MEASUREMENT EQUIPMENT

Product catalogue 2023

pneumatech.com

pneumatech
Pure air . Pure gas

Contents

Overview Chart Recorder

Check Box S6

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- Chart recorder for data logging of upto 4/8/12 sensors
- 7“ Color display with touch panel
- Ethernet connection
- 4 GB Data memory

Check Box S1 - S5

Page 16-17

- Chart recorder for data logging of up to 2/4 sensors
- 3,5“ Color display with touch panel
- Option: Ethernet connection
- Option: 4 GB Data memory

Suitable sensors for Check Box S1 - 6

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PMH PM 5100 current/ effective power meter

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Check Box M6

Page 24-27

- Chart recorder for data logging of upto 4/8/12 sensors
- 7“ Color display with touch panel
- In a sturdy case for the field use
- Ethernet connection
- 4 GB Data memory

Check Box M1 - 5

Page 28-31

- Chart recorder for data logging of up to 2/4 sensors
- 3,5“ Color display with touch panel
- In a sturdy case for the field use
- Integrated Li-Ion battery
- Ethernet connection
- 4 GB Data memory

Check Box 500 mobile

Page 32-33

- Chart recorder for data logging of up to 4/8/12 sensors
- 7“ Color display with touch panel
- In a sturdy case for the field use
- Ethernet connection
- 4 GB Data memory

Suitable sensors for mobile devices
Check Box S1-6
Check Box 500 mobile

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PMH PM600 mobile current/ effective power meter

Page 36-37

PDP Check M/Mplus

Page 40-41

- Mobile dew point device
- Meas. range -80-+50°Ctd pressure dew point
- 3,5“ Color display with touch panel
- Integrated Li-Ion battery
- 4 GB Data memory

PDP Sens 1/ 2

Page 42-43

- Dew point sensor for measurement of residual moisture in compressed air and gases
- Meas.range -80-+20°Ctd or -20-+50°Ctd
- 4-20 mA analogue output and/or Modbus-RTU

PDP Check S

Page 44-45

- Plug-in dew point set
- Meas. range: -80-+20°Ctd or -20-+50°Ctd
- 2 Alarm relais (freely adjustable)
- 4-20 mA analogue output

PDP Check 500 S2/S1

Page 46-47

- Dew point sensor from -80 to 20°Ctd Ctd (-20 to 50°C)
- Easy operation via the keys on the display

PDP Check S3/ S4

Page 48-49

- Plug-in dew point set
- Option: integrated data logger dew point monitoring
- Option: Ethernet interface
- 3,5“ Color display with touch panel

Accessories for dew point measurement / calibration

Page 50-57

Overview Flow

Flow Check Universal

Page 60-63

- Flow meter as a insertion version
- Easy installation and removal under pressure without line interruption
- Applicable in existing pipes from 1/2“ to DN 1000

Flow Check with thread

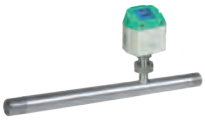
Page 66-67

- Inline flow meter with thread
- 1/4“ to 2“

Flow Check with flange

Page 62-63

- Inline flow meter with flange
- DN 15 to DN 80



Flow Check Universal W

Page 68-69

- Flow sensor for wet compressed air
- Simple installation and removal under pressure

Accessories for Flow Measurement/ Calibration/ Measuring ranges for different gases

Page 70-73

PMH Service software

Page 74-75

- Including PC connection set
- USB adapter and interface adapter to the meter

Measuring ranges Flow Check

Page 76-83

- Measuring ranges Low-Speed version
- Measuring ranges Standard version
- Measuring ranges Max version
- Measuring ranges High-Speed version

OIL-Check 400

Page 88-89

- OIL-Check 400 - stationary solution
- OIL-Check 400 - Portable solution with handle

Particle counter – Particle Check S1/ S2/ M1/ M2

Page 90-91

- Stationary solution with particle counter Particle Check S1/ S2
- Mobile solution with particle counter Particle Check M1/ M2 in a service case

Leak Check Pro 1X/ Pro 2X

Page 94-95

- Leak detector with camera
- shows leakage rate in l/min and costs in Euro
- USB interface for data transfer into the evaluation software PMH Leak Reporter
- Special accessories
- With integrated laser distance measurement

PMH Leak Reporter

Page 96-97

- Creates a detailed ISO 50001 report
- Provides an illustrated overview of the leakages found and their savings potential
- Licence for 2 workstations

Leak Check A

Page 100-101

Low-price leak detector

PMH Basic

Page 104-107

- Data evaluation as a graph or in table form
- Reading the measurement data of all Pneumatech data loggers / chart recorders via USB or Ethernet

Gas analysis solutions

Page 0-00

- Room oxygen monitor
- Inline O_2 analyser (Microx OL)

Overview Gas analysis

Gas analysis

Page 110-113

- Gas Analysis Solutions
- Inline O2 analyser, Portable O2/N2 analyser, Room oxygen monitor, Medical gas analyser

Overview PNEUMACHECK

PNEUMACHECK

Page 114-119

- PNEUMACHECK advanced services
- A complete auditing solution
- A wide range of PNEUMACHECK solutions

Overview Calibration

Calibration

Page 120-123

- Calibrating Measurement Equipment

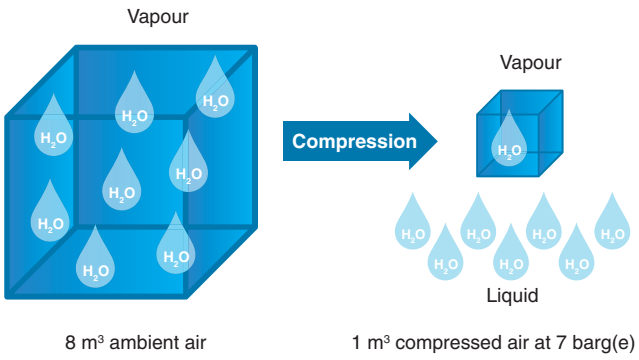
Compressed Air Treatment

Air treatment is the process of purifying compressed air to remove contaminants such as water (liquid or vapor), dust, dirt, and oil. This is important because these contaminants can cause a variety of problems in systems that use compressed air.

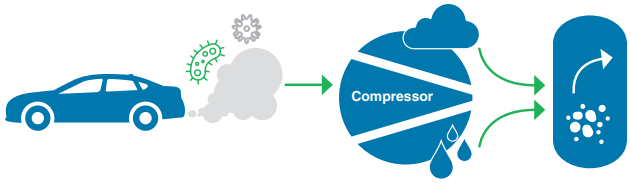
How are contaminants in compressed air formed?

Contaminants in compressed air can be formed in different ways:

- **Water vapor:** Water vapor is naturally present in ambient air and is drawn in by the compressor along with the air. When the air is compressed, the water vapor becomes more concentrated, increasing the risk of condensation.



- **Dust:** Dust and other particulate matter are present in ambient air and can be drawn into the compressor along with the air.



- **Oil:** Compressors contain lubricating oil to keep the moving parts functioning smoothly. Over time, the oil can break down and become contaminated with dirt and other particles, which can be carried into the compressed air stream. Additionally, compressors can leak oil, which can also contaminate the compressed air.
- **Wear and tear:** As compressors age and are used extensively, they can begin to wear down. This can lead to the introduction of additional contaminants, such as metal particles, into the compressed air stream.
- **Piping and hoses:** As compressed air travels through pipes and hoses, it can pick up additional contaminants, such as dirt and moisture, from the inside walls of the pipes and hoses.

What problems can contaminants form?

Contaminants in compressed air can cause various problems, depending on the specific contaminant and the application in which the compressed air is being used. Some common problems that can be caused by contaminants in compressed air include:

- Corrosion of pipe lines
- Bad quality of the end product
- Malfunctioning of controls
- Build-up of ice
- Cultivation of micro-organisms
- Damaged production equipment, leading to inefficiencies and increased costs
- Air pollution, creating unhealthy work environments
- Pollution of the condensate

The Pneumatech solution

As the leader in compressed air quality, Pneumatech offers a comprehensive range of air treatment equipment, including all types of dryers, filters, drains and (oil-)water separators. That means you can get top-quality, fully compatible air solutions from just a single source.

Producing your own nitrogen or oxygen is the smart environmentally friendly choice. Using an on-site gas generator is more cost-efficient, dependable and sustainable than gas deliveries.

How do gas generators work?

To produce your own nitrogen or oxygen, all you need is a compressor and a gas generator system

That's because air consists of 78% nitrogen and 21% oxygen. When you feed compressed air into a nitrogen generator, it separates the N_2 from the O_2. There are two main technologies to produce nitrogen or oxygen:

PSA:

Pressure Swing Adsorption (PSA) separates nitrogen from compressed air using a carbon molecular sieve (CMS). As the air passes through a vessel filled with CMS, the oxygen in the air is adsorbed by the CMS. This allows nitrogen allows only nitrogen with a purity of up to 99.999% to reach the outlet. PSA generators are ideal for high-purity, high-flow applications.

To generate oxygen a different adsorbent called Zeolite Molecular Sieve is used resulting in the nitrogen in the air being adsorbed by the ZMS, instead of the oxygen.

Membrane:

Membrane technology is a very simple, reliable and continuous N_2 production method. Compressed air is pushed through hollow polymer membranes. The oxygen in the air premeates through the fiber walls and escapes into the atmosphere. This leaves quality nitrogen with a purity between 95% and 99.5% at the generator outlet.

The benefits of on-site gas generation:

1. On-site gas generation offers convincing benefits compared to liquid or gaseous N_2 or O_2 deliveries:
2. Cost efficiency: Producing your own nitrogen or oyxgen with the purity you need allows you to significantly reduce your cost of gas.
3. Sustainability: Eliminate the transport emissions that gas deliveries generate. In addition, Pneumatech's on-site generation solutions are super efficient, minimizing your energy use and your environmental footprint.
4. A reliable nitrogen or oxygen supply: No need to count on external vendors. On-site generation gives you complete control over your nitrogen supply.
5. No logistics: Say goodbye to always monitoring your N_2 or O_2 supply, working with vendors, and tracking and handling deliveries.

Greater cost-efficiency saves you money

Eliminating bottle or liquid deliveries reduces your environmental footprint

Take charge of your own nitrogen supply

Less hassle by removing supply logistics

The Pneumatech solution

Pneumatech's nitrogen and oxygen generators are available with Pressure Swing Adsorption (PSA) technology, resulting in nitrogen purities up to 99,999% and oxygen purities up to 95%. Membrane technology is also offered for nitrogen purity levels up to 99,5%. Pre-defined high-pressure nitrogen skids are available as a plug-and-play solution for various applications.

Chart Recorder

Pneumatech chart recorders indicate the measured data of the different sensors on a screen and give you the possibility to have all parameters at a glance. The measured curves are indicated graphically. With the according option the measured values are stored and can be analyzed with the PMH Basic software to find the most energy efficient solution for your application.

Check Box S6 - Intelligent chart recorder for compressed air and gases

Features & Benefits

- Clear layout: 7“ color screen with touch panel-
- Versatile: Up to 12 optional sensors can be connected
- Suitable for industrial applications: Metal housing IP 65 or panel mounting
- Data available through world wide web: Network-compatible and remote transmission via webserver
- Intelligent: Daily/weekly/monthly reports in combination with software PMH Basic
- Mathematical function for internal calculations
- Totalizer function for analogue signals
- Saves time and costs during installation
- integrated data logger for 100 million measured values

Measurement - control - indication - alarm - recording - evaluation

Options


Flow sensors


Dew point sensors


Pressure sensors


Temperature sensors


Compressed air quality measurement


Current/effective power meters

From recording of the measured data, indication on a big color screen, alerting, storage up to remote read-out via webserver- this is all possible with Check Box S6. By means of the webserver software alarms can be sent via SMS or e-mail with SSL protection.

All measured values, measured curves and threshold exceeding are indicated. The curve progressions from the beginning of the measurement can be viewed by an easy slide of the finger.
Daily/weekly/monthly reports with costs in € and counter reading in m³ for each consumption sensor in combination with software PMH Basic are completing the sophisticated system concept. The big difference to ordinary paperless chart recorders reveals in the easy initiation and in the evaluation of the measured data. All sensors are identified directly and powered by Check Box S6. Everything is matched and tuned. Mathematical function for internal calculations, e.g. the typical figures of a compressed air plant:

- costs in € per generated m³ air
- kWh/m³ generated air
- consumption of single lines including summation

Totalizer function for analogue signals (e.g. 0/4-20 mA, 0-10 V). In case of third-party sensors which e.g. only give a 4-20 mA signal for the actual flow in m³/h a total counter reading in m³ can be generated by means of the totalizer function.
No time consuming studying of the instruction manual- this saves time. Internal voltage supply of all sensors, no wiring of external mains units - this saves additional costs.

At 12 freely assignable sensor inputs all our sensors can be connected as well as any optional third-party sensors and meters with the following signal outputs:

4-20 mA, 0-20 mA I 0-1 V / 0-10 V / 0-30 V I Pt 100 (2- or 3-wire), Pt 1000 (2- or 3-wire), KTY I pulse outputs (e.g. of gas meters) frequency output I Modbus protocol.

Flow sensors

- Installation and removal under pressure via standard 1/2” ball valve
- A safety ring avoids the uncontrolled ejection in case of installation/removal under pressure
- Usable for different gases: compressed air, nitrogen, argon, CO_2, oxygen

Dew point sensors

- Extremely long-term stable
- Quick adaption time
- Large measuring range (-80° to +20°Ctd)
- For all driers: Desiccant driers, membrane driers, refrigeration driers
- Easy installation under pressure via the standard measuring chamber with quick coupling

Pressure sensors

- Large selection of pressure sensors with different measuring ranges for each measuring purpose
- Quick installation under ressure by quick coupling
- Pressure sensors 0-10/16/40/100/250/400/600 bar overpressure
- Pressure sensors -1 - +15 bar (under-/ overpressure)
- Differential pressure 0-1,6 bar
- Absolute pressure 0-1.6 bar (abs:)

Temperature sensors

- Large selection of temperature sensors e.g. for measurement of the ambient temperature or gas temperature
- Pt100 (2-wire or 3-wire)
- Pt1000 (2-wire or 3-wire)
- KTY sensors
- Temperature sensors with measuring transducer (4-20 mA output)

Compressed air quality measurement

- Monitoring the compressed air according to ISO 8773
- Residual oil, particle, residual moisture

Current/effective power meters

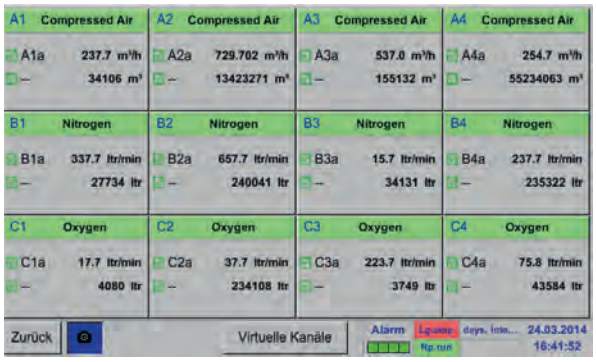
- PMH ENERIUM 30 current/effective power meters for panel mounting with external current transformer for big machines and plants
- External current transformers for encompassing the phases (max. 2000 A)
- Measures KW, kWh, cos phi, kVar, kVA
- Data transfer Check Box S6 via Modbus

By means of the intelligent chart recorder Check Box S6, all measuring data of a compressor station can be recorded, indicated and evaluated.

Measured values, statistics, curves with the 7” color screen touch panel

Real time measured values

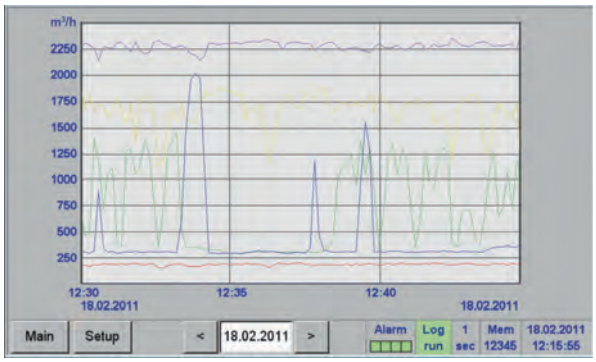
- All measured values can be seen at a glance. Threshold exceeding are indicated in red color.
- A „measuring site name“ can be allocated to each sensor.



Real time measured values

Graphic display

- This display replaces the former evaluation of ordinary paper chart recorders and offers lots of advantages. The time axis can be moved by a finger slide.
- The „zoom function by finger movement“ which enables an analysis of peak values is unique.



Graphic display

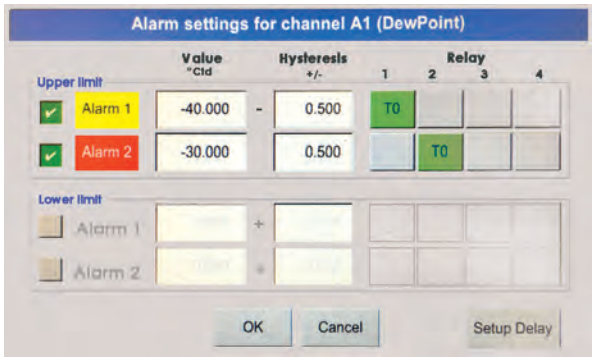
Actual measurement values and graphic

- Additionally to the measurement curves the real time value is indicated as well.

Actual measurement values and graphic

Adjustment of the alarm relays

- Each one of the four alarm relays can be allocated individually to a connected sensor. The alarm thresholds and the hysteresis can be freeley adjusted.
  New: It is possible to set an alarm delay for each alarm relay so that the relay is only triggered after that period of time.



Adjustment of the alarm relay

Technical data of the Check Box S6

Technical data Check Box S6	
Dimensions of housing	280 x 170 x 90 mm, IP 65
Connections	18 x PG 12 for sensors and supply
Version panel mounting	Cutout panel 250 x 156 mm
Weight	7.3 Kg
Material	Die cast metal, front screen polyester
Sensor inputs	4/8/12 sensor inputs for analogue and digital sensors freely allocatable. See options Digital PMH sensors for dew point and consumption with SDI interface FA/VA series, digital third-party sensors RS 485 / Modbus RTU, other bus systems realizable on request. Analogue PMH Sensors for pressure, temperature, clamp-on ammeters pre-configured. Analogue third-party sensors 0/4-20 mA, 0-1/10/30V, pulse, Pt 100 / Pt 1000, KTY
Power supply for sensors	24 VDC, max. 130 mA per sensor, integrated mains unit max. 24 VDC, 25 W. In case of version 8/12 sensor inputs, 2 integrated mains units each max. 24 VDC, 25 W.
Interfaces	USB stick, Ethernet / RS 485 Modbus RTU / TCP, SDI other bus systems on request, WEB server optionally
Outputs	4 relays (changeover contact 230 VAC, 6 A), alarm management, relays freely programmable, collective alarm Analogue otuput, pulse in case of sensors with own signal output looped, like e.g. VA/FA series
Memory card	Memory size 4 GB SD memory card standard
Power supply	100-240 VAC / 50-60 Hz, special version 24 VDC
Color screen	7“ touch panel TFT transmissive, graphics, curves, statistics
Accuracy	see sensor specifications
Operating temperature	0-50°C
Storage temperature	-20-70°C
Optionally	Webserver
Optionally	Option „energy and flow report“ statistics, daily/weekly/monthly report

Description	Order no.
Check Box S6 - intelligent chart recorder in basic version (4 sensor inputs)	2255332462
Option: 4 additional sensor inputs for Check Box S6	2255332463
Option: 8 additional sensor inputs for Check Box S6	2255332464
Option: Integrated webserver	2255460218
Option: version for panel mounting	2255332465
Option: power supply 24 VDC (instead of 100-240 VAC)	2255332466
Option: „Mathematics calculation function“ for 4 freely selectable „virtual“ channels, (mathematical functions: addition, subtraction, division, multiplication)	2255460221
Option: „Totalizer function for analogue signals“	2255460222
External Gateway Profibus	2255332467
PMH Basic – data evaluation graphically and in tabular form - reading of the measured data via USB or Ethernet, license for 2 workstations	2255332468

Input signals	
Current signal Internal or external power supply Measuring range Resolution Accuracy Input resistance	(0-20mA/ 4-20mA) 0-20 mA 0.0001 mA ± 0.03 mA ± 0.05 % 50 Ω
Voltage signal Measuring range Resolution Accuracy Input resistance	(0-1 V) 0-1 V 0.05 mV ± 0.2 mV ± 0.05 % 100 kΩ
Voltage signal Measuring range Resolution Accuracy Input resistance	(0-10 V / 30 V) 0-10 V 0.5 mV ± 2 mV ± 0.05 % 1 MΩ
RTD Pt 100 Measuring range Resolution Accurancy	 -200-850°C 0.1°C ± 0.2°C (-100-400°C) ± 0.3°C (further range)
RTD Pt 1000 Measuring range Resolution Accuracy	 -200-850°C 0.1°C ± 0.2° (-100-400°C)
Pulse Measuring range	min. pulse length 500 µs frequency 0-1 kHz max. 30 VDC

Matching sensors can be found e.g. on pages 16 to 18

Check Box S1-S5 - Chart recorder

Standard equipment

- USB interface
- 3.5“ graphic display with touch screen
- Integrated mains unit for supply of the sensors
- 4-20 mA output of all connected active sensors
- Pulse output (for total consumption) in case of flow sensors
- 2 alarm relays (pot.-free switch-over contacts, max. 230 V, 3 A)

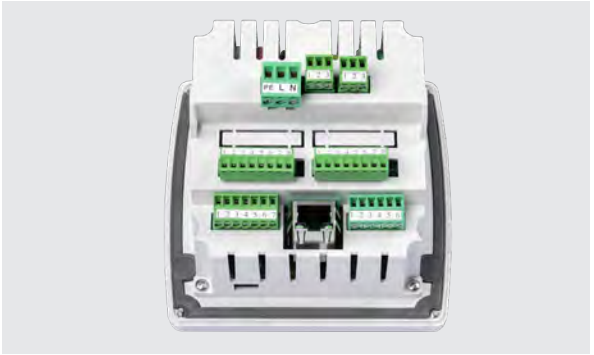
Software options

- Integrated webserver
- Mathematics calculation function
- Totalizer function

Hardware logger

- Integrated data logger to store the measured values and to display it from the beginning of the measurement (without this option: only display of the last 24 hours without data storage). Measuring rate freely adjustable
- Ethernet / RS 485 interface
- Additional sensor inputs (digital or analogue) selectable

Panel mounting



Back view

Description				Order no.
Check Box S1-S5 - Mobile chart recorder with graphic display and touch screen		Sensor input 1+2	Sensor input 3+4	
	S 1	Digital	--------	2255330407
	S 2	Digital	Digital	2255330408
	S 3	Digital	Analog	2255330409
	S 4	Analog	--------	2255330410
	S 5	Analog	Analog	2255330411
Options:				
Option: Integrated data logger for 100 million measured values				2255460217
Option: Integrated Ethernet and RS 485 interface				2255460216
Option: Integrated webserver				2255460218
Option: „Mathematics calculation function“ for 4 freely selectable channels, (virtual channels): addition, subtraction, division, multiplication				2255332469
Option: „Totalizer function for analogue signals“				2255332470
External Gateway Profibus for RS 485 interface connection				2255332467
External Gateway Profinet for RS 485 interface connection				2255332676
Further accessories:				
PMH Basic – data evaluation graphically and in tabular form - reading of the measured data via USB or Ethernet, license for 2 workstations				2255332468

Technical Check Box S1-S5	
Dimensions	118 x 115 x 98 mm IP 54 (wall housing) 92 x 92 x 75 mm (panel mounting)
Inputs	2 digital inputs for FA 5xx resp. VA 5xx
Interface	USB
Power supply	100-240 VAC, 50-60 Hz
Accuracy	Please refer sensor specification
Alarm outputs S1-S5	2 relays, (pot.-free)
Options	
Data logger	100 million measuring values start/stop time, measuring rate freely adjustable
2 additional sensor inputs	for connection of pressure sensors, temperature sensors, clamp-on ammeters, third-party sensors with 4-20 mA, 0 to 10 V, Pt 100, Pt 1000

The sensor inputs board 1 and 2 can be selected according to the required sensors (see table pages 16 to 18):

Input signals	
Current signal Internal or external power supply Measuring range Resolution Accuracy Input resistance	(0-20mA/4-20mA) 0-20 mA 0.0001 mA ± 0.03 mA ± 0.05 % 50 Ω
Voltage signal Measuring range Resolution Accuracy Input resistance	(0-1 V) 0-1 V 0.05 mV ± 0.2 mV ± 0.05 % 100 kΩ
Voltage signal Measuring range Resolution Accuracy Input resistance	(0-10 V / 30 V) 0-10 V 0.5 mV ± 2 mV ± 0.05 % 1 MΩ
RTD Pt 100 Measuring range Resolution Accurancy	 -200-850°C 0.1°C ± 0.2°C (-100-400°C) ± 0.3°C (further range)
RTD Pt 1000 Measuring range Resolution Accuracy	 -200-850°C 0.1°C ± 0.2° (-100-400°C)
Pulse Measuring range	minimum pulse length 500 µs frequency 0 - 1 kHz, max. 30 VDC

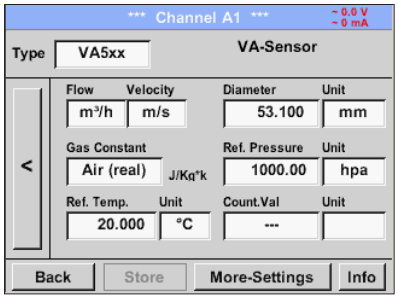
Digital	Digital	Digital	Digital
m³/h, m³	°Ctd	A, kW/h	
			MOD-BUS
Flow sensor	Dew point sensor	Current meter	Thirt-party with RS 485

Analog	Analog	Analog	Analog
bar	A	°C	°C
			4-20 mA 0-20 mA 0-10 V Pulse Pt 100 Pt 1000
Pressure sensor	Clamp-on ammeter	Temperature sensor	Third party sensor analog output

Check Box S1-S6 - Easy operation via touch screen

Configuration of flow sensor

- In the menu of the Check Box S1-S6, the flow sensor Flow Check can be set to the respective pipe inside diameter. Furthermore, the unit, the gas type and the reference condition can be set. The meter reading can be set to „zero“ if necessary.



Configuration of flow sensor

Graphic view

- In the graphic view all measured values are indicated as curves.
- It is possible to browse back on the time axis by a slide of the finger (without data logger maximum 24 h, with data logger back to the start of the measurement).

Graphic view

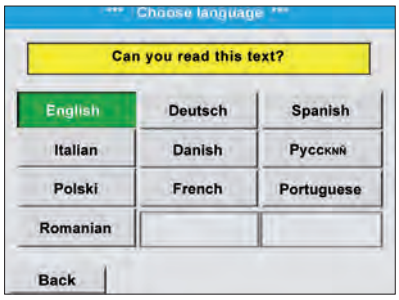
Data logger

- With the option „integrated data logger“ the measured values are stored in the Check Box S1-S6. The time interval can be determined freely. It is also possible to set the start time and end time of the data recording. Reading the measured data via USB interface or via the optional Ethernet interface.

Data logger

Selection of the language

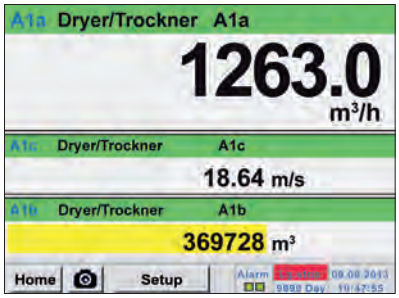
- Many languages are already stored in every Check Box
- S1-S6. The desired language can be selected via the selection button.



Selection of the language

All relevant parameters at a glance

- In addition to the flow rate in m³ / h, the Check Box S1-S6 also displays other parameters such as total consumption in m³ and speed in m/s.



All relevant parameters at a glance

Webserver

The new webserver with extended features for the chart recorders Check Box S6 and Check Box S1-S5 is available with immediate effect. Users can get direct access to their measured values worldwide (current and historic ones) and display them on their smart phone, tablet or computer.

The new webserver can be ordered as an option with each stationary Check Box S1-S6, but also for their mobile devices. For using the features of the webservers, the Check Box S1-S6 must be set up with it's own IP address within the corporate network..

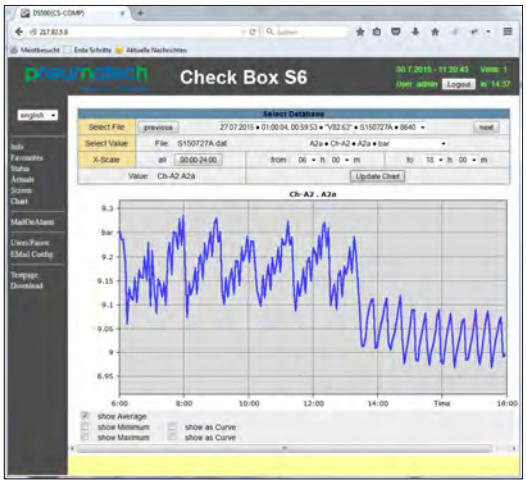
The webserver provides a website, which displays the measuring values. This website can be accessed from any web browser on each smart phone, tablet or computer via it's unique IP address. This is all possible without the installation of any new or additional software.

Access authorization
Different groups with different users/passwords can be assigned to different access levels.

Starting the data logger
In case of a stopped data logger the group operator or administrator can start the data logger remotely, via the web server.

PS: The new webserver can be retro fitted to any Check Box S1-S6 already in use.

View of the real time measured values (graphic table view)



View of the historic measured values as a single chart (time period freely selectable)

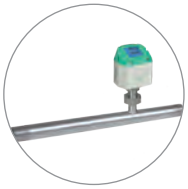
Check Box S1-S6 - Suitable sensors for Check Box S1-S6

Flow meters for installation and removal under pressure (insertion-type)

Flow meters insertion type	Order no.
Flow Check Universal 1 meter in basic version: Standard (92,7 m/s), probe length 220 mm, without display	2255332455

Flow Check Universal

Flow meters in-line version	Order no.
Flow meter Flow Check 1 with integrated measuring section, (R 1/4" DN 8)	2255330393
Flow meter Flow Check 2 with integrated measuring section, (R 1/2“ DN 15)	2255330394
Flow meter Flow Check 3 with integrated measuring section, (R 3/4“ DN 20)	2255330395
Flow meter Flow Check 4 with integrated measuring section, (R 1“ DN 25)	2255330396
Flow meter Flow Check 5 with integrated measuring section, (R 1 1/4“ DN 32)	2255330397
Flow meter Flow Check 6 with integrated measuring section, (R 1 1/2“ DN 40)	2255330398
Flow meter Flow Check 7 with integrated measuring section, (R 2“ DN 50)	2255330399

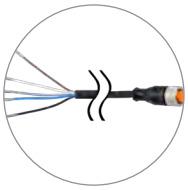


Flow Check

Dew point sensors	Order no.
PDP Sens 2 Dew point sensor, -80-+20 °Ctd incl. factory certificate	2255330413
PDP Sens 1 Dew point sensor, -20-+50 °Ctd incl. factory certificate	2255330412
Standard measuring chamber for compressed air up to 16 bar	2255460229

PDP Sens 1/2

Connection cable for flow meters/ dew point sensors flow check universal , flow check and pdp sens 1/2	Order no.
Connection cable for Flow/ PDP series, 5 m	2255460213
Connection cable for Flow/ PDP series, 10 m	2255460214



Connection cable

Pressure probes	± 1% Accuracy	± 0,5% Accuracy
Standard pressure probe PMH 16, 0-16 bar	2255330414	2255332478
Standard pressure probe PMH 40, 0…40 bar	2255330415	2255332479
Standard pressure probe PMH 1.6, 0-1.6 bar		2255332480
Standard pressure probe PMH 10, 0-10 bar	2255332477	2255332481
Standard pressure probe PMH 100, 0…100 bar		2255332482
Standard pressure probe PMH 250, 0…250 bar		2255332483
Standard pressure probe PMH 400, 0…400 bar		2255332484
Precision pressure probe PMH -1-+15 bar, ± 0.5% accuracy of f. s.		2255332485
Differential pressure probe 1.6 bar diff.		2255332486
Calibration certificate pressure, 5 calibration points for the whole measuring range		2255332487

Pressure probes

Flow meters for installation and removal under pressure (insertion-type)

Inline flow meter

Temperature sensors	Order no.
Screw-in temperature sensor PT 100 class A, length 300 mm, d = 6 mm, with transmitter 4-20 mA = -50 °C-+ 500 °C (2-wire)	2255332488
Outdoor temperature sensor PT 100 class B (2-wire) in panel mounting (82x55x33 mm) Application range: -50 °C-+80 °C	2255332489
Indoor temperature sensor PT 100 class B (2-wire) in panel mounting with ventilation slots (82x55x33 mm), application range: -50 °C-+80 °C	2255332490
Cable temperature sensor PT 100 class A (4-wire), length: 300 mm, d = 6 mm, -70 - + 260 ° C, 5 m connecting cable PFA with open ends	2255332491
Cable temperature sensor PT 100 class A (4-wire), length: 100 mm, d = 6 mm, -70 - + 260 ° C, 5 m connecting cable PFA with open ends	2255332492
Cable temperature sensor PT 100 class A (4-wire), length: 200 mm, d = 6 mm, -70 - + 260 ° C, 5 m connecting cable PFA with open ends	2255332493
Magnetic surface temperature sensor, magnet 39x26x25 mm, PT 100 class B (2-wire), -30-+ 180 °C, 5m connection cable PFA with open ends	2255332494
Compression fittings: 6mm; G 1/2" teflon clamping ring pressure-tight up to 10 bar. Material: stainless steel, application area: max. + 260 °C	2255332495
Compression fittings: 6mm; G 1/2» teflon clamping ring pressure-tight up to 16 bar. Material: stainless steel, application area: max. + 260 °C	2255332496
Calibration certificate temperature, 2 calibration points	2255332497

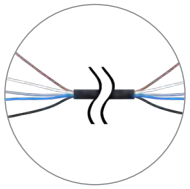
2255332488

2255332494

2255332491

2255332495

Connection cables for pressure probes/temp. sensors	Order no.
Connection cable for probes 5 m with open ends	2255332498
Connection cable for probes 10 m with open ends	2255332499



Connection cable

Clamp-on ammeters	Order no.
Clamp-on ammeters 0 - 1000 A TRMS incl. 3 m connection cable with open ends	2255332500
Clamp-on ammeters 0 - 400 A TRMS incl. 3 m connection cable with open ends	2255332501

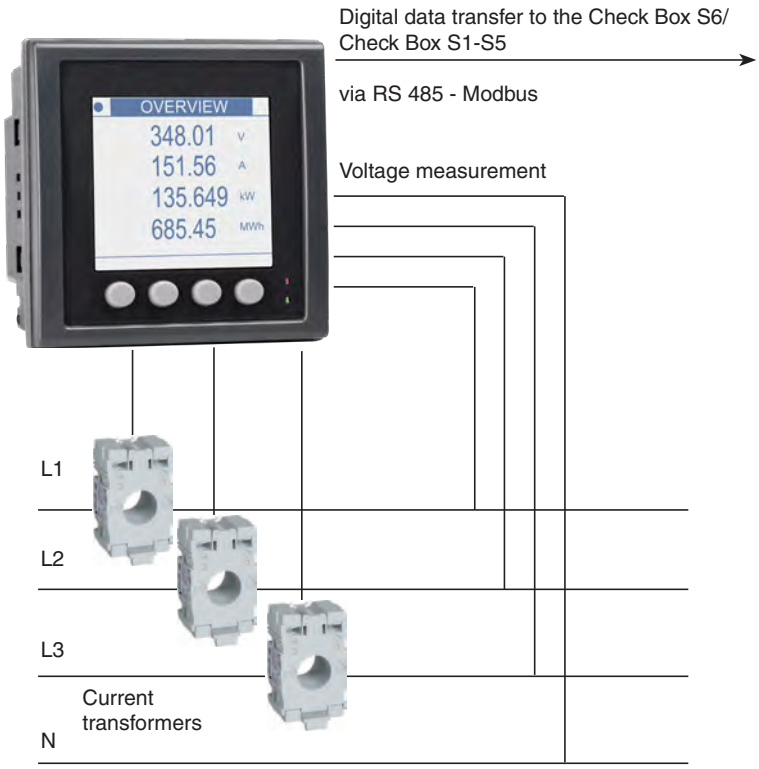
Clamp-on ammeter

PMH PM 5100 - current / effective power meter for panel mounting

Measures voltage, current and calculates:

Active power [kW]
Apparent power [kVA]
Reactive power [kVar]
Active energy [kWh]
cos phi

All measured data ar transmitted digitally (Modbus) to the Check Box S6 and can be recorded there.



Technical data PM 5100	
Parameters	Voltage (Volt) Current (Ampere) Cos phi Active power (kW) Apparent power (kVA) Reactive power (kVar) Active energy (kWh) Power frequency (Hz) All parameters are transferred digitally to Check Box S1-S6
Accuracy current measurement	± 0,5% of 1 to 6 A
Accuracy voltage	± 0,5% of 50 V to 277 V
Accuracy active energy	IEC 62053-21 Class 1
Interfaces	RS 485 (Modbus protocol)
Measuring range	Voltage measurement max. 480 Volt
Dimensions	96 x 96 x 74 mm (B x H x T)
Operating temperature	-10-+55°C

Description	Order no.
PMH PM 5100 current/effective power meter for panel mounting, with RS485 interface	2255332502
Install-construction for the PM 5100, on top hat rail	2255332503
Current transformer 100/5 A connectable to current/effective power meter for panel mounting (for cables up to Ø 21 mm)	2255332504
Current transformer 200/5 A connectable to current/effective power meter for panel mounting (for cables up to Ø 21 mm)	2255332505
Current transformer 300/5 A connectable to current/effective power meter for panel mounting (for cables up to Ø 22 mm)	2255332506
Current transformer 500/5 A connectable to current/effective power meter for panel mounting (for cables up to Ø 22 mm)	2255332507
Current transformer 600/5 A connectable to current/effective power meter for panel mounting (for cables up to Ø 22 mm)	2255332508
Current transformer 1000/5 A connectable to current/effective power meter for panel mounting (for current bar up to 65 x 32 mm)	2255332509
Current transformer 2000/5 A connectable to current/effective power meter for panel mounting (for current bar up to 127 x 38 mm)	2255332510
Connection cable for probes 5 m, with open ends	2255332498
Connection cable for probes 10 m, with open ends	2255332499

Check Box M6 - Intelligent mobile chart recorder

The intelligent mobile chart recorder - energy analysis according to DIN EN ISO 50001

Energy analysis - flow measurement - leakage calculation at compressed air systems

Features & Benefits

- Easy operation via 7" color display with touch panel

Versatile

- Up to 12 sensors/meters connectable also third-party sensors/meters including power supply

Reliable

- Stores all measured values on a memory card, easy reading-out via USB stick possible

Intelligent energy analysis

- Daily / weekly / monthly evaluations mathematical functions for internal calculations in combination with software PMH Basic e. g., the typical key figures of a compressed air system
  - Costs in € per generated m³ air
  - kWh/m³ generated air
  - Flow of single lines including summation
  - Integrated data logger for 100 million measured values

Technical data of the Check Box M6

Technical data Check Box M6	
Case dimensions	360 x 270 x 150 mm
Weight	4,5 kg
Material	Diecast, front foil polyester, ABS
Sensor inputs	4/8/12 sensor inputs for analogue and digital sensors; freely allocatable. (See options). Digital PMH sensors for dew point and flow with SDI interface Flow/ PDP series, digital third-party sensors RS485 / Modbus RTU. Analogue PMH Sensors for pressure, temperature, clamp-on ammeters preconfigured. Analog third-party sensors 0/4-20 mA, 0-1/10/30V, pulse, Pt 100 / Pt 1000, KTY, counter
Voltage supply for sensor	24 VDC, max. 130 mA per sensor, integrated mains unit, max. 24 VDC, 25 W. In case of version 8/12 sensor inputs 2 integrated mains unit, each max. 24 VDC, 25 W.
Interfaces	USB stick, Ethernet / RS 485 Modbus RTU / TCP, SDI other bus systems on request, webserver optionally, GSM module
Memory card	Memory size 4 GB SD Memory card
Voltage supply	100-240 VAC / 50-60 Hz
Color display	7“ touch panel TFT transmissive graphics, curves statistics
Accuracy	Please see sensor specifications
Operating temperature	0-50°C
Storage temperature	-20-70°C

Input signals	
Current signal Internal or external power supply Measuring range Resolution Accuracy Input resistance	(0-20mA/4-20mA) 0-20 mA 0.0001 mA ± 0.03 mA ± 0.05 % 50 Ω
Voltage signal Measuring range Resolution Accuracy Input resistance	 (0-1 V) 0-1 V 0.05 mV ± 0.2 mV ± 0.05 % 100 kΩ
Voltage signal Measuring range Resolution Accuracy Input resistance	 (0-10 V / 30 V) 0-10 V 0.5 mV ± 2 mV ± 0.05 % 1 MΩ
RTD Pt 100 Measuring range Resolution Accuracy	 -200-850°C 0.1°C ± 0.2°C (-100-400°C) ± 0.3°C (further range)
RTD Pt 1000 Measuring range Resolution Accuracy	 -200-850°C 0.1°C ± 0.2° (-100-400°C)
Pulse Measuring range	 Min. pulse length 100 µs frequency 0-1 kHz max. 30 VDC

Description	Order no.
Intelligent chart recorder Check Box M6-4, 4 sensor inputs	2255332457
Intelligent chart recorder Check Box M6-8, 8 sensor inputs	2255332458
Intelligent chart recorder Check Box M6-12, 12 sensor inputs	2255331721
Option: „integrated webserver“	2255460218
Option: „Mathematics calculation function“ for 4 freely selectable „virtual“ channels, (mathematical functions: addition, subtraction, division, multiplication)	2255460221
Option: „Totalizer function for analogue signals“	2255460222
PMH Basic – data evaluation graphically and in tabular form - reading of the measured data via USB or Ethernet, license for 2 workstations	2255332468
PMH Soft Energy Analyzer for energy and leakage analysis of compressed air stations	2255331729
Connecting cable for pressure, temperature and external sensors to mobile devices, ODU/open ends, 5 m	2255332514
Connecting cable for pressure, temperature and external sensors to mobile devices, ODU/open ends, 10 m	2255332515
Connection cable for Flow/ PDP sensors to mobile devices, ODU/M12, 5m	2255332516
Extension cable for mobile devices, ODU/ODU, 10 m	2255332517
Case for all sensors (dimensions: 500 x 360 x 120 x mm)	2255332518

Further sensors can be found on pages 30 to 33

Check Box M6 - Intelligent mobile chart recorder

12 sensor inputs - Including voltage supply for all sensors

Touch screen

USB stick

Ethernet connection

Options

Flow sensors

Dew point sensors

Pressure sensors

Temperature sensors

Clamp-on ammeters

Current/effective power meters

The intelligent chart recorder of the future - energy analysis according to DIN EN 50001

If we talk about operational costs of compressed air plants we are actually talking about the energy cost as they make up about 70 to 80 % of the total costs of a compressed air plant.

Depending on the size of the plant this means considerable operating costs. Even in smaller plants this may quickly add up to 10.000 to 20.000 € per year. This is an amount which can be considerably reduced - even in the case of well operated and maintained plants.

Does this also apply to your compressed air plant? Which actual costs per generated m³ air do you actually have? Which energy is grind due to the waste heat recovery? What is the total performance balance of your plant? How high are the differential pressures of single filters, how high is the humidity (pressure dew point), how much compressed air is used?

By means of the new intelligent chart recorder Check Box M6 and the suitable sensors and meters all these questions can be answered easily. For example by means of a long-term measurement over 7 days, data recording and evaluation at the PC.

Digital

Flow sensors
for compressed air and gases

- Installation and removal under pressure via standard 1/2" ball valve
- A safety ring avoids the uncontrolled ejection in case of installation/removal under pressure
- Usable for different gases: compressed air, nitrogen, argon, CO_2, oxygen

Digital

Dew point sensors

- Extremely long-term stable
- Quick adaption time
- Large measuring range (-80° to +20°Ctd)
- For all driers: Desiccant driers, membrane driers, refrigeration driers
- Easy installation under pressure via the standard measuring chamber with quick coupling

Analog

Pressure sensors

- Large selection of pressure sensors with different measuring ranges for each measuring purpose
- Quick installation under pressure by quick coupling
- Pressure sensors 0-10/16/40/100/250/400/600 bar overpressure
- Pressure sensors -1 - +15 bar (under-/overpressure)
- Differential pressure 0-1,6 bar
- Absolute pressure 0-1.6 bar (abs:)

Analog

Temperature sensors

- Large selection of temperature sensors e.g. for measurement of the ambient temperature or gas temperature
- Pt100 (2-wire or 3-wire)
- Pt1000 (2-wire or 3-wire)
- Temperature sensors with measuring transducer (4-20 mA output)

Analog

Clamp-on ammeters

- For the analysis of compressors (load and idle times, energy consumption, on/off cycles) the current consumption of up to 12 compressors is recorded by current clamp
- Measuring range of the current clamps: 0 - 400 A 0 - 1000 A

Digital

Current/effective power meters

- PMH PM 600 mobile current/active power meter with external current transformers for large machines and plants
- External current transformers for encompassing the phases (100 A or 600 A)
- External magnetic measuring tips for picking up the voltage measures KW, kWh, cos phi, kVar, kVA
- Data transmission Check Box M6 via Modbus

By means of the mobile chart recorder Check Box M6, all measuring data of a compressor station can be recorded, indicated and evaluated.

At 12 freely assignable sensor inputs all our sensors can be connected as well as any optional third-party sensors and meters with the following signal outputs:

4-20 mA, 0-20 mA I 0-1 V / 0-10 V / 0-30 V I Pt 100 (2- or 3-wire), Pt 1000 (2- or 3-wire), KTY I pulse outputs (e.g. of gas meters) frequency output I Modbus protocol.

Check Box M1-M5 - Affordable mobile chart recorder

Energy analysis - flow measurement - leakage calculation at compressed air systems

Features & Benefits

- Easy operation via 3.5″ color display with touch panel
- Internally rechargeable Li-Ion battery - about 8 hours continuous operation

Versatile:

- Up to 4 sensors / meters can be connected, including third-party sensors / counters incl. Power supply

Reliable:

- Stores all measured values on a memory card. Easy reading out via USB stick possible

Intelligent energy analysis:

- Daily / weekly / monthly evaluations mathematical functions for internal calculations in combination with software PMH Basic e. g., the typical key figures of a compressed air system
  - Costs in € per generated m³ air
  - kWh/m³ generated air
  - Flow of single lines including summation
  - Integrated data logger for 100 million measured values

Up to 4 sensors can be connected including power supply for all sensors

Options

Flow sensors

Dew point sensors

Pressure sensors

Temperature sensors

Clamp-on ammeters

Current/effective power meters

Sensors for Check Box M6 / Check Box M1-M5

Digital

Flow meters
for compressed air and gases

- Installation and removal under pressure via standard 1/2” ball valve
- A safety ring avoids the uncontrolled ejection in case of installation/removal under pressure
- Usable for different gases: compressed air, nitrogen, argon, CO_2, oxygen

Digital

Dew point sensors

- Extremely long-term stable
- Quick adaption time
- Large measuring range (-80° to +20°Ctd)
- For all driers: Desiccant driers, membrane driers, refrigeration driers
- Easy installation under pressure via the standard measuring chamber with quick coupling

Analog

Pressure sensors

- Large selection of pressure sensors with different measuring ranges for each measuring purpose
- Quick installation under pressure by quick coupling
- Pressure sensors 0-10/16/40/100/250/400/600 bar overpressure
- Pressure sensors -1 - +15 bar (under-/ overpressure)
- Differential pressure 0-1,6 bar
- Absolute pressure 0-1.6 bar (abs:)

Analog

Temperature sensors

- Large selection of temperature sensors e.g. for measurement of the ambient temperature or gas temperature
- Pt100 (2-wire or 3-wire)
- Pt1000 (2-wire or 3-wire)
- Temperature sensors with measuring transducer (4-20 mA output)

Analog

Clamp-on ammeters

- For the analysis of compressors (load and idle times, energy consumption, on/off cycles) the current consumption of up to 12 compressors is recorded by current clamp
- Measuring range of the current clamps: 0 - 400 A 0 - 1000 A

Digital

Current/effective power meters

- PMH PM 600 mobile current/active power meter with external current transformers for large machines and plants
- external current transformers for encompassing the phases (100 A or 600 A)
- external magnetic measuring tips for picking up the voltage
- measures KW, kWh, cos phi, kVar, kVA
- Data transmission Check Box M1-M5 mobile via Modbus

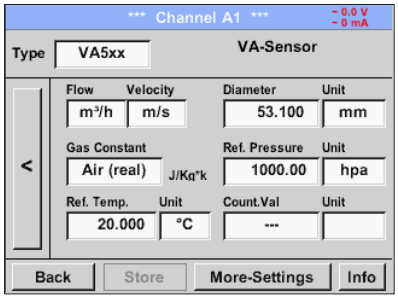
By means of the chart recorder Check Box M1-M5, all measured data of a compressor station can be recorded, indicated and evaluated. All digital sensors of our product range can be connected to the digital inputs.

Flow meter, dew point sensors, current/effective power meters and third-party sensors with Modbus RS 485 could be connected.

At analog sensor inputs third party sensors and meters with the following signal output could be connected: 4-20 mA, 0-20 mA | 0-1 V / 0-10 V / 0-30 V | Pt 100 (2- or 3-wire), Pt 1000 (2- or 3-wire), KTY | pulse outputs (e.g. of gas meters) | frequency output | Modbus protocol.

Configuration of flow sensor

- In the menu of the Check Box M6/ Check Box M1-M5, the flow sensor Flow Check Universal can be set to the respective pipe inside diameter. Furthermore, the unit, the gas type and the reference condition can be set. The meter reading can be set to „zero“ if necessary.



Configuration of flow sensor

Graphic view

- In the graphic view all measured values are indicated as curves.It is possible to browse back on the time axis by a slide of the finger (without data logger maximum 24 h, with data logger back to the start of the measurement).

Graphic view

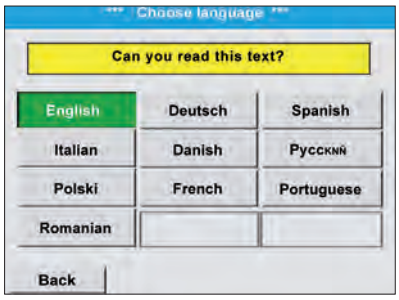
Data logger

- With the integrated data logger the measured values are stored in the Check Box M6/ Check Box M1-M5. The time interval can be free be determined. It is also possible to set the start time and end time of the data recording.Reading the measured data via USB interface or via the optional Ethernet interface.

Data logger

Selection of the language

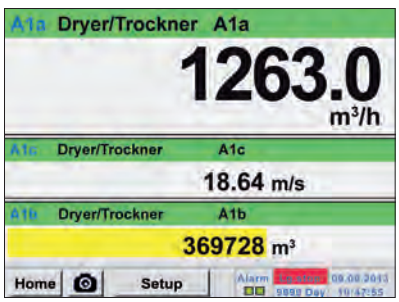
- Many languages are already stored in every Check Box M6 mobile/ Check Box M1-M5. The desired language can be selected via the selection button.



Selection of the language

All relevant parameters at a glance

- In addition to the flow rate in m³/h, the Check Box M6/ Check Box M1-M5 also displays other parameters such as total consumption in m³ and speed in m/s.



All relevant parameters at a glance

Technical data of the Check Box M1 - M5

Technical data Check Box M1-M5	
Dimensions	270 x 225 x 156 mm (W x H x D)
Weight	2.2 kg
Inputs	2 x 2 sensor inputs for digital or analogue sensor signals
Interface	USB (standard), Ethernet (optional)
Power supply	Internal rechargeable Li-Ion batteries, approx 8 h continuos operation, 4 h charging time
Options	
Integrated data logger	100 million measuring values start/stop time, measuring rate freely adjustable
2 additional sensor inputs	for connection of pressure sensors, temperature sensors, clamp-on ammeters, third-party sensors with 4-20 mA 0 to 10 V, Pt100, Pt1000

Description				Order no.
Check Box M1-M5 chart recorder with graphic display touch screen and integrated data logger		**Sensor input 1 and 2**	**Sensor input 3 and 4**	
	M1	Digital	--------	2255330402
	M2	Digital	Digital	2255330403
	M3	Digital	Analog	2255330404
	M4	Analog	--------	2255330405
	M5	Analog	Analog	2255330406
Option				
Option: Integrated Ethernet and RS 485 interface				2255460216
Option: Integrated webserver				2255460218
Option: „Mathematics calculation function“ for 4 freely selectable channels, (virtual channels): addition, subtraction, division, multiplication				2255332469
Option: „Totalizer function for analogue signals“				2255332470
Further accessories				
PMH Basic – data evaluation graphically and in tabular form - reading of the measured data via USB or Ethernet, license for 2 workstations				2255332468
PMH Soft Energy Analyzer for energy and leakage analysis of compressed air stations				2255331729
Connecting cable for pressure, temperature and external sensors to mobile devices, ODU/open ends, 5 m				2255332514
Connecting cable for pressure, temperature and external sensors to mobile devices, ODU/open ends, 10 m				2255332515
Connection cable for Flow/ PDP sensors to mobile devices, ODU/M12, 5m				2255332516
Extension cable for mobile devices, ODU/ODU, 10 m				2255332517
Connecting cable for mobile current / active power meter to mobile devices, length 5 m				2255332519
Case for all sensors (dimensions: 500x360x120 mm)				2255332518

Suitable sensors can be found on pages 30 to 33

Input signals	
Current signals Internal or external power supply Measuring range Resolution Accuracy Input resistance	(0-20mA/4-20mA) 0-20 mA 0.0001 mA ± 0.03 mA ± 0.05 % 50 Ω
Voltage signal Measuring range Resolution Accuracy Input resistance	(0-1 V) 0-1 V 0.05 mV ± 0.2 mV ± 0.05 % 100 kΩ
Voltage signal Measuring range Resolution Accuracy Input resistance	(0-10 V / 30 V) 0-10 V 0.5 mV ± 2 mV ± 0.05 % 1 MΩ
RTD Pt 100 Measuring range Resolution Accuracy	 -200-850°C 0.1°C ± 0.2°C (-100-400°C) ± 0.3°C (further range)
RTD Pt 1000 Measuring range Resolution Accuracy	 -200-850°C 0.1°C ± 0.2° (-100-400°C)
Impuls Measuring range	Min pulse length 500 µs frequency 0-1 kHz max. 30 VDC

Digital	Digital	Digital	Digital
m^3/h, m^3	°Ctd	A, kW/h	
			MOD-BUS
Flow sensor	Dew point sensor	Current meter	Thirt-party with RS 485

Analog	Analog	Analog	Analog
bar	A	°C	°C
			4-20 mA 0-20 mA 0-10 V Pulse Pt 100 Pt 1000
Pressure sensor	Clamp-on ammeter	Temperature sensor	Third party sensor analog output

Check Box 500 mobile - Hand-held instrument for industry

The new Check Box 500 mobile is an all-purpose hand-held measuring instrument for many applications in industry like e. g.:

- Flow measurement
- Pressure/vacuum measurement
- Temperature measurement
- Moisture/dew point measurement

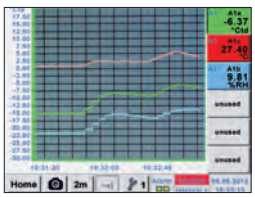
The graphic indication of colored measurement curves is inimitably.
Up to 100 million measured values can be stored with date and name of measuring site. The measured values can be transferred to the computer by means of al USB stick. The data can be comfortably evaluated with the PMH Basic software.

Measured data and service reports can be issued easily and quickly. The following sensors can be connected to the freely configurable sensor input of Check Box 500 mobile:

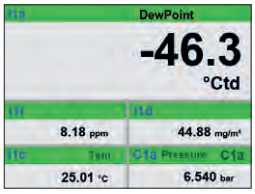
- Pressure sensors (high and low pressure)
- Flow sensors, Flow Check/ Flow Check Universal
- Temperature sensors Pt 100, Pt 1000 / 4-20 mA
- Dew point sensors PDP Sens
- Effective power meters
- Optional third-party sensors with the following signals: 0-1/10 V, 0/4-20 mA, Pt 100, Pt 1000, pulse, Modbus

Special features:

- Universal sensor input for lots of common sensor signals
- Internal rechargeable Li-Ion batteries (approx. 12h continuous operation)
- 3.5“ graphic display / easy operation via touch screen
- Integrated data logger for storage of the measured values
- USB interface for reading out via USB stick
- International: Up to 8 languages selectable



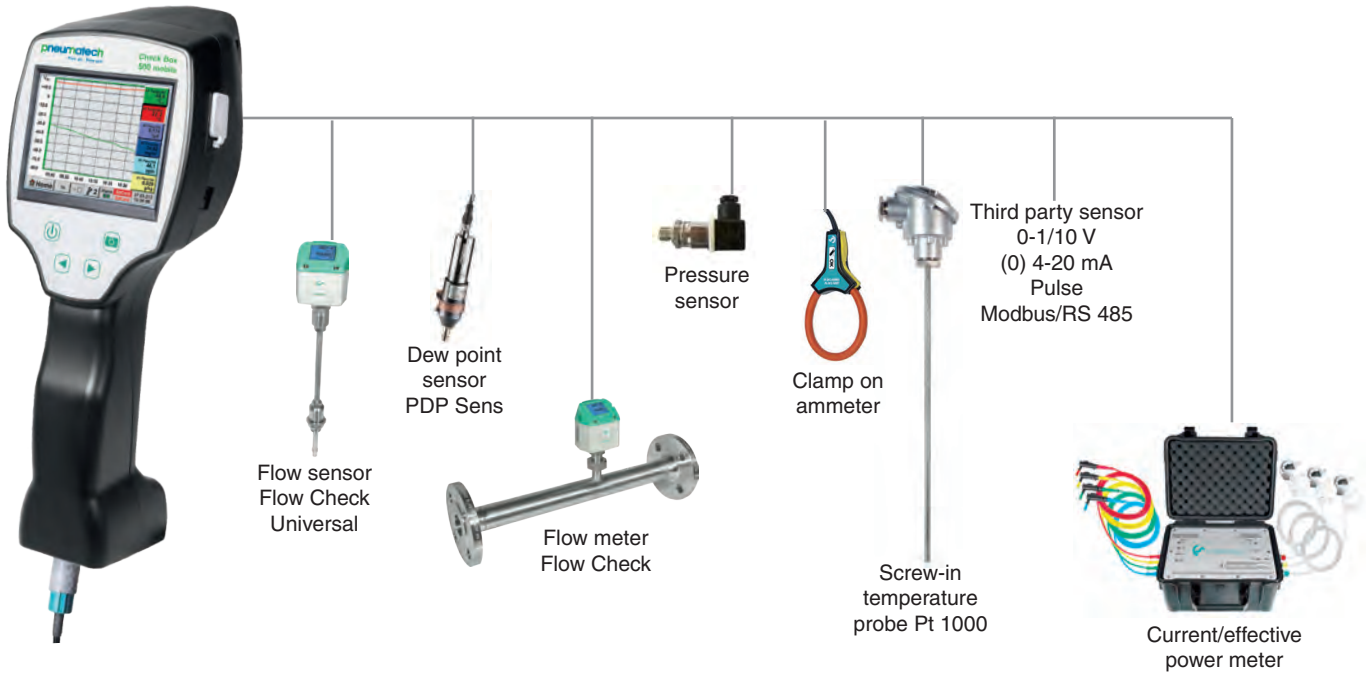
Measurement curves are indicated graphically and thus the user can see the behavior of the dryer at a glance since the start of the measurement.



All physical parameters of moisture measurement are calculated automatically. The measured values of the external sensor will be displayed in addition.

It is possible to store up to 100 million measured values. Each measurement can be stored with a comment, e.g. measuring site name. The time interval can be freely determined.

Check Box 500 mobile - Hand-held instrument with large sensor selection



Input signals	
Current signals Internal or external power supply Measuring range Resolution Accuracy Input resistance	(0-20mA/4-20mA) 0-20 mA 0.0001 mA ± 0.03 mA ± 0.05 % 50 Ω
Voltage signal Measuring range Resolution Accuracy Input resistance	(0-1 V) 0-1 V 0.05 mV ± 0.2 mV ± 0.05 % 100 kΩ
Voltage signal Measuring range Resolution Accuracy Input resistance	(0-10 V / 30 V) 0-10 V 0.5 mV ± 2 mV ± 0.05 % 1 MΩ
RTD Pt 100 Measuring range Resolution Accuracy	 -200-850°C 0.1°C ± 0.2°C (-100-400°C) ± 0.3°C (further range)
RTD Pt 1000 Measuring range Resolution Accuracy	 -200-850°C 0.1°C ± 0.2° (-100-400°C)
Impulse Measuring range	Min pulse length 500 µs frequency 0-1 kHz max. 30 VDC

Description	Order no.
Check Box 500 mobile portable measuring instrument with integrated data logger, incl. power supply	2255332520
Option for Check Box 500 mobile: “mathematiPMH calculation function” for 4 freely selectable „virtual“ channels	2255332521
Option „Totalizer function for analogue signals“	2255332522
PMH Basic – data evaluation graphically and in tabular form - reading of the measured data via USB or Ethernet, license for 2 workstations	2255332468
Transport case	2255332523

Further sensors can be found on pages 30 to 33

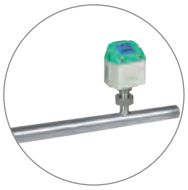
Technical data check box 500 mobile	
Display	3.5˝ touchpanel TFT transmissive, graphics, curves, statistics
Interface	USB interface
Power supply for sensors	Output voltage: 24VDC ± 10% Output current: 120 mA in continuous operation
Power supply	Internal rechargeable Li-Ion batteries, charging time approx. 4 h, Check Box 500 mobile continuous operation> 4h depending on power consumption for ext. sensor
Power adapter	100 - 240 VAC / 50 - 60 Hz, 12 VDC - 1A, safety class 2 only for use in dry rooms
Dimensions	82 x 96 x 245 mm
Housing material	PC/ABS
Weight	450 g
Operating temperature	0-50°C Ambient temperature
Storage temperature	-20 bis +70°C
EMC	DIN EN 61326
Sensor input	For connection of pressure and temperature sensors, current clamps, external sensors with 4 - 20 mA, 0-10V, Pt 100, Pt 1000, Modbus
Memory Size	8 GB - Memory card standard

Suitable sensors for Check Box M6, Check Box M1-M5, Check Box 500 mobile, PDP Check Mplus, Leak Check Pro 2

Consumption meters insertion-version	Order no.
Flow Check Universal flow meter, Max version (185 m/s), probe length 220 mm, incl. 5 m connection cable to mobile devices	2255332524
Flow Check Universal flow meter, High-Speed version (224 m/s), probe length 220 mm, incl. 5 m connection cable to mobile devices	2255332525

Flow Check Universal

Flow meters inline version	Order no.
Flow Check 1 with integrated measuring section, (R 1/4˝ DN 8)	2255330393
Flow Check 2 with integrated measuring section, (R 1/2“ DN 15)	2255330394
Flow Check 3 with integrated measuring section, (R 3/4“ DN 20)	2255330395
Flow Check 4 with integrated measuring section, (R 1“ DN 25)	2255330396
Flow Check 5 with integrated measuring section, (R 1 1/4“ DN 32)	2255330397
Flow Check 6 with integrated measuring section, (R 1 1/2“ DN 40)	2255330398
Flow Check 7 with integrated measuring section, (R 2“ DN 50)	2255330399



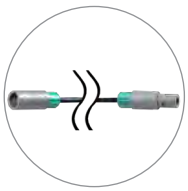
Flow Check

Dew point sensors	Order no.
PDP Sens 2 set dew point sensor, -80 - + 20 ° Ctd incl. measuring chamber mobile and 5 m connection cable to mobile devices	2255332526
PDP Sens 1 set dew point sensor, -20 - + 50 ° Ctd incl. measuring chamber mobile and 5 m connection cable to mobile devices	2255332527

PDP Sens

Connection cable for flow check universal/ flow check and pdp sens 1/2 sensors	Order no.
Connection cable for Flow/ PDP sensors to mobile devices, ODU/M12, 5 m	2255332516
Extention cable for mobile für mobile equipment, 10 m	2255332517

ODU/M12



Extention cable

Pressure probes	± 1% Accuracy	± 0,5% Accuracy
Standard pressure probe PMH 16, 0-16 bar	2255330414	2255332478
Standard pressure probe PMH 40, 0…40 bar	2255330415	2255332479
Standard pressure probe PMH 1.6, 0. 1.6 bar abs.	-	2255332480
Standard pressure probe PMH 10, 0-10 bar	2255332477	2255332481
Standard pressure probe PMH 100, 0…100 bar	-	2255332482
Standard pressure probe PMH 250, 0…250 bar	-	2255332483
Standard pressure probe PMH 400, 0…400 bar	-	2255332484
Precision pressure probe PMH -1-+15 bar, ± 0.5% accuracy of. f.s.	-	2255332485
Differential pressure probe 1.6 bar diff.	-	2255332486
Calibration certificate pressure, 5 calibration points for the whole measuring range	2255332487	-

Temperature sensors	Order no.
Bendable temperature probe PT 100 (2-wire) class A, length: 300 mm, d=3 mm, -70°C to +500°C, connect cable PFA, 2 m with ODU-plug (8 pole) to mobile instruments	2255332526
Screw-in temperature sensor PT 100 class A, length 300 mm, d = 6 mm, with transmitter 4-20 mA = -50 °C-+ 500 °C (2-wire)	2255332488
Cross-band surface temperature probe, thermocouple Type K, with integrated transducer 4…20 mA = 0°C…+180°C, 2 m connect calbe (PVC) with ODU-plug (8-pole) to mobile instruments	2255332527
Cable temperature sensor PT 100 class A (4-wire), length: 300 mm, d = 6 mm, -70 - + 260 ° C, 5 m connect cable PFA with open ends	2255332491
Cable temperature sensor PT 100 class A (4-wire), length: 100 mm, d = 6 mm, -70 - + 260 ° C, 5 m connection cable PFA with open ends	2255332492
Cable temperature sensor PT 100 class A (4-wire), length: 200 mm, d = 6 mm, -70 - + 260 ° C, 5 m connect cable PFA with open ends	2255332493
Magnetic surface temperature sensor, magnet 39x26x25 mm, PT 100 class B (2-wire), -30-+ 180 °C, 5m connection cable PFA with open ends	2255332494
Compression fittings: 6mm; G 1/2˝ teflon clamping ring pressure-tight up to 10 bar. Material: stainless steel, application area: max. + 260 °C	2255332495
Compression fittings: 6mm; G 1/2˝ teflon clamping ring pressure-tight up to 16 bar. Material: stainless steel, application area: max. + 260 °C	2255332496
Calibration certificate temperature, 2 calibration points	2255332497

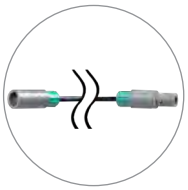
2255332488

2255332527

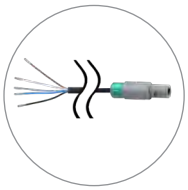
2255332526

2255332491

Connection cables for pressure sensors / temperature sensors	Order no.
Connection cable for pressure, temperature and external sensors to mobile devices, ODU/open ends, 5 m	2255332514
Connection cable for pressure, temperature and external sensors to mobile devices, ODU/open ends, 10 m	2255332515
Extension cable for mobile instruments, ODU / ODU, 10 m	2255332517
ODU plug for connection to mobile devices	2255332528



Extension cable



Connection cable/ODU

ODU connector

Clamp on ammeter	Order no.
Clamp-on ammeter 0 - 1000 A TRMS incl. 3 m connection cable	2255332529
Clamp-on ammeter 0 - 400 A TRMS incl. 3 m connection cable	2255332530

Clamp-on ammeter

PMH PM 600 - mobile current/ effective power meter

Mobile current/effective power meter suitable for: Check Box M6/ Check Box M1-M5/ Check Box 500 mobile

Features & Benefits

- Magnetic voltage measuring tips for measuring the voltage during operation
- Hinged current transformers encompass the conductors of the phases L1, L2, L3. This can also be done during operation
- All measured data are transferred digitally (Modbus) to Check Box M6/ Check Box M1-M5 and can be recorded there.
- Current transformer can be opened

Third party sensor connectable

- Third-party sensor 0 - 1/10 V
- Third-party sensor RS 485 Modbus RTU
- Third-party sensor Pulse
- Thrid-party sensor 0/4-20 mA

Measures voltage, current and calculates:

- Active power [kW]
- Apparent power [kVA]
- Reactive power [kVar]
- Active energy [kWh]
- Cos phi

Special features:

Magnetic voltage measuring tips electrically isolated

Example: Measurement at a compressor

Current/effective power meter	Order no.
PMH PM 600 mobile current/effective power meter up to 100 A	2255332531
PMH PM 600 mobile current/effective power meter up to 600 A	2255332532
- Mobile current effective power meter with 3 external current transformers for big machines and plants • External current transformers for clamping around the phases (100 A or 600 A) • External magnetic measuring tip for measuring the voltage • measures kW, kWh, cos, phi, kVar, kVA • Data transfer to Check Box M6 / Check Box M1-M5 via Modbus • Incl. connection cable for mobile current/effective power meter to mobile instruments, 5 m	
Current transformer 100A/1A consisting of 3 transformers for mobile instruments	2255332533
Current transformer 600A/1A consisting of 3 transformers for mobile instruments	2255332534
Current transformer 1000A/1A consisting of 3 transformers for mobile instruments	2255332535

Any third-party sensor connectable

Additionally, any third-party sensors with the following signal outputs can be connected:
- 4-20 mA
- 0-20 mA
- 0-1 V / 0-10 V / 0-30 V
- Pt 100 (2- or 3-wire)
- Pt 1000 (2- or 3-wire)
- Pulse outputs (e. G. of gas gas meters)
- Frequency output
- Modbus protocol

Technical data PMH PM 600	
Parameters	Voltage (Volt) Current (Ampere) Cos phi Active power (kW) Apparent power (kVA) Reactive power (kVar) Active energy (kWh) Supply frequency (Hz) All parameters are transferred digital to Check Box M6/ Check Box M1-M5
Accuracy current measurement	Threshold values for current deviation. Loss angle according to IEC 60044-1. Current deviation in % at rated current in 120 % 1 100 % 1 20 % 1,5 5 % 3
Accuracy active energy	IEC 62053-21 Class 1
Sensor connections	3 x current transformers (L1,L2,L3,N) 4 x voltage measurement (L1,L2,L3,N)
Interface	RS 485 (Modbus protocol)
Measure range	Voltage measurement max. 400 Volt Current measurement max. 100 A resp. 600 A
Size current transformers	100 A / 1 A (max.24 mm wire) 600 A / 1 A (max. 36 mm wire)
Dimensions case	270 x 225 x 156 mm (B x H x T)
Operating temperature	- 10-+40°C
Power supply	230 VAC (L1-N necessary)

Dew Point

Pneumatech offers a wide and field proven product portfolio for dew point sensors. With our especially designed stationary and mobile solutions, the dew point of refrigeration, desiccant or membrane dryers can be supervised. Tailor-made accessories like measuring chambers, dry containers or diffusion tight hose safeguard that Pneumatech dew point systems are the perfect solution for a flawless dew point measurement

To ensure that your processes using compressed air run smoothly, dew point has to be in compliance to the requirements accordingly. In several industries and applications, the dew point need to be measured in a professional way. Examples are generation of technical gases such as nitrogen or oxygen and other, in the plastics technology for the drying of granulate and many more. Customers all over the globe rely on the competence and knowledge of Pneumatech. Proven and reliable dew point meters from Pneumatech are helping customers worldwide to protect the required product quality in compressed air and gas systems.

PDP Check M/ PDP Check M plus - Mobile dew point meters with data logger

Features & Benefits

- Precise dew point measurement down to -80°Ctd
- Quick response time
- 3.5“ graphic display / easy operation via touch screen
- Integrated data logger for storage of the measured values
- USB interface for reading out via USB stick
- Calculates all necessary moisture parameters like g/m³, mg/m³, ppm V/V, g/kg, °Ctdatm
- 2nd freely assignable sensor input for third-party sensors (only DP 510)
- International: Up to 8 languages selectable

Applications:

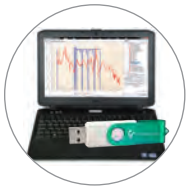
- Compressed air: Examination of refrigeration, membrane, adsorption dryers
- Technical gases: Residual moisture measurement in gases such as N_2, O_2 etc.
- Plastic industry: Examination of granulate dryers

Special features

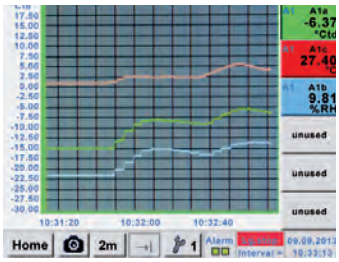

Quick installation


Ideal for service technicians

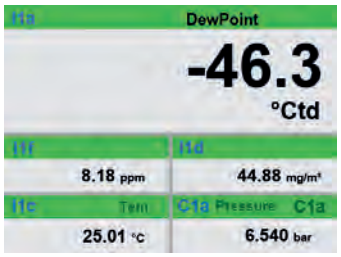

Dry container for sensor protection and quick adaptation time


Transfer of data per USB stick to the PC

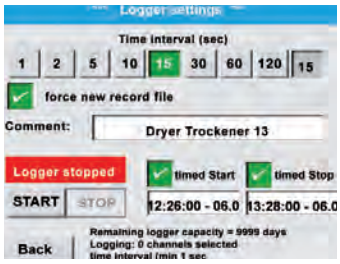
Everything a glance



Gradients are displayed graphically, so the operator sees at a glance the behavior of the dryer since the start of the measurement.



All physical parameters of the humidity measurement are calculated automatically. The PDP Check M plus also displays the measured values of the external sensor.



Up to 100 million readings can be stored. Each measurement may be accompanied by a comment, e. g. location name. The time interval can be determined freely.

Photo key saves current screen as an image file. No additional software necessary.

Description	Order no.
PDP Check M in a case - consisting of:	2255330386
• Portable dew point meter PDP Check M for compressed air and gases	2255332534
• Mobile measuring chamber up to 16 bar	2255332535
• Diffusion-tight PTFE hose with quick connector, length 1 m	2255332536
• Power supply for PDP Check M/ PDP Check M plus	2255332537
• Control and calibration set 11.3 % RH	2255332538
• Quick-lock coupling	2255332539
• Dry container for PMH dew point sensors	2255332540
• Transportation case (small) for PDP Check M	2255332541
PDP Check M plus in a case - consisting of:	2255332453
• Mobile dew point meter PDP Check M plus with one additorial input for external sensors	2255331735
• Mobile measuring chamber up to 16 bar	2255332535
• Diffusion-tight PTFE hose with quick connector, length 1 m	2255332536
• Power supply for PDP Check M/ PDP Check M plus	2255332537
• Control and calibration set 11.3 % RH	2255332538
• Quick-lock coupling	2255332539
• Dry container for PMH dew point sensors	2255332540
• Transportation case (large) for PDP Check M plus as well as other sensors	2255332523
Furter options, not included in the set:	
Option: „Mathematics calculation function“ for 4 freely selectable channels, (virtual channels): addition,subtraction, division, multiplication	2255332521
Option: „Totalizer function for analogue signals“	2255332522
PMH Basic – data evaluation graphically and in tabular form - reading of the measured data via USB or Ethernet, license for 2 workstations	2255332468
Precision calibration at -40°Ctd or 3°Ctd with ISO certificate	2255332542
Additional calibration point freely selectable in the range between -80- +20°Ctd	2255332543
High pressure measuring chamber up to 350 bar	2255332544
Measuring chamber for atmospheric dew point	2255332545
Measuring chamber for granulate driers with minimum overpressure	2255332546
Portable dew point meter PDP Check M plus for compressed air and gases (high pressure version up to 350 bar)	2255332547
Portable dew point meter PDP Check M for compressed air and gases (high pressure version up to 350 bar)	2255332548

Technical data PDP Check M/ PDP Check M Plus	
Display	3.5“ Touch screen
Measuring range:	-80-+50°Ctd -20-+70°C 0-100 %rF
Accuracy	± 0,5°Ctd bei -10-+50°Ctd Typ. ± 2°Ctd (remain. range)
Moisture parameters	g/m³, mg/m³, ppm V/V, g/kg, °Ctdatm, %rF
Pressure range	-1-50 bar standard -1-350 bar special version
Interface	USB interface
Data logger	8 GB SD memory card (100 millions values)
Power supply for sensors	Output voltage: 24 VDC ± 10% Output current: 120 mA continuous operation
Power supply	Internal rechargeable Li-Ion batteries, approx 12 h continuous operation, 4 h charging time
Screw-in thread	G 1/2“ stainless steel
Ambient temperature	0-+50°C
EMV	DIN EN 61326-1

The whole range of suitable sensors can be found on pages 30 to 33

PDP Sens 1/ PDP Sens 1A/ PDP Sens 2/ PDP Sens 2A - Dew point sensor

Dew point sensor for residual moisture measurement in compressed air and gases

Features & Benefits

- Extremely long-term stable
- Analog output 4 - 20 mA for dew point
- Condensation insensitive
- Fast adjustment time
- Pressure resistant up to 350 bar (special version)
- Modbus RTU interface
- Higher resolution of the sensor signal due to improved evaluation electronics
- Sensor diagnosis on site with mobile device or PMH service software
- Readable via Modbus:
  - Pressure dew point [° Ctd.]
  - Temperature [° C]
  - Rel. humidity [% RH]
  - Abs. humidity [g / m³]
  - Moisture content [g / m³]
  - Moisture content V / V [ppmV / V]
  - Partial vapor pressure [hPa]
  - Atmospheric dew point [° Ctd.atm]

Typical applications:

- Dew point measurement in the compressed air after adsorption dryer, membrane dryer, refrigeration dryer
- Residual moisture/ dew point measurement in gases like oxygen, nitrogen, argon
- Residual moisture/ dew point measurement after granulate dryers in plastiPMH industry

Recommendation:

- Mounting with standard measuring chamber for compressed air up to 16 bar
- Advantage: Easy installation via quick coupling

Description	Order no.
PDP Sens 2 dew point sensor for desiccant driers -80°-20°Ctd incl. inspection certificate, 4…20 mA output signal (3-wire connection) and Modbus-RTU interface	2255330413
PDP Sens 2A dew point sensor for desiccant driers -80°-20°Ctd incl. inspection certificate, 4…20 mA output signal (2-wire connection) or Modbus-RTU interface	2255331723
PDP Sens 1 dew point sensor for refrigerated driers -20-50°Ctd incl. inspection certificate, 4…20 mA output signal (3-wire connection) and Modbus-RTU interface	2255330412
PDP Sens 1A dew point sensor for refrigerated driers -20-50°Ctd incl. inspection certificate, 4…20 mA output signal (2-wire connection) or Modbus-RTU interface	2255332552
Connection cables	
Connection cable for Flow/ PDP sensors, 5 m	2255460213
Connection cable for Flow/ PDP sensors, 10 m	2255460214
Option for PDP Sens 1/ PDP Sens 2:	
Option: analogue output PDP Sens 1/2, Special version 2…10 Volt	2255332553
Option for: PDP Sens 1/ PDP Sens 1A/ PDP Sens 2/ PDP Sens 2A	
Option: max. pressure PDP sens 350 bar	2255332591
Option: special scaling PDP sens 4…20 mA=__ … __ g/m³, ppm etc.	2255332592
Option: connection thread PDP sens, 5/8" UNF	2255332593
Option: connection thread PDP sens, 1/2" NPT	2255332594
Option: surface condition PDP sens, free of oil & grease	2255332595
Further accessories	
Standard measuring chamber up to 16 bar	2255460229
High pressure measuring chamber up to 350 bar	2255332544
Measuring chamber, stainless steel 1.4305	2255332596
PMH Service Software for dew point sensors incl. PC connection set (Modbus to USB Interface)	2255332597
Calibration and adjustment	
Precision calibration at -40°Ctd or 3° Ctd including ISO certificate	2255332542
Additional calibration point freely selectable	2255332543

Technical data PDP Sens 1/ PDP Sens 1A/ PDP Sens 2/ PDP Sens 2A	
Measure range	-80-20°Ctd, -20-50°Ctd
Accuracy	± 1°C to 50--20°Ctd ± 2°C to -20--50°Ctd ± 3°C to -50--80°Ctd
Pressure range	-1-50 bar special version up to 350 bar
Power supply	24 VDC (16-30 VDC)
Protection class	IP 65
EMV	according to DIN EN 61326-1
Operating temp.	-20-70 °C
Connection	M12, 5-pole
PC connection	Modbus-RTU interface (RS 485)
Analog output	4-20 mA = -80-20°Ctd 4-20 mA = -20-50°Ctd PDP Sens 1/2: 4-20 mA (3-wire) PDP Sens 2A : 4-20 mA (2-wire)
Burden for analog output	< 500 Ω
Screw-in thread	G 1/2" optional: UNF 5/8", NPT 1/2"
Dimensions	Ø 30 mm, length approx. 130 mm
Via service software Choose units	% RH, °Ctd, g/m³, mg/m³, ppm V/V
Scaling	Change 4-20 mA

PDP Sens 2 set and PDP Sens1 set see also page 32

PDP Check S - Dew point monitoring

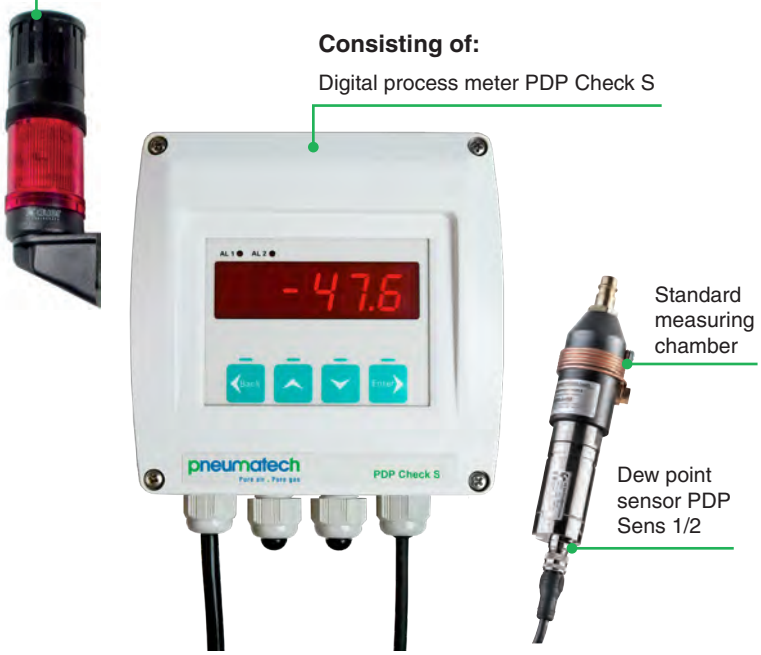
Dew point sensor for residual moisture measurement in compressed air and gases

Features & Benefits

- Alarm unit (Buzzer and continuous red light)
- Digital process meter PDP Check S
- 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
- Option alarm unit: Buzzer and continuous red light
- Standard measuring chamber
- Dew point sensor PDP Sens 1/2

Options

Alarm unit (Buzzer and continuous red light)



The dew-point set is wired ready to plug in at the factory. The alarm values can be set freely. The dew point sensor PDP Sens 1/2 is extremely long-term stable and can be quickly and easily installed and removed under pressure via the screw-on measuring chamber incl. Quick coupling.

Description	Order no.
Dew point monitoring PDP Check S2 for desiccant driers consisting of:	2255330390
PDP Check S LED display in wall housing	2255332549
PDP Sens 2 dew point sensor for desiccant driers -80°-20°Ctd incl. inspection certificate, 4…20 mA output signal (3-wire connection) and Modbus-RTU interface	2255330413
Standard measuring chamber up to 16 bar	2255460229
Connection cable for Flow/ PDP sensors, 5 m	2255460213
Dew point monitoring PDP Check S for refrigeration dryers, consisting of:	2255330387
PDP Check S LED display in wall housing	2255332549
PDP Sens 1 dew point sensor for refrigeration dryer -20-50°Ctd incl. inspection certificate, 4…20 mA output signal (3-wire connection) and Modbus-RTU interface	2255330412
Standard measuring chamber up to 16 bar	2255460229
Connection cable for Flow/ PDP sensors, 5 m	2255460213
Options:	
Power supply 24 VDC (instead of 230 VAC)	2255330388
Power supply 110 VAC (instead of 230 VAC)	2255330389
Alarm unit mounted at wall housing	2255460211
Alarm unit for external mounting with 5 m cable	2255460231
Calibration and adjustment:	
Precision calibration at -40°Ctd including ISO certificate	2255332542
Additional calibration point freely selectable	2255332543

Technical data display PDP Check S	
Dimension	118 x 92 x 93 mm
Display	LED red, 7 segments, height: 13 mm, 5 digits, 2 LED for alarm relay
Keypad	4 keys
Input	4-20 mA
Power supply	230 VAC, 50/60 Hz; Option: 24 VDC or 110 VAC 50/60 Hz
Alarm outputs	2 x relay output, changeover contact, 250 VAC, max. 3 A
Operating temperature	-10-+60 °C (storage temperature -20°C-+80°C)
Alarm thresholds	freely adjustable
Hysteresis	2 °Ctd
Analog output	4-20 mA = -80-20 Ctd or -20-50°Ctd.

PDP Check 500 S2/S1 - Dew point sensor from -80 to 20 °Ctd Ctd (-20 to 50°C)

PDP Check 500 S2/S1 is the ideal dew point measuring instrument with integrated display and alarm relay for refrigeration, membrane and adsorption dryers.

Special features:

- Integrated display
- Threshold value adjustable via keypad, alarm relay (max. 60 VDC, 0.5 A)
- Pressure-tight up to 500 bar (special version)
- Extremely stable in the long term
- Quick adaption time
- 4...20 mA analogue output for dew point
- Different refrigeration and adsorption dryer versions
- **NEW**: Modbus-RTU interface
- **NEW**: Higher resolution of sensor signal due to the improved evaluation electronics
- **NEW**: Sensor diagnosis on site with a portable device or PMH Service Software

Readable via Modbus:

- Pressure dew point [°Ctd.]
- Temperature [°C]
- rel. humidity [% RH]
- abs. humidity [g/m³]
- Degree of humidity [g/m³]
- Moisture content V/V [ppmV/V]
- Water vapour particle pressure [hPa]
- Atmospheric dew point [°Ctd.atm]

Special features

The integrated keys enable simple, menu-controlled operation

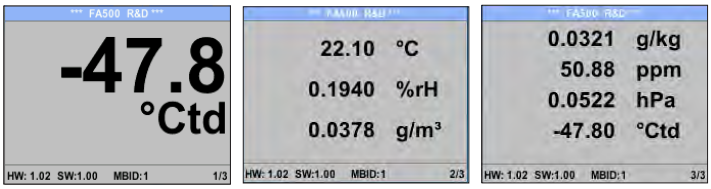
Upper connection:
Power supply, 4…20 mA output, Modbus-RTU output

Lower connection:
Alarm relay

Option

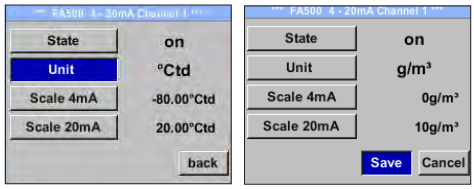
Ethernet interface (PoE)

Easy operation via the keys on the display

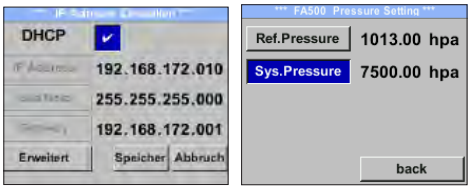


The integrated display shows the dew point in big figures as well as further humidity parameters on two more display pages. The arrow key can be used to scroll between the display pages.

The alarm threshold value for the integrated relay can be freely entered via the keys. In addition to the alarm threshold, the hysteresis can also be freely entered.



The 4…20 mA analogue output can be scaled freely or also allocated to one further parameter, e. g. g/m³.



After entering the system pressure of the compressed air system and the reference pressure (atmospheric pressure), the sensor can also calculate back to the atmospheric dew point from the measured pressure dew point if desired.

DESCRIPTION PDP Check 500 S2/S1	ORDER NO.
PDP Check 500 S1 dew point sensor for refrigeration dryers, -20...50 °Ctd	2255332882
PDP Check 500 S2 dew point sensor for adsorption dryers, -80…20 °Ctd	2255332883
Connection cables:	
Connection cable for Flow/ PDP series, 5 m	2255460213
Connection cable for Flow/ PDP sensors, 10 m	2255460214
Cable for alarm/pulse output, with M12 plug, length 5 m	2255332609
Cable for alarm/pulse output, with M12 plug, length 10 m	2255332610
Ethernet connection cable length 5 m, M12 plug x-coded (8 pin) to RJ 45 plug	2255332614
Ethernet connection cable length 10 m, M12 plug x-coded (8 pin) to RJ 45 plug	2255332615
Options:	
Option: Max. pressure PDP sens 350 bar	2255332591
Option: Max. pressure PDP sens 500 bar	2255333010
Option: Special scaling PDP sens 4…20 mA=__ … __ g/m³, ppm etc.	2255332592
Option: connection thread PDP sens, 5/8" UNF	2255332593
Option: surface condition PDP sens, free of oil & grease	2255332595
Ethernet-Interface	2255332633
Ethernet-Interface PoE	2255332634
M-Bus board for	2255332635
Further accessories:	
Standard measuring chamber for compressed air up to 16 bar	2255460229
High pressure measuring chamber up to 350 bar	2255332544
PMH Service Software for Flow/ PDP sensors incl. PC connection set, USB connection and interface adapter to the sensor	2255332597
Mains unit in wall housing for maximum 2 sensors of the Flow/ PDP sens series, 100-240 V, 23 VA, 50-60 Hz / 24 VDC, 0.35 A	2255332616
AC adapter plug 100-240 VAC / 24 VDC for Flow/ PDP sens	2255332617
Calibration and adjustment:	
Precision calibration at -40 °Ctd or +3 °Ctd incl. ISO certificate	2255332542

TECHNICAL DATA PDP Check 500 S2/S1	
Measuring range:	-80…20 °Ctd, -20…50 °Ctd, or 0…100% RH
Accuracy:	± 1 °C at +50…-20 °Ctd ± 2 °C at -20…-50 °Ctd ± 3 °C at -50…-80 °Ctd
Pressure range:	-1…50 bar Special version up to 500 bar
Power supply:	24 VDC (10…36 VDC)
Protection class:	IP 65
EMC:	In acc. with DIN EN 61326-1
Operating temperature:	-20…50 °C
Connection:	2 x M12, 5-pin for analogue output, Modbus-RTU and alarm output, M-Bus (optional) Ethernet (PoE) (optional)
PC connection:	Modbus-RTU interface (RS 485)
Output: (3-wire)	4…20 mA = -80…20 °Ctd 4…20 mA = -60…30 °Ctd 4…20 mA = -20…50 °Ctd
Burden for analogue output:	< 500 Ω
Alarm relay:	NC, max. 60 VDC, 0.5 A
Screw-in thread:	G 1/2″
Dimensions housing:	76.5 x 85 x 75 mm (WxHxD)

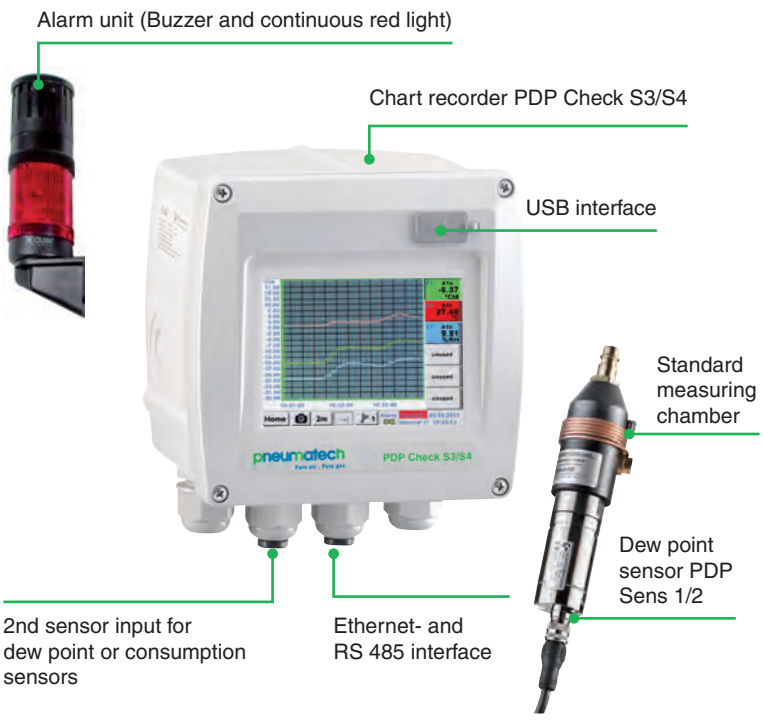
PDP Check S3/S4 - Dew point monitoring

For stationary dew point monitoring of refrigeration or desiccant dryers. The touch screen graphic display enables an intuitive operation and shows the progress of the measured values. 2 alarm relays are available for monitoring of threshold values. Available either with a classic analogue output 4-20 mA or optionally with digital interfaces like Ethernet and RS 485 (Modbus protocol). As a stand-alone solution the measured data stored in the optional data logger can be read-out via USB stick and evaluated by means of the software PMH Soft Basic.

Features & Benefits

- 3.5“ Graphic display – easy to use with touchscreen
- Plug-in system: everything wired and ready
- 2 alarm contacts (230 VAC, 3 A) Pre-alarm and main alarm freely adjustabler
- An alarm delay can be set for each alarm relay
- 4-20 mA Analog output
- Option: Ethernet and RS 485 interface (Modbus protocole)
- Option: Webserver
- Option: Integrated data logger
- Record dew point curve up to 100 million readings
- PMH Basic for graphical and tabular evaluation. Read out data either via USB stick or Ethernet
- Option: Alarm unit (buzzer and continuous red light)

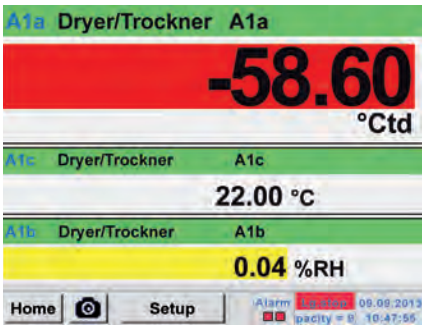
Options



Feature

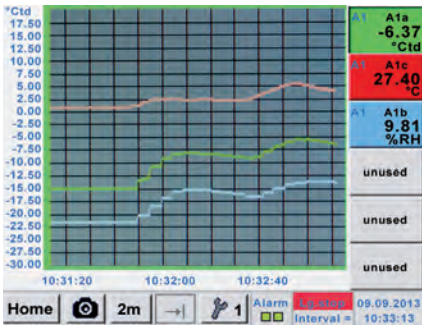
Transfer the data via USB stick to the PC

Easy operation via Touch screen



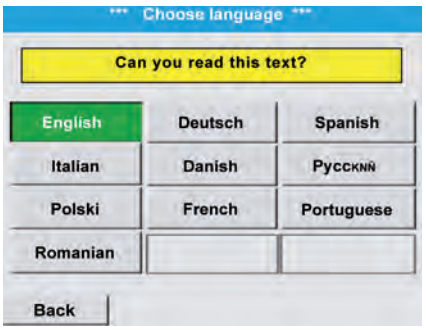
Actual measured values

All measured values can be seen at a glance. Threshold exceeding are indicated in red color. A „measuring site name“ can be allocated to each sensor.



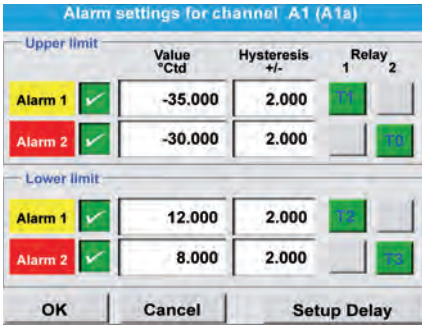
Graphic view

In the graphic view all measured values are indicated as curves. It is possible to brows back on the time axis by a slide of the finger (without data logger maximum 24 h, with data logger back to the start of the measurement).



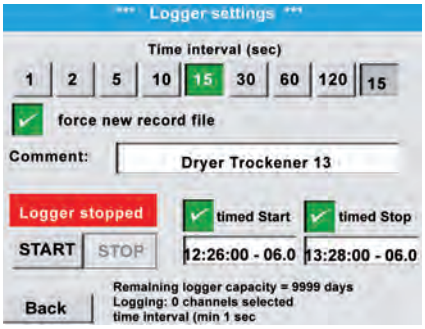
Data logger

Check Box S „speaks“ several languages. The required language can be selected by means of the select button.



Selection of the language

Each one of the 2 alarm relays can be allocated individually to a connected sensor. The alarm thresholds and the hysteresis can be freely adjusted. New: It is possible to set an alarm delay for each alarm relay so that the relay is just triggered after that period of time.



Adjustment of the alarm relays

Measured values are stored in Check Box S by means of the option „integrated data logger“. The time interval can be freely set. Furthermore there is the possibility to fix the starting time and the end time of the data recording. Read-out of the measured data via USB interface or via the optional Ethernet interface.

Description	Order no.
Dew point monitoring PDP Check S3 for desiccant driers (-80-+20° Ctd.)	2255332598
Dew point monitoring PDP Check S4 for refrigeration driers (-20-+50°Ctd)	2255332599
Options	
Option: Integrated data logger for 100 million measured values	2255460217
Option: Integrated Ethernet and RS 485 interface	2255460216
Option: Integrated webserver	2255460218
Option: 2 additional sensor inputs for analogue sensors (pressure sensor, temperature sensor and so on)	2255332600
Additional accessories	
PMH Basic – data evaluation graphically and in tabular form - reading of the measured data via USB or Ethernet, license for 2 workstations	2255332468
Alarm unit mounted at wall housing	2255460211
Alarm unit for external mounting with 5 m cable	2255460231
Calibration and adjustment	
Precision calibration at -40 °Ctd or +3 °Ctd including ISO certificate	2255332542

Technical data PDP Check S3/ S4	
Dimensions	118 x 115 x 98 mm IP 54 (wall housing) 92 x 92 x 75 mm (panel mounting)
Inputs	2 digital inputs for PDP Sens 1/2 resp. Flow Check
Interface	USB interface
Power supply	100-240 VAC, 50-60 Hz
Accuracy	please see PDP Sens 1/2
Alarm outputs	2 relays, (pot. - free)
Options	
Data logger	100 million measuring values start/stop time, measuring rate freely adjustable
2 additional sensor inputs	for connection of pressure sensors, temperature sensors, clamp-on ammeters, third-party sensors with 4-20 mA 0 to 10 V, Pt 100, Pt 1000

Technical data PDP Sens 1/2	
Measuring range:	-80-20 °Ctd resp. -20-50 °Ctd
Accuracy:	± 1 °C at 50--20 °Ctd ± 2 °C at -20--50 °Ctd ± 3 °C at -50--80 °Ctd
Pressure range:	-1-50 bar, special version up to 350 bar

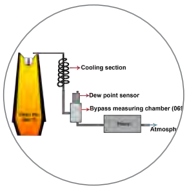
Accessories for PDP Sens - 1, 1A, 2, 2A

Description	Order no.
Diffusion-tight PTFE hose 6 mm with quick-release coupling length 1m	2255332536
Diffusion-tight PTFE hose 6 mm, length 1m	2255332602

Flow Check
Universal

Description	Order no.
Cooling section made of stainless steel	2255332603

- 8 mm stainless steel tube wound as a spiral.
- With the cooling section, process gases from ovens etc. can be cooled from high temperatures (about 900°C) to a sensor-compatible temperature of about 50°C. Condensation of the dew point to be avoided.



Description	Order no.
Quick-lock coupling NW 7,2 - G 1/2″ male thread	2255332539

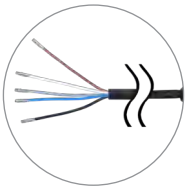
Description	Order no.
Control and calibration set 11,3 %RH	2255332538
Control and calibration set 33 %RH	2255332605
Control and calibration set 75,3 %RH	2255332606

- Control and calibration sets provide a defined humidity over a saturated saline solution
- The control and calibration set is screwed onto the dew point sensor and thus enables a simple and inexpensive control and calibration option down to -20° Ctd dew point on site

Description	Order no.
Dry container for PMH dew point sensors	2255332540

- Provides sensor protection and fast equalization time. Recommended for sto-rage of mobile sensors

Description	Order no.
Connection cable for Flow / PDP series, 5 m	2255460213
Connection cable for Flow / PDP series, 10 m	2255460214
Connection cable for Flow / PDP series, 20 m	2255460215
Connection cable for Flow / PDP series, 5 m shielded	2255332607
Connection cable for Flow / PDP series, 10 m shielded	2255332608
Cable for alarm/pulse output, with M12 plug, 5 m	2255332609
Cable for alarm/pulse output, with M12 plug, 10 m	2255332610



Description	Order no.
M12 plug for PDP Sens 1, 1A, 2, 2A	2255332611
M12 plug angled 90°	2255332612

Description	Order no.
Ethernet connection cable length 5 m, M12 plug x-coded (8 pol.) on RJ 45 plug	2255332614
Ethernet connection cable length 10 m, M12 plug x-coded (8 pol.) on RJ 45 plug	2255332615

Description	Order no.
Adapter plug PDP Sens 1A/ 2A Michell easidew valve plug DIN 43650 shape C 8 mm	2255332613

Accessories for all PDP Sens

Description	Order no.
Mains unit in wall housing for max. 2 sensors of the Flow / PDP Sens series 100-240 V, 23 VA, 50-60 Hz / 24 VDC, 0,35 A	2255332616

2255332616

Description	Order no.
Power supply unit 100-240 V AC/24 V for Flow / PDP Sens	2255332617

2255332617

Measuring chambers

Description	Order no.
Standard measuring chamber for compressed air	2255460229

- Applicable for 2-16 bar
- Process connection: Plug nipple NW 7.2 (Parker series 26) or G1/4˝ female thread when used without plug nipple
- Sensor connection: G 1/2˝ female thread
- Gives 2-3 liters / min of process air to the environment
- The copper capillary relaxes the compressed air and prevents the backflow of moisture from the ambient air into the measuring chamber

2255460229

Description	Order no.
Stainless steel measuring chamber for compressed air up to 50 bar	2255332618

- Applicable for 2-50 bar
- Process connection: G 1/4” female thread
- Sensor connection: G 1/2˝ female thread
- Gives 2-3 liters / min of process air to the environment

2255332618

Description	Order no.
Stainless steel measuring chamber for compressed air up to 50 bar with NPT thread	2255332619

- Process connection: G 1/4“ female thread
- Sensor connection: 5/8“ UNF female thread
- Applicable for 2 - 50 bar
- Gives 2-3 liters / min of process air to the environment via a fine nozzle

2255332619

Description	Order no.
High pressure measuring chamber for compressed air up to 350 bar	2255332544

- Applicable for 30-350 bar
- Process connection: G 1/4˝ female thread
- Sensor connection: G 1/2“ female thread
- Gives 2-3 liters / min of process air to the environment via a fine nozzle
- Via the high-pressure valve, the amount of air for sampling can be adjusted individually depending on the pressure level. The process air is released to the environment via the sinter filter

2255332544

Description	Order no.
Stainless steel bypass measuring chamber for dew point measurement in gases under pressure	2255332596

- Applicable for -1-350 bar
- Process connection: G 1/4˝ female thread gas inlet and G 1/4“ female thread gas outlet
- Sensor connection: G 1/2˝ female thread
- The flow of at least 2 liters / min of gas must be ensured by the customer

2255332596

Measuring chambers

Description	Order no.
Measuring chamber for atmospheric dew point	2255332545

- Applicable for 2-16 bar
- Process connection: Plug nipple NW 7.2 (Parker series 26) or G 1/4″ female thread when using without plug nipple
- Sensor connection: G 1/2″ female thread
- Gives 2-3 liters / min of process air to the environment
- The throttle valve in front of the measuring chamber relaxes the compressed air to atmospheric pressure in the measuring chamber. The manometer integ-rated in the measuring chamber indicates the overpressure to the atmosphere

2255332545

Description	Order no.
Measuring chamber for granulate dryers and gases	2255332546

- Applicable for 2-16 bar
- Process connection: Plug nipple NW 7.2 (Parker series 26) or G 1/4″ female thread when using without plug nipple
- Sensor connection: G 1/2″ female thread
- Gives 2-3 liters / min of process air to the environment
- The throttle valve in front of the measuring chamber relaxes the compressed air to atmospheric pressure in the measuring chamber. The manometer integ-rated in the measuring chamber indicates the overpressure to the atmosphere

2255332546

Calibration of dew point sensors

The calibration range for dew point sensors are -80°Ctd - 20°Ctd

Both dew point sensors from us and from other manufacturers can be calibrated. High precision reference measuring instruments with DKD resp. BAM certificate grant an accuracy of up to 0.1 °C dew point..

Special feature:

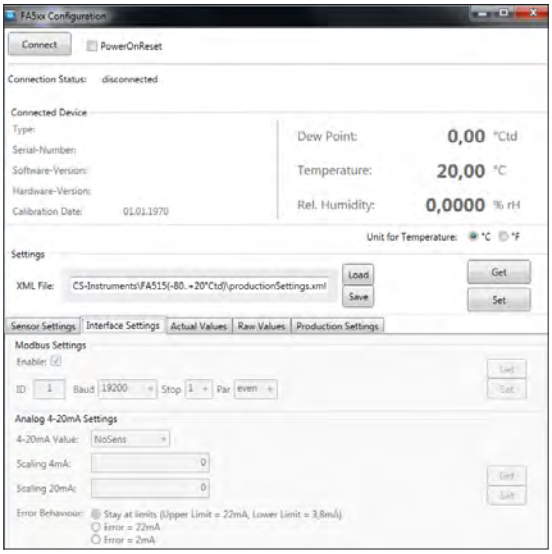
- Due to the digital data transmission, only the dew point sensor has to be calibrated. The display devices remain wired on site.
- **Calibration range:** from -80 to 20 °Ctd -
- **Accuracy of the DKD reference:** 0,1 °Ctd

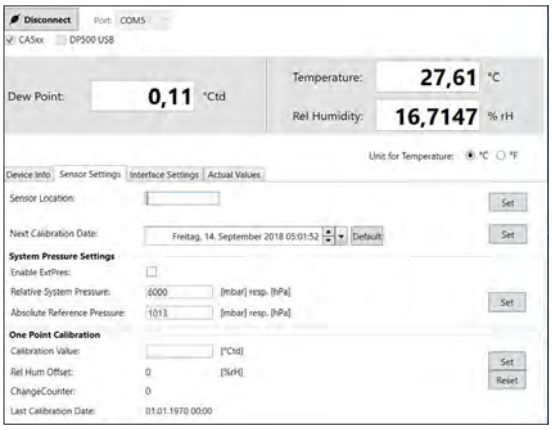
Control and calibration set

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.

Description	Order no.
Recalibration and precision calibration at -40 °Ctd or 3 °Ctd including ISO-Certifikate	2255332622
Precision calibration in the range -80-20 °Ctd, °Ctd points freely selectable	2255332543
Control and calibration set 11.3 %RH	2255332538
Control and calibration set 33 %RH	2255332605
Control and calibration set 75.3 %RH	2255332606
Precision calibration at -40 °Ctd or 3 °Ctd including ISO certificate	2255332542
Replacement unit for the period of re-calibration	2255332625
Dew point sensor in exchange with calibration certificate at -40 °Ctd	2255332626





Description	Order no.
PMH Service Software incl. PC connection set, USB connection and interface adapter to the sensor	2255332597

PMH Service Software

With the PMH service software including the USB - Modbus interface adapter, the PDP Sens 1/ 1A/ 2/ 2A dew point sensors can be configured via laptop / PC. The following settings can be made via PMH Service Software:

- Scaling of the 4-20 mA analogue output
- Assignment of the measured variable to the analogue output (e.g. 4-20 mA = 0-10 g/m³)
- Available units: °Ctd, °Ftd, g/m³, mg/m³, ppmv/v, g/kg
- Reading out the firmware version, serial number, date of the last calibration
- One-point calibration (adjustment) of the sensors in the process. This requires a reference device
- Update of the sensor software (Firmware)
- Modbus settings as Modbus-ID, Baud rate, Stopbit, Parity