CAEL-S16B/S16/S16A Series
Probe Humidity and Temperature Transmitter

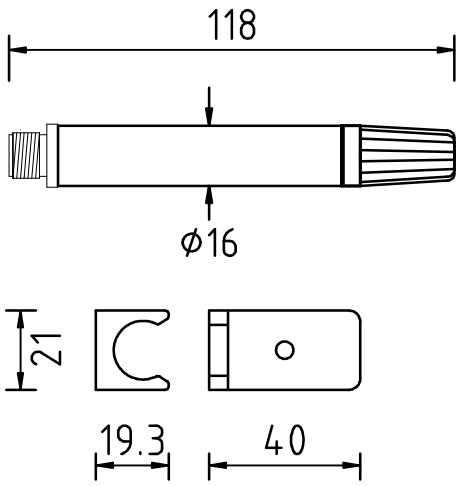
Features

- 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

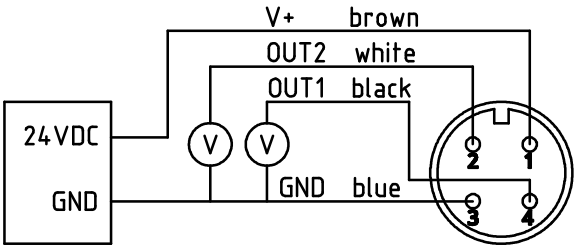
- Semiconductor and microelectronics industry
- Food production and packaging
- Agriculture, farms
- Environmental chambers, drying equipment, spraying equipment
- Greenhouse, storage room, cooling chamber
- HVAC

Dimensions (mm)

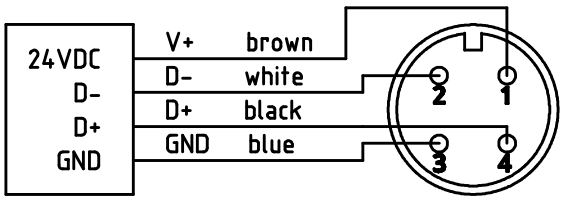


Connection Diagrams

0...10V output



RS485 output



Physical Quantity Output Range

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

Technical Data

Humidity

Measurement range	0 ... 100 %RH
Accuracy (including non-linearity, hysteresis, and repeatability)	
CAEL-S16A	±1.5%RH@25℃ (20 … 80%RH) ±2%RH@25℃ (0 … 20/80 … 100%RH)
CAEL-S16	±2%RH@25℃ (20 … 80%RH) ±3%RH@25℃ (0 … 20/80 … 100%RH)
CAEL-S16B	±3%RH@25℃ (20 … 80%RH)
Temperature coefficient (from 0°C to 80°C)	typ. ±0.02%RH/℃
Humidity Hysteresis	±1%RH
Long term drift[1]	< 0.25%RH/year
Response time T63[2]	8 second (at 1m/s air flow)

Temperature

Measurement range	-40 ... 100 ℃
Accuracy (including non-linearity, hysteresis, and repeatability)	±0.2℃@25℃ ±0.7℃ (-40 … 5℃) ±0.3℃ (5 … 60℃) ±0.9℃ (60 … 100℃)
Long term drift[3]	< 0.02℃/year

Analog output (two channels) [4]

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	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

[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.
[4] The humidity scale in the analog output is always 0…100%RH.

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

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

Filter material	PC, Polycarbonate
Probe material	brass nickel-plated
Probe pressure	10bar
Housing classification	IP65
Cable	M12 4-pin 2M female

Operation Temperature range

-40 ... 100 °C (-40 ... 212 °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 [5] (analog output)		Psychrometrics (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**		

[5] None of the temperature scale: **X** in the analog output means that this item has no temperature output, it is output humidity only.

Example

CAEL-S16-31M

Humidity accuracy: ±2%RH (20…80%RH)	**S16**
Output: 0 … 10V	**3**
Temperature Scale: 0 … 50°C	**1**
Option - Psychrometric calculations: Yes	**M**

CAEL-S16A-6X

Humidity accuracy: ±1.5%RH (20…80%RH)	**S16A**
Output: 0 … 1V	**6**
No temperature output	**X**

Accessories

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

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