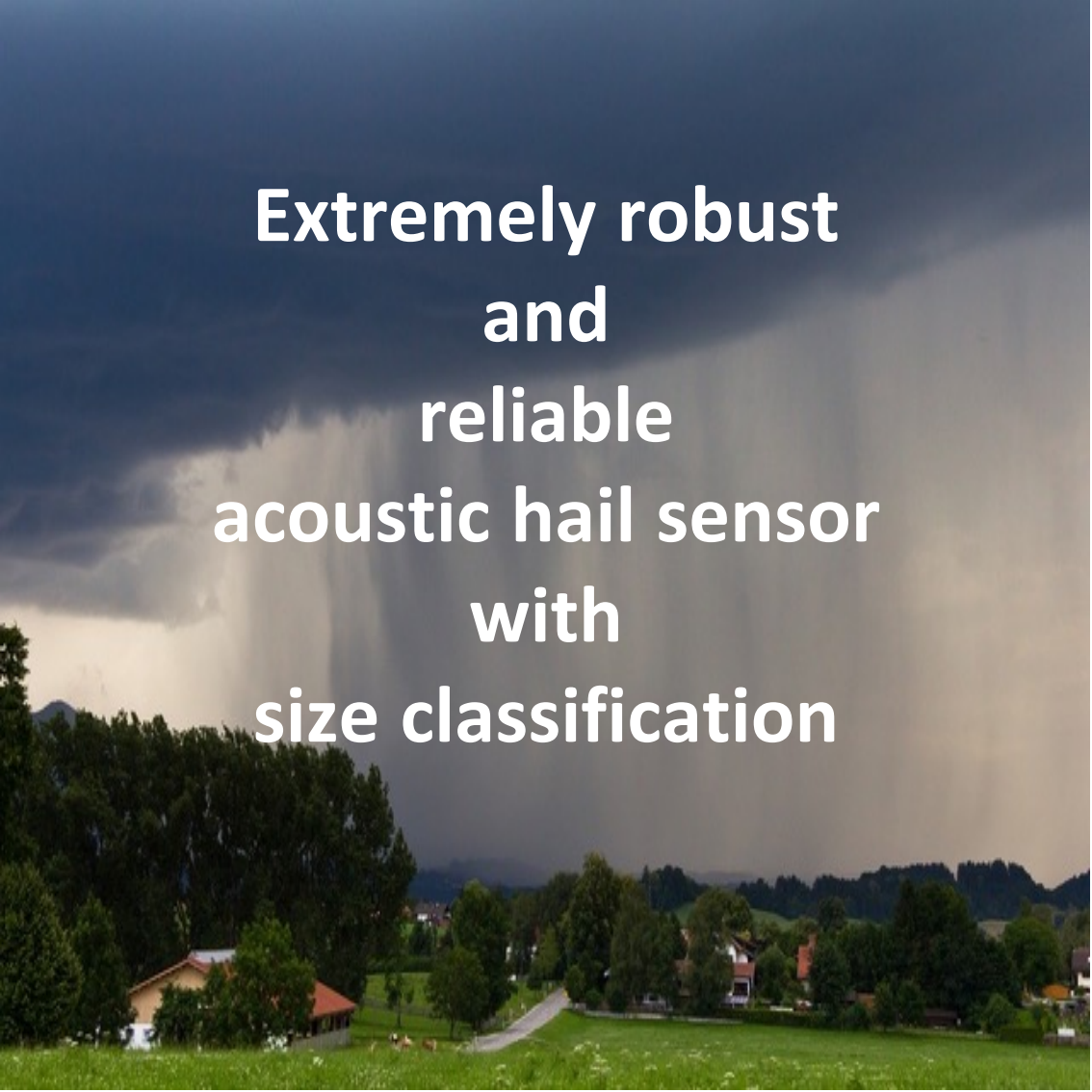


HDI

Hail sensor

Environmental monitoring equipment by Sommer Messtechnik



Extremely robust
and
reliable
acoustic hail sensor
with
size classification



What is it?

The HDI is a very low-power, maintenance-free, totally sealed and mechanically ultra-robust acoustic instrument with no mobile parts. It is able to detect hailstones between 0.5 and 7.5 cm diameter and will survive the most extreme hail episodes. The sensing part of the instrument is a three layer polished stainless disc supported by an unbreakable stainless-steel arm. Impacts of hailstones (or any other lithometeors in the same range of kinetic energy) induce a measurable change in internal acoustic pressure.

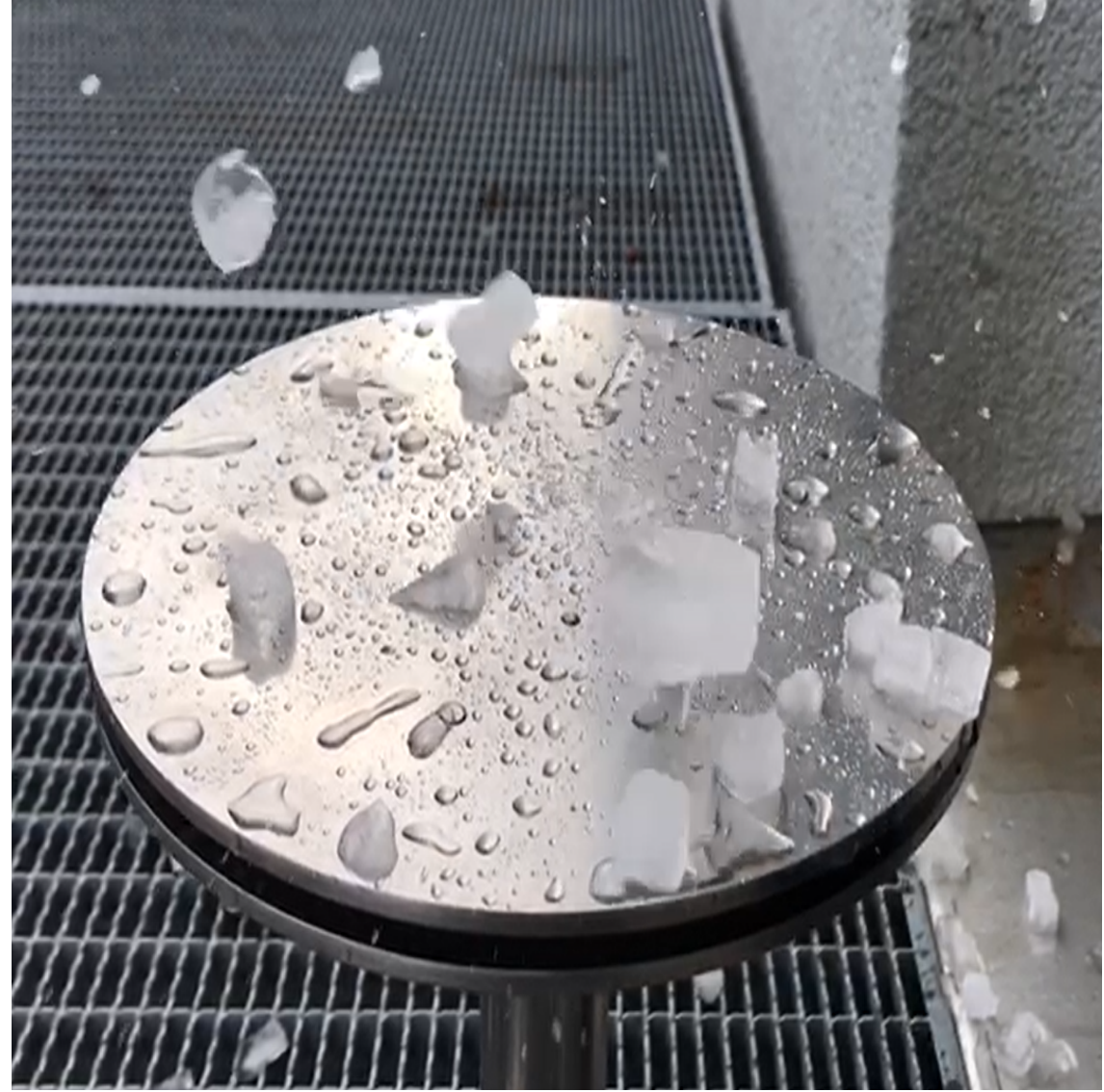
It features continuous or pulse analog voltage outputs and supports SDI-12 communication, serial RS-232, and Modbus RTU RS485 (using an optional adapter). The full configuration of the sensor can be customized at any time with a Plug-and-Play PC connection or remotely, using serial commands.

How it works

The HDI sensor measures the impact of individual hailstones on a stainless-steel disc using a special acoustic detector, signal processing and calculation. The sensing surface is a 200 mm diameter omnidirectional head, containing the electronics of the system.

A high-resolution impulse detector converts the acoustic signal of an impacting hailstone into a voltage, which is proportional to the momentum that is transferred to the sensing surface. The momentum of a hit can be considered to depend mostly on the hailstone size.

The HDI can detect hailstones between 0.5 and 7.5 cm and up to 25 hits per second. Comparable to so-called disdrometry, it can distinguish between 15 size-classes. The size distribution is reported as percentage of all detected impacts according to classification table.



Advantages

- Maintenance-free & special design to resist the highest winds, extreme temperatures, rime, sunlight, abrasion, ashes and even temporary submersion.
- Lightweight, corrosion free, UV/Ozone stable, non-obstructable. Resistant to shock, vibration, lightning, corrosion, humidity, animals, insects and splashes. Operating temperature from $-40\text{ }^{\circ}\text{C}$ to $80\text{ }^{\circ}\text{C}$ ($-50\text{ }^{\circ}\text{C}$ to $100\text{ }^{\circ}\text{C}$ extended).
- Very low power consumption: 2.1 mA continuous for nominal operation (10% duty-cycle) or 21 mA for continuous operation.
- Plug-and-Play and configurable to fit any application.
- Adaptable to any structure thanks to a range of high standard stainless steel clamping accessories.
- Directly connect the sensor to your central unit or configure any analog or digital communication through the included USB dongle.
- Compatible with almost any external analog or digital central unit, with a very long extension cable (typ. up to 200 m), with IoT (LPWAN) transceivers and industrial control systems (BMS, SCADA, etc.).

Applications

- Meteorology (hail, solid precipitation, lithometeors)
- High resolution hail monitoring and warning
- Roadside, railway, airport protection
- Building and infrastructure surveillance and insurance
- Agriculture
- Land management
- Solar power plants
- Applied scientific research

Option: Hail detection station

Sommer Messtechnik provides Plug & Play monitoring station that does not require any technical background knowledge. This unit is shipped completely assembled and can be mounted right out of the box.

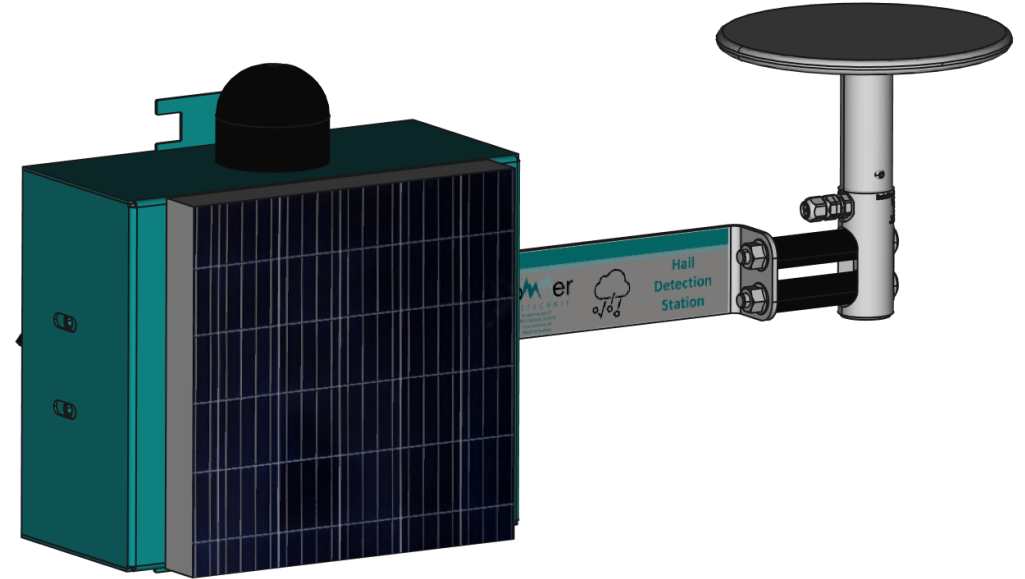
The included data logger (MRL) collects the hail data and transfers them via mobile internet to the Sommer Messtechnik Cloud or a server of your choice.

The hail detection station includes:

- HDI Sensor
- Datalogger MRL
- Modem
- Battery
- Solar panel
- Mounting brackets

Options:

- International SIM card
- Mast with foundation





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