CAEL-HT Series
Multi-function Humidity and Temperature Transmitter

SERIAL's latest CAEL series Temperature and Humidity transmitter meets the harsh environmental requirements for temperature and humidity measurement. Via temperature and relative humidity values, the output can be calculated dew point temperature, absolute humidity, wet bulb temperature, the specific enthalpy and other parameters of humidity.

CAEL series Temperature and Humidity transmitter supported wall mount type, duct type and remote probe type. Metal probe provides a high temperature, mechanical stress, pressure and withstand harsh environments generated by the fine waterproof housing can avoid environmental contamination and prevent condensation generated.

Parameter values measured through the two analog output channels, the output may be a current or voltage output. You can simply establish a network by RS485 connection to achieve remote monitoring and data logging, measurement data through the storage device for analysis and processing.

LCD monitor would displays three measurement parameters at the same time, or the font is enlarged for single display to provide different visual needs. Touch buttons without having to open the housing can be set a one point adjustment for temperature and humidity, output selection, range setting, adjustment parameters, and do not carry the computer in the environment field will be able to complete the setup work.

Features

- Remote probe w/M12 connector
- Metal probe reduce electromagnetic interference
- 2-wire 4...20mA with selectable physical quantity
- 0 ... 100%RH measurement, temperature range up to +120°C (248 °F)
- Probe pressure up to 10 bar
- Display and touch buttons for convenient operation
- Excellent quality and stable measurement
- IP-65 housing
- 1-point user adjustment
- Analog output and RS485
- MODBUS RTU protocol with integer and floating type
- Unit support metric or imperial
- Alarm output
- Dip switch setting
- Configure adapter support

iSweek www.isweek.com
Add: 16/F, Bldg. #3, Zhongke Mansion, No.1 Hi-Tech S. Rd, Hi-Tech Park South, Shenzhen, Guangdong, 518067 P.R.China
Tel: + 86-755-83289036 Fax: + 86-755-83289052 E-mail: sales@isweek.com

LCD DISPLAY

Industrial-grade specifications provide -20 ... 70 ° C temperature working range, it can be reliably display measured values in harsh demanding environments. 128X64 image pixel can clearly show the measured values on large font, or it can display three measured values simultaneously.

DIP SWITCH

DIP switch on the PCB board involves the most common configuration options, so adjust the parameters will having the maximum convenience.

OUTPUT

2-wire or 3-wire 4 ... 20mA
0 ... 1V / 5V / 10V
RS485 MODBUS RTU

ALARM OUTPUT

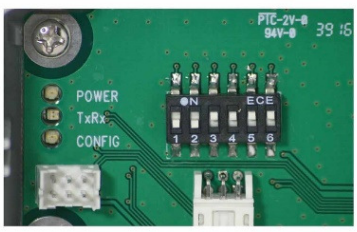
Use function with relay outputs (option) can be realized switch alarm and control, it can easily complete the set points via LCD display and touch buttons. 8A ac current capacity, so that the control can be more free.

CONFIGURE ADAPTOR

Configure adaptor can set measuring type, measuring scale, output type, alarm point, RS485 parameters, as well as a one point temperature and humidity adjustment in the measuring field without having to use a computer.

Applications

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



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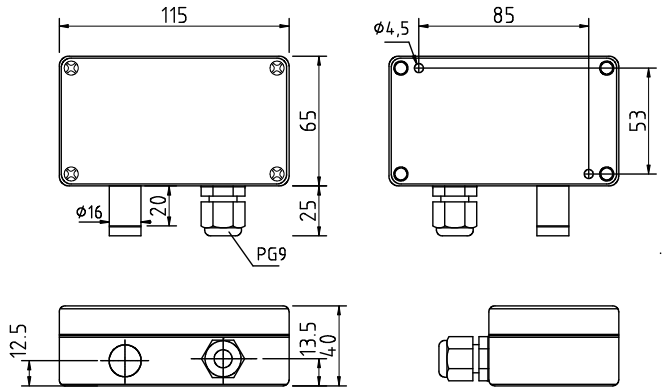
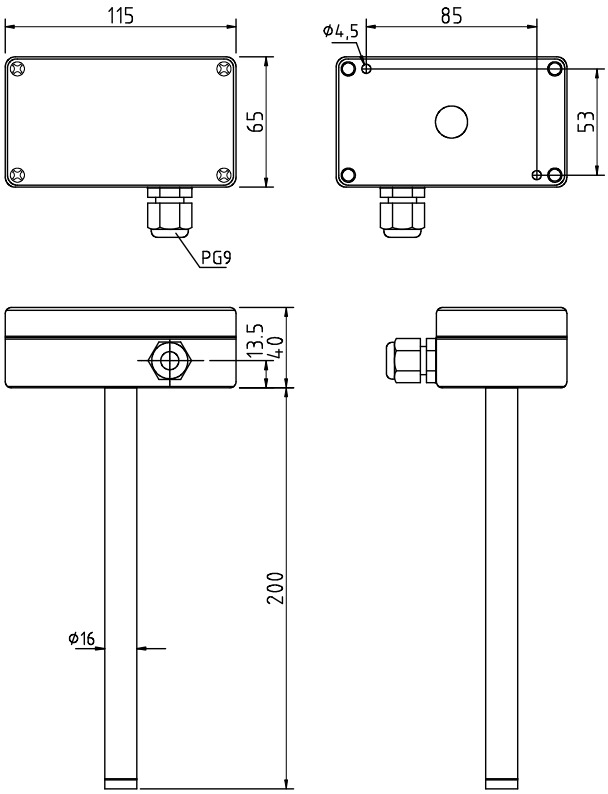
DIMENSIONS (mm)

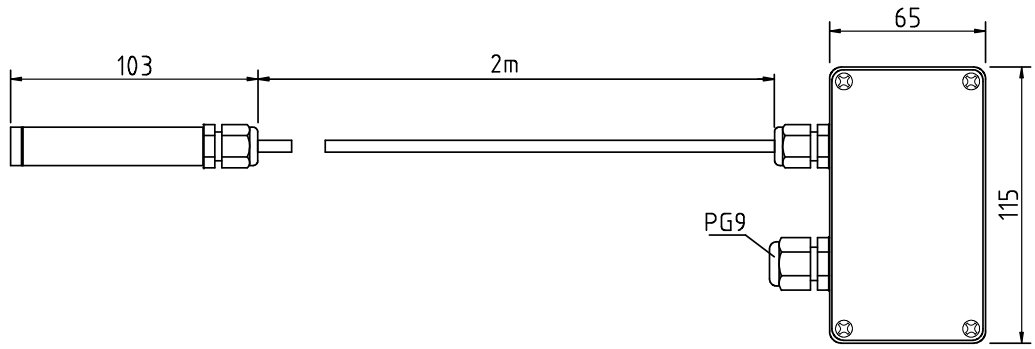
110 Wall mount version (Probe material: brass nickel-plated)



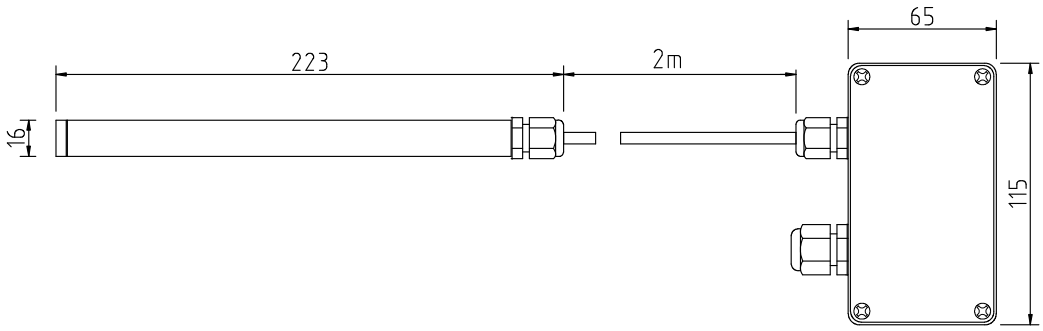
120 Duct version (Probe material: aluminum)



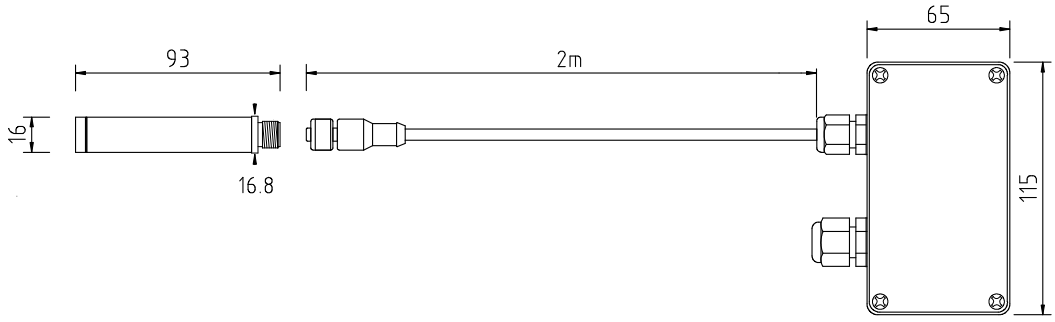
130 Remote probe (Probe material: brass nickel-plated)



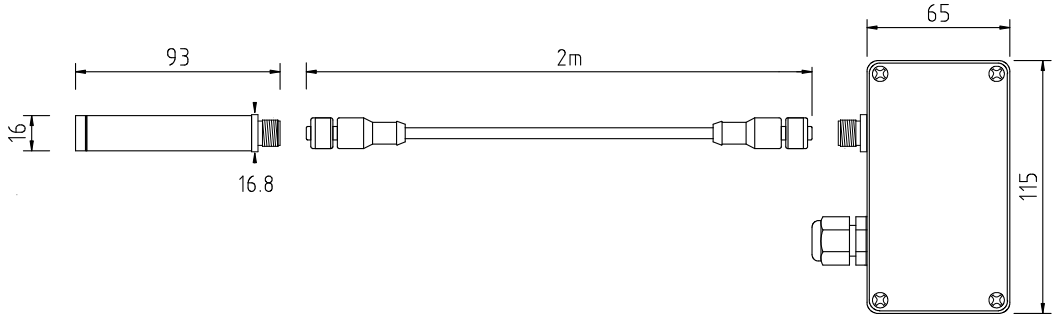
131 Remote probe (Probe material: aluminum)



135 Remote probe with M12connector (Probe material: brass nickel-plated)



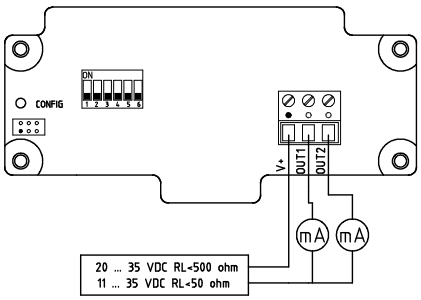
136 Remote probe with dual M12connector (Probe material: brass nickel-plated)



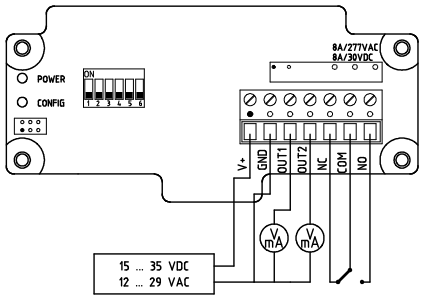
CONNECTION DIAGRAME

Cable gland with terminal block

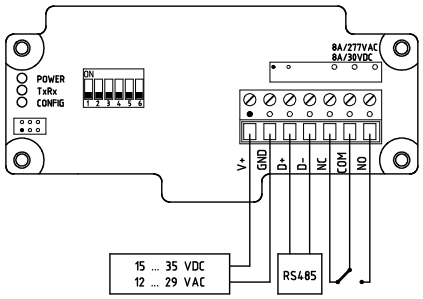
2-wire 4...20mA output
(OUT1 must be connected)



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

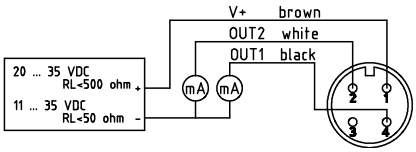


RS485 output

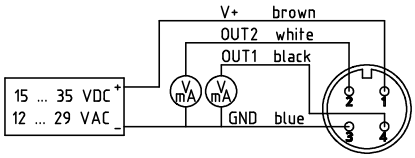


M12 – 4 pin connector

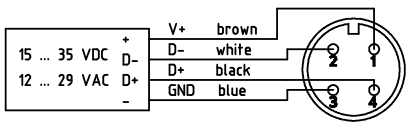
2-wire 4...20mA output
(OUT1 must be connected)



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



RS485 output



PHYSICAL QUANTITY OUTPUT RANGE

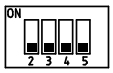
Item	Metric	Imperial
Temperature T	-40 ... 120 °C	-40... 248 °F
Relative Humidity RH	0 ... 100 %	0 ... 100 %
Dew point Td	-20 ... 100 °C	-4 ... 212 °F
Frost/dew point Tf	-20 ... 100 °C	-4 ... 212 °F
Wet bulb temperature Tw	-40 ... 100 °C	-40 ... 212 °F
Water vapor pressure E	0 ... 1013 mbar	0 ... 14.7 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

DIP SWITCH

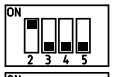
4...20mA version

off

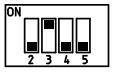
temperature scale
by dip switch setting



-50 ... 0

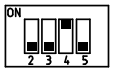


-50 ... 50

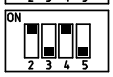


-40 ... 60

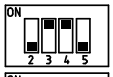
-40 ... 100



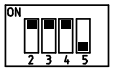
-40 ... 120



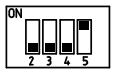
-40 ... 160



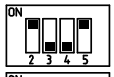
-30 ... 70



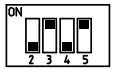
-30 ... 120



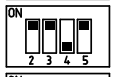
-20 ... 80



-20 ... 100

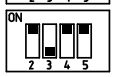


-20 ... 120



-10 ... 50

0 ... 50



0 ... 100

0 ... 150

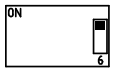
0 ... 200

Voltage version

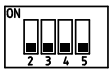
off

temperature scale
and analog range
by dip switch setting

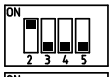
0 ... 10V



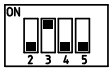
0 ... 5V



-50 ... 0

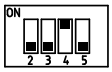


-50 ... 50

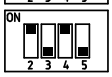


-40 ... 60

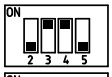
-40 ... 100



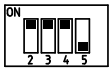
-40 ... 120



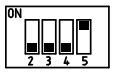
-40 ... 160



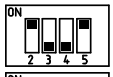
-30 ... 70



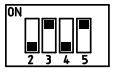
-30 ... 120



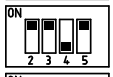
-20 ... 80



-20 ... 100

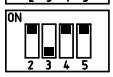


-20 ... 120

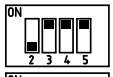


-10 ... 50

0 ... 50



0 ... 100

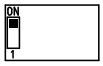


0 ... 150

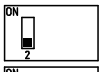
0 ... 200

RS485 version

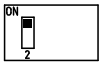
off



Slave ID
and baud rate
by dip switch setting

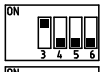


9600 baud rate



115200 baud rate

Slave ID 1



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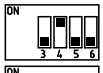
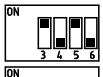


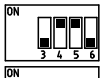
Slave ID 3

Slave ID 4

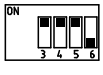
Slave ID 5



Slave ID 6

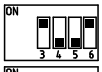


Slave ID 7

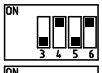


Slave ID 8

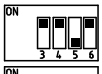
Slave ID 9



Slave ID 10

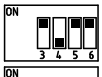


Slave ID 11

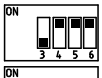


Slave ID 12

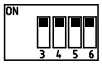
Slave ID 13



Slave ID 14



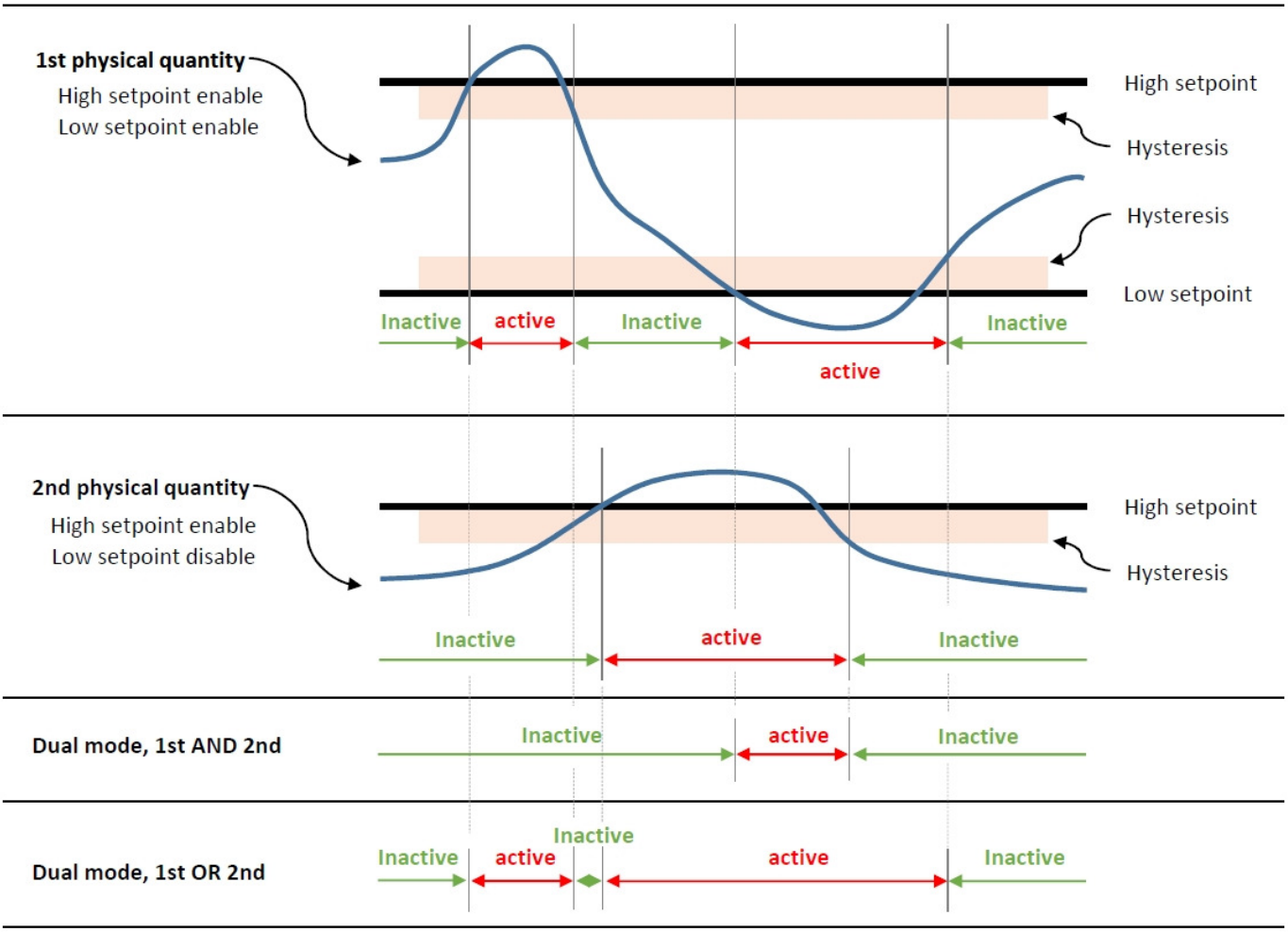
Slave ID 15



Slave ID 16

ALARM

Parameter	Description
Single or Dual mode	Alarm relative one or two physical quantities.
AND or OR logic	Alarm turn ON logic based on 1st physical quantity AND/OR 2nd physical quantity. This is only available on dual mode.
Hysteresis	The Hysteresis setting defines a tolerance band for suppressing alarm alerts. The function prevents multiple alarm alerts if the reading oscillates around the specified threshold.
1st / 2nd quantity	Physical quantities for alarm.
High/Low setpoint	Setpoint is a setting at which the system will automatically indicate an alarm. Each physical quantity has a high setpoint and a low setpoint.
Setpoint enable/disable	Enable or disable a setpoint.
Delay	The alarm delay property enables you to configure advanced alarms so that they will not turn ON unless their triggering conditions remain true for a specified period.
Latch	The alarm will turn OFF if the process value goes outside alarm operation range. This can be prevented by using a latch, which holds the alarm output until the power supply turns OFF once the process value enters the alarm range.
Physical quantities with psychrometric calculations	(RH) relative humidity, (T) temperature, (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
Physical quantities without psychrometric calculations	(RH)relative humidity, (T) temperature



TECHNICAL DATA

Humidity

Measurement range	0 ... 100 %RH
Accuracy (including non-linearity, hysteresis, and repeatability)	
CAEL-HTA	±1.5%RH@25℃ (20 ... 80%RH)
	±2%RH@25℃ (0 ... 20/80 ... 100%RH)
CAEL-HT	±2%RH@25℃ (20 ... 80%RH)
	±3%RH@25℃ (0 ... 20/80 ... 100%RH)
CAEL-HTB	±3%RH@25℃ (20 ... 80%RH)
Temperature coefficient (from 0°C to 80°C)	typ. ±0.02%RH/℃
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	10 second (at 1m/s air flow)

Temperature

Measurement range	-40 ... 120 ℃
Accuracy (including non-linearity, hysteresis, and repeatability)	±0.2℃±0.003*T@25℃
	±0.7℃ (-40 ... 5℃)
	±0.3℃ (5 ... 60℃)
	±0.9℃ (60 ... 120℃)
Long term drift	< 0.02℃/year

Analog output (two channels)

Current version	2-wire or 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 0 ... 1 V output RL > 2k ohm
	0 ... 5 V and 0 ... 10 V outputs RL > 10k ohm

RS485 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, (A) absolute humidity,
(Tf) frost/dew point temperature, (R) mixing ratio,
(S) enthalpy, (Tw) wet bulb temperature,
(E) water vapor pressure

Display with touch button (option)

LCD	128x64 dots without backlight
Lines	1,2 or 3
Buttons	capacitive x3

Alarm (option)

Relay type	Electromagnetic x1
Contact	SPDT / 8A / 277 VAC (resistive load)
Dual mode logic	AND/OR
Activate	High-point and Low-point with enable
Setpoint	-9999 to 9999
Hysteresis	0 to 9999
Delay	0 to 3600 second
Latch	on/off

Power supply

2-wire current version	11 ... 35 VDC RL<50 ohm
	20 ... 35 VDC RL<500 ohm
3-wire current version	15 ... 35 VDC, 12 ... 29 VAC
Voltage version	15 ... 35 VDC, 12 ... 29 VAC
RS485 version	15 ... 35 VDC, 12 ... 29 VAC

Power consume (25 °C, V+ 24 VDC)

Current version	max. 40mA
Voltage version	typ. 10mA
Voltage version + alarm	typ. 25mA
RS485 version	typ. 25mA
RS485 version + alarm	typ. 40mA

Mechanics

Cable gland	PG9 with strain relief
Cable bushing	4.5 ... 8.2 mm/0.18" ... 0.32"
Housing material	PC, POLYCARBONATE
Housing classification	IP65
Probe pressure	10bar
Terminal block	AWG 12...24
Cable of remote probe version	2m, shield PVC, 80 °C
Connection	Cable gland w/ terminal block or M12-4 pin

Probe material

Wall mount version	brass nickel-plated
Duct version	aluminum
Remote probe version	brass nickel-plated/aluminum

Temperature range

without display	-40 ... 80 °C (-40 ... 176 °F)
with display	-20 ... 70 °C (-4 ... 158 °F)

Probe temperature range

Duct and remote probe version -40 ... 120 °C (-40 ... 248 °F)

Electromagnetic compatibility

Complies with EMC standard
EN61326-1, Industrial Environment

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Ordering Guide

Model	Installation	Output	Connection
CAEL-HTA CAEL-HT CAEL-HTB	Wall mount (110) Duct (120) Remote probe (130) Remote probe (131) Remote probe (135) Remote probe (136)	*2-wire 4 ... 20mA (2) 3-wire 4...20mA (7) 0 ... 10V (3) 0 ... 5V (5) 0 ... 1V (6) RS485 (4)	Cable gland (A) M12-4 pin (B) (with 2m cable)

	Psychrometric calculations (Option)	Display with touch button (Option))	Alarm (Option)
	Yes (M)	Yes (D)	Yes (R)

*2-wire 4...20mA version without Alarm option

Ordering example

CAEL-HT-120-7AMDR

Humidity accuracy: ±2%RH (20...80%RH)
Installation: **Duct version**
Output: **3-wire 4 ... 20 mA**
Connection: **Cable gland with terminal block**

Psychrometric calculations: **Yes**
Display with touch button: **Yes**
Alarm: **Yes**

Accessories

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

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