

Sigma 05

Modular Sensor Platform

The Sigma 05 sensor hub represents the central element of the E+E modular sensor ecosystem with intelligent probes, analogue outputs and display. With pluggable, interchangeable probes, the modular sensor platform is suitable even for harsh and challenging environment.

Flexibility: Multiple Probes and Measurands

The Sigma 05 accommodates up to 3 E+E plug-and-play probes with RS485 interface and Modbus RTU protocol. Up to 5 measurands can be assigned to the two freely selectable and scaleable analogue outputs and to the optional graphic display.

Plug-and-Play

Sigma 05 features automatic detection of E+E plug-and-play probes and performs an autonomous, rule based hub setup. Refer to the user manual for details.

Configuration and Adjustment

The free PCS10 Product Configuration Software allows for easy setup of the Sigma 05, measurand assignment and thresholds, display layout, scaling of the analogue outputs and adjustment of the connected probes.



Sigma 05 with EE872

Features

Electronics

- » 2 voltage or current outputs, freely selectable and scaleable
- » USB-C service interface
- » Status indication via LEDs
- » Components on PCB underside for optimum protection against mechanical damage during installation

Display with backlight

- » Configurable display layout
- » Up to 3 freely selectable measurands
- » Status information
- » Indicates measurands beyond predefined range

Appropriate for US mounting requirements

- » Knockout for 1/2" conduit fitting

Smooth cover surface

- » No accumulation of dust in protruding edges

External mounting holes

- » Easy and fast mounting with closed cover
- » Electronics protected against construction site pollution

Bayonet Screws

- » Open/close with a 1/4 rotation

M12 Probe connection

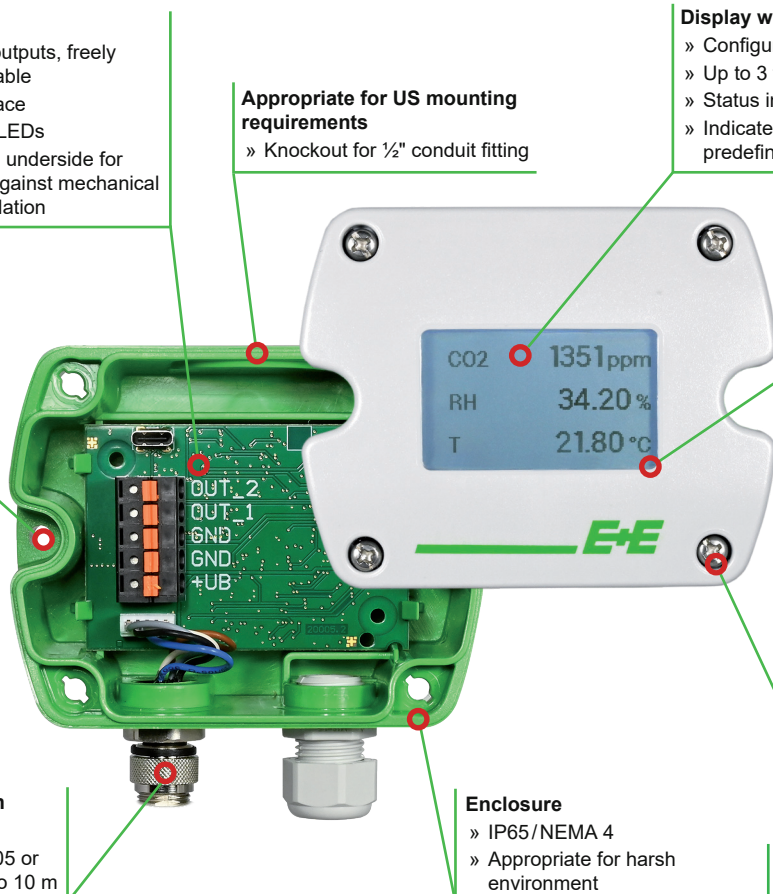
- » Up to 3 probes
- » Directly onto Sigma 05 or with M12 cables up to 10 m

Enclosure

- » IP65/NEMA 4
- » Appropriate for harsh environment

Test report

according to DIN EN 10204-2.2



Sensing Probes for Sigma 05

Refer to the respective data sheet for details



EE872

EE072

EE074

EE671

EE680

Sigma 05

EE872 - Modular Probe for CO₂, Humidity, Temperature and Ambient Pressure: www.epluse.com/EE872

EE072 - Humidity and Temperature Probe: www.epluse.com/EE072

EE074 - Temperature Probe: www.epluse.com/EE074

EE671 - HVAC Air Velocity Probe: www.epluse.com/EE671

EE680 - Air Velocity and Temperature Sensor for Laminar Flow: www.epluse.com/EE680

Reference Probe

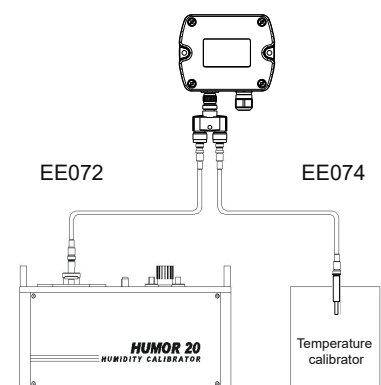
A functional and accuracy check of the Sigma 05 can be performed with the E+E Reference Probe Modbus RTU instead of the regular sensing probes. The reference probe supplies fixed values for a wide choice of measurands and features an individual test report. Refer to the Reference Probe Modbus RTU Quick Guide at www.epluse.com/Sigma05 for further details.



Field Loop Calibration

The modular design of the E+E sensor platform facilitates the loop calibration or adjustment in the field, as required by the FDA (Food and Drugs Administration) regulated industries. Using extension cables, the sensing probes can be inserted into portable calibrators without dismantling the Sigma 05 host device.

The illustration shows the EE072 humidity probe placed into the Humor 20 high end portable humidity calibrator and the EE074 temperature probe in a dry block calibrator.



Technical Data


Probe connection

| | |
|---|--|
| Max. number of sensing probes ¹⁾ | 3 |
| Max. number of measurands | 5 (2 on the analogue outputs, 3 on the display) |
| Probe interface | RS485 |
| Protocol | Modbus RTU |
| Default settings | Baud rate 9600 ²⁾ , data bits 8, parity even, stop bits 1 |
| Electrical connection | M12x1 socket 5 poles |

Outputs

| | | |
|---|--|--------------------------|
| Voltage | 0 - 1 V / 0 - 2.5 V / 0 - 5 V / 0 - 10 V | $0 < I_L < 1 \text{ mA}$ |
| Current | 0 - 20 mA / 4 - 20 mA (3-wire) | $R_L < 500 \Omega$ |
| <i>Freely selectable and scalable</i> | | |
| Accuracy of analogue outputs at 20 °C (68 °F) | 0.02 % FS for 0 - 10 V and 0 - 20 mA | (FS = full scale) |

General

| | |
|--|--|
| Power supply class III  (EU) / class 2 (NA) | 15 - 30 V DC |
| Supply current to the probes, max. | 0.5 A |
| Electrical connection | 5 pole spring clamp terminal, max. 2.5 mm ² |
| Cable feedthrough | Cable gland M16x1.5 |
| Configuration interface | USB-C on the electronics board |
| Configuration software (free) | PCS10 Product Configuration Software |
| <i>Free download from www.epluse.com/PCS10</i> | |
| Enclosure Material | Polycarbonate, UL94V-0 (with Display UL94HB) approved |
| Protection rating ³⁾ | IP65/NEMA 4 |
| Electromagnetic compatibility | EN 61326-1:2013 EN 61326-2-3:2013 Industrial Environment FCC Part15 ClassA ICES-003 ClassA |
| Working and storage conditions | -40...60 °C (-40...140 °F) without display -20...50 °C (-4...122 °F) with display 0...95 % RH, non-condensing 700...1200 mbar |



1) Compatible E+E probes see section "Sensing Probes for Sigma 05" above.

2) Supported baud rates: 9600, 19200, 38400, 57600, 76800 and 115200.

For details on the communication setting refer to the User Manual and the Modbus Application Note at www.epluse.com/Sigma05

3) With appropriate cable / probe connector (M12x1 female), see section "Accessories" below.

Ordering Guide

| Hardware Configuration | | SIGMA05- |
|------------------------|------------------------|----------|
| Enclosure | Polycarbonate | HS1 |
| Display | No display | D0 |
| | Display with backlight | D2 |
| Software Configuration | | |
| Output signal | 0 - 1 V | GA1 |
| | 0 - 5 V | GA2 |
| | 0 - 10 V | GA3 |
| | 0 - 20 mA | GA5 |
| | 4 - 20 mA | GA6 |
| Units | Metric (SI) | U1 |
| | Non-metric US/GB | U2 |

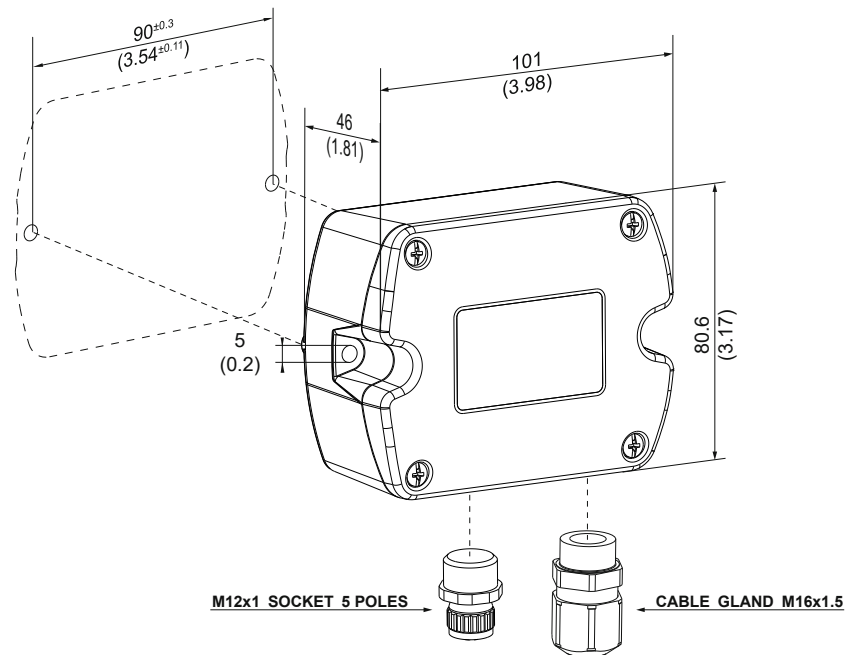
Order Example

SIGMA05-HS1D2GA6U1

| | |
|----------------|------------------------|
| Enclosure: | Polycarbonate |
| Display: | Display with backlight |
| Output signal: | 4 - 20 mA |
| Units: | Metric (SI) |

Dimensions

Values in mm (inch)



Accessories

(for further information, see data sheet "Accessories")

| | |
|---|----------|
| PCS10 Product Configuration Software (free download: www.epluse.com/PCS10) | PCS10 |
| Connection cable M12-M12 unshielded | |
| L = 2 m (6.6 ft) | HA010813 |
| L = 5 m (16.4 ft) | HA010814 |
| L = 10 m (32.8 ft) | HA010815 |
| Reference Probe Modbus RTU | HA010406 |
| Modbus Configuration Adapter | HA011018 |
| Power supply adapter 240 - 100 V AC to 24 V DC | V03 |
| USB cable for PC connection (USB-A to USB-C) | HA010327 |
| T-coupler M12 - M12 | HA030204 |
| M12 cable connector for self-assembly, 5 pole socket | HA010708 |
| M12 cable connector for self-assembly, 5 pole plug | HA010706 |
| Protection cap for M12 female connector | HA010781 |
| Protection cap for M12 male connector | HA010782 |