

CAEL-DP Series Dew Point Transmitter for Industrial Control



SERIAL's latest CAEL series Dew Point transmitter meets the harsh environmental requirements for Dew Point 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 Dew Point 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
- 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

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

3-wire 4 ... 20mA

0 ... 1V / 5V / 10V

RS485 MODBUS RTU

ALARM OUTPUT

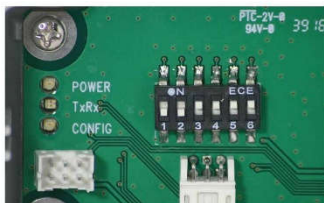
Use function with relay outputs (option) can be realized switch alarm and control, it can easily complete the set points via LCD display and touch buttons. 8A ac current capacity, so that the control can be more free.

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.

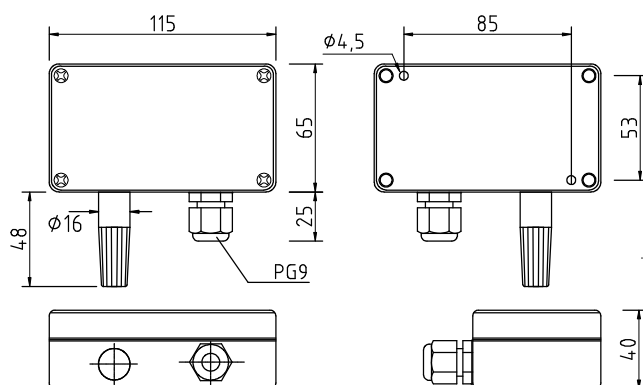
Applications

- 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

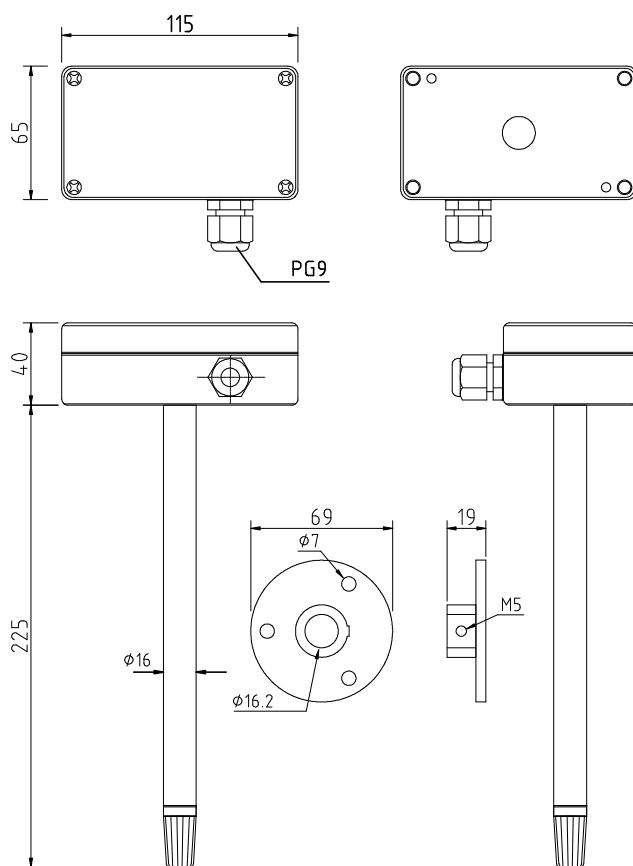


DIMENSIONS (mm)

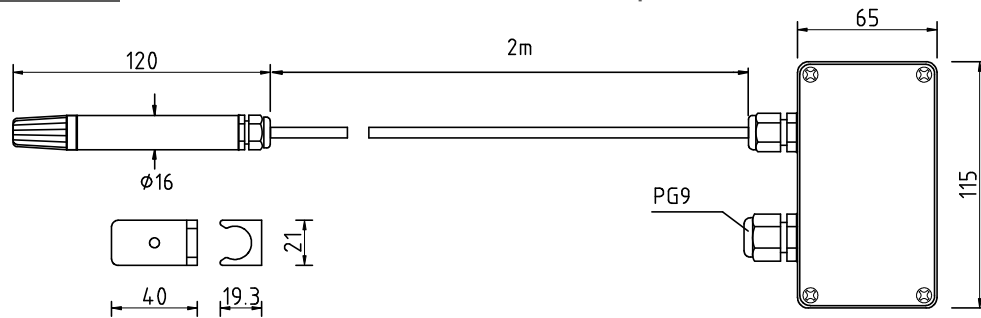
110 Wall mount version (Probe material: ABS)



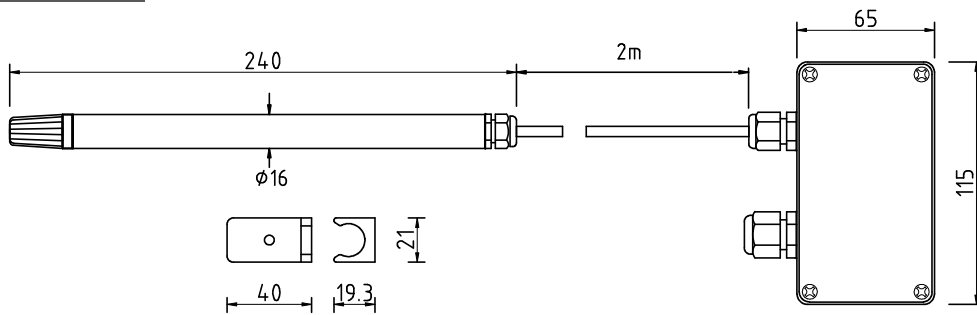
120 Duct version (Probe material: aluminum)



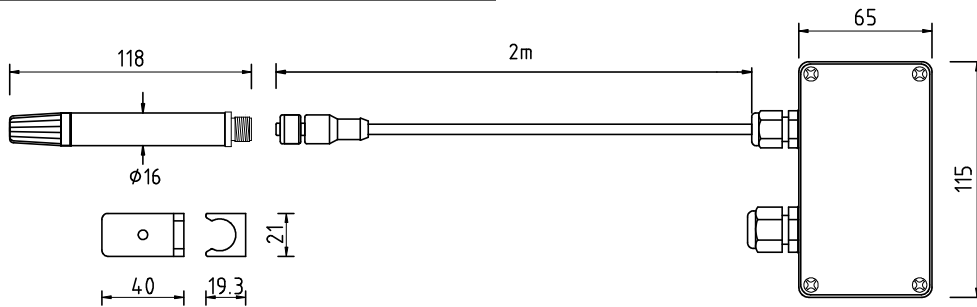
130 Remote probe (Probe material: brass nickel-plated)



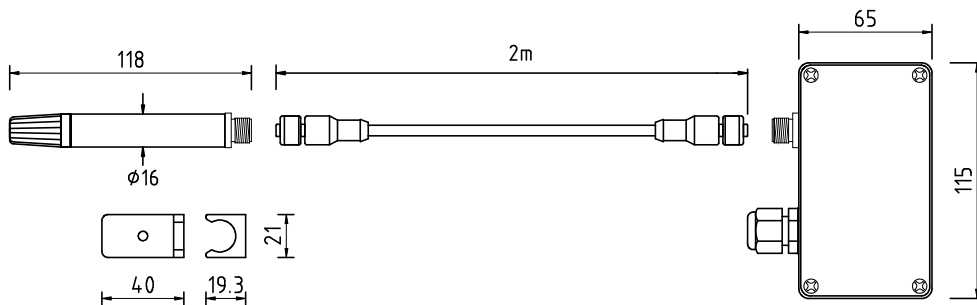
131 Remote probe (Probe material: aluminum)



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



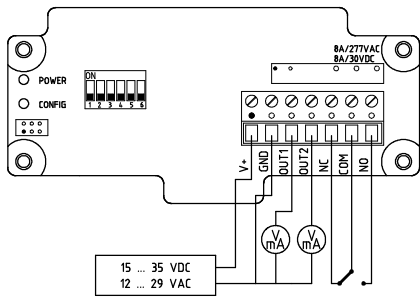
136 Remote probe with dual M12connector (Probe material: brass nickel-plated)



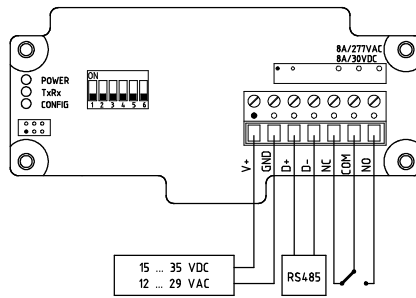
CONNECTION DIAGRAM

Cable gland with terminal block

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

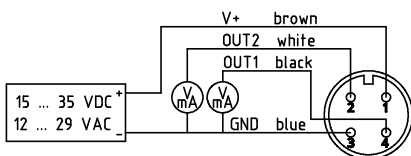


RS485 output

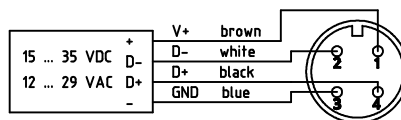


M12 – 4 pin connector

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

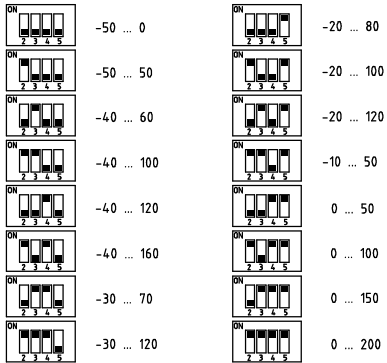
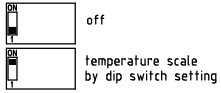


RS485 output

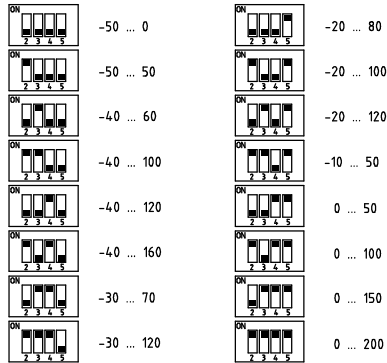
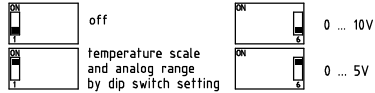


DIP SWITCH

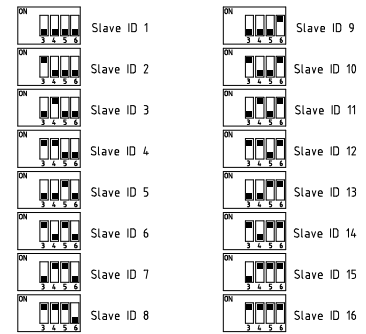
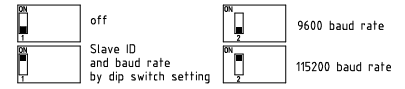
4...20mA version



Voltage version



RS485 version



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>Td</u>	-60 ... 100 °C	-76 ... 212 °F
Frost/dew point <u>Tf</u>	-60 ... 100 °C	-76 ... 212 °F
PPMv <u>V</u>	0 ... 240000	0 ... 240000
PPMw <u>W</u>	0 ... 150000	0 ... 150000

TECHNICAL DATA

Dew point

Measurement range	
CAEL-DPA	-60 ... 60 °C Td
CAEL-DP	-40 ... 60 °C Td
Accuracy (including non-linearity, hysteresis, and repeatability)	±3°C Td@25°C (-40...60°C Td) ±5°C Td@25°C (-60...-40°C Td)

Temperature

Measurement range	-40 ... 120 °C
Accuracy (including non-linearity, hysteresis, and repeatability)	±0.7°C (-40 ... 5°C) ±0.3°C (5 ... 60°C) ±0.9°C (60 ... 120°C)
Long term drift	< 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 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

(Td) dew point temperature,
(Tf) frost/dew point temperature, (V) PPMv, (W) PPMw

Display with touch button (option)

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

Alarm (option)

Relay type	Electromagnetic
Contact	SPDT / 8A / 277 VAC (resistive load)
Activate	Increasing / Decreasing
Set-point	-9999 to 9999
Hysteresis	0 to 9999
Delay	0 to 3600 second
Latch	on/off

Power supply

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	typ. 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

Body temperature range

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

Probe material

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

Probe temperature range

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

Electromagnetic compatibility

Complies with EMC standard
EN61326-1, Industrial Environment

Ordering Guide

Model	Installation	Output	Dew point Scale
CAEL-DPA	Wall mount (110)	3-wire 4...20mA (7)	-20 ... 60°C (1)
CAEL-DP	Duct (120)	0 ... 10V (3)	-40 ... 60°C (2)
	Remote probe (130)	0 ... 5V (5)	-40 ... 20°C (3)
	Remote probe (131)	0 ... 1V (6)	-60 ... 20°C (4)
	Remote probe (135)	RS485 (4)	By order (S)
	Remote probe (136)		No (X)

Connection	Display with touch button (Option)	Alarm (Option)
Cable gland (A)	Yes (D)	Yes (R)
M12-4 pin (B) (with 2m cable)		

Ordering example

CAEL-DPA-120-74ADR

Dew point measurement range: -60 ... 60 °C Td

Installation: **Duct version**

Output: 3-wire 4 ... 20 mA

Dew Point Scale: -60...20 °C Td

Connection: **Cable gland with terminal block**

Option - Display with touch button: **Yes**

Option - Alarm: **Yes**

Accessories

SA020002 Stainless steel sintered, pores size: 30µm		SA020401 NPT1/2" stainless steel sample block with NPT1/4" inlet & outlet ports	
SA020004 Stainless steel mesh, pores size: 75µm		SA020201 NPT 1/2" Stainless steel fitting	
SA021001 Wall mounting clip		SA010201 Configure adapter	

SERIAL

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SERIAL Technology Corporation
17F, No. 98, Sec 1, Xintai 5th Rd, Xizhi Dist,
New Taipei City 22102, Taiwan (R.O.C.)
Phone +886 2 2696 8099
Fax +886 2 2696 8098
E-mail info@serial.com.tw



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