

CA Moisture Probe Installation Guide

To re-order quote part number:	HD1077
Revision:	1.0.0
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CUSTOMER RESPONSIBILITY

The customer in applying the product described in this documentation accepts that the product is a programmable electronic system which is inherently complex and which may not be completely free of errors. In doing so the customer therefore undertakes responsibility to ensure that the product is properly installed commissioned operated and maintained by competent and suitably trained persons and in accordance with any instructions or safety precautions made available or good engineering practice and to thoroughly verify the use of the product in the particular application.

ERRORS IN DOCUMENTATION

The product described in this documentation is subject to continuous development and improvement. All information of a technical nature and particulars of the product and its use including the information and particulars contained in this documentation are given by Hydronix in good faith.

Hydronix welcomes comments and suggestions relating to the product and this documentation

ACKNOWLEDGEMENTS

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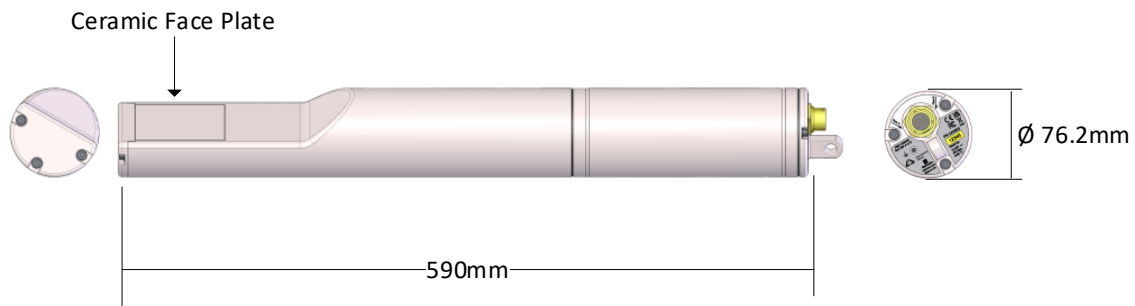


Figure 1: The CA Moisture Probe Sensor

Available accessories:

0025	Standard Mounting Sleeve
0975A	4m sensor cable
0975A-10m	10m sensor cable
0975A-25m	25m sensor cable
0975AT	4m sensor network termination cable
0975AT-10m	10m sensor network termination cable
0975AT-25m	25m sensor network termination cable
0116	Power Supply – 30 Watt for up to 4 sensors
0067	Terminal Box (IP65, 10 terminals)
0049A	RS232/485 converter (DIN rail mounting)
0049B	RS232/485 converter (9 pin D type to terminal block)
SIMxx	USB Sensor Interface Module including cables and power supply

Hydro-Com configuration and diagnostics software is available for free download from www.hydronix.com

This CA Moisture Probe Installation Guide is only valid for model number CA0022

1 General to All Applications

Follow the advice below for good sensor positioning:

- The 'sensing area' of the sensor (ceramic faceplate) should always be positioned in the moving, smooth, stream of material.
- The sensor should not obstruct the material flow.
- Position the sensor so that it is easily accessible for routine maintenance.

- To prevent damage from excessive vibration, position the sensor as far as reasonably practical from vibrators.
- To reduce material sticking to the sensor it should be angled with the ceramic faceplate initially set to 60° to the flow (as shown below). This is indicated on the label when the A or B line is in line with the material flow.
- It is recommended to install a switch close to the sampling point to manually start sensor averaging for calibration purposes. (see Electrical Installation Guide HD0678 for connection details)
- A calibration sample point must be available as close to the sensor as possible (no more than 150cm downstream)

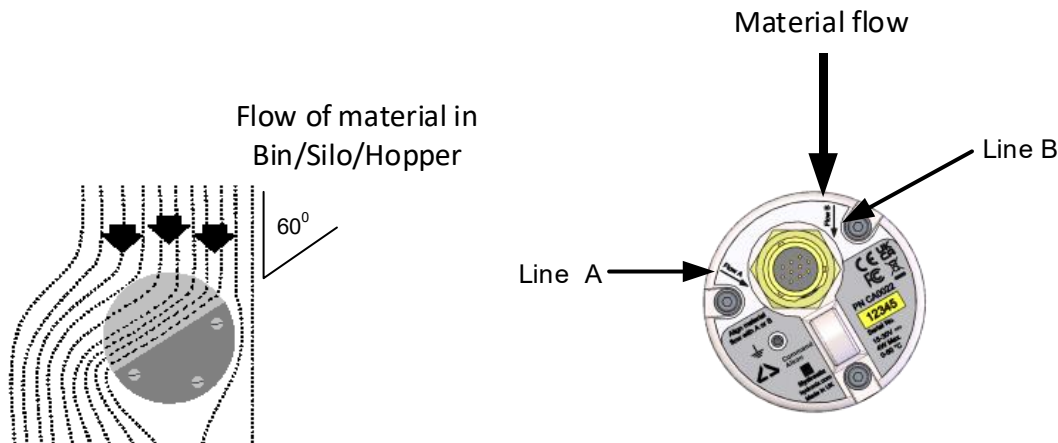


Figure 2: CA Moisture Probe mounting angle and material flow

When filling a bin/silo/hopper using large aggregates (>12mm), the ceramic faceplate is susceptible to damage by direct or indirect impact. To prevent this, a deflection plate should be fitted above the sensor.

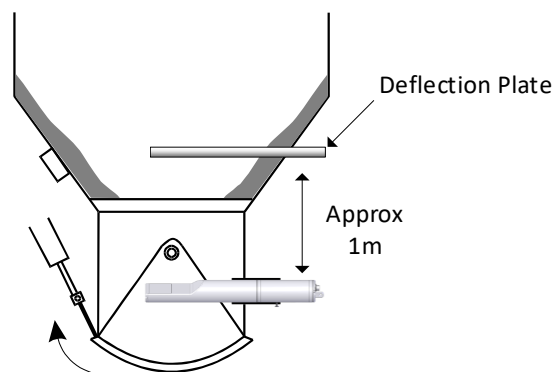


Figure 3: Fitting a Deflection Plate to prevent damage

2 Positioning the Sensor

The optimum location for the sensor varies depending on the type of installation – a number of options are detailed on the following pages.

2.1 Bin/Silo/Hopper Mounting

The sensor may be mounted in the neck or the wall of the bin so the ceramic faceplate is in the centre of the flow, as shown below.

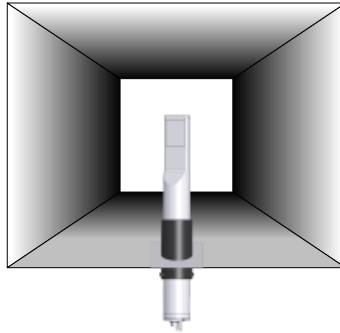


Figure 4: Overhead View of CA Moisture Probe Mounted in a Bin

2.2 Neck Mounting

The sensor should be located on the opposite side to the door-opening and centred within the neck. If it is fitted on the same side as the ram, it should be angled towards the centre. Positioning the sensor under the bin will also help where space is limited.

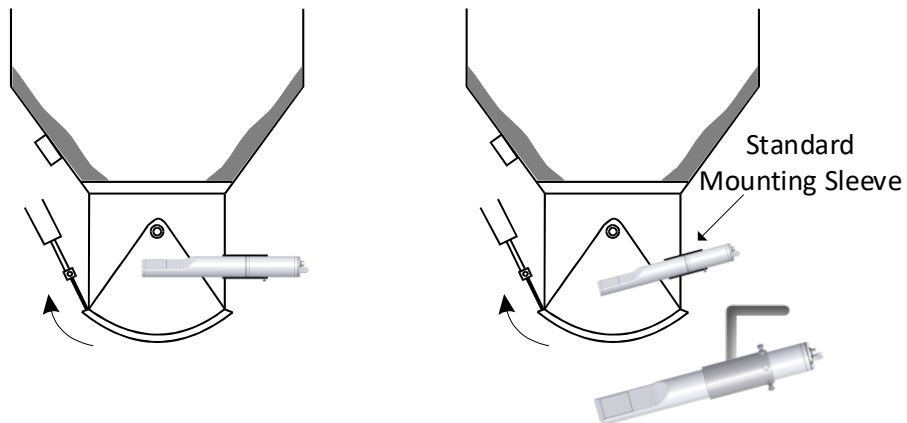


Figure 5: Mounting the CA Moisture Probe in the Neck of the Bin

2.3 Bin Wall Mounting

The sensor can be placed horizontally in the bin wall, or if the space is limited, angled down to 45° as shown, using the Standard Mounting Sleeve (part no: 0025).

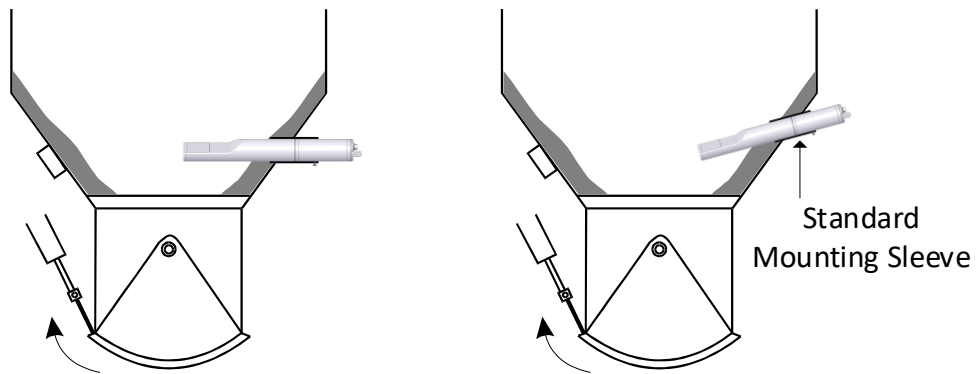


Figure 6: Mounting the CA Moisture Probe in the Bin Wall

3 Standard Mounting Sleeve (part no 0025)

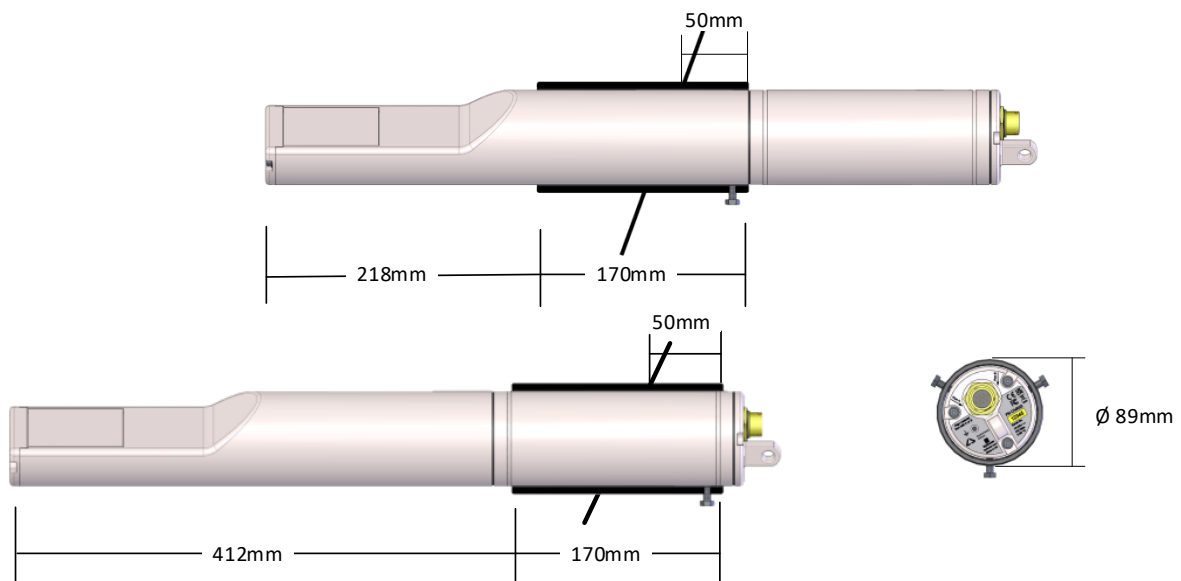


Figure 7: The Standard Mounting Sleeve (part no 0025)

1 Corrosion Protection

In situations where corrosive materials are in use, there is potential for the cable connector to be damaged. Protection from this corrosion is possible with a few simple adjustments to how the sensor is installed.

1.1 Sensor Position

Position the sensor so that no material comes into contact with the connector (See Figure 8).

The sensor must remain in the main flow of the material at all times to produce accurate measurements of the moisture.

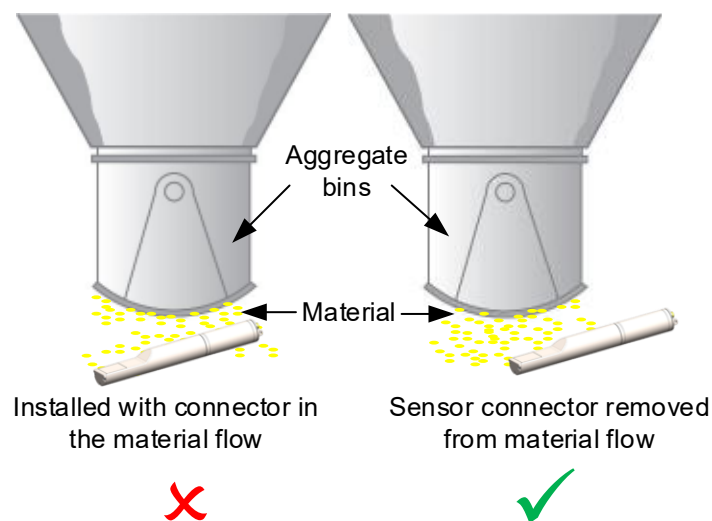


Figure 8: CA Moisture Probe installed under an Aggregate Bin

1.1.1 Drip Loop

Although the connector is specified to withstand water ingress it is recommended to install with a drip loop in the cable. (See Figure 9).

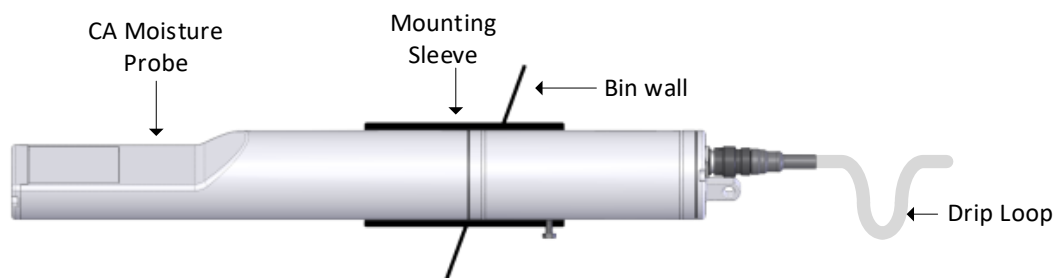


Figure 9: CA Moisture Probe installed with a Drip Loop

1.1.2 Protection Cover

Install a cover over the top of the sensor to deflect the material away from the connector. (See Figure 10). Self-amalgamating tape can also be used to seal the connector.

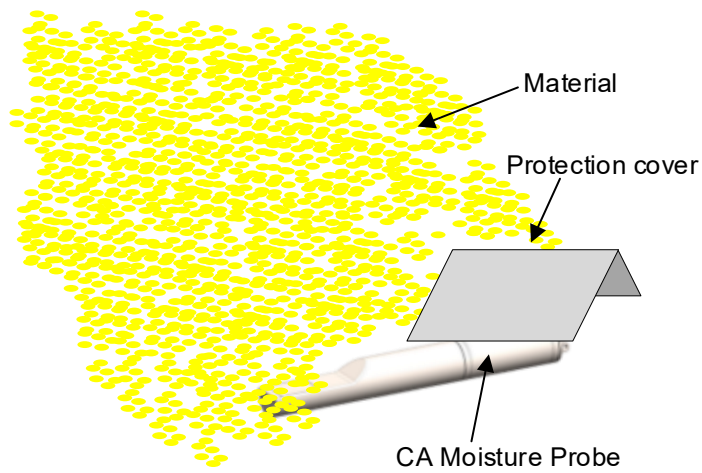


Figure 10: CA Moisture Probe Protection Cover

1 Technical Specification

1.1 Dimensions

Diameter: 76.2mm

Length: 590mm

1.2 Construction

Body: Cast stainless steel

Faceplate: Ceramic

1.3 Penetration of Field

Approximately 75 -100mm dependent upon material

1.4 Range of Moisture

For bulk materials the sensor will measure up to the point of saturation.

1.5 Operating Temperature Range

0-60°C (32-140°F).The sensor will not measure in frozen material

1.6 Power Supply Voltage

15 - 30 VDC. 1 A minimum required for start-up (normal operating power is 4W).

1.7 Analogue Output

Two configurable 0–20mA or 4-20mA current loop outputs (sink) available for moisture and temperature. The sensor outputs may also be converted to 0-10Vdc

1.8 Measurement Modes

1.8.1 CA Moisture Probe

Mode F only

1.9 Brix measurement output

No

1.10 Digital (Serial) Communications

Opto-isolated RS485 2 wire port – for serial communications including changing operating parameters and sensor diagnostics.

1.11 Digital Inputs

- One configurable digital input 15-30 V dc activation

- One configurable digital input/output – input specification 15 – 30 Vdc, output specification: open collector output, maximum current 500mA (over current protection required)

1.12 Connections

1.12.1 Sensor Cable

- Six pairs twisted (12 cores total) screened (shielded) cable with 22 AWG, 0.35mm² conductors.
- Screen (shield): Braid with 65% minimum coverage plus aluminium/polyester foil.
- Recommended cable types: Belden 8306, Alpha 6373
- 500 Ohm resistor – The recommended resistor is an epoxy sealed precision resistor of the following specification: 500 Ohm, 0.1% 0.33W
- Maximum cable run: 100m, separate to any heavy equipment power cables.

1.13 Grounding

The sensor body is connected to the cable shield. Ensure equipotential bonding of all exposed metalwork. In areas of high lightning risk, correct and adequate protection should be used.

The sensor cable shield is connected to the sensor body. To prevent earth loops the shield must not be connected at the control panel.

1 Document Cross Reference

This section lists all of the other documents that are referred to in this User Guide. You may find it beneficial to have a copy available when reading this guide.

Document Number	Title
HD0678	Hydronix Moisture Sensor Electrical Installation Guide
HD0679	Hydronix Moisture Sensor Configuration and Calibration Guide

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