

Instruction manual

DP 300 mobile dew point instrument
for measuring pressure dew point and atmospheric dew point
in different applications:

- Compressed air plants (refrigeration/adsorption dryer)
- Granule dryers
- Medical gases
- Non corrosive gas, e.g. nitrogen, SF₆...

 Instrument conforms to DIN EN 61326-1



Notes on safety!
Please read prior operation.

- Do not exceed pressure range of >50 bar with standard version.
- With special version up to 350 bar.
- Observe measuring ranges of the sensor!
- The probes are damaged if overheated.
- Observe maximal storage and transport temperature.

Warranty claims or calibration should be carried out by a qualified measurement and control engineering staff only.

Important: Before installing briefly bleed the compressed air in order to remove condensate and particles. This prevents soiling the instrument DP 300. Standing air leads to longer response times.

Introduction:

Keeping a specific dew point is requirement for a trouble free plant operation. The mobile dew point measuring instrument DP300 is the ideal service instrument in a handy case. It measures relative humidity, temperature and the dew point up to 50 bars, easy, **fast without annoying cable.**

With the pc software the measured data can be recorded in an Excel file and further parameters can be selected: ppm, g/m³, mg/m³, g/kg, atmospheric dew point. Special version up to 350 bars.

We generally recommend using a measuring chamber.

Screw in the DP 300 in the measuring chamber, you can also use a diffusion tight Teflon Tube with fast coupling:

Advantage:

- + Easy mounting and dismounting
- + Fast response time

Measurable gases:

In general humidity can be measured in all non corrosive active gases.

Instruction:



1. On/Off to switch the instrument



2. Scroll function to select between °C dew point, % relative humidity or °C ambient temperature



3. Max/Min to choose between the highest and lowest value since starting the instrument

Technical data:

Measuring range:	-80...50 °C td -20...70°C 0...100 % RH Via PC Software alternatively to the dew point further parameters can be displayed software: ppm V/V, atmospheric dew point, g/m ³ , mg/m ³ , g/kg and °F. Via PC Software
T90 response time: (90% of measured value)	10 s from -60 → -20 °C td 3 min von -20 → -60 °C td
Pressure range:	-1 up to 50 bar standard -1 up to 350 bar high pressure version
Display:	one line, resolution 0,1 Dew point (°C td) Relative humidity (% RH) Temperature (°C or °F) production setting
Display functions:	Min, Max, battery load
Output	RS 232 PC connection, Interface (SDI) for PC Software
Input:	battery load only with CS mains unit possible
Accuracy:	+ - 0,5 °C td (-10...50°C td) Typical + - 2°C td at -40°C td
Power supply:	internal charchable storage battery (4 x 1,5 NiMh AAA) for Approximately 15 h operation Display Low Batt max. 2 hours remaining operation time
Online measurement:	with mains unit
Operating temperature:	-20...70°C measuring gas temperature 0...40 °C ambient temperature
EMC:	DIN EN 61326
Screw in thread:	G ½" stainless steel
Housing:	Polycarbonat
Weight:	230 g

Service/calibration/adjustment

According to DIN ISO certification of the measuring instruments we recommend to calibrate and if applicable to adjust the instrument regularly from the manufacturer.

Dear customer,

Thank you for your confidence. You have made the right choice by choosing a quality product. If you have reason for complaint we will 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 instrument has been opened. This also is the case if the serial number has been changed damaged or removed.

The warranty time is 12 months for the instrument, 6 months for accessory parts. Warranty services do not extend the warranty time.

If in addition to the warranty service necessary repairs, adjustment or similar are carried out, the warranty service are free of charge but there is a charge for other services such as transport and packaging 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. Please call us.

Order data:

Description:	Order no.
Set DP 300 consisting of:	0600 6000
• Dew point instrument DP300 up to 50 bar incl. battery	0560 6000
• Standard chamber up to 16 bar	0699 3390
• Diffusion-tight Teflon cable 1 m with fast connection	0554 0003
• Mains unit for storage battery charging and long time measurement	0554 0001
• Control and calibration set 11,3 % RH	0554 0002
• Transport case	0554 0050

Additional accessories not included in the set:

Dew point instrument DP300 up to 350 bar incl. storage battery	0560 6001
PC Software DP 300 for data recording incl. RS 232 cable, power mains	0560 3399
Precision calibration at -40°C dew point with ISO certificate	0699 3396
Measuring chamber for atmospheric pressure dew point	0699 3690
High pressure measuring chamber up to 350 bar	0699 3590
Measuring chamber for granule dryers for min. overpressure	0699 3490
High pressure 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

Humidity Reference Cells

For **adjustment** and **calibration** of **humidity measuring instruments**



Performance characteristics

- Reference cell for relative air humidity
- 7 versions with different salt fillings ranging from 11 % to 97 % RH
- High accuracy guaranteed by chemically straight salts
- Integrated Teflon membrane as separating barrier between salt solution and measuring chamber
- Optimized housing with favourable ratio of membrane surface to inner volume
- Transparent design for visual controllability of saturation and liquid level
- Temperature range from 0 to +50°C
- Made in Germany, 12 month warranty

Working principle

The humidity reference cells are used as humidity standards in order to provide stable humidity values for experiments or for calibration of measuring instruments. The achievable accuracy is within a deviation of 1 % RH.

The working principle is based on a saturated salt solution, that leads to a particular relative air humidity value prevailing directly above the solution.

The reference cells in addition contain a semi-permeable Teflon membrane (diaphragm) which separates the salt solution from the measuring area. The membrane is permeable for vaporous water molecules, but not for the salt solution or for liquid water. The humidity value in the measuring area corresponds to the relative air humidity above the salt solution. The membrane makes handling the cells much easier: the reference cells can be inserted upside down. There is no risk of the salt solution leaking out and thus spoiling the test item. Furthermore, the salt solution is protected against contamination coming from the outside. The active membrane area is rather large compared to the inside volume, which leads - after insertion of the test item - to quickly stabilizing humidity values.

The cells are mechanically stable and transparent. Thus, the humidity level and the air saturation can be monitored from the outside. The sensitive membrane is protected by a plastic insert. The humidity curve in dependence on the temperature can be seen on the label of the containers. Temperature ranges goes from 0 to +50°C.

Durability

When applied correctly, the cells can be used for many years. If the liquid level changes, just send in the cells to our customer service for regeneration or for a refill.

Versions

The version offered is equipped with a 1/2" inner thread that allows the compressed air probe or the instrument series FA 200 and FA 300 to be directly screwed in leak-proof. The reference cell is available with seven different salt solutions. The salts used are of the straightest laboratory quality. For an overview of the versions available, please refer to the back of this leaflet.

Further information can be made available upon request.

Fields of application

Due to the high accuracy, the reference cells are suitable for calibration of capacitive humidity measuring instruments. A service software, that makes adjustment and calibration with the measuring cell possible, is available for instrument series FA 300. The order no. for the service software package is 0560.3399. The complete package does also include an interface module, a mains unit and a connecting cable.

Further fields of application are humidity generators and moisturizing equipment for research and development purposes.

Humidity curve

Filling, salt	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C	45°C	50°C
Lithium chloride	11.26	11.29	11.30	11.31	11.30	11.28	11.25	11.21	11.16	11.10
Magnesium chloride	33.60	33.47	33.30	33.07	32.78	32.44	32.05	31.60	31.10	30.54
Magnesium nitrate	58.86	57.36	55.87	54.38	52.89	51.40	49.91	48.42	46.93	45.44
Sodium chloride	75.65	75.67	75.61	75.47	75.29	75.09	74.87	74.68	74.52	74.43
Potassium chloride	87.67	86.77	85.92	85.11	84.34	83.62	82.95	82.32	81.74	81.20
Potassium nitrate	96	95	94	93	92	91	89	88	85	82
Potassium sulphate	98	98	97	97	97	96	96	96	96	96

Ordering information

Filling, salt	relative humidity at 20°C	Order no.	Annotation
Lithium chloride	11.31	0801.0113	standard, ex stock
Magnesium chloride	33.07	0801.0329	standard, ex stock
Magnesium nitrate	54.38	0801.0535	upon request
Sodium chloride	75.47	0801.0754	standard, ex stock
Potassium chloride	85.11	0801.0864	upon request
Potassium nitrate	93	0801.0920	upon request
Potassium sulphate	97	0801.0970	upon request
Calibration set with 2 salts	11.31 + 33.07	0801.1021	standard, ex stock
Calibration set with 3 salts	11.31 + 33.07 + 75.47	0801.1031	standard, ex stock

Dew point overview

Lithium chloride (LiCl)										
temperature	5 °C	10 °C	15 °C	20 °C	25 °C	30 °C	35 °C	40 °C	45 °C	50 °C
relative humidity	11.26 %	11.29 %	11.30 %	11.31 %	11.30 %	11.28 %	11.25 %	11.21 %	11.16 %	11.10 %
dew point	-22.6 °tpd	-18.7 °tpd	-14.8 °tpd	-10.9 °tpd	-7.1 °tpd	-3.3 °tpd	0.5 °tpd	4.2 °tpd	7.9 °tpd	11.6 °tpd

Magnesium chloride (MgCl ₂)										
temperature	5 °C	10 °C	15 °C	20 °C	25 °C	30 °C	35 °C	40 °C	45 °C	50 °C
relative humidity	33.60 %	33.47 %	33.30 %	33.07 %	32.78 %	32.44 %	32.05 %	31.60 %	31.10 %	30.54 %
dew point	-9.6 °tpd	-5.3 °tpd	-1.0 °tpd	3.3 °tpd	7.5 °tpd	11.7 °tpd	15.8 °tpd	19.9 °tpd	24.0 °tpd	27.9 °tpd

Sodium chloride (NaCl)										
temperature	5 °C	10 °C	15 °C	20 °C	25 °C	30 °C	35 °C	40 °C	45 °C	50 °C
relative humidity	75.65 %	75.67 %	75.61 %	75.47 %	75.29 %	75.09 %	74.87 %	74.68 %	74.52 %	74.43 %
dew point	1.1 °tp	5.9 °tpd	10.7 °tpd	15.5 °tpd	20.3 °tpd	25.1 °tpd	29.9 °tpd	34.6 °tpd	39.4 °tpd	44.2 °tpd

Potassium chloride (KCl)										
temperature	5 °C	10 °C	15 °C	20 °C	25 °C	30 °C	35 °C	40 °C	45 °C	50 °C
relative humidity	87.67 %	86.77 %	85.92 %	85.11 %	84.34 %	83.62 %	82.95 %	82.32 %	81.74 %	81.20 %
dew point	3.1 °tpd	7.9 °tpd	12.7 °tpd	17.4 °tpd	22.2 °tpd	26.9 °tpd	31.7 °tpd	36.4 °tpd	41.1 °tpd	45.9 °tpd

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