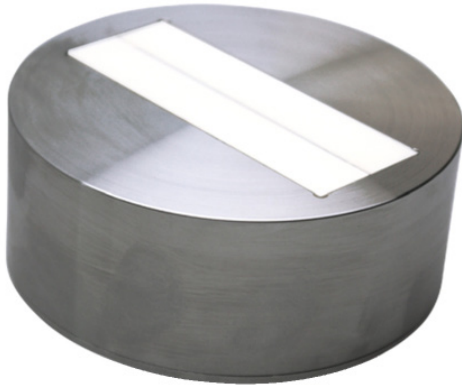
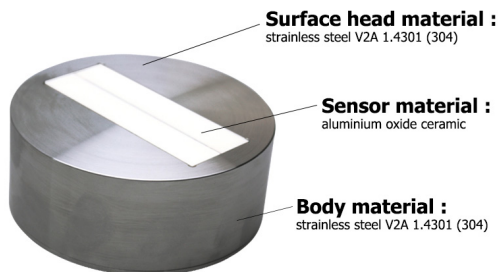
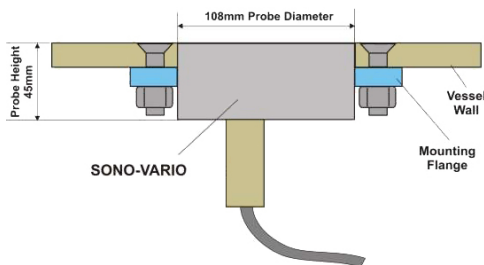


## MOISTURE PROBE SONO-VARIO



### Drawing



### Features

- Ideally to measure abrasive materials like sand, gravel and other aggregates
- Highly reliable when measuring complex materials like minerals, powders, granules, quartz sand, food and sludge
- Simple installation in containers, shafts, silos, conveyor belts and others
- In case of abrasion at probe head an automatic correction of the measuring value happens – without recalibration
- TRIME®-TDR Winner of multiple awards. Innovation awards, such as the Bauma Innovation Award 2016 and DLG Approved certification from the German Agricultural Society (DLG - 2018) it is unaffected by steam or changing particle sizes of sand and gravel

### Technical data

**Moisture range :** 0...100% H<sub>2</sub>O (depending on materials)

**Accuracy :** 0.1 %H<sub>2</sub>O (within the calibration range)

**Conductivity range :** 0...20 mS/cm (The conductivity range is reduced in moisture measurement ranges >50%)

**Measuring technology :** TRIME® (Time-Domain-Reflectometry with Intelligent Micromodule Elements)

**Measuring principle :** radar wave frequency 600MHz to 1.2 GHz

**Temperature range :** 0...70°C

**Field expansion range :** approx. 30...50mm (depending on material and moisture)

**Signal output :** 2 x 0(4)...20mA

Analog output 1	moisture in %
Analog output 2	conductivity, temperature or standard deviation

**Communication :** RS-485, IMP-Bus

**Power supply :** 12...24Vdc, 3W

**Connector plug :** 10-pole MIL flange connector

**Body material :** stainless steel V2A 1.4301 (304)

**Sensor material :** aluminium oxide ceramic

**Surface head material :** stainless steel V2A 1.4301 (304)

**Dimension :** Φ108 x 45h mm

**Protection class :** IP67

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## AVAILABLE MATERIALS for SONO-VARIO

The SONO-VARIO is suited for measuring of normal abrasive materials.

- **Sand, gravel and minerals** (gain size up to 4mm)

For example....



Fine sand



Sand



Gravel



Quartz sand

- **Food** (gain size up to 8mm)

For example....



Paddy



Rice



Cassava



Palm



Dried Corn



Flour / powder



Malt



Seeds



dried fruites



Sugar



Salt



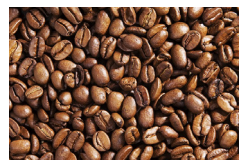
Sunflower seed



Pet food



Cereal



Coffee



Bagasse



## AVAILABLE MATERIALS for SONO-VARIO

The SONO-VARIO is suited for measuring of normal abrasive materials.

- **Plastic and synthetic materials** (*gain size up to 8mm*)

For example....



Grain plastic



Plastic film



Shredded plastic



Para rubber



Colour pigments



Washing powder



Silica



Fertilizer

- **Wood materials** (*gain size up to 8mm*)

For example....



Biomass



Wood pellets



Saw dust



Wood fibre



Silage

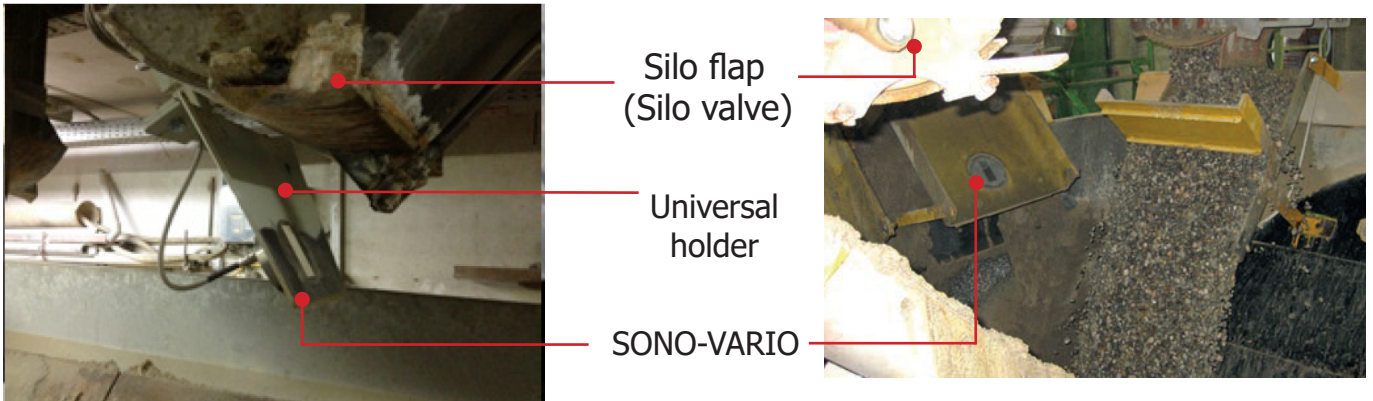


*Furthermore, these materials that are shown, please do not hesitate to contact us for consulting*

## MOISTURE PROBE

### INSTALLATION EXAMPLE SONO-VARIO

- Under silo flap (silo valve)



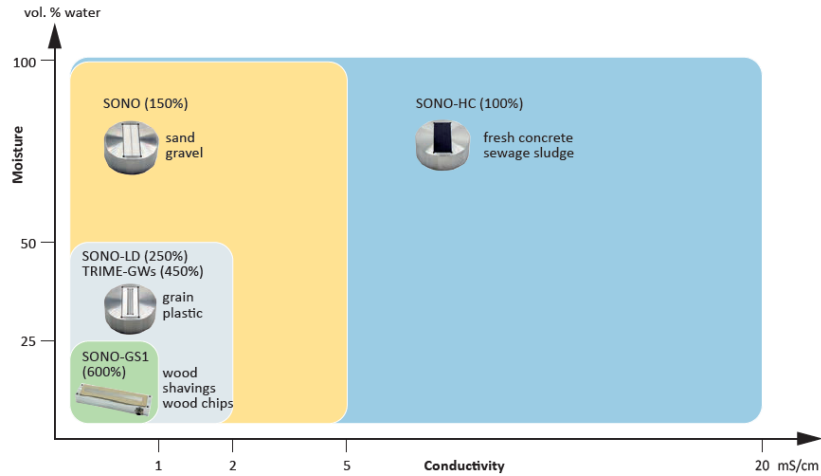
- Conveyor belt



*\*\*note ; The moisture probe, SONO-VARIO. It is able to install various position. So, the installation of probe depend on conditions and structure of working place. The more installation correctly, the more effective of moisture probe.*

## SONO SENSOR APPLICATION

Depending on the group, SONO sensors differ in resolution and measuring range. The higher the conductivity range of a sensor, the lower the resolution or the performance characteristics. Use the following diagram to help you choose sensor.



The sensitivity of the individual sensor series in comparison to SONO-HC is marked in brackets

### Ordering code

SONO - VARIO -

- LD : Low density version**  
moisture 0...50% water  
Electrical conductivity 0...2 mS/cm  
Density 300...1000 kg/m<sup>3</sup>
- : Standard version**  
moisture 0...100% water,  
Electrical conductivity 0...5 mS/cm  
Density 800...2000 kg/m<sup>3</sup>
- HC : High electrical conductivity**  
moisture 0...100% water,  
Electrical conductivity 0...20 mS/cm  
Density 1000...3000 kg/m<sup>3</sup>



**Example :** SONO-VARIO-HC

Moisture probe sensor standard version, moisture range 0...100% water, electrical conductivity 0...20 mS/cm, bulk solids density of approx. 10...30 kg/m<sup>3</sup>

## ACCESSORIES for SONO-VARIO

These are necessary equipments that using with products and increase efficiency.

**SM-USB :** SM-USB is the signal transmitter. it can connect your SONO probes with a PC and setting, adjustment, calibration by SONO-CONFIG software.



**Sensor cable**  : The connection cables with MIL connectors are available in cable lengths.

- 308029 :** Cable length of 4 meters
- 308032 :** Cable length of 10 meters
- 308033 :** Cable length of 25 meters



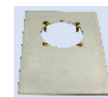
**SONO-VIEW :** SONO-View is a display and configuration for advanced process control with TRIME and SONO probes. Up to 4 probes can be connected via serial interface for displaying the measured values, setting of operation mode, calibration curves and other functions.



**Mounting flange :** The mounting flange is 108 mm (diameter). the flange can either be installed at the base or the side wall of containers.



**Baffle plate :** The Baffle plate that is used for round sensor e.g. SONO-VARIO. It is installed under silo flap. The dimension is 300 x 200 mm.



**Universal holder :** The universal hold that is used for round sensor e.g. SONO-VARIO. It is installed under silo flap. It is combined between baffle plate and tilt mechanism.



**Slider incl. mounting :** The Slider incl. mounting is used for round sensor e.g. SONO-VARIO. It is installed at conveyor belt.



**Slider wear-resistant incl. mounting :** The Slider incl. mounting is used for round sensor e.g. SONO-VARIO. It is installed at conveyor belt. The device is carbide coating for wear-resistant.



**SONO-CONFIG :** SONO-CONFIG it is possible to make process-related adjustments of individual parameters of the SONO probe. Furthermore the measurement values of the SONO probe can be read from the probe via the serial interface and displayed on the screen.

