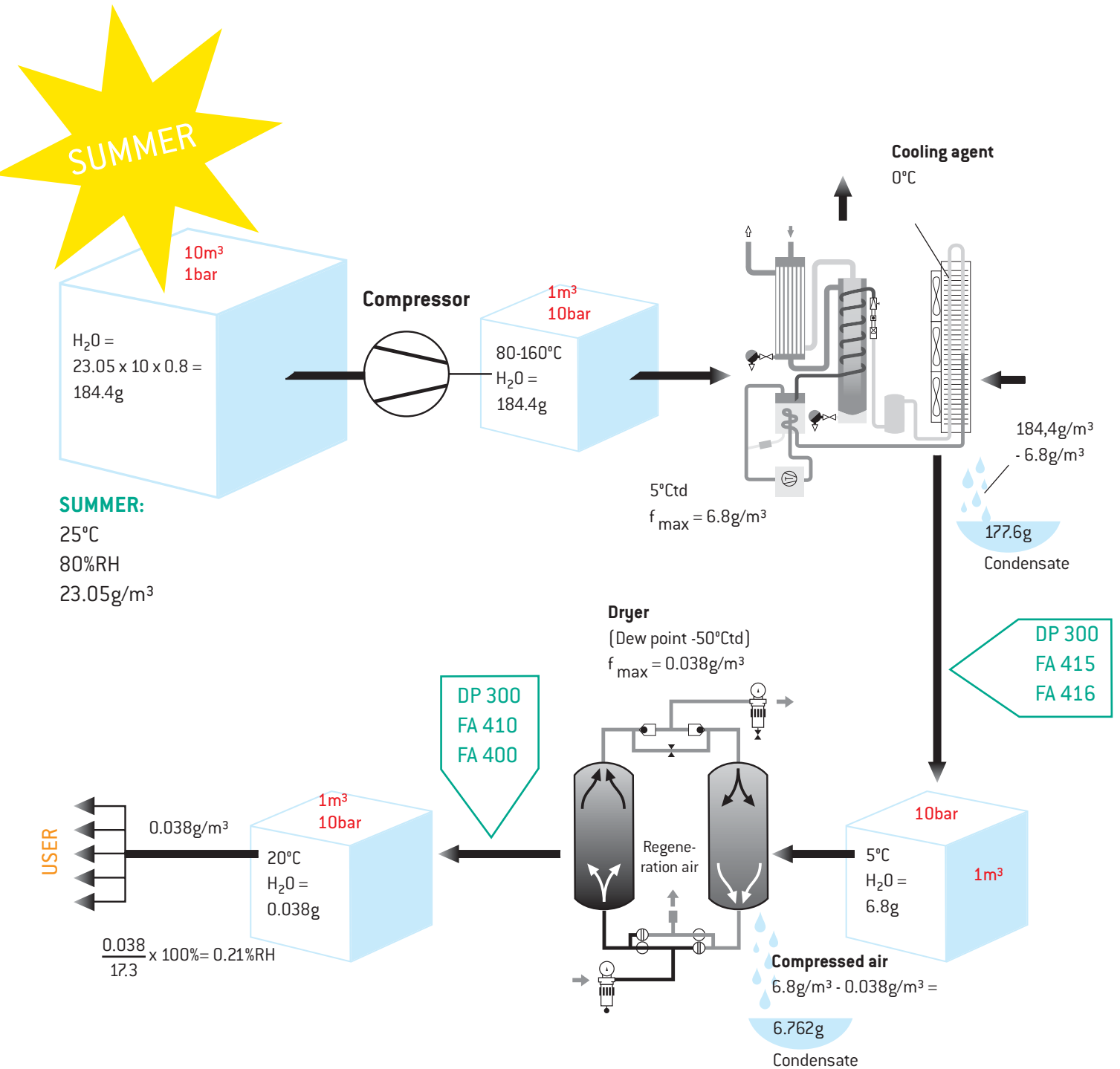




Typical procedure of compressed air drying with dew point measurement





Portable dew point meter DP 300

Relative humidity, temperature and dew point measurement with one instrument

The portable dew point meter DP 300 is the ideal instrument for service and is supplied in a convenient case. Thanks to the internal rechargeable battery it measures quickly and reliably for a duration of up to 15 hours.



Special feature

- Large measuring range to $-80\text{ }^{\circ}\text{C}_{\text{td}}$ for all dryers (adsorption, membrane, refrigeration dryers)

Technical data DP 300

Display single line:	dew point ($^{\circ}\text{C}_{\text{td}}$ resp. $^{\circ}\text{F}$) relative humidity (% RH) temperature ($^{\circ}\text{C}$ resp. $^{\circ}\text{F}$) freely selectable
Display functions:	Max, Min, state of battery
Measuring range:	$-80\text{...}50\text{ }^{\circ}\text{C}_{\text{td}}$ $-20\text{...}70\text{ }^{\circ}\text{C}$ 0 to 100 % RH
Pressure range:	-1 to 50 bar standard -1 to 350 bar high-pressure version
PC connection:	SDI interface
Accuracy:	$\pm 0,5\text{ }^{\circ}\text{C}_{\text{td}}$ at $-10\text{...}50\text{ }^{\circ}\text{C}_{\text{td}}$ typical $\pm 2\text{ }^{\circ}\text{C}_{\text{td}}$ at $-40\text{ }^{\circ}\text{C}_{\text{td}}$
Power supply:	internal rech. batteries (4 x 1,5 NiMh AAA) for approx. 15 h continuous operation
Operating temp:	$-20\text{...}70\text{ }^{\circ}\text{C}$
EMC:	DIN EN 61326
Screw-in thread:	1/2" stainless steel
Housing:	polycarbonate

Description	Order no.
Set DP 300 consisting of:	0600 6000
Portable dew point meter DP300 up to 50 bar including rechargeable battery	0560 6000
Mobile measuring chamber up to 16 bar	0699 4490
Diffusion-tight teflon hose 1 m with fast coupling at both ends	0554 0003
Power supply 24 VDC, 230 VAC for rech. battery load and long-term meas.	0554 0001
Control and calibration set 11.3 % RH	0554 0002
Transport case	0554 6002
Additional accessories, not included in the set:	
Portable dew point meter DP 300 up to 350 bar including rech. battery	0560 6001
High-pressure measuring chamber up to 350 bar	0699 3590
Precision calibration at $-40\text{ }^{\circ}\text{C}_{\text{td}}$ with ISO certificate	0699 3396
Measuring chamber for atmospheric dew point	0699 3690
Measuring chamber for granulate dryers for minimum over pressure	0699 3490
Measuring chamber for respiratory air bottles up to 350 bar	0699 3790
Control and calibration set 33 % RH	0554 0004
Control and calibration set 75.3 % RH	0554 0005



FA 410 from -80 to 20 °C_{td}

FA 410 – the ideal dew point sensor for monitoring membrane and adsorption dryers

Typical use in compressed air dryers/granulate dryers at very low dew points down to -80 °C.

Recommendation:



Mounting with standard measuring chamber for compressed air up to 16 bar

Advantage: Easy installation via fast coupling.

Special features

- Measuring range -80...20 °C_{td}
- Extremely long-term stable
- Analogue output 4...20 mA
- Condensation insensitive
- Quick response time
- Pressure-tight up to 350 bar (special version)



Technical data FA 410

Measuring range:	-80...20 °C _{td} resp. -20...50 °C _{td}
Accuracy:	± 1 °C at 20...-20 °C _{td} ± 2 °C at -20...-50 °C _{td} ± 3 °C at -50...-80 °C _{td}
Pressure range:	-1...50 bar special version up to 350 bar
Power supply:	24 VDC (16...30 VDC)
Protection class:	IP 65
EMC:	according to DIN EN 61326
Operating temp:	-20...70 °C
Connection:	M12, 5-pole
PC connection:	SDI interface
Analogue output:	4...20 mA = -80...20 °C _{td} resp. 4...20 mA = -20...50 °C _{td}
Burden for analogue output:	< 500 Ohm
Screw-in thread:	G1/2"
Dimensions:	Ø 30 mm, length approx. 130 mm
Via service software:	
– choose units:	% RH, °C _{td} , g/m ³ , mg/m ³ , ppm V/V
– scaling	change 4...20 mA
Special version:	4...20mA, 2-wire technology

Description	Order no..
FA 410 dew point sensor, -80...20 °C _{td} incl. inspection certificate	0699 0410
FA 410 dew point sensor, -20...50 °C _{td} incl. inspection certificate	0699 0412
Connection cables:	
Connection cable, length: 5 m	0553 0104
Connection cable, length: 10 m	0553 0105
Options for FA 410:	
Option special version up to 350 bar	0699 4003
Option output in mg/m ³ , g/kg, oder %RH, special scaling 4...20 mA	0699 4004
Additional accessories:	
Standard measuring chamber up to 16 bar	0699 3390
High-pressure measuring chamber up to 350 bar	0699 3590
Measuring chamber for respiratory air bottles up to 350 bar	0699 3790
CS Service Software for FA/VA 400 sensors including PC connection set, USB adapter and interface adapter to the sensor as well as CS Soft Professional software for data recording, please see page 11	0554 2005
Mains unit in wall housing 230 VAC/24 VDC	0699 3395
Calibration:	
Precision calibration at -40 °C _{td} including ISO certificate	0699 3396
Precision calibration at 0 °C and 10 °C _{td} including ISO certificate	3200 0003
Control and calibration set 11.3 % RH	0554 0002
Control and calibration set 33 % RH	0554 0004
Control and calibration set 75.3 % RH	0554 0005



Dew point set FA 410

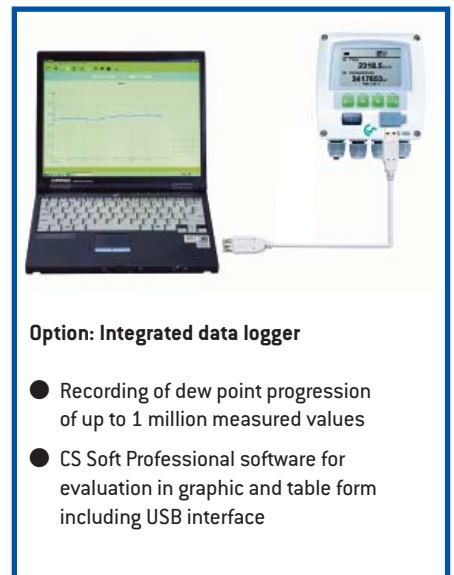
Dew point measurement for refrigeration/adsorption dryers ready for plug-in

Dew point set FA 410
consisting of:



Special features

- System ready for plug-in: everything completely wired
- No time-consuming studying of the instruction manual
- 2 alarm contacts (230 VAC, 3 A) pre- and main-alarm freely adjustable
- 4...20 mA analogue output
- Optical alarm: Red flashing
- Parallel indication % RH, °C, °C_d



Description	Order no.
Dew point set FA 410 for adsorption dryers [-80...20 °C _d]	0600 0410
Dew point set FA 410 for refrigeration dryers [-20...50 °C _d]	0600 0412
Option:	
Integrated data logger for 1 million measured values	Z500 3001
Alarm unit mounted at wall housing	Z500 0003
Alarm unit for external mounting with 5 m cable	Z500 0004
Additional accessories:	
CS Soft Professional software for data evaluation in graphic and table form including USB interface	0554 7010
Precision calibration at -40 °C _d including ISO certificate	0699 3396
Precision calibration at 0 °C and 10 °C _d including ISO certificate	3200 0003
Control and calibration set 11.3 % RH	0554 0002
Control and calibration set 33 % RH	0554 0004
Control and calibration set 75.3 % RH	0554 0005

Technical data DS 300	
Dimensions:	118 x 115 x 93 mm, IP 65 (wall housing) 92 x 92 x 70 mm, IP 65 (panel mounting)
Inputs:	2 digital inputs for FA 410 resp. VA 400
Interface:	USB
Keypad:	4 keys
Power supply:	100...240 VAC, 50-60 Hz
Accuracy:	see FA 410 page 6
Alarm outputs:	2 relays, 230 VAC, 3 A
Operating temp.:	0...50 °C
Transport temperature:	-20...70 °C
OPTIONS	
Data logger:	1 million meas. values start/stop time, meas. rate freely adjustable



FA 415/FA 416 from -20 to 50 °C_{td}

The new dew point sensors FA 415/416 for the typical use in refrigeration dryers



FA 415 dew point sensor

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

Special features

- Analogue output 4...20 mA
- Precise, long-term stability
- Quick response time
- Measuring range -20...50 °C_{td}



FA 416 condensate switch

For reliable alarm signal in case of condensation with alarm relay and LED

Special features

- Dew point distance freely adjustable
- Alarm in case of condensation
- LED alarm signal
- Quick response time

Technical data FA 415/416

Measuring range:	-20...50 °C _{td} resp. 0...100% RH
Accuracy:	± 1 °C at 20...10 °C _{td} ± 2 °C at -20 °C _{td}
Pressure range:	-1...16 bar
Power supply:	24 VDC (10...30 VDC)
Protection class:	IP 65
EMC:	according to DIN EN 61326
Operating temp.:	-20...70 °C
Connection:	M12, 5-pole
PC connection:	SDI interface
Screw-in thread:	G1/2"
Dimensions:	Ø 30 mm, length 130 mm
Output FA 415:	4...20 mA = -20...50 °C _{td}
Burden for analogue output:	< 500 Ohm
Output FA 416:	Relay NO max. 60 VDC, 0,5 A, ex factory 12 °C _{td} resp. in case of condensation, dew point distance freely adjustable

Recommendation:



Mounting with standard meas. chamber for compressed air up to 16 bar

Advantage: Easy installation via fast coupling.

Description	Order no.
FA 415 dew point sensor	0699 0415
FA 416 condensate switch	0699 0416
Connection cables:	
Connection cable, length: 5m	0553 0104
Connection cable, length: 10m	0553 0105
Additional accessories:	
Standard measuring chamber up to 16 bar	0699 3390
CS Service Software for FA/VA 400 sensors including PC connection set, USB adapter and interface adapter to the sensor as well as CS Soft Professional software for data recording, see page 11	0554 2005
Mains unit in wall housing 230 VAC/24 VDC (for FA 415)	0699 3395
Mains unit in wall housing 230 VAC/24 VDC with alarm processing (for FA 416)	0699 3495
External display, see pages 22 and 27	
Calibration:	
Precision calibration at 0 °C and 10 °C _{td} including ISO certificate	3200 0003
Control and calibration set 11.3 % RH	0554 0002
Control and calibration set 33 % RH	0554 0004
Control and calibration set 75.3 % RH	0554 0005



FA 400 from -80 to $20^{\circ}\text{C}_{\text{td}}$

FA 400 is the ideal dew point measuring instrument with integrated display and alarm relay for refrigeration, membrane and adsorption dryers

It replaces the worldwide proven instrument FA 200. The threshold value can be easily adjusted via the keypad.



Alarm adjustable via keypad

Special features

- $-80...20^{\circ}\text{C}_{\text{td}}$
- Integrated display
- Threshold value adjustable via keypad alarm relay (max. 60 VDC, 0.5 A)
- Pressure-tight up to 350 bar (special version)
- Extreme long-term stability
- Quick response time
- 4...20 mA analogue output
- 2 versions: Refrigeration dryers and adsorption dryers

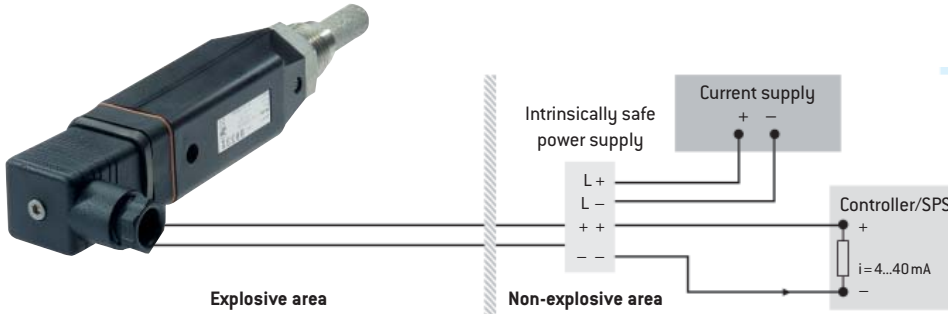
Description	Order no.
FA 400 dew point sensor for refrigeration dryers, $-20...50^{\circ}\text{C}_{\text{td}}$	0699 0401
FA 400 dew point sensor for adsorption dryers, $-80...20^{\circ}\text{C}_{\text{td}}$	0699 0402
FA 400 dew point sensor, replacement of FA 200, $-60...30^{\circ}\text{C}_{\text{td}}$	0699 0403
Connection cables:	
Connection cable, length: 5m (power supply and analogue output)	0553 0104
Connection cable, length 10m (power supply and analogue output)	0553 0105
Alarm cable, length: 5m	0553 0106
Alarm cable, length: 10m	0553 0107
Options for FA 400:	
Special version FA 400 up to 350 bar	0699 4003
Special scaling, output in ppm V/V, % RH, mg/m^3	0699 4004
Additional accessories:	
Standard measuring chamber for compressed air up to 16 bar	0699 3390
CS Service Software for FA/VA 400 sensors including PC connection set, USB adapter and interface adapter to the sensor as well as CS Soft Professional software for data recording, see page 11	0554 2005
Mains unit in wall housing 230 VAC/24 VDC with alarm processing	0699 3495
Calibration:	
Precision calibration at $-40^{\circ}\text{C}_{\text{td}}$ including ISO certificate	0699 3396
Precision calibration at 0°C and $10^{\circ}\text{C}_{\text{td}}$ including ISO certificate	3200 0003
Control and calibration set 11.3 % RH	0554 0002
Control and calibration set 33 % RH	0554 0004
Control and calibration set 75.3 % RH	0554 0005

Technical data FA 400

Measuring range:	$-80...20^{\circ}\text{C}_{\text{td}}$, $-60...30^{\circ}\text{C}_{\text{td}}$, $-20...50^{\circ}\text{C}_{\text{td}}$ resp. 0...100 % RH
Accuracy:	$\pm 1^{\circ}\text{C}$ at $20...-20^{\circ}\text{C}_{\text{td}}$ $\pm 2^{\circ}\text{C}$ at $-20...-50^{\circ}\text{C}_{\text{td}}$ $\pm 3^{\circ}\text{C}$ at $-50...-80^{\circ}\text{C}_{\text{td}}$
Pressure range:	$-1...50$ bar special version up to 350 bar
Power supply:	24 VDC (16...30 VDC) smoothed
Protection class:	IP 65
EMC:	according to DIN EN 61326
Operating temp.:	$-20...50^{\circ}\text{C}$
Connection:	2 x M12, 5-pole for analogue output and alarm output
PC connection:	SDI interface
Output:	4...20 mA = $-80...20^{\circ}\text{C}_{\text{td}}$ 4...20 mA = $-60...30^{\circ}\text{C}_{\text{td}}$ 4...20 mA = $-20...50^{\circ}\text{C}_{\text{td}}$
Burden for analogue output:	< 500 Ohm
Alarm relay:	NO, max. 60 VDC, 0.5 A
Screw-in thread:	G1/2"
Dimensions:	$\varnothing 65$ mm, length approx. 160 mm
Output signals via software:	% RH, $^{\circ}\text{C}_{\text{td}}$, g/m^3 , mg/m^3 , ppm V/V



FA 300 Ex -80 to 20 °C_{td}



Special features

- Robust design
- Pressure-tight up to 300 bar
- Long-term stable humidity sensor, approved for years
- 4...20 mA analogue output in 2-wire system
- Further parameters adjustable via software: % RH, g/m³, mg/m³, ppm V/V, g/kg
- CS Service Software for data storage and calibration

Technical data FA 300-2 Ex

Measuring range:	Pressure dew point in °C _{td}
FA 300-2 Ex:	-80...20 °C _{td} = 4...20 mA
Pressure range:	-1...300 bar
Power supply:	24 VDC (10...30 VDC)
Accuracy:	± 0,5 °C at -10...50 °C _{td} typical ± 2 °C at -40 °C _{td}
Output:	4...20 mA in 2-wire technology
Protection class:	IP 65
EMC:	according to DIN EN 61326
Operating temp.:	-20...70 °C
Storage temp.:	-40...80 °C
Burden for analogue output:	< 500 Ohm
Screw-in thread:	G1/2" stainless steel
Housing material:	polycarbonate
Sensor protection:	Sintered filter 50 µm stainless steel

FA 300-2 Ex measures the dew point resp. the pressure dew point in explosive areas of Zone 1.
Protection class: FA 300-2 Ex: II 2G EEx ia II C T4

With the Atex approval for Zone 1 the established dew point measuring instruments FA 300-2 Ex can now be

used in explosive areas of the industry as well.

FA 300-2 Ex may only be used in connection with approved Ex-rated power supplies or safety barriers or galvanic separating elements with

max.: U₀ = 30 V max.
I₀ = 100 mA max.
P₀ = 1 W max.

Description	Order no.
FA 300-2 Ex pressure dew point meter	0699 3070
Measuring chamber up to 350 bar	0699 3590
Special scaling	0699 4004
Analogue output to other humidity parameters: % RH g/m ³ , mg/m ³ , ppm V/V, g/kg	
Intrinsically safe power supply, safety barriers	0554 3071



DS 50

Digital display for panel mounting

- for FA 415, FA 416, FA 410, sensors

Technical data

Dimensions:	70 x 29 mm
Input:	1 digital input for FA 415, FA 416, FA 410
Display:	7 segment LED
Power supply:	18-32 V DC (also for supply of the connected sensor)
Analogue output:	4...20 mA looped through from sensor



DS 50

Dew point display in wall housing

- for FA 415, FA 410, sensors

Technical data

Dimensions:	118 x 115 x 93 mm, IP 65
Input:	1 digital input for FA 415, FA 410
Display:	7 segment LED
Power supply:	100-240 VAC, 50-60 Hz
Alarm output:	1 relay, 230 V AC, 3 A (alarm threshold has to be programmed at the sensor via service software) dew point sensors only
Analogue output:	4...20 mA looped through from sensor

Description	Order no.
DS 50 – digital display for panel mounting	0500 0001
DS 50 – dew point display in wall housing with alarm output	0500 0003



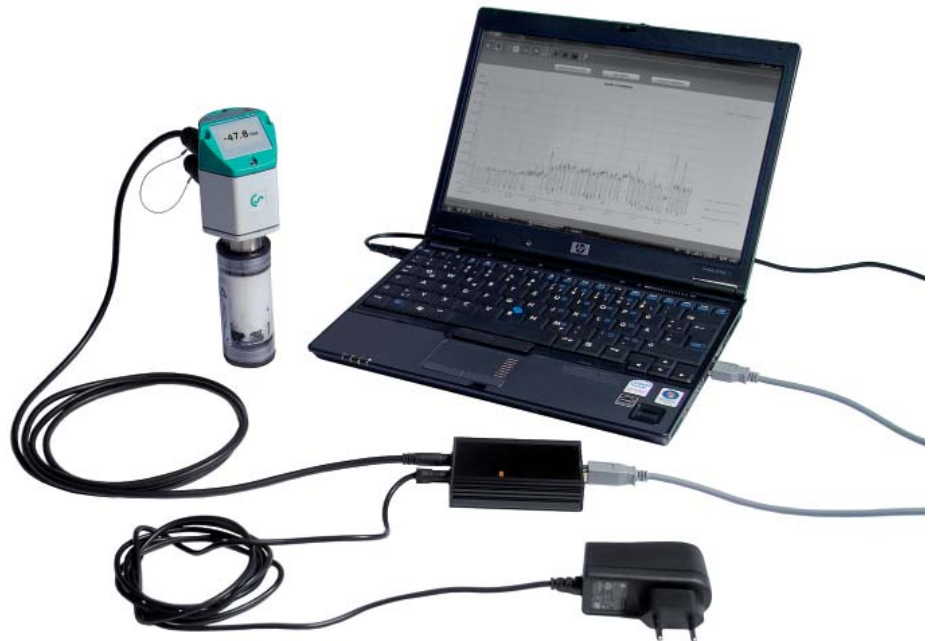
Accessories for dew point measurement and calibration

CS Service Software

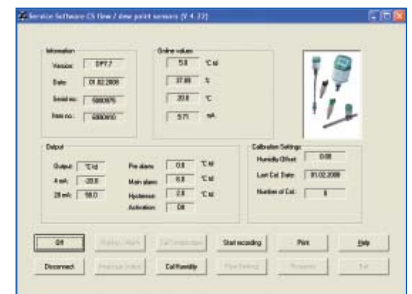
for FA/VA 400 sensors including PC connection set, USB adapter and interface adapter to the sensor as well as CS Soft Professional software for data recording.

The humidity sensors FA 400, FA 410, FA 415, FA 416 can be connected to the PC and the following adjustments can be carried out by means of the CS Service Software:

- Scaling of the 4...20 mA analogue output
- Selecting the units: % RH, °C_{td}, g/m³, mg/m³, ppm V/V
- Reading out of: Version no., production date, serial no., date of last calibration
- Adjustment of the alarm limits
- Single-point calibration (adjustment) - for this purpose a reference measuring instrument is required



By means of the CS Soft Professional software the measured data can be read out online at the PC. It can be stored and evaluated in graphic and in table form.



The right measuring chamber for each measuring task:



Standard measuring chamber for compressed air up to 16 bar
Order no. **0699 3390**



Measuring chamber for atmospheric dew point
Order no. **0699 3690**



High-pressure measuring chamber for compressed air up to 350 bar*
Order no. **0699 3590**



Measuring chamber for respiratory air bottles up to 350 bar*
Order no. **0699 3790**



Measuring chamber for granulate dryers up to 250 mbar
Order no. **0699 3490**

* in case of pressures higher than 50 bar please order special version FA 400 / FA 410.

Mounting recommendation

The dew point meters can be mounted directly into the air stream.

However, we recommend always to use a screwable measuring chamber.



Screwable measuring chamber

Advantage: Easy installation via fast coupling



Calibration of dew point sensors

The calibration range for dew point sensors is $-80...+20^{\circ}\text{C}_{\text{td}}$

It is possible to calibrate dew point sensors of CS Instruments as well as of other manufacturers. High precision reference measuring instruments with DKD resp. BAM certificate grant an accuracy of up to 0.1°C dew point.



Special feature

- Due to the digital data transfer only the dew point sensor has to be calibrated, enabling the display unit DS 300 to stay on-site at all times.



Calibration range: from -80 to $20^{\circ}\text{C}_{\text{td}}$
 Accuracy of the DKD reference: $0.1^{\circ}\text{C}_{\text{td}}$

Description	Order no.
Precision calibration at $0^{\circ}\text{C}_{\text{td}}$ and $10^{\circ}\text{C}_{\text{td}}$ including ISO certificate	3200 0003
Precision calibration at $-40^{\circ}\text{C}_{\text{td}}$ including ISO certificate	0699 3396
Precision calibration in the range $-80...20^{\circ}\text{C}_{\text{td}}$, $^{\circ}\text{C}_{\text{td}}$ points freely selectable	on request
Control and calibration set 11.3 % RH	0554 0002
Control and calibration set 33 % RH	0554 0004
Control and calibration set 75.3 % RH	0554 0005

Control and calibration set

Control and calibration sets guarantee a defined humidity by means of a saturated saline solution.

The control and calibration set is screwed onto the dew point sensor and therefore enables an easy and low-priced possibility for on-site control and calibration down to -20°C dew point.