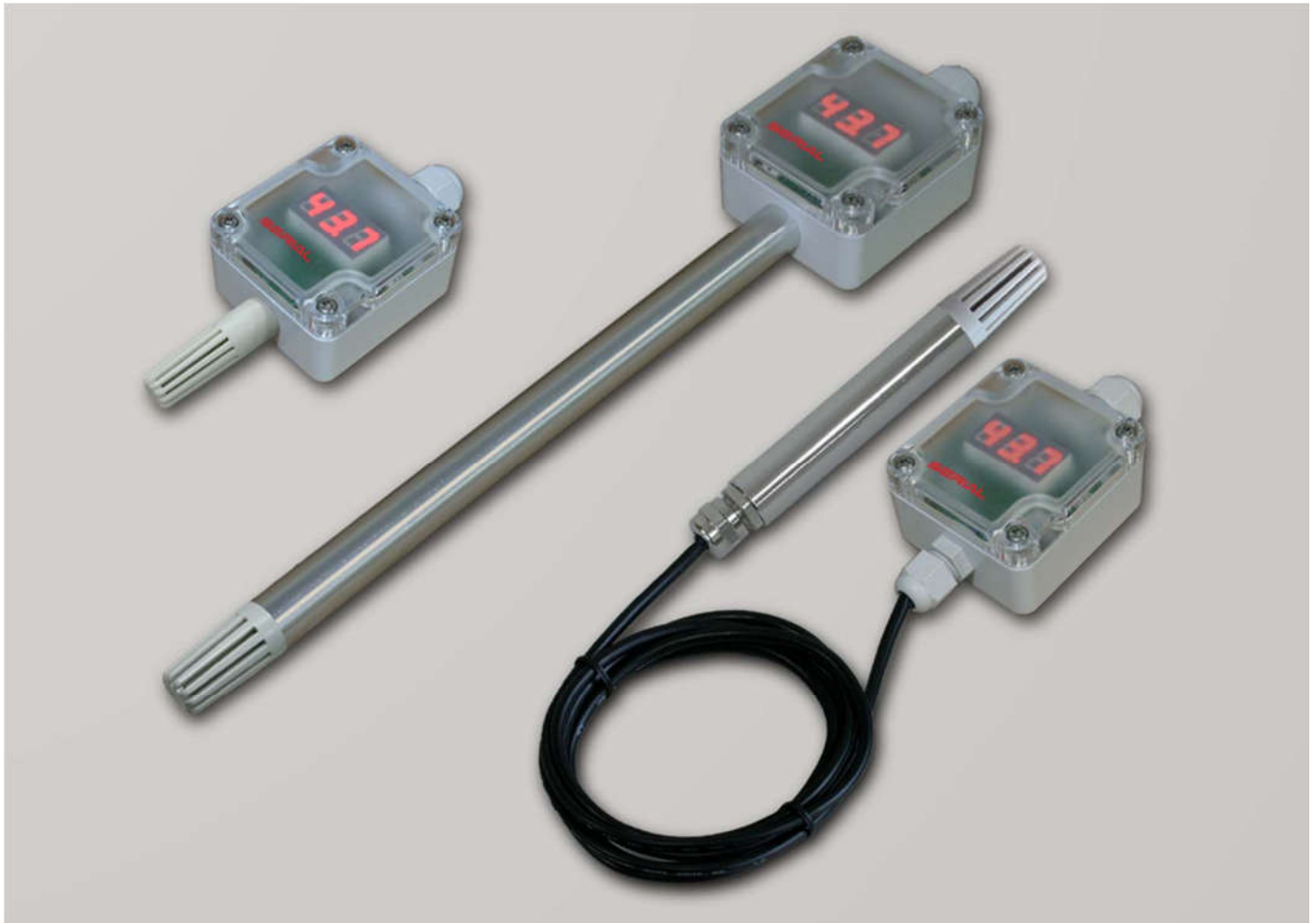


CAEL-ECO-HT/HTA/HTAA Series

The Most Economic Humidity and Temperature Transmitter



Features

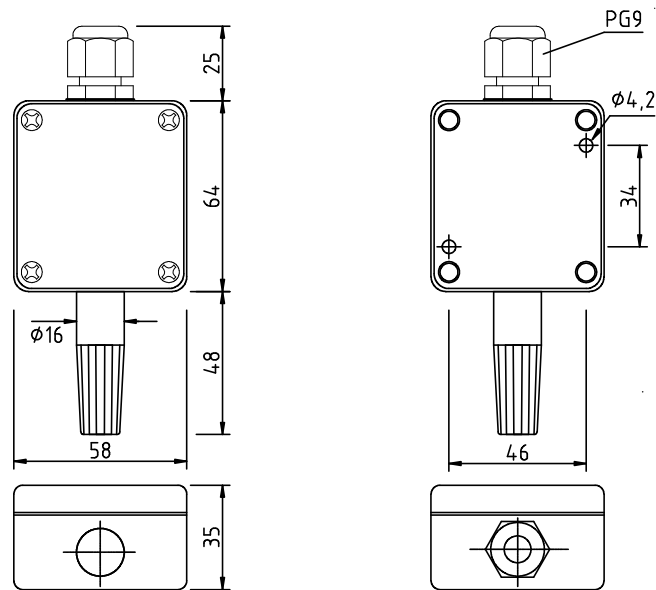
- Metal probe reduce electromagnetic interference
- 3-wire 4...20mA with selectable physical quantity
- 0 ... 100%RH measurement,
- Temperature range up to +120°C
- Probe pressure up to 10 bar
- Excellent quality and stable measurement
- IP-65 housing
- Modbus RTU protocol
- Configure adapter support

Applications

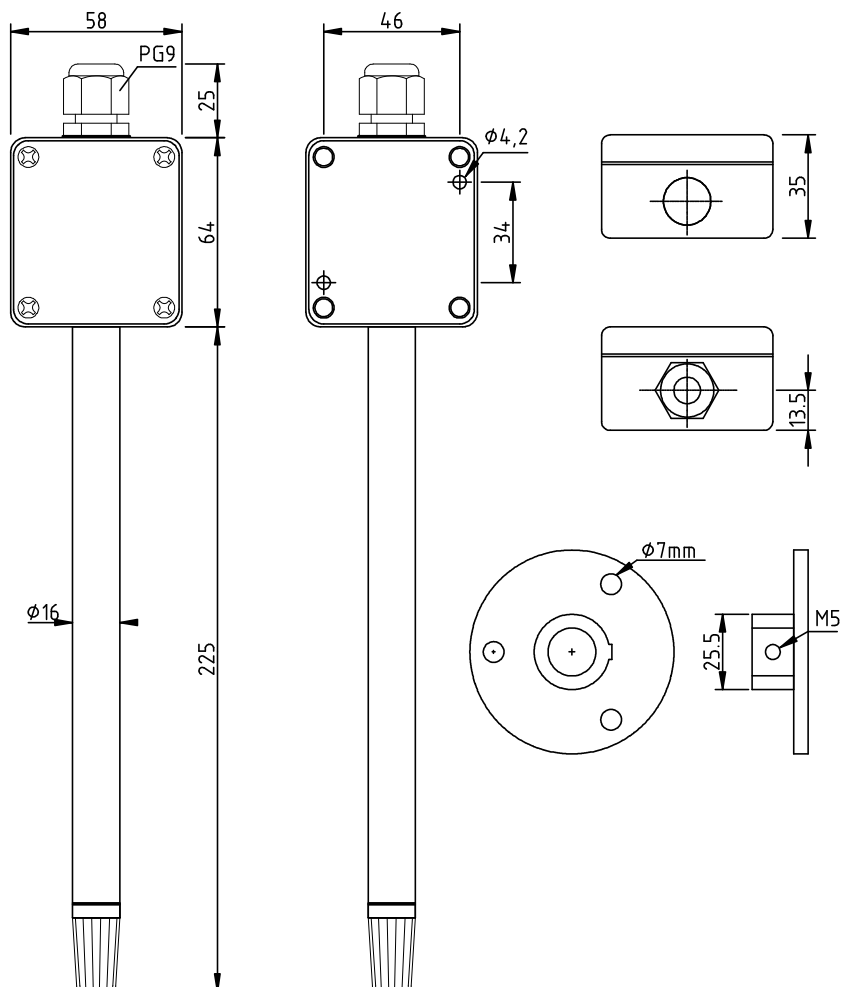
- Semiconductor and microelectronics industry
- Pharmaceutical and paper industry
- Environmental chambers
- Drying and spraying equipment
- Agriculture, farms
- Greenhouse, storage room
- Cooling chamber
- Building Automation
- Environment and ventilation control

Dimensions (mm)

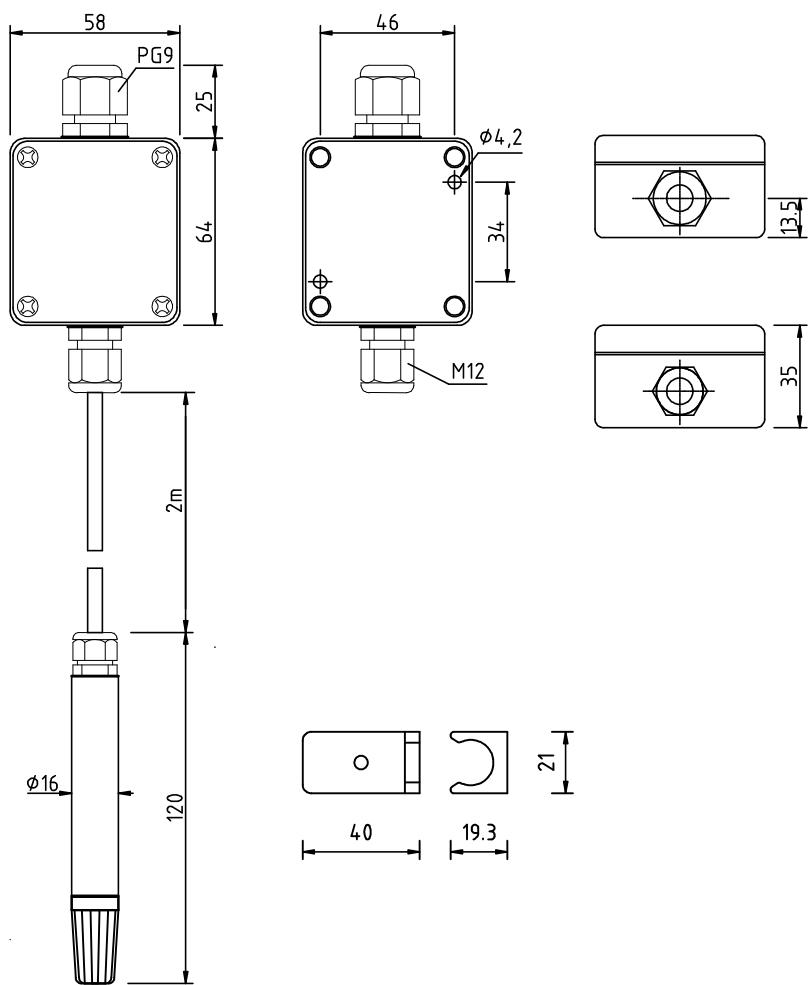
110 Wall mount version (Filter material: ABS)



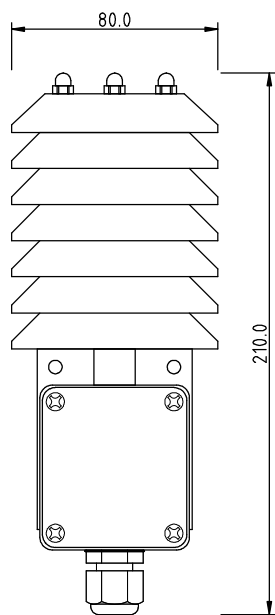
120 Duct version (Probe material: aluminum)



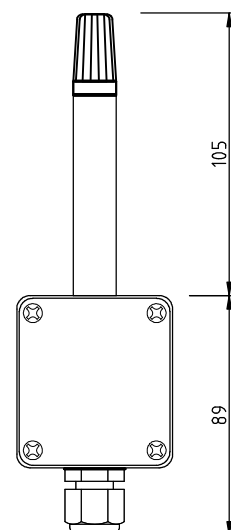
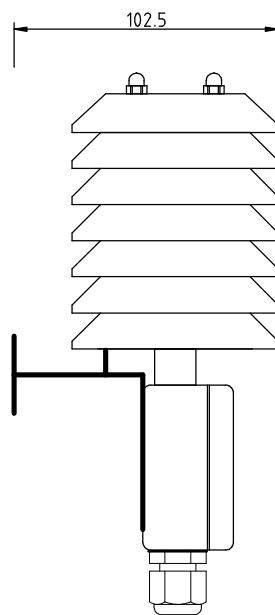
130 Remote probe (Probe material: brass nickel-plated)



140 Outdoor



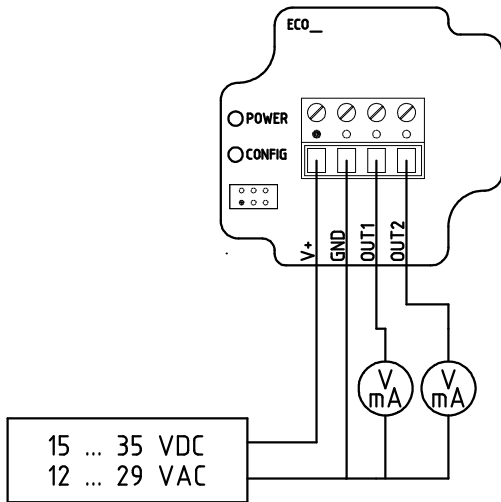
140N Short Probe



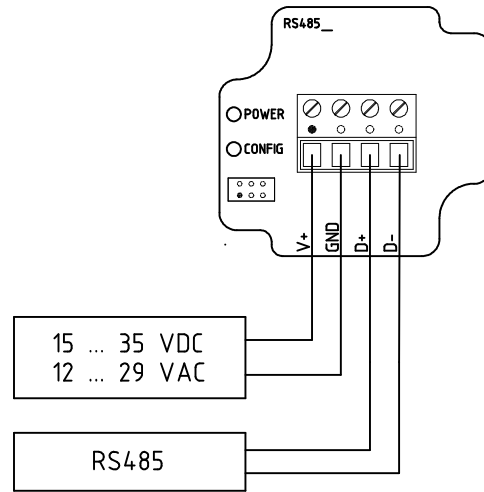
Connection Diagrams

Cable gland with terminal block

3-wire 4...20mA or voltage output

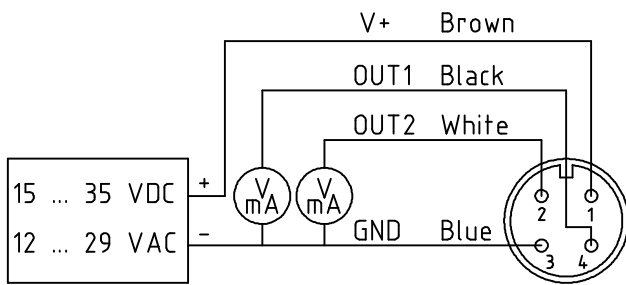


RS485 output



M12 – 4 pin connector

3-wire 4...20mA or voltage output

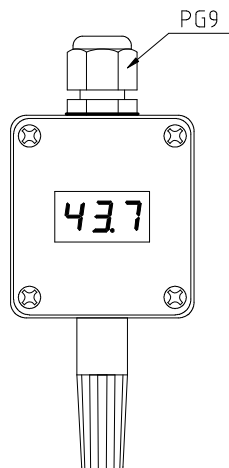


RS485 output

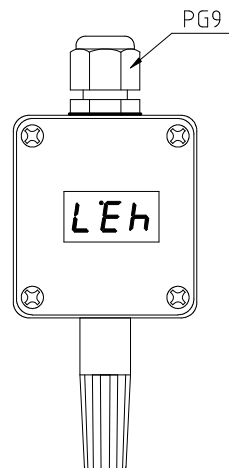


LED display

Forward view: D1



Reverse view: D2



Physical Quantity Output Range

Item	Metric	Imperial
Temperature <u>T</u>	-40 ... 120 °C	-40... 248 °F
Relative Humidity <u>RH</u>	0 ... 100 %	0 ... 100 %
Dew point <u>T_d</u>	-20 ... 100 °C	-4 ... 212 °F
Frost/dew point <u>T_f</u>	-20 ... 100 °C	-4 ... 212 °F
Wet bulb temperature <u>T_w</u>	-40 ... 100 °C	-40 ... 212 °F
Water vapor pressure <u>E</u>	0 ... 1013 mbar	0 ... 14.7 psi
Mixing ratio <u>R</u>	0 ... 30000 g/kg	0 ... 210000 gr/lb
Absolute humidity <u>A</u>	0 ... 550 g/m ³	0 ... 240 gr/ft ³
Enthalpy <u>S</u>	-40 ... 40000 kJ/kg	-10 ... 20000 BTU/lb

Technical Data

Humidity

Measurement range 0 ... 100 %RH
Accuracy (including non-linearity, hysteresis, and repeatability)

CAEL-ECO-HTAA ±1.5%RH@25°C (20 ... 80%RH)
±2%RH@25°C (0 ... 20/80 ... 100%RH)

CAEL-ECO-HTA ±2%RH@25°C (20 ... 80%RH)
±3%RH@25°C (0 ... 20/80 ... 100%RH)

CAEL-ECO-HT ±3%RH@25°C (20 ... 80%RH)
Temperature coefficient (from 0°C to 80°C)

typ. ±0.02%RH/°C

Humidity Hysteresis ±1%RH

Long term drift¹ < 0.25%RH/year

Response time T63² 8 second (at 1m/s air flow)

Temperature

Measurement range -40 ... 120 °C
Accuracy (including non-linearity, hysteresis, and repeatability)

±0.2°C@25°C

±0.7°C (-40 ... 5°C)

±0.3°C (5 ... 60°C)

±0.9°C (60 ... 120°C)

Long term drift³ < 0.02°C/year

Analog output (two channels)

Current version 3-wire, 4 ... 20 mA

Voltage version 0 ... 1 V / 5 V / 10 V

Accuracy of analog outputs at +25 °C ±0.1% full scale

Temperature dependence ±0.005%/°C full scale

External loads current output RL < 500 ohm
voltage output RL > 10k ohm

RS485 Modbus RTU

ID 1...247

Baud rate 9600/19200/38400/57600/115200

Data format N81/N82/E81/E82/O81/O82

Psychrometrics (option)

(Td) dew point temperature, (A) absolute humidity,

(Tf) frost/dew point temperature, (R) mixing ratio,

(S) enthalpy, (Tw) wet bulb temperature,

(E) water vapor pressure

Measurement type

CAEL-ECO-HT/HTA/HTAA Humidity and Temperature

CAEL-ECO-TS Temperature only

LED Display (option)

Digits, Type 3-digits, 0.4" 7 segment LED

Display OUT1 stable, OUT2 flash 3 time,

alternate

View direction Forward or Reverse

Power supply

DC 15 ... 35 VDC

AC 12 ... 29 VAC

Power consume (25 °C, V+ 24 VDC)

Current version max. 35mA

Voltage version typ. 8mA

RS485 version typ. 10mA

Mechanics

Housing material PC, Polycarbonate

Filter material 110 ABS

Filter material 120/130/140/140N PC, Polycarbonate

Flange material Aluminum

Cable of remote probe version 2m, shield PVC, 80 °C

Housing classification IP65

Cable gland PG9 with strain relief

Cable bushing 4.5 ... 8.2 mm

Terminal block AWG 12...24

Connection Cable gland with terminal block

or M12-4 pin

Probe material

Duct version 120 aluminum

Remote probe 130/140/140N brass nickel-plated

Outdoor version material

Radiation shield ASA, Acrylonitrile Styrene Acrylate

Mounting bracket SUS304

Housing temperature range

without display -40 ... 80 °C

with display -25 ... 80 °C

Probe temperature range

Duct and remote probe version -40 ... 120 °C

Electromagnetic compatibility

Complies with EMC standard

EN61326-1, Industrial Environment

¹ Typical value for operation in normal RH/T operating range. Max. value is < 0.5%RH/year. Value may be higher in environments with vaporized solvents, outgassing tapes, adhesives, packaging materials, etc.

² Time for achieving 63% of a step function, valid at 25°C and 1m/s airflow.

³ Max. value is < 0.04°C/year.

Ordering Guide

Model	Installation	Output	Temperature Scale
CAEL-ECO-HTAA	Wall mount	110	4 ... 20mA
CAEL-ECO-HTA	Duct	120	0 ... 10V
CAEL-ECO-HT	Remote probe	130	0 ... 5V
CAEL-ECO-TS	Outdoor	140	0 ... 1V
	Short probe	140N	RS485

Connection	Psychrometrics (Option)	LED Display (Option)
Cable gland	Yes	Forward view
M12-4 pin (with 2m cable)		Reverse view

Example

CAEL-ECO-HT-120-21AMD1

Humidity accuracy: $\pm 3\%RH$ (20...80%RH) **HT** Option - Psychrometric calculations: Yes **M**
 Installation: Duct version **120** Option – LED Display: Yes, Forward view **D1**
 Output: 4 ... 20 mA **2**
 Temperature Scale: 0 ... 50°C **1**
 Connection: Cable gland with terminal block **A**

Accessories

SA020002 Stainless steel sintered, pores size: 30 μ m		SA020401 PT 1/2" stainless steel sample block with PT1/4" inlet & outlet ports	
SA020004 Stainless steel mesh, pores size: 75 μ m		SA020201 PT 1/2" Stainless steel fitting	
SA021001 Wall mounting clip		SA010201 Configure adapter	

