



# Datasheet VHF Moisture Sensor

PCE-MWM 240

**EN**

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## Application

A bulk moisture meter is an irreplaceable device when it is necessary to measure the content of moisture in various materials, either in mining, petrochemical industry, or agriculture as well as in the production of the building materials. A non-nuclear device, which means that the moisture meter does not contain any radioactive material, is safe to be used and frees the customer from the need to ensure radiation safety, as well as from expenses for nuclear devices disposal. Moreover, there is no need to obtain a license for handling devices and machines generating ionizing radiation.



The advantage and strength of the devices construction is that it is based on the VHF band waves. To be able to measure non-uniform materials the wavelength must exceed the size of the granules of the tested material, only in that case it won't get weaker and scatter on inhomogeneity. The granules can be even greater than 5 cm in diameter and that is why such materials as sand, gravel, crushed stone, sawdust, grains, flour, seeds, wood and rubber chips, ore, etc. are all included into the list of possible materials for measurements taken with the help of the moisture meter. It allows to get very accurate results by averaging them over the whole volume of the materials even with non-uniform materials.

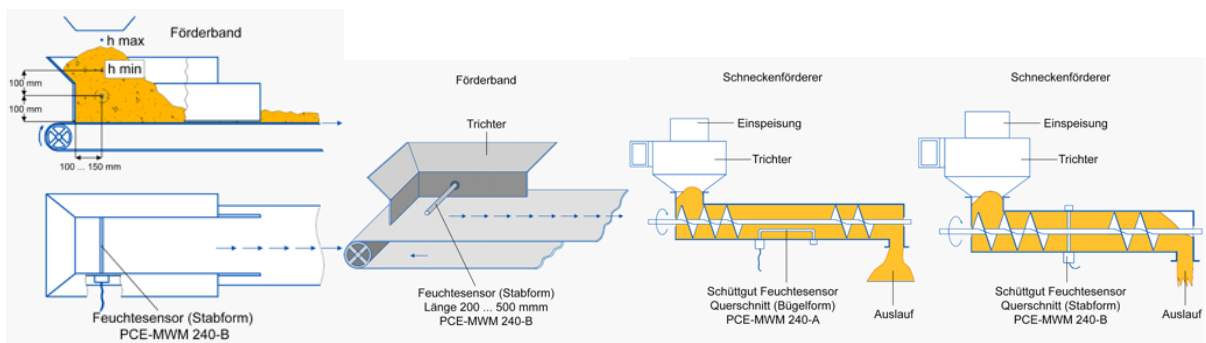
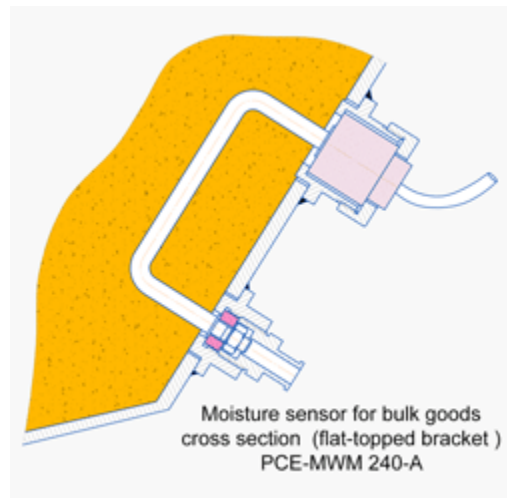
Version 1(**PCE-MWM 240-A**): The sensor probe has a U-shape bracket which is mounted on the wall of the hopper via couplings. Moisture meter is meant for moisture measurement of the bulk materials (crushed stone, silicate mass, clay, sand, sawdust, etc) in the bunkers, silos, batchers, conveyer belt, and mixers used in the silicate brick production, as well as screw conveyors.

When the sensor with the U-shape probe is set up on the conveyor belt, the flow of the bulk material is formed from the sides by the guiding plates. Viewed from above the flow of the material is limited by the plate that stabilizes the density of the material in the measured area and guarantees high measurement accuracy.

Version 2(**PCE-MWM 240-B**): The sensor probe has a straight rod shape with the ends fixed by special couplings on the opposite walls of the hopper. The sensor allows control of large volumes of material ensuring accurate data about the of moisture content in the material.

## Product features

The moisture meter is meant for measuring moisture in the bulk materials (sand, crushed stone, silicone mass, clay etc) in bunkers, silos, and batchers. A special feature of this model is the large probe length (up to 1.2 m), and the volume measured up to 1 cubic meter. The differences in moisture of separate local areas and also material sticking to the walls of the bunker do not influence the quality of measurement results. Moisture meter installation at the feed bin outlet allows to evaluation of the moisture of the material directly before the dosing. This solution allows the total dose of water in the inert volume put into the concrete mixer to be determined.



The moisture meter is meant for moisture control in wood chips, sawdust, sand, clay and other similar materials. The probe of the sensor is a pin with the length up to 0.6 m, made of stainless steel bar 12X18H10T, probe diameter – 14 mm. The sensor of this moisture meter and be fixed on the walls of the bunker, as well as above the conveyor belt.

The recommended application – to set up in the places of material unloading on the conveyor. In the loading area a collecting box is installed above the belt. The probe is fixed in the coupling on the walls of the box.

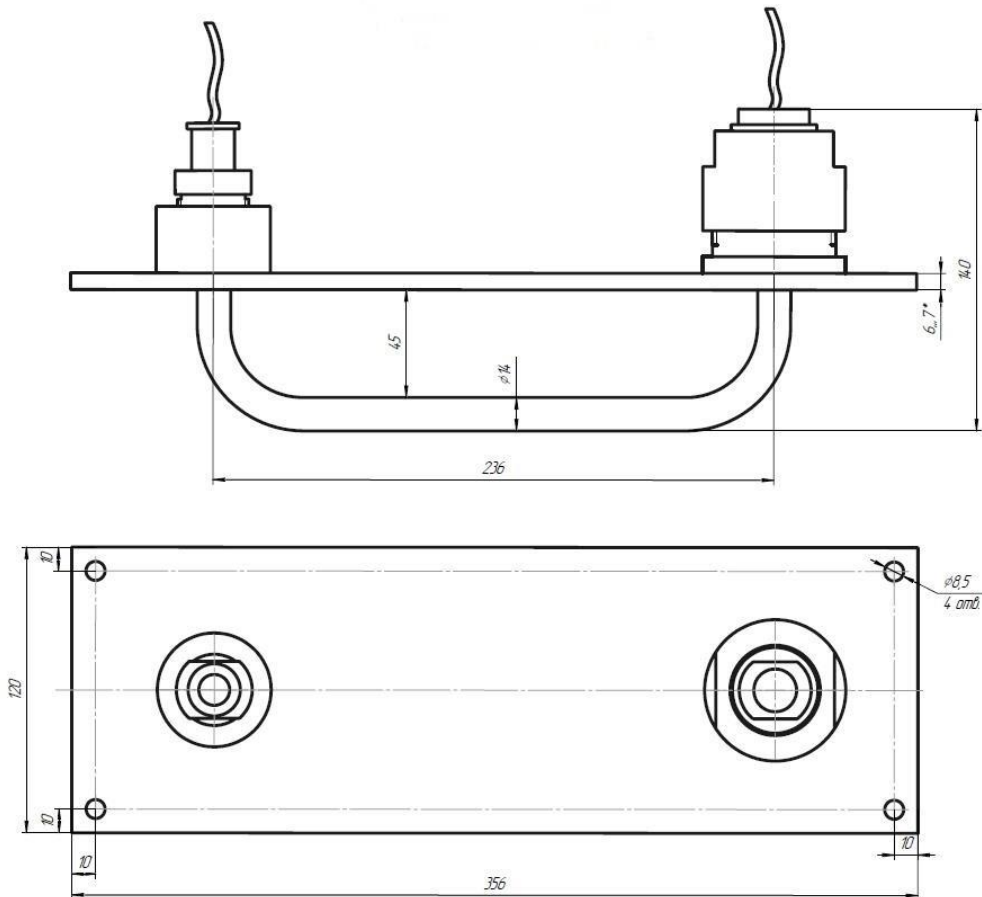
The measured material should cover the probe completely; the thickness of the material layer above the probe must around 20 cm. The required height of the pile of the material which is filled can be achieved by the conveyor speed regulation, as well as by setting up an additional flap in the box outlet, partly overlapping the flow. As the probe is made as a threaded rod and its length can be changed within a wide range (from 20 cm to 50 and more cm), the level of the material can also be regulated by choosing the right width of the duct.

## Technical specification

Measurement range	0 ... 100 %
Limits of permissible absolute error of the measurements results of the mass fraction of water	$\Delta = 0.02 + 0,025 \cdot W$ (seen Note 1)
Range of working temperatures	0 ... +90 °C (industrial version)
Operation mode continuous	continuous operation
Measurement period	0.3 ... 1.5 s
Voltage supply - Rated / - Allowable	24 (18 ... 36) VDC
Consumption current, not more than	200 mA
Input power	<0,1 W
Warm-up time at start-up	30 min
Output	RS 485 Modbus RTU, 4-20 mA [RS485: max. cable length 1,000 m; 4-20 mA: max. cable length 100 m (max. cable length to SPS unit)]
Dimension of the sensor, length	L 500 ... 1500 mm, Ø 15 ... 30 mm (depending on the variant)
Protection class	IP54
Note 1	
Moisture W [%]	Absolute error $\Delta W$ [%]
0 ... 6	0,3
6 ... 8	0,4
8 ... 10	0,5
10 ... 20	1,0
20 ... 50	2,5
50 ... 100	5,0

Technical drawing

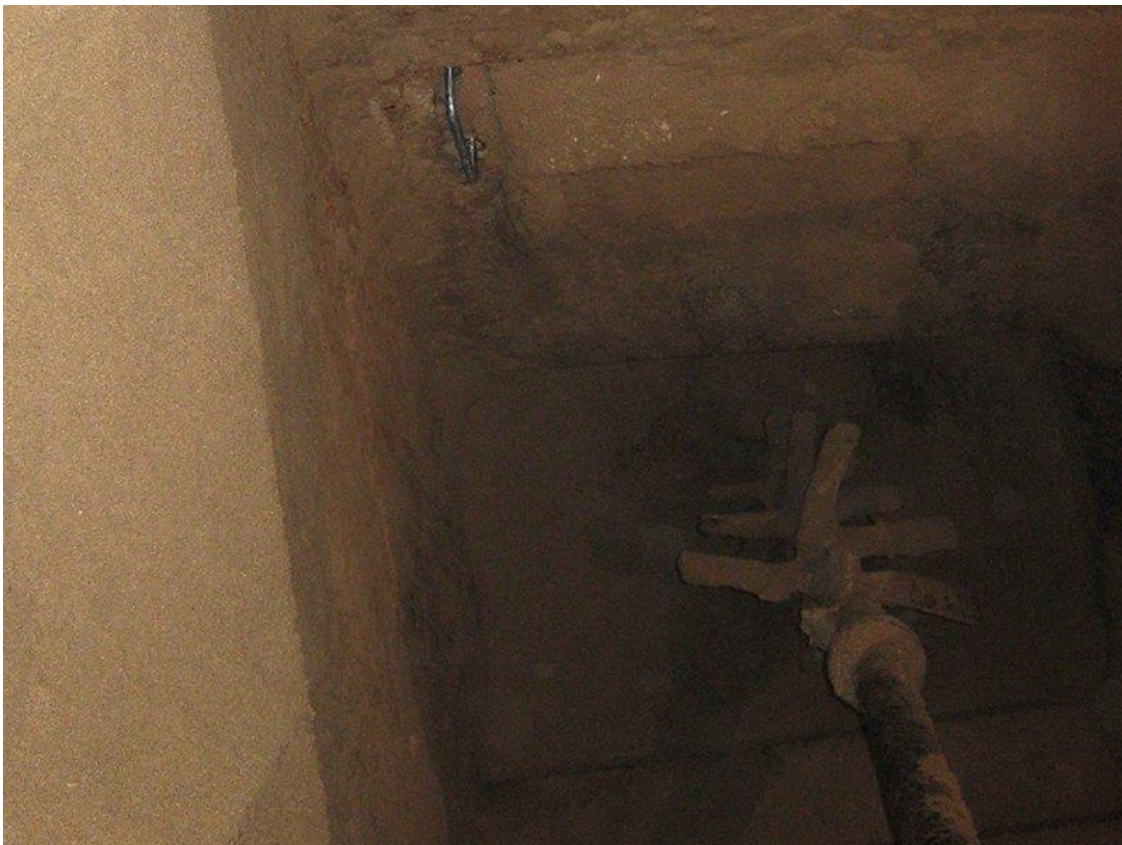
PCE-MWM 240-A



PCE-MWM 240-B

You can get this technical drawing on demand.

Application pictures





**Ordering code PCE-MWM 240-X(-XXXX)-XX****Version**

- A U-shape sensor
- B Straight rod

**Sensor length (only model B)**

- XXXX Length in mm (max. 1500 mm)

**Explosion proof (optional)**

- EX Electronics in explosion proof housing Ex d II B T5

**Ordering example****PCE-MWM 240-B-0950-EX**

- VHF moisture sensor PCE-MWM 240
- Straight rod version
- Length 950 mm
- Electronics in explosion proof housing Ex d II B T5