

HARDENED ROOM SENSOR RS485 MODBUS link for environment monitoring

SAD120

LOREME

• **Integrated sensors:**

- **Temperature** (-40°C...+85°C)
- **Humidity** (0.....100%)
- **Barometric pressure** (500.....1150hPa)
- **Dew point** (calculated)
- **Remote dust sensor** (0.1.....0.5mg/m³)

• **Communication**

- RS485 half duplex, Modbus RTU protocol

• **Power supply**

- 24V DC

• **IP66 painted aluminum case**

- Wall mounting (optional DIN rail adapter)
- Rugged M12 - 5 pin connectors (RS485, power)

• **LCD display 4 lines of 16 characters**

- (temperature, humidity, atmospheric pressure, dust or speed)



The SAD120 is an ambient hardened probe for control applications or traceability of controlled atmosphere rooms. This probe allows the reading of measures through RS485 Modbus link.

Description

Measure:

- Temperature, humidity, barometric pressure, dew point and in option: remote optical dust sensor.

Features:

- Wall mounting (painted aluminum housing)
- Electronic protected by conformal coating
- Protection rating (enclosure / connectors): IP66
- DIN rail mounting with special adapter

Front panel / configuration:

- LCD display with 4 lines of 16 characters for the display of measurement and communication parameters (address and baudrate).
- Three internal pushbuttons for communication configuration (address, speed) or measure adjustment (offset)

Local serial link:

- The device can also be configured via the internal serial link (USB cable provide separately)

The serial link can also be used for firmware update.

Communication:

- RS485 half duplex (M12 male connection)
- Supported protocol: Modbus RTU
Available speed: 9600, 19200, 38400 and 115200 bps
Format: 8 data bits, 1 stop bit, no parity

Test - Qualification:

- Excellent life time > 1000 hours, in extreme environment (temperature 65 °C, relative humidity 93%)
- Return time approximately 10 seconds after 150 hours of condensation
- Humidity hysteresis < +/- 1.5%.
- Long-term stability < 0.5% / year.
- Linearity, < 1% over the range of 10% to 90% Hr

External dust sensor : CPO55

- Powered by the SAD120
- Serial communication (dust density value)
- Interchangeable (contains its own calibration)
- Cable length up to 100 meters (M12, 5 pins)
- Magnetic mount (fixing collar option)
- Anodized aluminum housing



CD12-MF
Male/Female M12
cable, 2 or 5
meters long
SAD120 / CPO55
interconnexion



CD12-F
Female M12
cable wires
termination,
2 or 5
meters long



SAD120 to PLC
interconnection
24 V & RS485

Version and order code:

- SAD120 :** Hardened room sensor
(Temperature, humidity and atmospheric pressure)
- Option :** /RDA120 DIN rail adapter
CD12-F Female M12 cable wires termination, 2 or 5
meters long (SAD120 to PLC 24 V & RS485
interconnection)

Additional modules

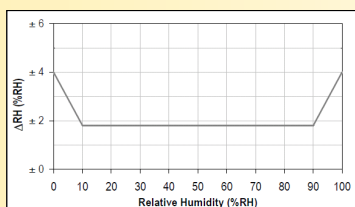
- CPO55 :** Remote dust sensor
(magnetic mount)
- Option :** /FC55 Fixing collars
CD12-MF Male/Female M12 cable, 2 or 5 meters long
(SAD120 / CPO55 interconnexion)

MEASURE

Relative humidity

Sensor operating range 0 ... 100 % HR

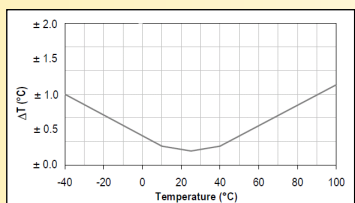
Accuracy



Temperature:

Sensor operating range -40°C.....+85°C

Accuracy



Response time Hr and 45 seconds

(with filter)

Repeatability

+/- 0.1% ; +/- 0.1°C

Linearity

< 0.2 %

Hysteresis

+/- 1% Hr

Long term drift

+/- 0.5% /year ; +/- 0.04°C /year

Atmospheric pressure:

Operating range

500 hPa 1150 hPa

Accuracy

+/- 5 hPa (calibrated)

Dust:

Operating range

0.1.....0.5 mg/m³

POWER SUPPLY

Nominal voltage 24Vdc (9.....36 Vdc) ; power 3 Watts

Reversed polarity protection

COMMUNICATION

Half duplex RS485 (switchable termination resistor)

Protocol : Modbus RTU , supported function code : 03 ; 04

Variable format : 32-bit floating point and 16 bit integer

ENVIRONMENT

SAD120 operating temperature - 20°C.....+70°C

SAD120 storage temperature - 30°C.....+80°C

CPO55 operating temperature - 10°C.....+65°C

CPO55 storage temperature - 20°C.....+80°C

Drift 0.05 % / °C (Hr)

Hygrometry 95 % not condensed

Weight SAD120: ~ 400 g

CPO55 : ~ 150 g

Protection SAD120: IP66 / IK05

CPO55 : IP20 / IK05

Life time

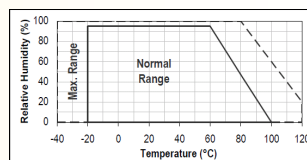
> 100

000 Hrs @ 30°C

Dielectric strength

1500 Vdc (Power supply/RS485)

Insulation resistance

1000 Vdc (Sensors/RS485)
> 1 Gohms @ 500Vdc

Electromagnetic compatibility 2014/30/UE / Low Voltage Directive 2014/35/UE

Immunity standard for industrial environments and power station
EN 61000-6-2 / EN 61000-6-5Emission standard for industrial environments
EN 61000-6-4

EN 61000-4-2 ESD

EN 61000-4-8 AC MF

EN 55011

EN 61000-4-3 RF

EN 61000-4-9 pulse MF

group 1

EN 61000-4-4 EFT

EN 61000-4-11 AC dips

class A

EN 61000-4-5 CWG

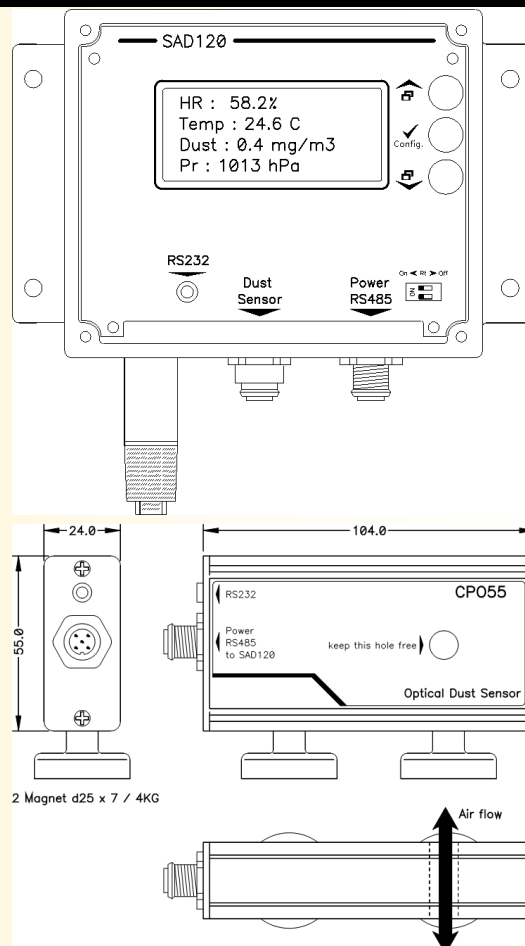
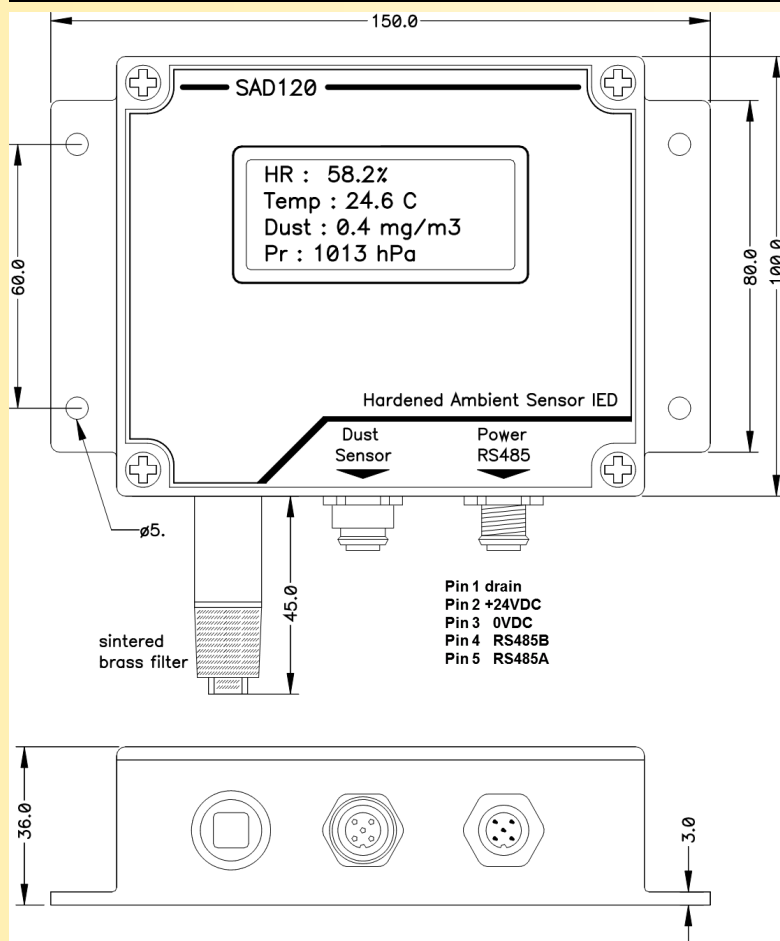
EN 61000-4-12 ring wave

EN 61000-4-6 RF

EN 61000-4-29 DC dips



WIRING AND OUTLINE DIMENSIONS:



SAD120 internal view

CPO55 remote dust sensor