

Important information

The operating instructions must be read in full and carefully observed before starting up the device.

The manufacturer cannot be held liable for any damage which occurs as a result of non-observance or non-compliance with this manual.

Should the device be tampered with in any manner other than a procedure which is described and specified in the manual, the warranty is cancelled and the manufacturer is exempt from liability.

The device is destined exclusively for the described application.

CS Instruments GmbH offers no guarantee for the suitability for any other purpose and is not liable for errors which may have slipped into this operating manual. They are also not liable for consequential damage resulting from the delivery, capability or use of this device.

Area of application

The display DS 50 in wall housing can be used as an on-line display to show the current measurement values of dew point sensors FA 410 oder FA 415 of CS Instruments GmbH. DS 50 receives the display information from the sensor, the sensor need to be programmed accordingly. Typical applications are:

- Dew point measurements in dryers with alarm signal
- Dew point display which are mounted in a panel

Safety instructions

Please read carefully before starting up the device!

Attention:

- Observe the measuring ranges of the connected sensor! Risk of damage in case of overheating!
- Don't exceed the stated supply voltage.
- Observe permissible storage, transport and operating temperatures.
- Improper handling or use of force when opening the device cancels all warranty claims.
- Avoid condensation or water drops as it can cause mall function.
- Adjustments and calibrations should be carried out by quanified staff only.

Technical data

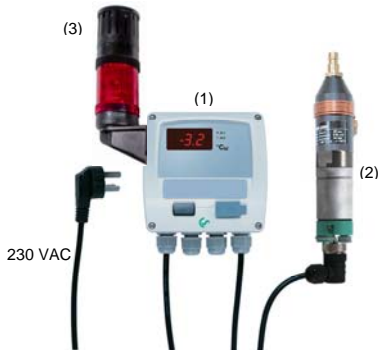
Housing	Dimensions: 118 x 92 x 113 mm
Sensor inputs	1 input for all FA 410/415
Power supply	100... 240 VAC / 50-60 Hz / 10 VA
Display	LED 7 segments, 10 mm height, 4 digits, red
Accuracy	See probe specifications
Settings	Alarm adjustments and hysteresis stored in the sensor
Alarm output	Relays, 230 VAC, 3 A, change-over contact
Analogue output	Connction of the 4... 20 mA signals of the CS dew point sensors
Operating temperatur	0 ... 60 °C
Storage temperature	-20 ... 70 °C
Cable lengths	5 m cable from probe to wall housing 3 m power cable Maximum cable length between sensor and display unit: 200 m

System description: All-in-one dew point monitoring system with option (external and acoustic alarm)

The system consists of the following single components:

- (1) Display unit
- (2) FA 410 / FA 415
- (3) Combined alarm buzzer/alarm light

Please observe the instruction manuals of the single components.



Operation:

The system will be supplied in a completely wired version and it is ready for plug in. The system will carry out a selftest as soon as the power supply plug (100 - 240 VAC, 50 - 60 Hz) is plugged in. During the selftest the display segments will be passed through and the alarm buzzer/alarm light are turned on.

The following alarm values will be preset in the dew point sensors on our premises:

FA 410: - 30 °Ctd

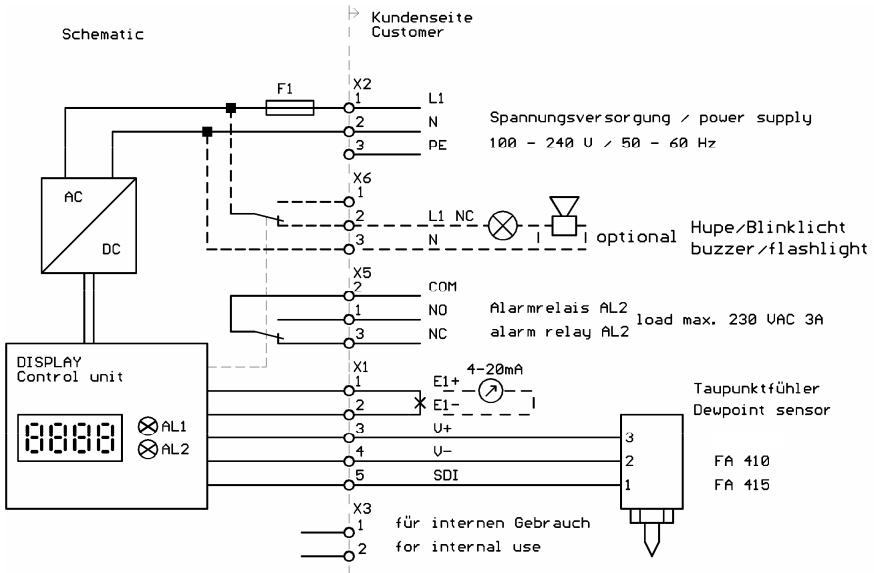
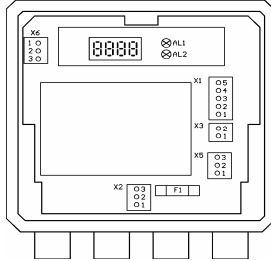
FA 415: +12 °Ctd

Alarm values and hysteresis can be adjusted in FA 410/FA 415 in our factory or by means of the CS Service Software, order no. 0554 2005, (please see screenshot).



alarm value

Connection scheme



Dew point sensor 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



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.

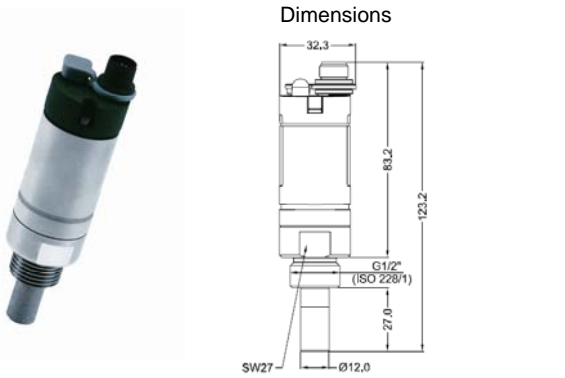
Observe max. storage and transport temperature as well as max. operating temperature
(e. g. protect measuring instrument from direct sunlight).

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.

Diagram of dew point sensor FA 415



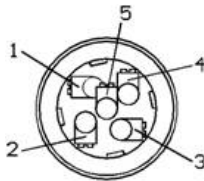
Wiring diagram

		Pin 1	Pin 2	Pin 3	Pin 4	Pin 5
FA 415	Connector plug	SDI	-VB	+VB	4...20 mA	NC
	Connection cable 0554 0104 (5 m) 0554 0105 (10 m)	brown	white	blue	NC	NC

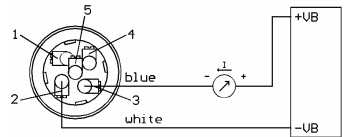
SDI	Digital signal (internal data transfer)
-VB	Negative power supply
+VB	Positive power supply 10...30 VDC smoothed
REL	Relay output
NC	Not connected

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.



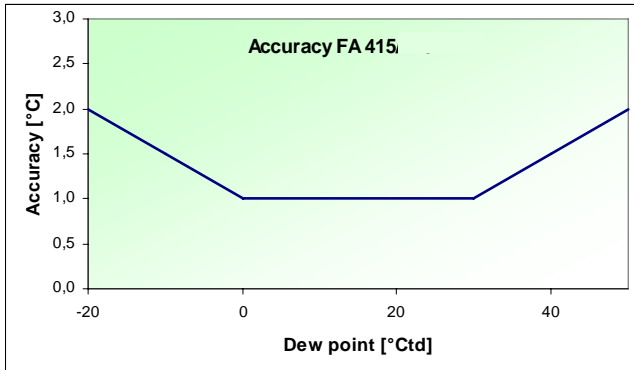
Connector plug FA 415:



Technical data FA 415

Measuring range: -20...50 °Ctd pressure dew point resp. dew point in °Ctd
 0...100 % RH
 -30...70 °C ambient temperature

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



Pressure range: -1...16 bar standard

Power supply: 10...30 VDC

Output: 4...20 mA \pm -20...50 °Ctd 2-wire technology in case of FA 415
 resp. relay 60 V, 0.5 A in case of FA 416

Protection class: IP 65

EMC: DIN EN 61326

Operating temperature: -30...70 °C (ideal 0...50 °C)

Storage temperature: -40...80 °C

Burden for analogue output: < 500 Ohm

Screw-in thread: G 1/2" stainless steel

Material of housing: zinc alloy, PC, ABS

Sensor protection: sintered filter 50 μ m stainless steel

Connection: M12, 5-pole

Response time t_{95} : < 30 seconds (descending)
 < 10 seconds (ascending)

Dew point sensor FA 410

Dew point sensor for measurement of pressure dew point and atmospheric dew point in different applications:

- compressed air plants
- granulate dryers
- medical gases
- non-corrosive cases, e. g. nitrogen



Please read prior to operation!

Warning: Do not exceed a pressure range of > 50 bar with standard version. With special versions up to 350 bar.

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

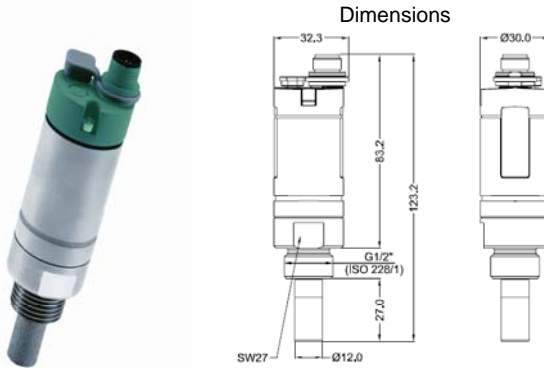
Observe max. storage and transport temperature as well as max. operating temperature (e. g. protect measuring instrument from direct sunlight).

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 410. Standing air leads to long measuring times.

Diagram of dew point sensor FA 410



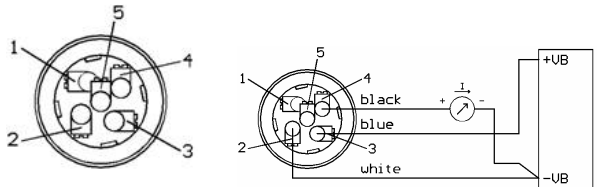
Wiring diagram

		Pin 1	Pin 2	Pin 3	Pin 4	Pin 5
FA 410	Connector plug	SDI	-VB	+VB	+I	NC
	Connection cable 0554 0104 (5 m) 0554 0105 (10 m)	brown	white	blue	black	

SDI	Digital signal (internal data transfer)
-VB	Negative supply voltage
+VB	Positive supply voltage 16...30 VDC smoothed
+I	Positive 4...20 mA signal
NC	Not connected

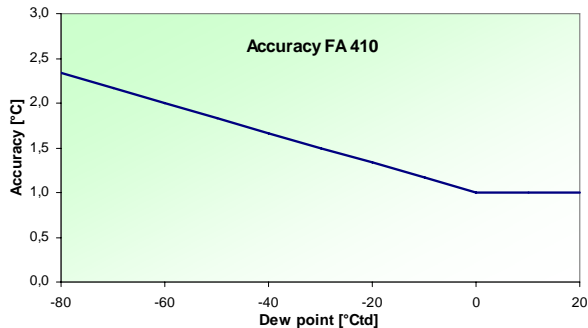
M12 connector plug

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.



Technical data FA 410

Measuring range	-80...20 °Ctd pressure dew point resp. dew point in °Ctd 0...100 % RH -30...70 °C
Type 0699.0410, FA 410	-80...20 °Ctd \triangleq 4...20 mA
Type 0699.0412, FA 410	-20...50 °Ctd \triangleq 4...20 mA
Accuracy:	typical ± 2 °Ctd of -80...-40 °Ctd ± 1.5 °Ctd of -40...0 °Ctd ± 1 °Ctd of 0...20 °Ctd



Pressure range:	-1...50 bar standard
Power supply:	16..30 VDC
Output:	4...20 mA 3-wire technology
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)

Calibration/Adjustment

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 410/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 410/FA 415 is 12 months for the instrument 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 DS 50 / FA 410 / FA 415

Order no.	Description
0500.0003	DS 50 - dew point display in wall housing with alarm output
0699.0410	FA 410 dew point sensor , -80...+20 °Ctd incl. inspection certificate
0699.0412	FA 410 dew point sensor , -20...+50 °Ctd incl. inspection certificate
0553.0104	Connection cable, 5 m
0553.0105	Connection cable, 10 m
0699.4003	Option special version up to 350 bar
0699.4004	Option output in mg/m ³ , g/kg or % RH, special scaling 4...20 mA
0699.3390	Standard measuring chamber up to 16 bar
0699.3590	High-pressure measuring chamber up to 350 bar
0699.3790	Measuring chamber for respiratory air bottles up to 350 bar
0554.2005	CS Service Software incl. PC connection set, USB adapter and interface adapter to the sensor as well as CS Soft Professional for data recording
0699.3395	Mains unit in wall housing 230 VAC/24 VDC
0699.3396	Precision calibration at -40 °Ctd incl. ISO certificate
3200.0003	Precision calibration at 0 °C and 10 °Ctd incl. ISO certificate
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
0699.0415	FA 415 dew point sensor
0553.0104	Connection cable, 5 m
0553.0105	Connection cable, 10 m
0699.3390	Standard measuring chamber 16 bar
0554.2005	CS Service Software incl. PC connection set, USB adapter and interface adapter to the sensor as well as CS Soft Professional for data recording
0699.3395	Mains unit in wall housing 230 VAC/24 VDC
3200.0003	Precision calibration at 0 °C and 10 °Ctd incl. ISO certificate
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

notes

- **Advice**
- **Sale**
- **Customer service**
- **Seminars**

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