CS INSTRUMENTS GmbH & Co. KG

Installation- and operating instructions

portable dew point meter with integrated pressure measurement

DP 400 mobil

Foreword

Dear customer,

thank you very much for deciding in favour of the DP 400 mobil. Please read this installation and operation manual carefully before mounting and initiating the device and follow our advice. A riskless operation and a correct functioning of the DP 400 mobil are only guaranteed in case of careful observation of the described instructions and notes

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II. Inhaltsverzeichnis

1 Safety instructions

1.1 General

Please check whether this manual corresponds with the device type.

Please attend to all notes indicated in this instruction manual. It contains essential information which has to be followed during installation, operation and maintenance. Therefore, this instruction manual has to be read categorically by the technician as well as by the responsible user/qualified personnel before installation, initiation and maintenance.

This instruction manual has to be available at any time at the operation site of the DS 400.

Regional and national regulations respectively, have to be observed in addition to this instruction manual if necessary.

In case of any obscurities or questions with regard to this manual or the instrument please contact CS Instruments GmbH & Co.KG

Warning!

Supply voltage!

Contact with supply voltage carrying non-insulated parts may cause an electric shock with injury and death.

Measures:

- Note all applicable regulations for electrical installations (e.g. VDE 0100)!
- **Carry out maintenance only in strain less state!**
- All electric works are only allowed to be carried out by authorized qualified personnel.

Warning!

Inadmissible operating parameters!

Undercutting and exceeding respectively of limit values may cause danger to persons and material and may lead to functional and operational disturbances.

Measures:

- Make sure that the DP 400 mobil is only operated within the admissible limit values indicated on the
  type label.
- Strict observance of the performance data of the DP 400 mobil in connection with the application.
- Do not exceed the admissible storage and transportation temperature.

Further safety instructions:

- Attention should also be paid to the applicable national regulations and safety instructions during installation and operation.
- The DP 400 mobil is not allowed to be used in explosive areas.

Additional remarks:

- Do not overheat the instrument!
- Change of battery and SD-Card are only allowed to be carried out by authorized qualified personnel and in strain less state

Attention!

Malfunctions at the DP 400 mobil!

Faulty installation and insufficient maintenance may lead to malfunctions of the DP 400 mobil which may affect the measuring results and which may lead to misinterpretations.

1.2 Installation

NOTE!
The plug of the power supply unit (charger) is used as a separator.
This separator must be clearly recognisable and easily accessible by the user. A plug connector with a CEE7/7 system is necessary.

NOTE!
Only the supplied power supply may be used.

1.3 Lithium Ion Batterie

Warning!
Battery!
The replacement of the battery must only be carried out by authorised and skilled personnel, and when the device is de-energised.
Only the original battery of the manufacturer with built-in protection circuit may be used.

- Do not use any other power supply for charging the Li-Ion battery as the provided.
- Do not charge the battery under conditions that are not specified in the manual.
- Do not charge the battery in an environment with flammable substances. Never charge the battery unattended.
- Transport
  The contained lithium ion batteries are subject to the Dangerous Goods Legislation requirements. The user can transport the batteries by road without further requirements.
  When being transported by third parties (e.g.: air transport or forwarding agency), special requirements on packaging and labelling must be observed. For preparation of the item being shipped, consulting an expert for hazardous material is required.
  Please also observe possibly more detailed national regulations.

Disposal

The datalogger, rechargeable batteries, accessories and packaging should be sorted for environmental friendly recycling.
Do not dispose of power tools and batteries/rechargeable batteries into household waste!

Only for EC countries:

According to the European Guideline 2012/19/EU, power tools that are no longer usable, and according to the European Guideline 2006/66/EC, defective or used battery packs/batteries, must be collected separately and disposed of in an environmentally correct manner.
Batteries no longer suitable for use can be directly returned at:

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2 Application area

The portable dew point measuring device in a robust case has been specially developed for field applications. The device has a high-precision digital dew point sensor. In addition to the dew point (pressure dew point), the temperature, relative humidity, absolute humidity (g / m³) as well as other moisture values are measured. Integrated pressure measurement up to 16 bar.

The measuring gas / compressed air is connected via PTFE hose to the 6mm plug connections.

The operation is carried out via the clear 3.5 "touch screen. The optional data logger enables the recording of all measured values over hours, days or weeks (100 million measured values of storage capacity)

Any analogue sensors (0/4 - 20 mA, 0 - 1/10/30 V), pulse) are easy and fast to configure. Digital sensors can be connected via RS 485, Modbus RTU.

Optional:

Network-capable and data transmission worldwide via Ethernet, integrated web server.

3 Intended use

The dew point measuring device with data logger DP 400 mobile is designed for portable data acquisition and storage of analog and digital input signals.

The DP 400 mobil is designed and designed exclusively for the intended use as described herein and may only be used accordingly.

The user must check whether the device is suitable for the selected application. Ensure that the medium is compatible with the media-bearing parts. The technical data in the data sheet are binding.

Incorrect handling or operation outside the technical specifications is prohibited. Claims of any kind due to improper use are excluded.

4 Technical Data DP 400 mobil

Dimensions of housing	270x225x156 mm
Weight	3,2 kg
Case Material	impact resistant HDPE/HWU –plastic (ABS).
Sensor inputs	Sensor inputs (digital / analogue) depending on configuration Digital sensors RS 485/ModBus RTU Analogue third-party sensors 0/4 – 20 mA, 0 - 1/10/30 V, pulse, Pt100/Pt1000.
Measuring ranges	Dew point: -80 … +50°Ctd Temperature: -20 …70°C Humnidity: 0 …100% RH Pressure: 0 ...16 bar
Accuracy dew point	± 1°C for 20...-20°Ctd ± 2°C for -20...-50°Ctd ± 3°C for -50...-80°Ctd
Accuray pressure	± 0,5 %
Power supply for sensors	Output voltage:: 24 VDC ± 10% Output current : a.) Digital board 120 mA continuous operation b.) Analogue board: 60mA
Interfaces	USB-Stick, Ethernet RTU/TCP optional, WEB-Server optional
Memory card	Speichergröße 4 GB-Memorycard-Standard
Power supply	Li-Ion Battery, Power Supply 100 – 240 VAC/50 – 60 Hz with output 12VDC
Colour screen	3.5“-Touchpanel TFT transmissive, graphics, curves, statistics
Operating temperature	0 – 50 °C
Storage temperature	-20 to +70°C
Process connection	6mm plug-in connection
Optionally	Ethernet Modbus TCP
Optionally	Webserver
Optionally	Mathematics calculation function

5 Input signals analogue sensors

Input signal		
Current signal (0 – 20 mA / 4 – 20 mA) internal or external power supply	Measuring range	0 – 20 mA / 4 – 20 mA
	Resolution	0,0001 mA
	Accuracy	± 0,03 mA ± 0,05 %
	Input resistance	50 Ω
Voltage signal (0 - 1V)	Measuring range	0 - 1 V
	Resolution	0,05 mV
	Accuracy	± 0,2 mV ± 0,05 %
	Input resistance	100 kΩ
Voltage signal (0 - 10 V / 30 V)	Measuring range	0 - 10 V/30 V
	Resolution	0,5 mV
	Accuracy	± 2 mV ± 0,05 %
	Input resistance	1 MΩ
RTD Pt100	Measuring range	-200 - 850 °C
	Resolution	0,1 °C
	Accuracy	± 0,2 °C at -100 - 400 °C ± 0,3 °C (further range)
RTD Pt1000	Measuring range	-200 - 850 °C
	Resolution	0,1 °C
	Accuracy	± 0,2 °C at -100 - 400 °C ± 0,3 °C (further range)
Pulse	Measuring range	minimal pulse length 100 µs frequency 0 - 1 kHz max. 30 VDC

6 Cable cross-section

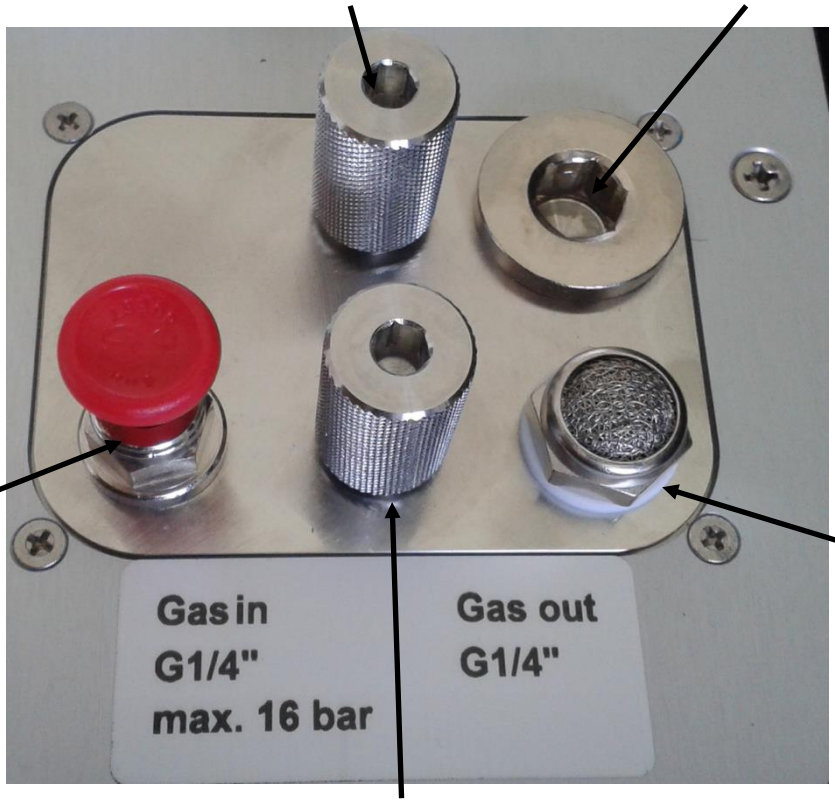
6.1 Sensor circuit points/Output signal

ODU Medi-Snap, AWG26 cable cross-sections: 0,14 mm^2

7 Installation / Connection / Measurement

7.1 User controls / connection

7.1.1 Dew point measurement

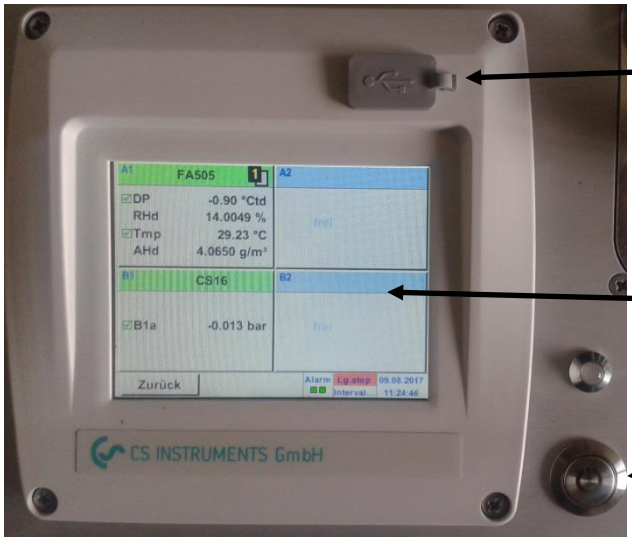


7.1.2 Display / Datalogger

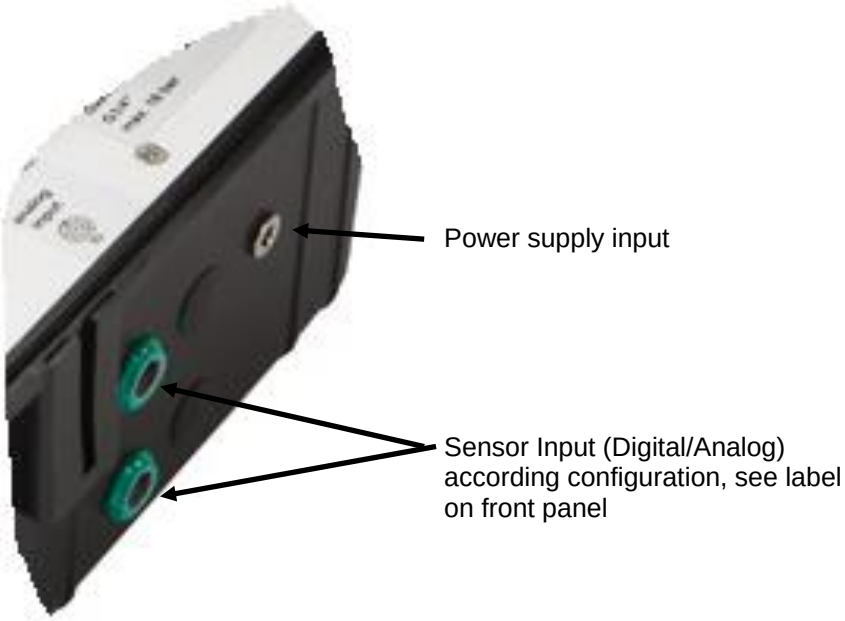
To switch on / off the DS400 mobile you have to press (>= 3sec) the on / off knob.

A short press of the on / off knob during operation opens a popup with indication of the remaining operation time.

The data logger is operated via the touchpanel integrated in the display.



7.1.3 Sensor connections / Power supply connection



NOTE!
Only the supplied power supply may be used.

7.2 Measurement dew point

7.2.1 Measurement test set up/ test procedure

The maximum operating pressure is 15 bar.

It is important that the media connections are correctly plugged in and the connection hoses are correctly installed.

Otherwise, the pressure tightness / strength of the device is compromised.

Before disconnecting the DP 400 mobile from the gas line, it is necessary to vent the system to atmospheric pressure, otherwise serious injuries may occur.

Note:

At delivery, the dew point measuring device is designed in such a way that the sample gas is introduced via the medium inlet (6 mm plug input) and with a direct flow out at the medium outlet, see figure.

"Gas Out" direct flow out

For applications of gases other than compressed air, it is mandatory to change the media outflow (gas out) and to lead out it safely via a suitable line.

Test procedure:

1.) Both controls , Medium and dry container, have to be closed completely
2.) Remove red seal plug and connect the gas input line at „ Gas In“.
3.) For measurements with gases, except compressed air, the „Gas out“ is to change to a suitable line output.A secure gas flow out is to ensure.
4.) The tightness of all connections is to be checked and ensured.
5.) Switch on the display / datalogger. (to press switch on/off button >=3 sec)
6.) Slowly open the control "Medium", max. until the red mark is visible.
7.) Allow the gas to flow until the display shows a stable reading.
8.) Switch off the unit after completing the measurement
9.) Before disassembling the connections, the system must be vented to atmospheric pressure.

Control dry container (2)closed.
(completely screwed in)

Control Medium (1) open,
max. until red marking is visible

The measuring point should be as close as possible to the critical measuring point in order to obtain a truly representative measurement. The length of the DP 400 mobile cable should be as short as possible. Only use PTFE piping (supplied) or stainless steel.

7.2.2 Display / data logger

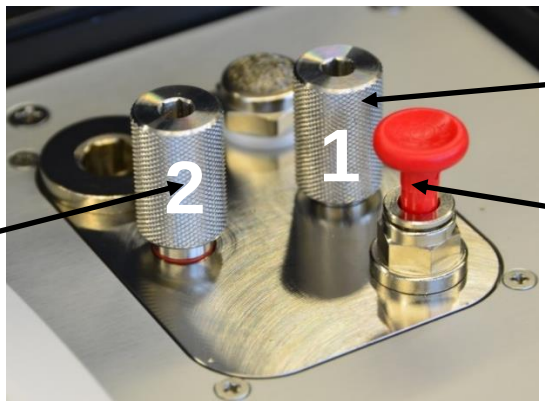
The display of the DP 400 mobils is at time of delivery already preconfigurated.

In addition to the pressure up to 16bar, the dew point (pressure dew point), the temperature, relative humidity, absolute humidity (g / m³) as well as other moisture values are measured
The humidity values are indicated in display channel A1 as well as the pressure on channel B1.

The DP 400 mobile provides an optional data logger for recording the measured values. (Storage capacity 100 million measured values)
For more details, see instruction manual DS 400 mobil chapter data logger.
Download Link: Instruction manual DS 400 mobile

8 DP 400 mobil settings in idle state / storage

The existing drying container should be activated between the measurements or especially during longer periods of interruption and storage. This is to protect the moisture sensor from excessively high moisture and thus to ensure fast response times.



Control Medium (1) closed.
(completely screwed in)

Red seal plug mounted again.

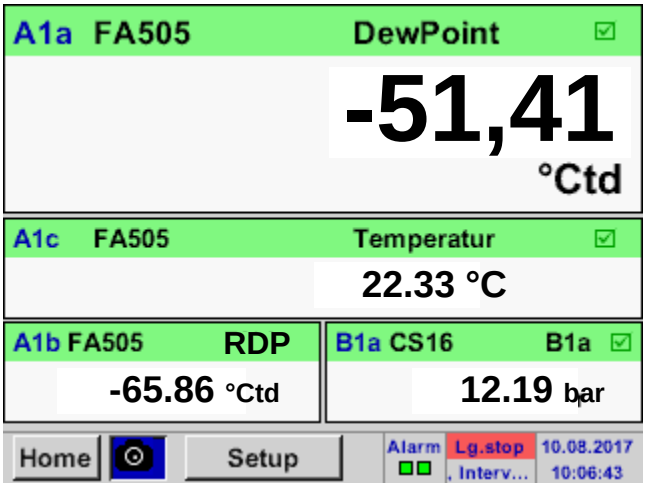
Control dry container (2) open.
(red marking straight visible)

9 Operation / setting display and datalogger(optional)

The operation is largely self-explanatory and menu-driven via the touch panel.
The selection of the respective menu items occur via short "tapping" with the finger or a soft round pen.

Attention: Please use no pens or other objects with sharp edges!
The foil can be damaged!

The DP 400 mobile is pre-configured, i.e.the pressure dew point, temperature, pressure as well as rel. humidity are displayed directly on the start screen. Configuration is freely definable, up to 5 different values can be displayed.



The data logger option must be ordered and enabled separately.

For a detailed description of the operation, use of datalogger, the free digital and analog inputs etc., please refer to the operating manual DS 400 mobile.
Download Link: Instruction manual DS 400 mobile

10 Cleaning Display

Note:

The DP 400 mobil has a cleaning-function which protects the display against unintentional operation in the event of cleaning measures

Cleaning of the DP 400 mobil must be undertaken using a slightly damp (not wet) cotton cloth or one-way wipe, and mild, commercially available cleaner/soap.

For decontamination, spray the cleaner on an unused cotton cloth or one-way wipe, and wipe the component comprehensively. Perform the final drying with a clean cloth or by air drying.

In addition, the local hygiene provisions need to be observed.

Warning!

Damage possible!

A too high degree of humidity and hard and pointed objects, as well as aggressive cleaners, cause damage to the data logger and to the integrated electronic components.

Measures

- Never clean with a soaked cloth.
- Do not use aggressive cleaners.
- Do not use pointed or hard objects for cleaning.