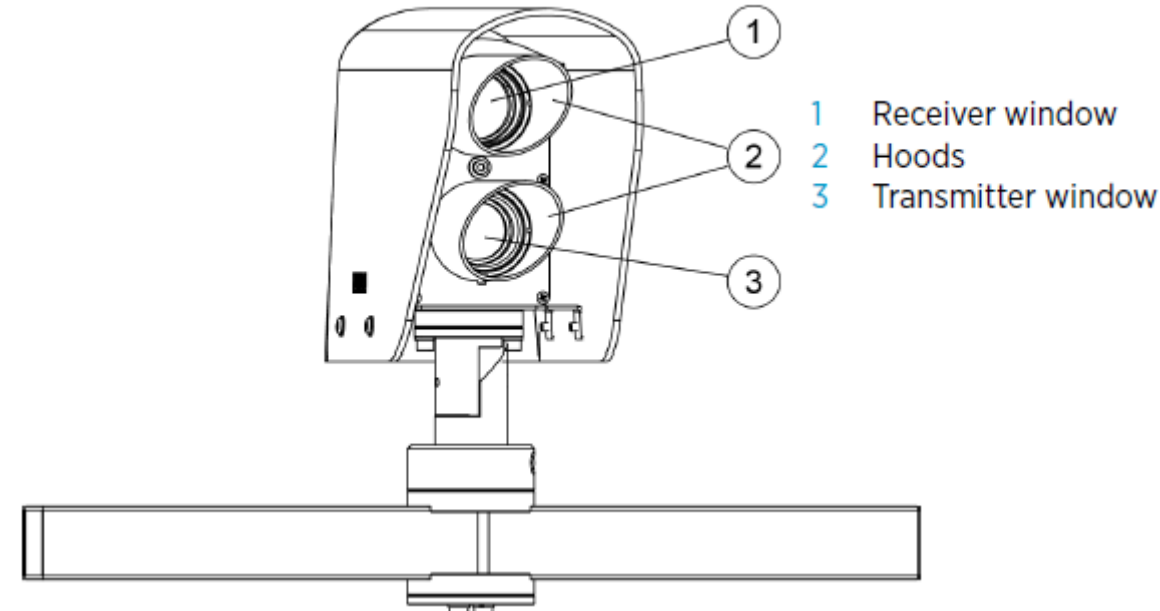
- Cleaning the transmitter and receiver windows.
- Checking that the sensor is aimed at the right spot
- Check distance adjustment
- Sensor DRY calibration



- Soft, lint-free cloth
- Mild detergent, foaming glass cleaner or 50% isopropyl alcohol
- Laser distance meter

Maintenance time for DSC211: ~10min

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Calibration

Calibration values:	Current values:	Previous values:
Dry parameters:	131.8 170.8 163.6	-0.1 169.5 163.6
Dry signals:	117.7 160.2 151.5	-0.1 169.5 163.6
High signals:	110.9 168.8 157.5	0.0 0.0 0.0
Optical signals:	111.0 169.2 157.4	0.0 0.0 0.0

[Refresh](#)

Dry calibration:

Manual calibration:

Give the new dry signal values.

Restore factory calibration:

Restart sensor:

Restarting is not normally needed after calibration. It is only needed if the sensor is malfunctioning or is not responding.

DST111 Maintenance

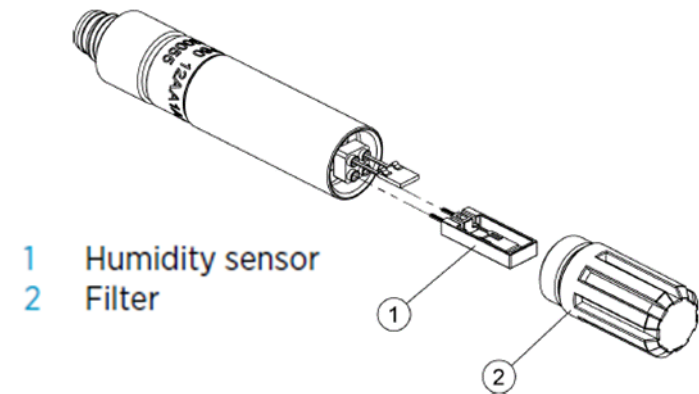
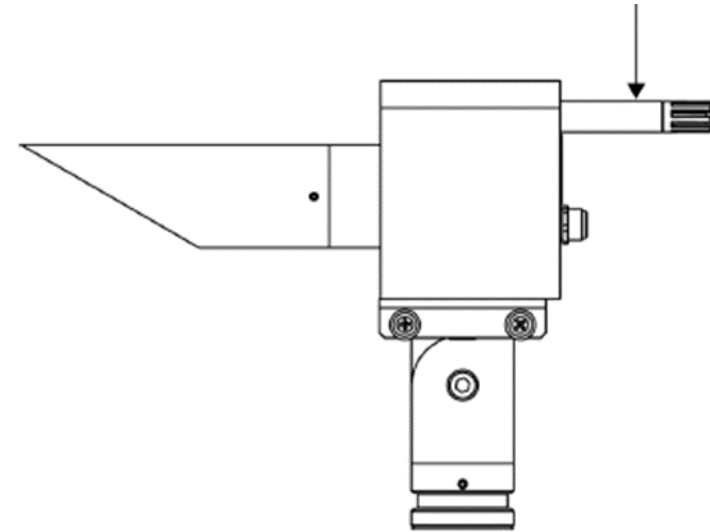
Periodic maintenance for DST111:

- Cleaning the sensor (the window and hood)
- Checking that the sensor is aimed at the right spot
- Replacing HMP60 filter and humidity sensor (if needed)



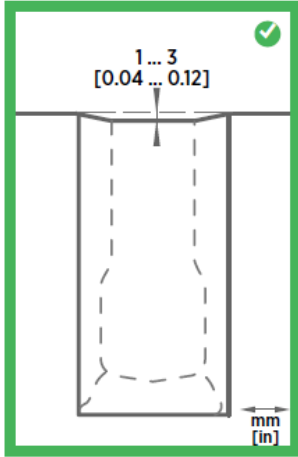
- Soft, lint-free cloth
- Mild detergent, foaming glass cleaner or 50% isopropyl alcohol
- Laser distance meter

Maintenance time for DST111: ~10min



DRS511 Maintenance

Checking the sensor position



- Check that the sensor lies 1 ... 3 mm below the road or surface.
- Checking that there are no outer damages
- There is no need to calibrate the optical measurement of DRS511 regularly

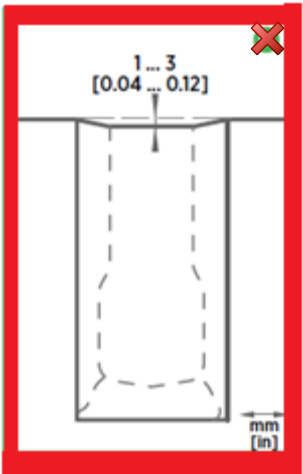


- Physical inspection

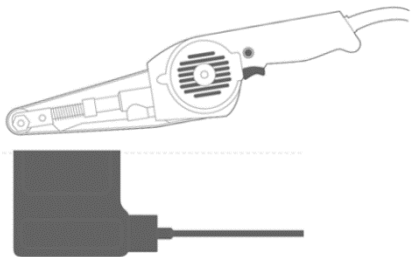
Maintenance time for one DRS511: ~5min
(without traffic management)

DRS511 Maintenance

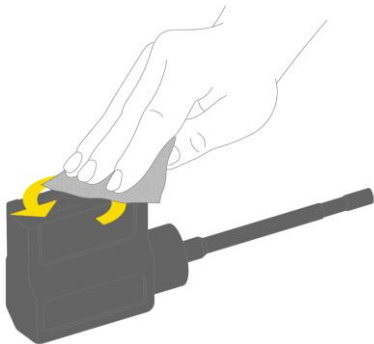
Checking the sensor position



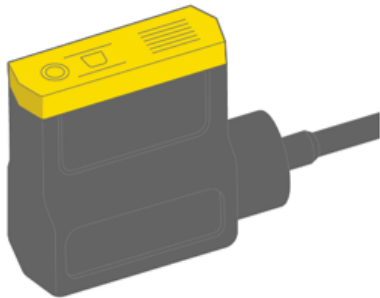
Lowering DRS511
(if needed)



Smooth the sensor
surface around the
optical sensor



Calibrating DRS511



- Belt grinding machine or similar
- Sandpaper (roughness 200-800 recommended)
- Soft, lint-free cloth and 50% isopropyl alcohol
- DRC511 calibration kit

Maintenance time for one DRS511: ~10-20min
(without traffic management)



DTS12G Maintenance

Subsurface sensor DTS12G does not require regular maintenance



- No tools needed



Maintenance time for DTS12G: ~0min

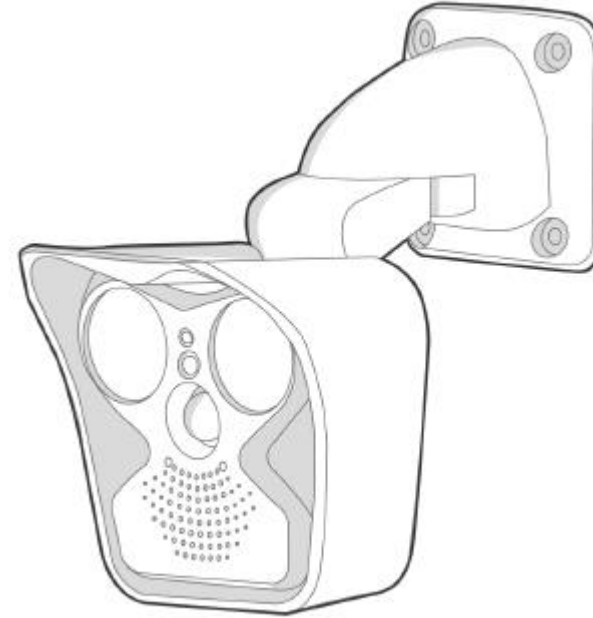
Mobotix camera maintenance

Periodic maintenance for Mobotix camera:

- Cleaning the sensor and lens



- Soft, lint-free cloth
- Mild detergent, foaming glass cleaner or isopropyl alcohol



Maintenance time for Mobotix camera: ~5min

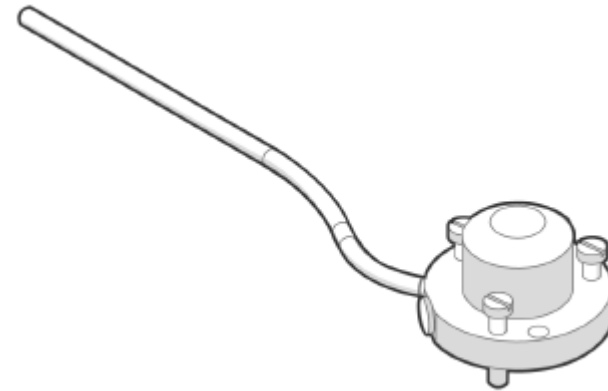
Pyranometer SP Lite2

Periodic maintenance for SP Lite2:

- Cleaning the dome window
- Check the sensor level



- Soft, lint-free cloth
- Mild detergent, foaming glass cleaner or isopropyl alcohol



Maintenance time for pyranometer: ~5min

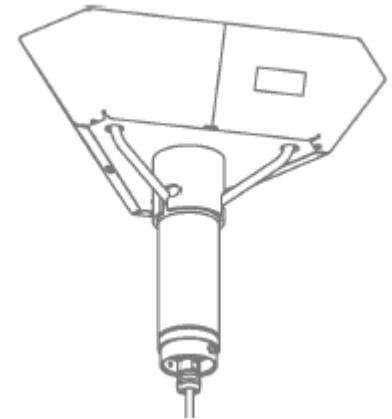
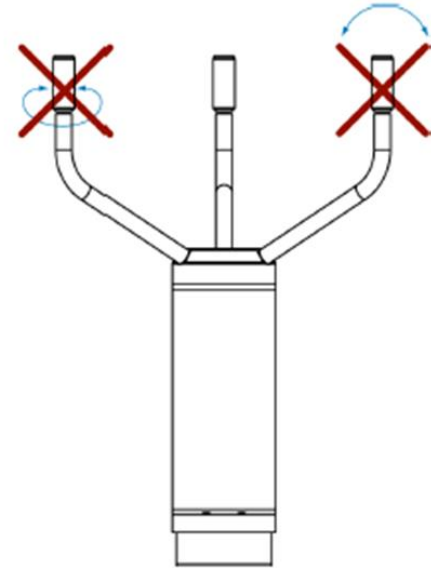
WMT700 Maintenance

WMT700 is a very reliable and rugged sensor. Since no moving or consumable parts are used, only minimal periodic maintenance is required.

Periodic maintenance for WMT:

- Basically, maintenance free
- Checking that there are no outer damages
- Verifying functionality by using the optional verifier to check the distance between the transducers.
Optional verifier (WMT70OVERIFIER)

Maintenance time for WMT700: ~1-5min



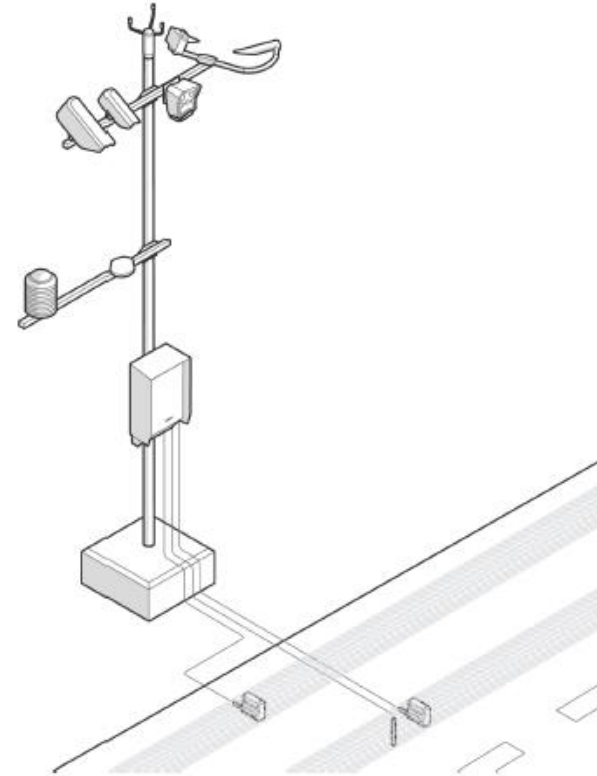
WMT700 reads less than 0.22 m/s (0.5 mph) with the verifier in place.

RWS200 Maintenance

Preventive maintenance in a nutshell

- Check
- Clean
- Calibrate

Maintenance time for sensors in the mast
+ visual DRS511 road sensor check: ~45-60min
(without traffic management and lowering any DRS511 sensor)



Internal quality control

Ability to track quality of the observations

- Lens contamination levels
- Quality of the observation
- Orientation of the sensors
- Measurements spots on the road

Sensor Settings
PWD22

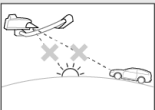
General Information
Serial number: V3920951
Software version: V 2.13 2021-11-04 [Update](#)
Last calibration: -

Sensor nickname:

Heating: ☒ Enabled ☐ Disabled

Message type: ☐ Standard ☒ Enhanced for road weather
Enhanced message has contamination monitoring and improved resolution for rain and snow. Requires PWD12/22 software version 2.12 or higher.

Sensor Orientation
Installation height: m
(6 - 8 m recommended)
Road direction:
PWD receiver looks:
Point the receiver to north and away from powerful light sources such as the sun and the lights of passing cars.



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Sensor Operations
PWD22

General Information
Serial number: V3920951
Software version: V 2.13 2021-11-04 [Update](#)
Last calibration: -

Sensor status: Hardware OK, Visibility OK

Cleaning:

1. Lenses, hoods and RAINCAP
Clean the PWD lenses, hoods, and RAINCAP sensor. Wait until the lenses are dry.
2. Refresh
Click Refresh to update the current reference values. If needed, repeat cleaning and refreshing until the values are good enough.
3. New clean reference value
Set the new clean reference values by clicking Set. This will override the current clean reference values.

Current reference values:	Previous set values:
Transmitter: -1.4/0.2	-/-
Receiver: 754.0/110.0	-/-
Dry offset: 829.9	-

Precipitation and Visibility
PWD22 1

Precipitation intensity	30 s	0.00 mm/h
Precipitation accumulation	since local 06:00	0.00 mm
Present weather (NWS)	30 s	No precipitation
Visibility	10 min	20000 m
Receiver backscatter	30 s	864 Hz
Receiver backscatter change	30 s	110 Hz
Transmitter backscatter	30 s	-1.2 V
Transmitter backscatter change	30 s	0.2 V

Internal

Maintenance management

System management

Ability to record maintenance records

- Who performed
- When took place
- What was done

Remote maintenance capabilities

System stores additional metadata for trouble shooting like raw data

 **Sensor Operations**

DSC211

General Information

Serial number:

B502034

Software version:

DSC211 V2.04 2017-12-08 [Update](#)

Last calibration:

2024-10-04 14:23

Distance adjustment:

Current value: -

Laser signal strength:

Show

Turn the adjustment screw of the sensor slowly to either direction until the maximum value has been determined.

Cleaning:

1. Lens cleanup

Make sure that the receiver and transmitter windows are cleaned. Wait until lenses are dry.

2. New clean reference value

Set the new clean reference value by clicking Set. This will override the current clean reference value.

Current value: 76.8

Previous value: 79.3

Set

Calibration

Calibration values:	Current values:	Previous values:
Dry parameters:	226.7 217.3 187.9	39.2 34.1 29.7
Dry signals:	226.7 217.3 187.9	133.7 127.5 117.6
High signals:	0.0 0.0 0.0	63.4 62.0 55.1
Optical signals:	447.6 235.4 28.6	226.7 217.3 187.9

[Refresh](#)

Dry calibration:

Calibrate

Perform dry calibration only when the road is completely dry. Wait for DSC211 to measure the road for at least 5 minutes before calibrating.

Manual calibration:

Calibrate

Give the new dry signal values.

Restore factory calibration:

Restore

Restart sensor:

Restart

Close

Internal

Troubleshooting

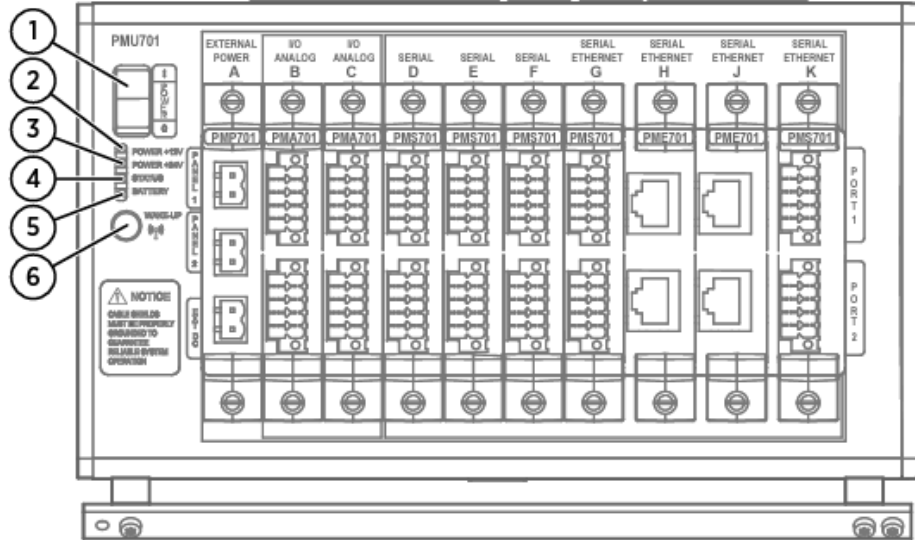


Figure 61 PMU701 front panel

- 1 System main power switch powers up or down the station.
- 2 Power +12 V LED indicates the status of 12 V power distribution to the sensors and the system.
- 3 Power +24 V LED indicates the status of 24 V power distribution to the sensors and the system.
- 4 System status LED indicates the system status.
- 5 Battery status LED indicates the backup battery status.
- 6 WLAN wake-up button turns on the WLAN connection.

PMU701 LED	Color	Description
12 V or 24 V power LED	Green	12 V or 24 V power available
	Red	Error
System status LED	Constant green	PMU701 is restarting; takes approximately 15 seconds
	Blinking green	PMU701 is operating properly
	Constant red	Fatal system error
	Blinking red	Minor system error
Battery status LED	Green	Battery fully charged
	Orange	Battery charging
	Red	Battery empty or missing

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