

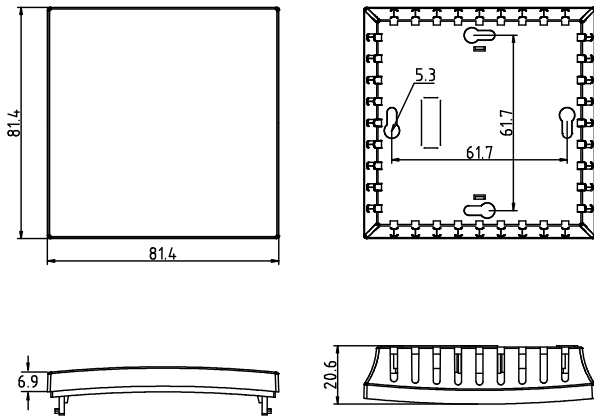
# CAEL-S81 Indoor Humidity and Temperature Transmitter



## Features

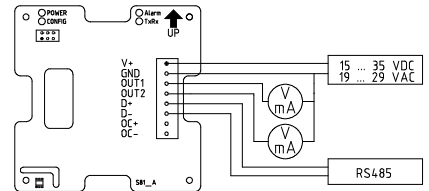
- Excellent quality and stable measurement
- 1-point user adjustment
- Analog output and RS485
- MODBUS RTU protocol with integer and floating type
- Unit support metric or imperial
- Configure adapter support
- Transistor output with PNP or NPN connection
- LCD display plus 3 capacitive buttons

## DIMENSIONS (mm)

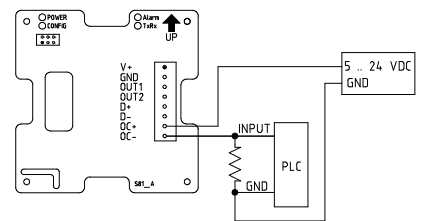


## 3-WIRE CONNECTION DIAGRAM

4...20mA  
0...1/5/10V  
RS485

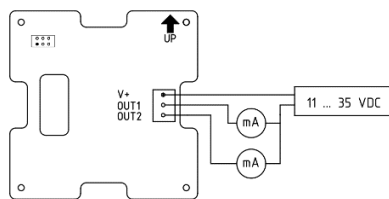


PLC PNP

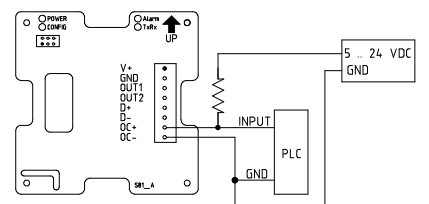


## 2-WIRE CONNECTION DIAGRAM

4...20mA



PLC NPN





## PHYSICAL QUANTITY OUTPUT RANGE

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	<u>Metric</u>	<u>Imperial</u>
- Temperature <u>T</u>	-20 ... 80 °C	-4... 176 °F
- Relative Humidity <u>RH</u>	0 ... 100 %	0 ... 100 %
- Dew point <u>Td</u>	-20 ... 80 °C	-4 ... 176 °F
- Frost/dew point <u>Tf</u>	-20 ... 80 °C	-4 ... 176 °F
- Wet bulb temperature <u>Tw</u>	-20 ... 80 °C	-4 ... 176 °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 <sup>3</sup>	0 ... 240 gr/ft <sup>3</sup>
- Enthalpy <u>S</u>	-20 ... 40000 kJ/kg	-1 ... 20000 BTU/lb

## TECHNICAL DATA

### Humidity

Measurement range	0 ... 95 %RH
Accuracy (including non-linearity, hysteresis, and repeatability)	
CAEL-S81A	2%RH@25°C (20 ... 80%RH)
	±3%RH@25°C (0 ... 20/80 ... 100%RH)

CAEL-S81	±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	10 second (at 1m/s air flow)

### Temperature

Measurement range	-20 ... 80 °C
Accuracy (including non-linearity, hysteresis, and repeatability)	±0.4°C
Long term drift	< 0.02°C/year
Response Time (at 63% of signal) from 15°C to 45°C	1 minute (at 1m/s air flow)

### Analog outputs

Current version	2-wire / 3-wire, 4 ... 20 mA
Voltage version	3-wire, 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 > 2 kohm
	0 ... 5 V and 0 ... 10 V outputs RL > 10 kohm

### RS485 output with Modbus RTU

(2-wire 4...20mA no support)	
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 point temperature,  
(R) mixing ratio, (A) absolute humidity, (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 *3

### Transistor output (option)

Isolation	Yes
Current maximum	50 mA sink / source
Voltage maximum	30VDC
Connection	PNP/NPN
Activate	Increasing / Decreasing
Set-point	-9999 to 9999
Hysteresis	0 to 9999
Delay	0 to 3600 second
Latch	on/off

### Power supply

2-wire 4...20mA	11 ... 35 VDC
3-wire 4...20mA/voltage/RS485	15 ... 35 VDC
	or 12 ... 29 VAC

### Power consume (25 °C, V+ 24 VDC)

2-wire 4...20mA	max. 40mA
3-wire 4...20mA	max. 30mA
Voltage/RS485	typ. 10mA

### Mechanics

Housing material	ABS
Housing classification	IP20
Connection	AWG 12...24

### Temperature range

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

### Electromagnetic compatibility

Complies with EMC standard  
EN61326-1, Industrial Environment



## Ordering Guide

Model	Output	Temperature Scale	Psychrometric calculations (Option)	LCD Display with touch buttons (Option)	Transistor Output (Option)
CAEL-S81A	2-wire 4...20mA* (1)	0...50°C (1)	Yes (M)	Yes (D)	Yes (R)
CAEL-S81	3-wire 4...20mA (2)	0...100°C (2)			
	0 ... 10V (3)	By order (S)			
	0 ... 5V (5)	None (X)			
	0 ... 1V (6)				

\*2-wire 4...20mA no support RS485 output

## Ordering example

### CAEL-S81A-11MDR

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

Output: 2-wire 4 ... 20 mA



Temperature Scale: 0 ... 50°C


Option - Psychrometric calculations: **Yes**

Option – LCD Display with touch buttons: **Yes**

Option – Transistor Output: **Yes**

## 附件

SA021101 118 to 86 adapter	
SA021103 86 wall mounting	

SA010201 Configure adapter	
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# SERIAL

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