

## CAEL-S16 Probe Humidity and Temperature Transmitter



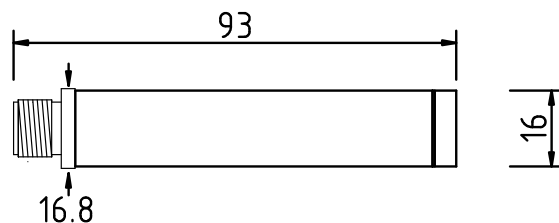
### Features

- Metal probe reduce electromagnetic interference
- Interchangeable sensor for rapid maintenance
- 0 ... 100%RH measurement,
- Probe pressure up to 10 bar
- Calculated hygrometric outputs
- Two channel with selectable physical quantity
- Unit support metric or imperial

### Applications

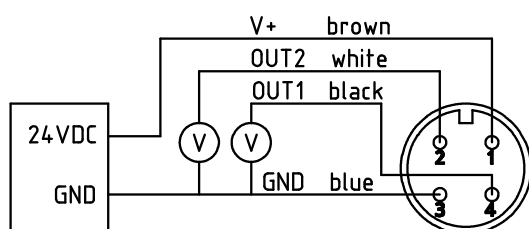
- Semiconductor and microelectronics industry
- Food production and packaging
- Agriculture, farms
- Environmental chambers, drying equipment, spraying equipment
- Greenhouse, storage room, cooling chamber
- HVAC

## DIMENSIONS (mm)

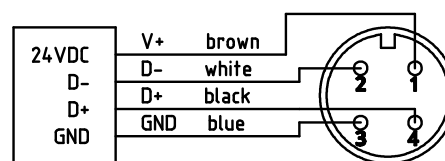


## CONNECTION DIAGRAMS

### Analog output



### RS485 Modbus RTU



## PHYSICAL QUANTITY OUTPUT RANGE

	Metric	Imperial
- Temperature <u>T</u>	-40 ... 105 °C	-40... 221 °F
- Relative Humidity <u>RH</u>	0 ... 100 %	0 ... 100 %
- Dew point <u>Td</u>	-20 ... 100 °C	-4 ... 212 °F
- Frost/dew point <u>Tf</u>	-20 ... 100 °C	-4 ... 212 °F
- Wet bulb temperature <u>Tw</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 ... 830 g/kg	0 ... 5800 gr/lb
- Absolute humidity <u>A</u>	0 ... 350 g/m <sup>3</sup>	0 ... 150 gr/ft <sup>3</sup>
- Enthalpy <u>S</u>	-40 ... 2300 kJ/kg	-10 ... 1000 BTU/lb

## TECHNICAL DATA

### Humidity

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

CAEL-S16A 1.5%RH@25°C (20 ... 80%RH)  
±2%RH@25°C (0 ... 20/80 ... 100%RH)

CAEL-S16 2%RH@25°C (20 ... 80%RH)  
±3%RH@25°C (0 ... 20/80 ... 100%RH)

CAEL-S16B 3%RH@25°C (20 ... 80%RH)  
Temperature coefficient (from 0°C to 80°C)

typ. ±0.02%RH/°C

Humidity Hysteresis ±1%RH

Recovery time after 150 hours of condensation 10 second

Long term drift < 0.25%RH/year

Response Time (at 63% of signal) from 33 to 75%RH

5 second (at 1m/s air flow)

### Temperature

Measurement range -40 ... 105 °C

Accuracy (including non-linearity, hysteresis, and repeatability)

±0.7°C (-40 ... 5°C)

±0.3°C (5 ... 60°C)

±0.9°C (60 ... 105°C)

Long term drift < 0.02°C/year

### Analog output (two channels)

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 0 ... 1 V output RL > 2k ohm

0 ... 5 V and 0 ... 10 V outputs RL > 10k ohm

### RS485 output with Modbus RTU

ID 1...247

Baud rate 9600/19200/38400/57600/115200

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

### Psychrometric calculations (option)

(Td) dew point temperature,  
(Tf) frost/dew point temperature, (R) mixing ratio,  
(A) absolute humidity, (S) enthalpy,  
(Tw) wet bulb temperature, (E) water vapor pressure

### Power supply

Analog output 0...1V 5...28VDC

Analog output 0...5V / 10V 15...28VDC

RS485 output 12...28VDC

### Power consume (25 °C, V+ 24 VDC)

Analog output typ. 3mA

RS485 output typ. 3mA

### Mechanics

Probe material brass nickel-plated

Probe pressure 10bar

Housing classification IP65

Cable M12 4-pin 2M female

### Operation Temperature range

-40 ... 105 °C (-40 ... 221 °F)

### Electromagnetic compatibility

EN61326-1:2013 Emission

CISPR11:2009+A1:2010 Group 1 Class B

EN61326-1:2013 Immunity

IEC 61000-4-2:2008

IEC 61000-4-3:2006+A1:2007+A2:2010

IEC 61000-4-8:2009

## Ordering Guide

Model	Output	Temperature Scale	Psychrometric calculations (Option)
CAEL-S16A	0 ... 10V (3)	0 ... 50°C (1)	Yes (M)
CAEL-S16	0 ... 5V (5)	0 ... 100°C (2)	No
CAEL-S16B	0 ... 1V (6)	By order (S)	
	RS485 (4)	none (X)	

We reserves the right to discontinue or modify the above information without notice.

## Ordering example

### CAEL-S16-31M

Humidity accuracy:  $\pm 2\%RH$  (20...80%RH)

Output: 0 ... 10V

Temperature Scale: 0 ... 50°C

Option - Psychrometric calculations: Yes

## Accessories

SA020002 Stainless steel sintered, pores size: 30 $\mu$ m		SA020401 NPT 1/2" stainless steel sample block, with NPT 1/4" inlet & outlet ports	
SA020004 Stainless steel mesh, pores size: 75 $\mu$ m		SA020201 NPT 1/2" Stainless steel fitting	
SA020003 Probe adapter from 16mm to 12mm		SA010001 M12 4-pin 5M female cable	