

EN - English



# **Installation and operating Instructions**

**CS Instruments GmbH**

**Service Dew Point Sensors**

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# 1 First steps

## 1.1 Installation of the CS Service Software

Please Install now the "CS Instruments GmbH - Service Software Dew Point Sensors".

You can find the latest version on the following link:

[www.cs-instruments.com](http://www.cs-instruments.com) --> Downloads --> Software --> Firmware Sensoren & Service Software

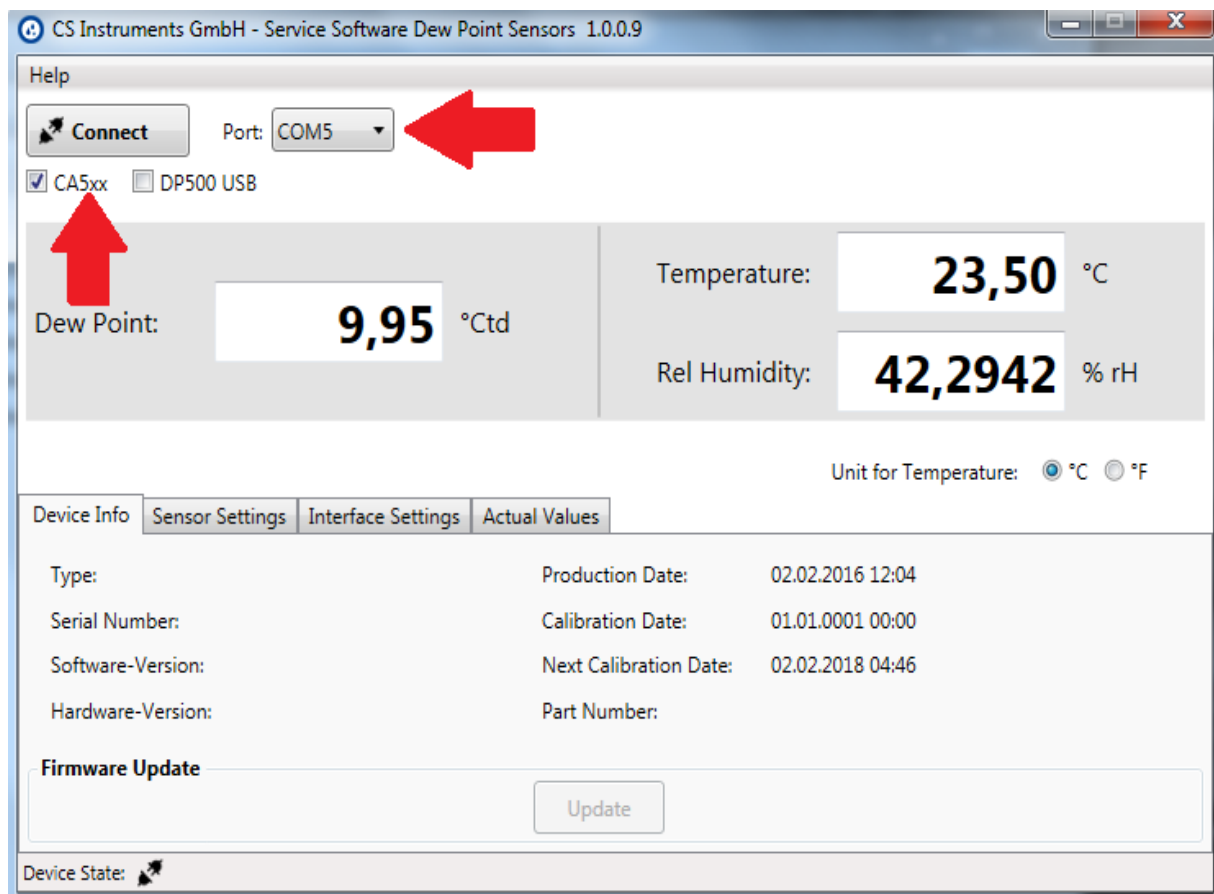
## 1.2 Connecting the device to the "CS Service Adapter"

- Please connect the "CS Service Software Adapter" with the power grid.
- Now connect the "CS Service Software Adapter" with **plug A** of your dew point sensor.
- Connect the "CS Service Software Adapter" with the USB port of your computer.

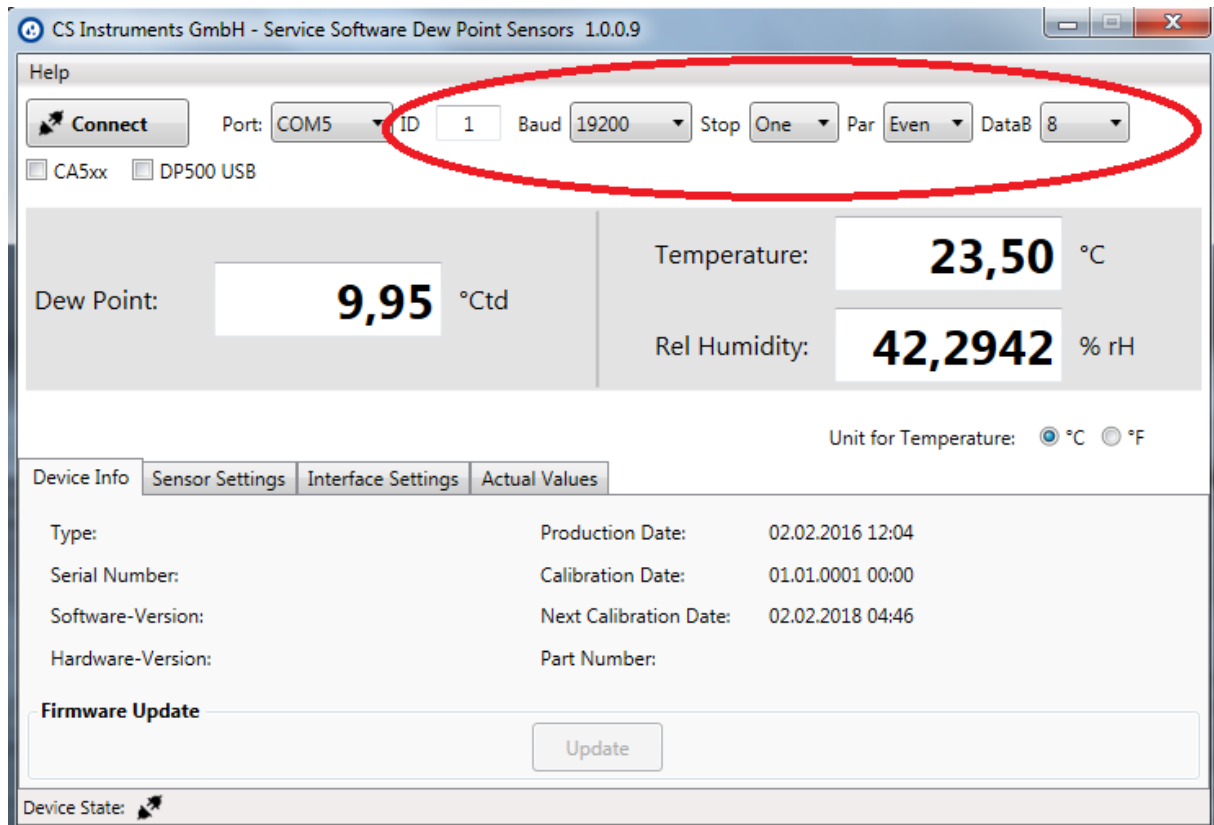
## 1.3 Connecting the dew point sensor to the computer

Please open the latest version of the "CS Instruments GmbH - Service Software dew point". Please activate the control window "CA5xx", if you have a FA510/515. Choose the "COM-Port" and click "Connect".

Please use your USB-Interface to connect the device with your PC, if you have a mobile device like the DP500/510. Choose the control window "DP500 USB" and click "Connect".



## 1.4 Connecting with Modbus RTU



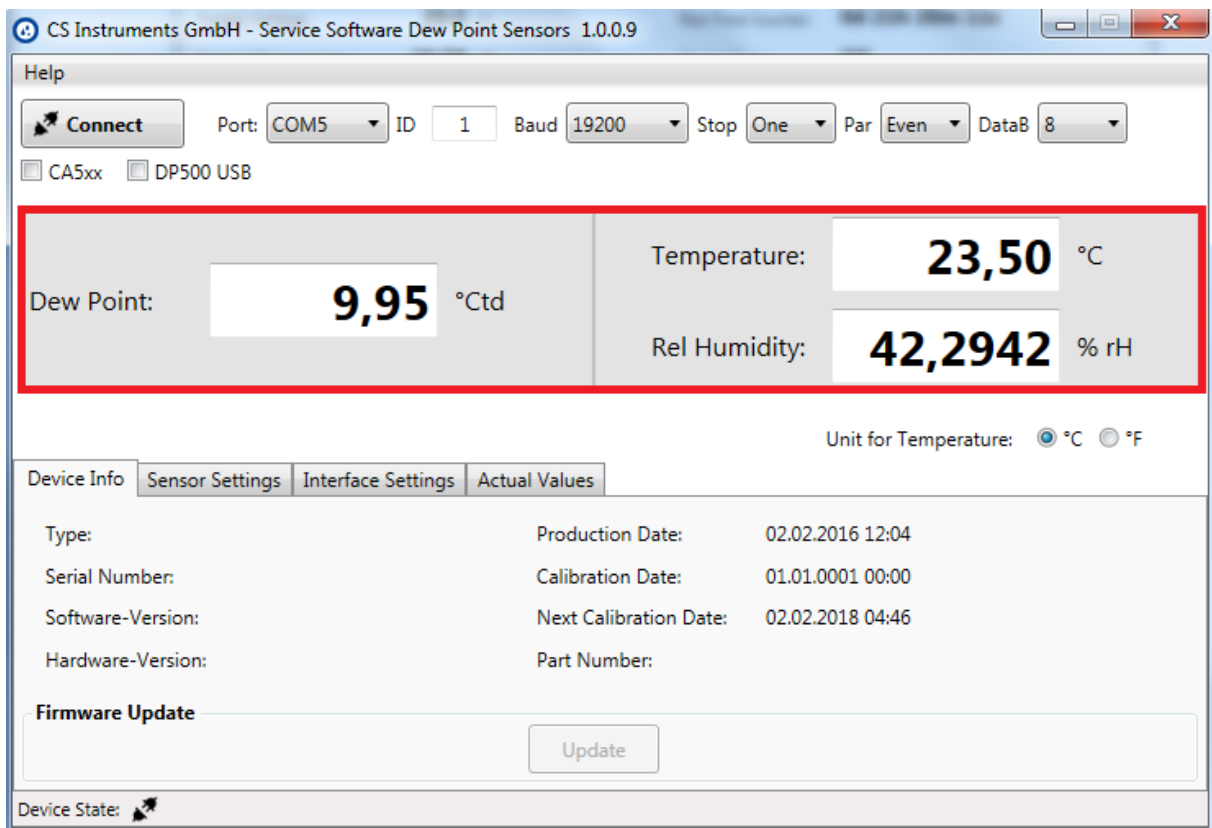
Please deactivate the control window "CA5xx", if you don't have the "CS Service Software Adapter", but your own Modbus converter.

Enter the specific values of the flow meter in the red marked area above.

- ID: 1
- Baud: 19200
- Stop: 1
- Parity: even
- Databits: 8

Please have also a look at - 2.3.1 Modbus Settings

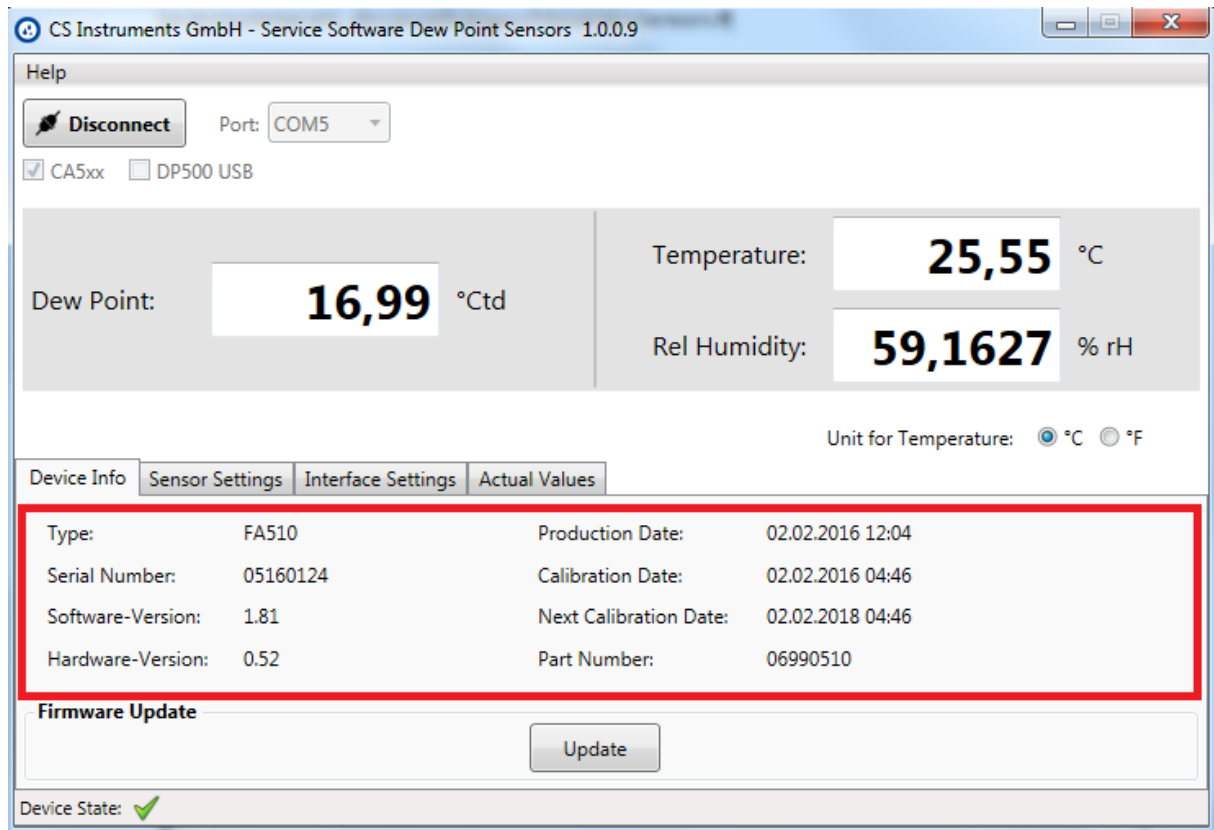
## 2 Description of the software



The upper part of the window shows current measurements.

- Dew Point: The current pressure dew point. The units °C and °F are selectable under the red marked area.
- Temperature: Current Temperature
- Rel. Humidity: Relative humidity shown in %

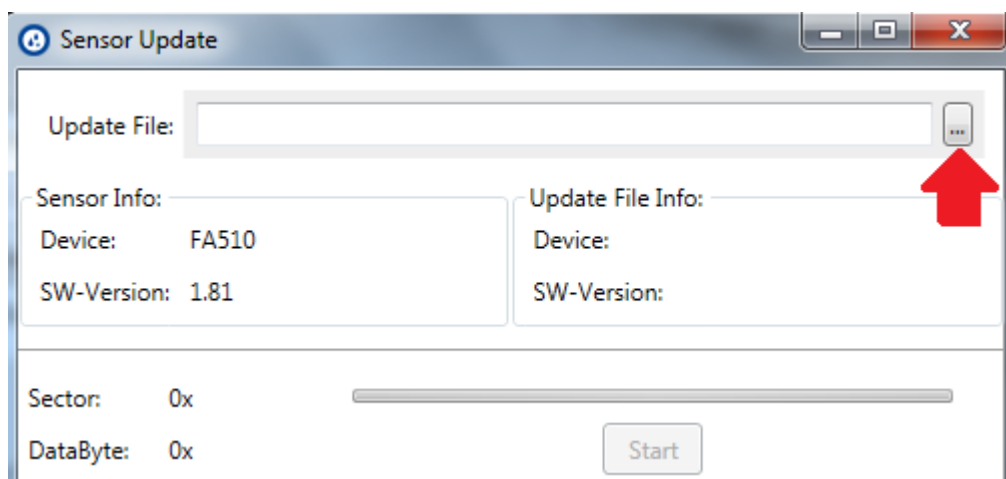
## 2.1 Device Info



The tab "Device Info" shows an overview about different specific information. For example: The serial number of the connected dew point sensor, Production date etc.

### 2.1.2 Firmware Update

At this point you can update your device with the latest software version



Please click the red marked button above and choose the right link to the latest software version.

The latest software version is available at our CS-Instruments homepage.

[www.cs-instruments.de](http://www.cs-instruments.de) --> Downloads --> Software --> Firmware sensors & service software

## 2.2 Sensor Settings

CS Instruments GmbH - Service Software Dew Point Sensors 1.0.0.9

Help

Port: COM5

CA5xx  DP500 USB

Dew Point: **13,63** °Ctd

Temperature: **25,83** °C

Rel Humidity: **46,9189** % rH

Unit for Temperature:  °C  °F

Device Info | **Sensor Settings** | Interface Settings | Actual Values

Sensor Location:

Next Calibration Date:

**System Pressure Settings**

Enable ExtPres:

Relative System Pressure:  [mbar] resp. [hPa]

Absolute Reference Pressure:  [mbar] resp. [hPa]

**One Point Calibration**

Calibration Value:  [°Ctd]

Rel Hum Offset:  [%rH]

ChangeCounter:

Device State:

Sensor Location: Enter up to 15 symbols

**For Example:** Location of the sensor, Name of the Sensor.

Next Calibration Date: At this point you can change the next calibration date.

### 2.2.1 System Pressure Settings

It is possible to set an extern measured pressure as calculating base for your pressure dew point if you activate the control window "Enable ExtPres". **For this you need the DP510 with an extern pressure sensor.**

You can also set the system pressure manually at "**Relative System Pressure**"

Please set the reference pressure as **standard calculating base** for your dew point at "Absolute Referenz Pressure".

### 2.2.2 One Point Calibration

You can calibrate the dew point sensor at different values at "Calibration Value".

#### **Attention:**

**You have to follow** the next steps if you want to calibrate the sensor by yourself.

- If your working point is  $-40^{\circ}$  Ctd., so please calibrate at this point.
- It could cause significant errors at low dew points if you calibrate at to high dew points.
- We recommend a calibration at  $-40$  to  $-55^{\circ}$  Ctd.
- Please use high precision devices for calibration.
- A adapting time of at least one hour is necessary.



## 2.3 Interface Settings

CS Instruments GmbH - Service Software Dew Point Sensors 1.0.0.9

Help

Disconnect Port: COM5

CA5xx  DP500 USB

Dew Point: **12,92** °Ctd

Temperature: **25,87** °C

Rel Humidity: **44,6918** % rH

Unit for Temperature:  °C  °F

Device Info | Sensor Settings | **Interface Settings** | Actual Values

**Modbus Settings**

Enable:

ID: 1 Baud: 19200 Stop: 1 Par: even WordOrder: CDAB

**Analog 4-20mA Settings**

4-20mA Value: Temp[°C]

Scaling 4mA: -80

Scaling 20mA: 20

Error Behaviour:  Stay at limits (Upper Limit = 22mA, Lower Limit = 3,8mA)  
 Error = 22mA  
 Error <= 3,6mA

Device State:

### 2.3.1 Modbus Settings

Factory Settings:

- Modbus ID: 1
- Baud: 19200
- Stop: 1
- Par: even
- Data: 8

It is necessary to set the correct interface settings for your modbus master device. Sensor and master device settings have to be identically. You can find the interface settings in our **CS Instruments Modbus RTU installation guide "FA5xx\_Modbus\_RTU\_Slave\_Installation"**

### 2.3.2 Analog 4 - 20 mA Settings

You can enter your desired measuring outputs at "4 - 20mA Value".

Please insert your specific limits at "Scale 4mA/Scale 20mA".

It is possible to set different scenarios in case of an error at "Error Behaviour".

- Stay at NAMUR limits: Depending on the the measuring value the output will be set 3,8 mA or 20,5 mA.
- Error = 22 mA: The output current will be set to 22 mA.
- Error = 3,6 mA: The output current will be set to 3,6 mA.

### 2.4 Actual Values

The screenshot shows the 'Actual Values' tab of the service software. The main display area shows the following values:

Dew Point:	<b>12,55</b> °Ctd	Temperature:	<b>25,99</b> °C
		Rel Humidity:	<b>43,3050</b> % rH

Unit for Temperature:  °C  °F

Device Info | Sensor Settings | Interface Settings | **Actual Values**

Dew Point:	<b>12,55</b> °Ctd	Run Time Counter:	<b>1d 4h 3m 8s</b>
Temperature:	<b>25,99</b> °C	Device State:	<b>0x0000</b>
Relative Humidity:	<b>43,3050</b> %rH	Humidity Sensor	
Absolute Humidity:	<b>10,5140</b> g/m <sup>3</sup>	Temp. Sensor	
	<b>10.514,02</b> mg/m <sup>3</sup>	Intern	
Humidity Grade:	<b>9,0400</b> g/kg		
Vapor Ratio:	<b>14.325,45</b> ppm		
Partial Vapor Pressure:	<b>14,52</b> hPa		
Reference Dew Point:	<b>12,55</b> °Ctd		

Device State:

The section "Actual Values" shows:

- Dew Point: Current pressure dew point.
- Temperature: Current temperature.
- Relative Humidity: Relative humidity shown in %
- Absolute Humidity: The actual quantity of water per cubic meter in gram or milligram.
- Humidity Grade: The humidity grade shows how much gram water per kilogram air are available.
- Vapor Ratio: Water vapor in ppm (Parts per million)

- Partial Vapor Press: Partial pressure of water in the measured air
- Reference Dew Point: The reference dew point that was used for calibration
- Run Time Counter: Shows the whole time of operation
- Device Status: Availability of the devices.