

Snow-Depth Datalogger Datasheet and Manual

(v3, 220811)

Wireless low-power ultrasonic distance measurement system

- Distance detection between sensor and snow cover, water surface or other covered ground.
- Optimized to detect the distance to closed snow cover by using an extended sensor-horn.
- Temperature compensated and long-term stable.
- Automatic self-cleaning to prevent condensation.
- Easy to handle.
- Long battery life.
- Easy battery exchange without tools.
- Cable-connection between datalogger and sensor for a flexible sensor positioning.
- Wireless data-transfer and configuration under field-approved distances:
 - Communicates through a thickness of snow, water, rock, earth, ...
 - No disturbance to observation site as instrument does not need to be removed or exposed during readout.
- Non-volatile flash memory for safe data-storage.
- Wide range of user configurable settings:
 - Measurement-Periods.
 - Automatic change to a configurable period when a specified distance-band is left.
 - Adjustable offset to suit the field application.



Optional:

- Mast mounting accessories for different diameters.
- User selectable cable length (default 3 m).

1. Technical data

- Targeting /range distance from 500 to 5000 mm.
- Automatic self calibration on sensor power up.
- Sensor self-cleaning for dust-reduction.
- Reading stability 1 mm /meter.
- Accuracy 1%, Resolution 1 mm.
- Ultrasonic sensor MB7574, optimized for snow level measurement with “snow horn” extension.
- UV resistant, shielded sensor cable (default 3 m).
- Operating temperature -40 to 65 °C.
- IP67 rating.
- Power supply 1 x 3,6 Volt Lithium D-Cell.
- Power consumption:
 - Idle: 30 µA (direct wireless connectivity).
 - Measurement: 15 mA.
 - Self-Cleaning: 50 mA.
- Flexgate 2 OS.
- 433 MHz radio communication for configuration and data-download.
- 2 MByte non-volatile flash memory for up to 350,000 values.
- Battery-lifetime up to 3 years @ 1 hour period or 48,000 cycles (whatever comes first), self-cleaning enabled¹.

¹ Extreme low and changing temperatures will decrease the lifetime of the battery.

2. Configuration

The measurement-system comes fully configured to read the sensor and record the data with an interval of 1 hour.

To download the data from the device or to change the configuration the “Wireless 433 MHz USB-Dongle” and FG2-Shell software are required.



Download the latest version of the FG2-Shell software here:

<https://www.thermistor-string.com/additional-string-information/downloads/category/2-software>

How to install and use the FG2-Shell software, please refer to the documentation “Doku_FlexGate_Software_Engl”:

<https://www.thermistor-string.com/additional-string-information/documentation-thermistor-string/category/3-documentation>

→**Note:**

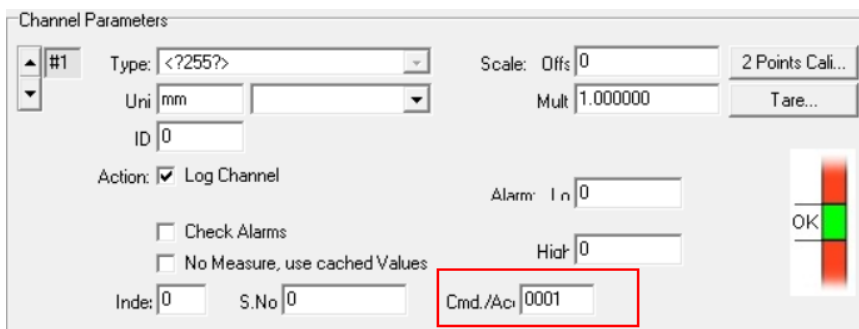
- All configuration/parameters of the device are stored in a separate non-volatile memory. Even after power-loss or erasing the data-storage (), the configuration is valid.
- Carefully check the parameters for the activated Record-Checkbox (), otherwise no data is recorded!

Self-Cleaning:

There is a special configuration to handle the self-cleaning feature of the sensor. By default the self-cleaning feature is enabled, to be proceeded previous to each reading.

To change the behaviour of the self-cleaning feature, open the parameter-form of the device and select “Channel 1 parameters”.

Change the value of the field “CMD/ACC”:



The screenshot shows a 'Channel Parameters' dialog box. The 'Cmd./Acc' field is highlighted with a red box and contains the value '0001'. Other fields include 'Type: <?255?>', 'Uni: mm', 'Scale: Offs: 0', 'Mult: 1.000000', 'ID: 0', 'Action: Log Channel', 'Alarm: Ln: 0', 'HiAl: 0', 'Inde: 0', 'S.No: 0', '2 Points Cali...', and 'Tare...'. There is also an 'OK' button on the right side.

- 0: Deactivate self-cleaning (increases the battery-lifetime).
- 1: Activated, self cleaning will take place at every period.
- 2: self cleaning will take place every 2nd period.
- 3: self cleaning will take place every 3rd period.
- 4 to 10: every 4th time and so on.

To take effect of changes in self-cleaning configuration immediately, perform a reset of the datalogger. Select device, Click Setup, then “Reset”.

Otherwise the changes will take effect after ending the cycle of the previous configuration.

3. Handling and mounting information

Battery:

- Lithium batteries can be dangerous! Prevent it from shock, physical damage or temperatures above the given specification.
- Old batteries must be recycled in special battery waste disposal.
- Always use correct polarity of the battery. Otherwise the whole device and battery are destroyed.
- The battery is very heavy! Prevent the device from physical shocks!

Datalogger-Mounting:

To prevent water leakage inside the housing chose one option:

- a) direction of the cable and air-vent ground-wards.
- b) horizontal position.



Sensor-mast-mounting

For more information about the aerial conditions and influences like

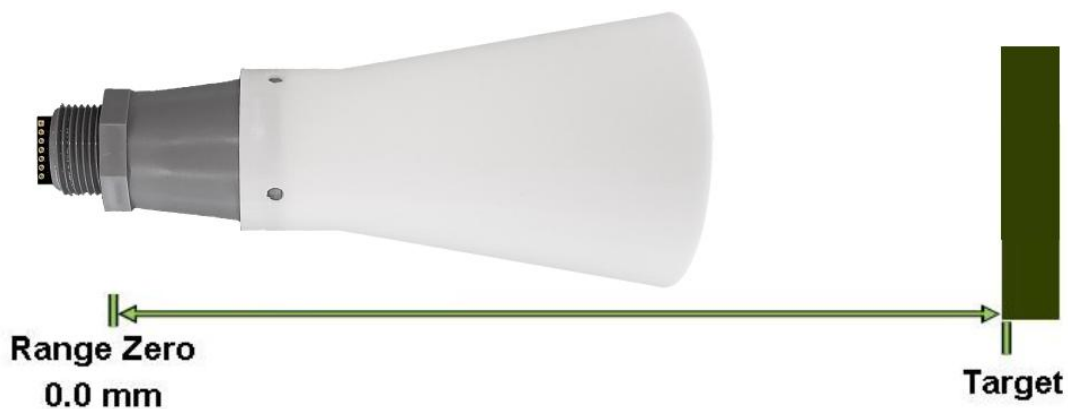
- reflections
- clearing-area
- beam patterns

Please have a look at here:

<https://www.maxbotix.com/070-snow-sensor-mounting-notes.htm>

Distance measurement:

From nut to ground.



Distance at least 501 mm up to max 4999 mm.

→ Distances outside this range are not recognized

Example: You mounting position is 2 m above clear ground. The measured data is 2000 mm. Now 30 cm snow is falling, the measured data is 1700 mm.