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Item number 215519:

Soil Adapter Kit for Horizontal Positioning of GMP343

The soil adapter kit consists of a soil adapter made of POM (polyoxymethylene) and a moulded hydrophobic filter made of PTFE (polytetrafluoroethylene). The kit is intended to be used with a diffusion model of the Vaisala CARBOCAP Carbon Dioxide Probe GMP343 in in-soil CO_2 measurement applications.

Structure and Operating Principle of the Adapter Kit

The two parts of the soil adapter kit are illustrated in Figure 1. The soil adapter can be used with or without the PTFE filter. The intention of the PTFE filter is to give extra protection to the GMP343 from water in the soil. The PTFE filter is a breathable material that is made porous by sintering with a pore size of 5-10 m.

When using the soil adapter kit for horizontal positioning, please first remove the standard filter cover of the GMP343, both the outer plastic grid filter and the paper filter.

The PTFE filter should then be pushed tightly against the O-ring on the diffusion model of the GMP343. After this, the actual soil adapter can be screwed on the probe.

The diffusion slot at the side of the soil adapter provides a distinct surface for gas diffusion. The gas port provides a means for remote calibration of the probe.

Figure 1. The soil adapter kit for horizontal installation of the GMP343 consists of an in-soil adapter (left) and a hydrophobic PTFE filter (right).

The Probe and the Adapter Kit

The soil adapter kit for the horizontal positioning of the GMP343 for in-soil CO_2 measurements is mounted on the GMP343 probe in Figure 2. The thread on the soil adapter should be tightened with a sealant such as the Loctite Product 5331 threadsealant for plastic fittings (an acetoxy silicone paste) for extra protection.

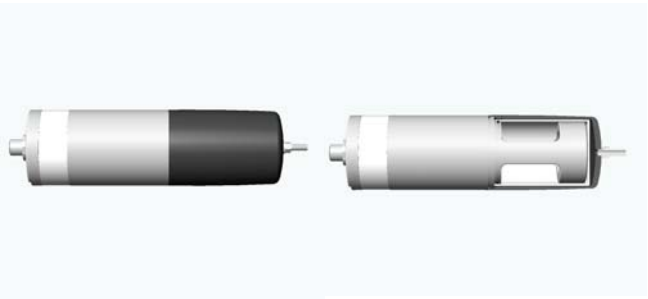

Figure 2. The GMP343 with the soil adapter kit for horizontal positioning (left a view from outside, right a cut-away view on the adapter).

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Installing the Probe with Adapter in Soil

When installing the CO2 probe and the in-soil adapter into soil it is important to minimize their effects on the soil texture. Depending on the type of soil, a drill could be used to make a hole sideways that is as distinct as possible. Alternatively the probe can be buried by making a hole so that each layer of soil is carefully removed and after burying the probe, put back in its right order. The horizontal adapter has a gas port, which may be used for a tube to periodically feed in calibration gas to the sensor if needed. The GMP343 User's Guide has detailed information about GMP343 calibration options.

Figure 3 illustrates a horizontal installation of the GMP343 below ground.

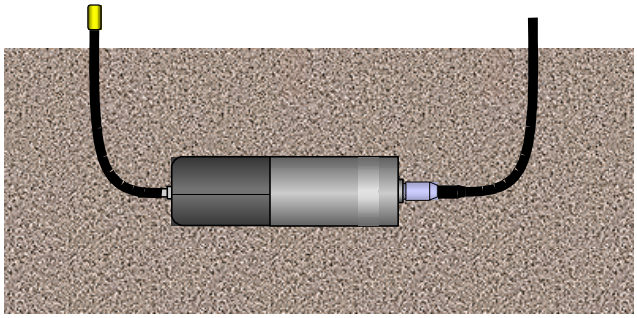

Figure 3. The GMP343 installed horizontally with the soil adapter kit below ground. A calibration tube is also installed to provide a means to insert calibration gas to the probe.

Environmental compensations

As NDIR based CO_2 measurements are dependent on the ambient temperature and pressure (mainly in accordance with the ideal gas law), compensations must be made in cases when best possible accuracy is required from the CO_2 measurement. The GMP343 has an internal temperature sensor in its gas sampling space. The temperature compensation can be enabled to continuously compensate for temperature. Also, by disabling the temperature compensation, uncompensated data can be obtained. If using a digital output (RS-232/485) both the uncompensated data and temperature data can be obtained from the GMP343. Although the GMP343 has internal algorithms also to calculate the pressure, relative humidity and oxygen compensations, these must be disabled unless there is an external system or PC providing pressure and humidity data to the CO2 probe on regular basis. Please refer to the GMP343 User's Guide for more information. In case all or some of the compensations will be made externally appropriate formulas needs to be used. Please contact Vaisala for further info.

Operating Conditions

The GMP343 Carbon Dioxide Probe is specified for an operating temperature range of -40...+60°C and operating humidity range according to figure 4. To avoid condensation on the optical components of the sensor, optics heating can be applied. Please refer to the GMP343 User's Guide for more details.

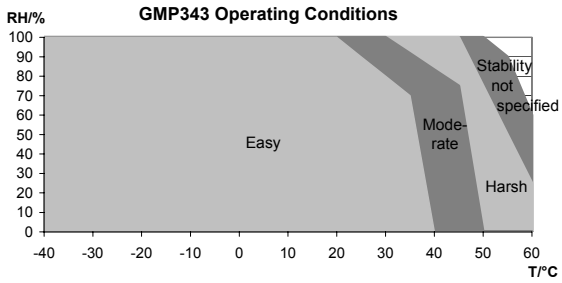

Figure 4. The GMP343 operating conditions.

Warning
If the probes are used outside the specifications the warranty will be void. Also any modifications or changes of the product as well as any adding to it without Vaisala's prior authorization will void the warranty.