

# FA 415

The CS **dew point sensor FA 415** with 2-wire technology 4...20 mA enables a reliable and long-term stable monitoring of the dew point in industrial applications

## FA 415

The ideal dew point sensor for the monitoring of refrigerating dryers with analogue output 4..20 mA



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**INTRODUCTION**


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Dear CS customer,

You have made the right decision by choosing a measuring instrument of CS Instruments GmbH. Thousands of customers buy our high standard products every year. There are a few good reasons for doing so:

- Cost-performance ratio. Reliable quality at a fair price.
- We have the ideal solutions for your measuring tasks based on our expert experience gained over 20 years.
- Our high quality standard.
- Of course, our instruments carry the CE symbol required by the EU.
- Calibration certificates, trainings, consultation and calibration on location.
- Our after sales-service, we do not leave you out in the cold.

Our service guarantees fast help.

 Measuring instrument conforms with **DIN EN 61326**

**Please read prior to operation!**



**Warning:** Do not exceed a pressure range of > 16 bar with standard version.

Observe measuring ranges of sensor! The probes are damaged if they are overheated.

Observe max. storage and transport temperature as well as max. operating temperature (e. g. protect measuring instrument from direct sunlight).

Warranty claims no longer apply if the instrument is opened, in the case of inexpert handling or use of force.

Adjustments or calibrations should be carried out by qualified measurement and control engineering staff only.

Important: Before installation briefly bleed the compressed air in order to remove condensate and particles. This prevents soiling of FA 415. Standing air leads to long measuring times.

## **DESCRIPTION**

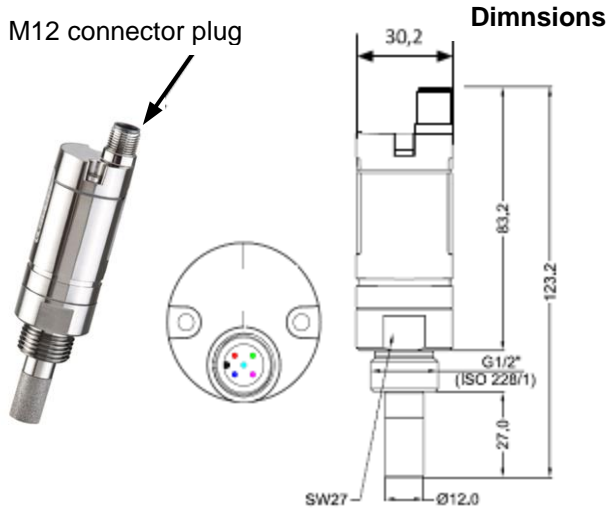
The FA 415/416 dew point sensor enables a reliable and long-term stable monitoring of the dew point in industrial applications from -20...50 °C dew point. The FA 415 features improved stability.

### **Advantages:**

- Extremely long-term stable
- IP 65 housing grants a reliable protection in extreme industrial conditions
- Very fast response time
- Installable in the dryer by means of G 1/2" thread
- High accuracy of  $\pm 1...2$  °Ctd
- Calibration on location and testing with CS control and calibration set (PC connection set)

### **Programming via SFA Software**

- Analogue output 4...20 mA scalable
- Calibration and adjustment including issuing of certificates
- Read-out of service data

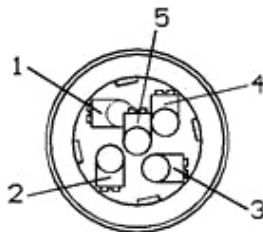


|        |  | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 |
|--------|--|-------|-------|-------|-------|-------|
| FA 415 | <b>Connector plug</b>  | SDI   | -VB   | +VB   | NC    | NC    |
|        | <b>Connection cable</b><br>0553.0104 (5 m)<br>0553.0105 (10 m) | brown | white | blue  | NC    | NC    |

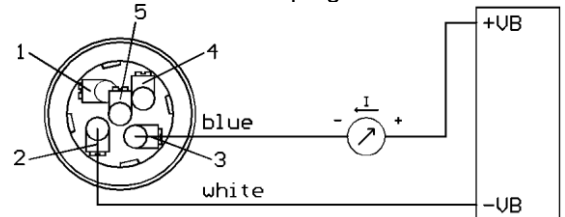
|     |  |
|-----|--|
| SDI | Digital signal (internal data transfer)      |
| -VB | Negative supply voltage                      |
| +VB | Positive supply voltage 10...30 VDC smoothed |
| REL | Relay output                                 |
| NC  | Not connected                                |

**M12 connector plug**

If no connection cable (0553.0104, 0553.0105) is ordered the sensor will be supplied with a M12 connector plug. The user can connect the supply and signal cables as indicated in the connection diagram.

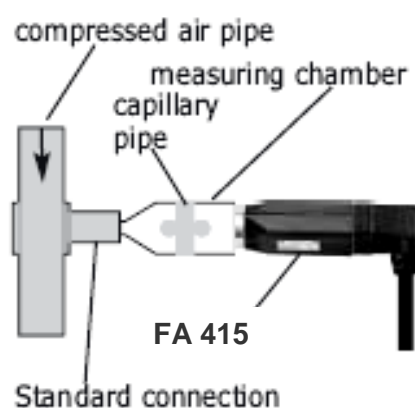


**Connector plug FA 415:**



**Please note: CS recommends the indirect installation with measuring chamber**

**Advantage:** Easy mounting and dismounting of the probe without interruption of the line. Quick response time due to quick coupling. Optimum sensor protection.



#### Indirectly in the compressed air system

Connect probe with measuring chamber to the compressed air pipe by means of a quick coupling. In case of compressed air containing oil and dirt particles a pre-filter should be installed in front of the measuring chamber. Compressed air flows continuously (at 7 bar approx. 1 l/min expanded) in the capillary pipe of the measuring chamber. The reaction times for the humidity reading are shorter than in case of a direct mounting.



#### Directly in the compressed air system

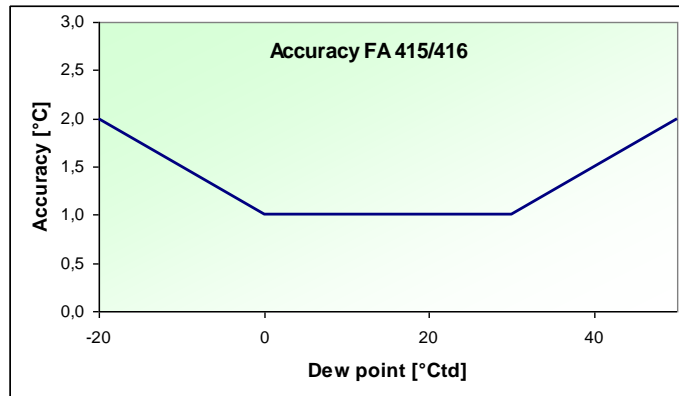
Screw in probe with G 1/2" thread pressure-tight in the center or at the top of the compressed air pipe. Take care that measurement is effected close to the compressed air flow. U-bend pipes or non-flowing compressed air result in very slow reaction times for the moisture reading.

#### Measurable gases

In general, humidity can be measured in all non-corrosive gases. In case of measurements in corrosive gases please consult CS Instruments GmbH.

Measuring range:           -20...50 °Ctd FA 415 (order no. 0699.0415)  
                                   -40...30 °Ctd FA 415-4 (order no. 0699.4415)  
                                   -60...30 °Ctd FA 415-6 (order no. 0699.6415)  
                                   -80...20 °Ctd FA 415-2 (order no. 0699.2415)  
                                   0...100 % RH  
                                   -30...70 °C environmental temperature

Accuracy:                    1 to 2 °Ctd dew point (see graph)



Pressure range:           -1...16 bar standard  
 Power supply:             10...30 VDC  
 Output:                    4...20 mA in 2-wire technology in case of FA 415  
                                   4...20 mA = -20...50 °Ctd in case of FA 415  
                                   4...20 mA = -40...30 °Ctd in case of FA 415-4  
                                   4...20 mA = -60...30 °Ctd in case of FA 415-6  
                                   4...20 mA = -80...20 °Ctd in case of FA 415-2

Protection class:         IP 65  
 EMC:                        DIN EN 61326  
 Operating temperature:  -30...70 °C (ideal 0...50 °C)  
 Storage temperature:    -40...80 °C  
 Load for analogue output: < 500 Ohm  
 Screw-in thread:         G 1/2" stainless steel  
 Material of housing:     zinc alloy, PC, ABS  
 Sensor protection:      sinter filter 50 µm stainless steel  
 Connection:               M12, 5-pole  
 Response time t95:      < 30 seconds (descending)  
                                   < 10 seconds (ascending)

**From the manufacturer**

According to DIN ISO certification of the measuring instruments we recommend regular calibration and, if necessary, adjustment of the instrument by the manufacturer. The calibration cycles should fit your internal scheme. In the course of the DIN ISO certification we recommend for FA 415 a calibration cycle of one year. If requested we can carry out the calibration on your premises.

**WARRANTY**

If you have reason for complaint we will of course repair any faults free of charge if it can be proven that they are manufacturing faults. The fault should be reported immediately after it has been found and within the warranty time guaranteed by us. Excluded from this warranty is damage caused by improper use and non-adherence to the instruction manual.

The warranty is also cancelled once the measuring instrument has been opened provided this is not described in the instruction manual for maintenance purposes. This is also the case if the serial number has been changed, damaged or removed.

The warranty time for FA 415 is 12 months for the instruments and 6 months for accessories if no other terms are agreed upon. Warranty services do not extend the warranty time.

If in addition to the warranty service necessary repairs, adjustments or similar are carried out, the warranty services are free of charge but there is a charge for other services such as transport and packing costs. Other claims, especially those for damage occurring outside the instrument are not included unless responsibility is legally binding.

**After-sales service after the warranty time has elapsed**

We are, of course, there for you after the warranty time has elapsed. In the case of function faults please send us your measuring instrument with a brief description of the defect. Please also indicate your telephone number so that we can contact you if necessary.

**ORDERING DETAILS**

| <i>Order no.</i> | <i>Description</i>  |
|------------------|---|
| 0699.0415        | FA 415 dew point sensor (-20...50 °Ctd)   |
| 0699.4415        | FA 415-4 dew point sensor (-40...30 °Ctd)   |
| 0699.6415        | FA 415-6 dew point sensor (-60...30 °Ctd)   |
| 0699.2415        | FA 415-2 Taupunktsensor (-80...20 °Ctd)   |
| 0600.0415        | All-in-one Set for refrigeration dryer with analogue output   |
| 0699.3390        | Standard measuring chamber for compressed air up to 16 bar  |
| 0699.3690        | Measuring chamber for atmospheric dew point   |
| 0554.2005        | CS Service Software for VA/FA 400 sensors incl. PC connection set, USB connection and interface adapter to the sensor as well as CS Soft Professional software for data recording |
| 0554.0002        | Control and calibration set 11.3 % RH   |
| 0554.0004        | Control and calibration set 33 % RH   |
| 0554.0005        | Control and calibration set 75.3 % RH   |
| 0553.0104        | Connection cable for FA 415, length: 5 m  |
| 0553.0105        | Connection cable for FA 415, length: 10 m   |
| 3200.0003        | Precision calibration at 0 °Ctd and 10 °Ctd incl. ISO certificate   |
| 0699.3396        | Precision calibration at -40 °Ctd incl. ISO certificate   |

**Sales office SOUTH**

Zindelsteiner Str. 15  
D-78052 Villingen-Schwenningen

Phone +49 (0) 7705 97 89 9-0  
Fax +49 (0) 7705 97 89 9-20

[info@cs-instruments.com](mailto:info@cs-instruments.com)  
[www.cs-instruments.com](http://www.cs-instruments.com)

**Sales office NORTH**

Am Oxer 28c  
D-24955 Harrislee

Phone +49 (0) 461 700 20 25  
Fax +49 (0) 461 700 20 26

[info@cs-instruments.com](mailto:info@cs-instruments.com)  
[www.cs-instruments.com](http://www.cs-instruments.com)