Catalogue Measurement Equipment

2020

pneumatech

Pure air . Pure gas

Overview Chart Recorder

Check Box S6

Page 8-13

- 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 14-17

- 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

Page 18-19

PMH Enerium 30 current/ effective power meter

Page 20-21

Check Box M6

Page 22-25

- 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 26-29

- 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 30-31

- 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

PDP Check M/Mplus

Page 36-39

- 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 40-41

- 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 42-43

- 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 S3/ S4

Page 44-45

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

Overview Flow

Flow Check Universal

Page 56-59

- 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

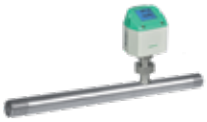
Page 60-61

- 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



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

Page 64-67

Leak Check Pro 1/ Pro 2

Page 84-89

- 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

PMH Leak Reporter

Page 86-87

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

Leak Check

Page 90-91

Low-price leak detector

PMH Basic

Page 94-97

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

Compressed Air Treatment

Untreated compressed air always contains contaminants because of the nature of the gas and how it is produced. The need for air treatment basically results from 3 characteristics of compressed air.

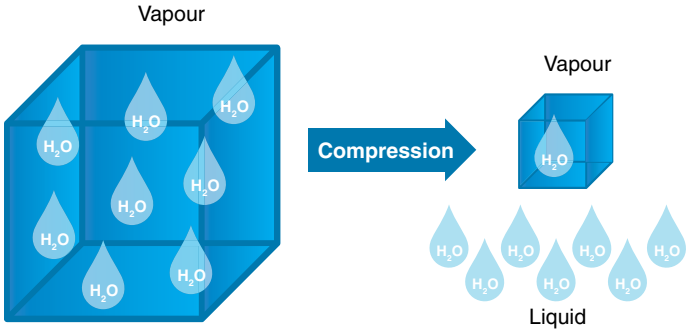
Compressed air is always wet

Contaminants

- Liquid water - water aerosols - water vapor

How are the contaminants formed?

As water is incompressible, the amount of moisture per m^3 increases when air is compressed. The maximum amount of moisture per m^3 air1 is however limited for a certain temperature. Condensation will thus be formed when air is compressed.



8 m^3 ambient air

1 m^3 compressed air at 7 barg(e)

What problems can the contaminants cause?

- Corrosion of pipe lines
- Bad quality of the end product
- Malfunctioning of controls
- Build-up of ice
- Cultivation of micro-organisms

The Pneumatech solution

- Water separators
- Drains
- Refrigeration dryers
- Adsorption dryers

[1]The so-called holding capacity of moisture in air.

Compressed air is always contaminated

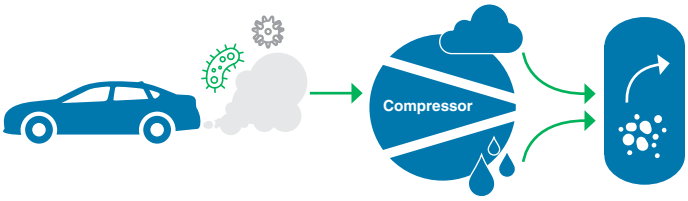
Contaminants

- Liquid oil - oil aerosols - oil vapor
- Dirt - microorganisms - pipescale
- Trace gases: carbon monoxide, sulfur dioxide, nitrous oxide

How are the contaminants formed?

Added by the compressor installation through oil lubricated compressors (oil), adsorption dryers and activated carbon filters (dirt), piping network and vessels (pipescale).

Trash in, trash out: oil vapors from car exhausts and industrial processes, atmospheric dirt and micro-organisms get sucked in by the compressor. As with water, their concentration – and thus importance – increases significantly after compression.



What problems can the contaminants cause?

- Damaged production equipment, leading to inefficiencies and increased costs
- Air pollution, creating unhealthy work environments
- Pollution of the condensate

The Pneumatech solution

- Coalescing filters for oil aerosols / particles
- Oil vapor filters
- Dust filters
- Oil-water separators
- Breathing air units

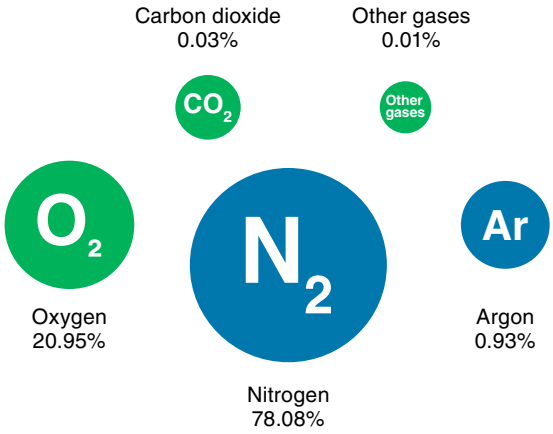
Compressed air composes of other gases

Contaminants

- Oxygen: contaminant if oxidation is unwanted
- Nitrogen: contaminant if oxidation is wanted

How are the contaminants formed?

Dry air is mainly composed of nitrogen (78%) and oxygen (21%). Air will keep the same nitrogen/oxygen ratio after compression, so additional treatment is needed to change this gas mix.



What problems can the contaminants cause?

- Oxygen causes oxidation, leading to explosions or fire of flammables (fast oxidation) or to rotting processes and corrosion of metals (slow oxidation).
- Nitrogen is an inert gas that can prevent oxidation to happen.

The Pneumatech solution

- PSA nitrogen generators
- Membrane nitrogen generators
- PSA oxygen generators

All measuring data of a compressor station can be recorded, indicated and evaluated.

Compressed air is a valuable product. Up to 80% of the total cost of a compressed air system is being generated by the energy bill.



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-
- Mathematical function for internal calculations
- Totalizer function for analogue signals
- Saves time and costs during installation

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.
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 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, CO2, 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

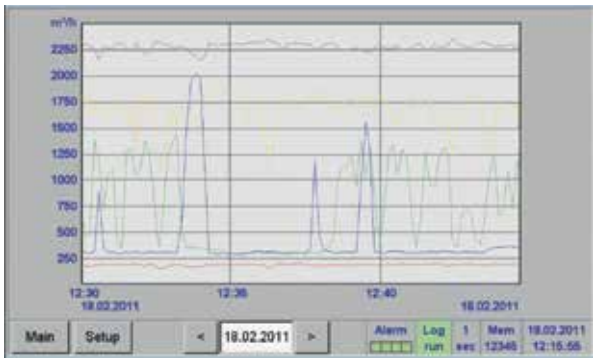
Real time measured values

- 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

Statistic and reports

- Different to ordinary chart recorders the Check Box S6 offers not only the recording of the measured data but also the evaluation of all flow sensors optionally as daily/weekly/monthly report at the push of a button.
- It is no longer necessary to read-out the counter and transfer the values manually into a list. The reports can be imported to every PC into Excel® by means of a USB stick and after that they can be printed out without any additional software. This saves time and money and simplifies the evaluation enormously.

Statistic and reports

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: „energy and flow report“ statistics, daily/weekly/monthly report	2255460220
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 options

- Integrated data logger
- 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	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

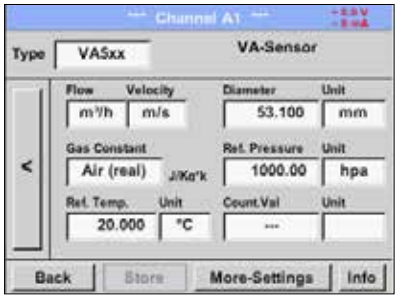
Digital	Digital	Digital	Digital
m³/h, m³	°Ctd	A, kW/h	
			MOD-BUS
Flow sensor	Dew point sensor	Current meter	Thirt-party with RS 485

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

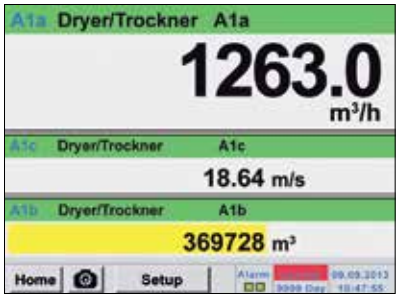
Selection of the language

- 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. For monitoring of threshold values users can receive an automated „alarm E-mail“.

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 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.

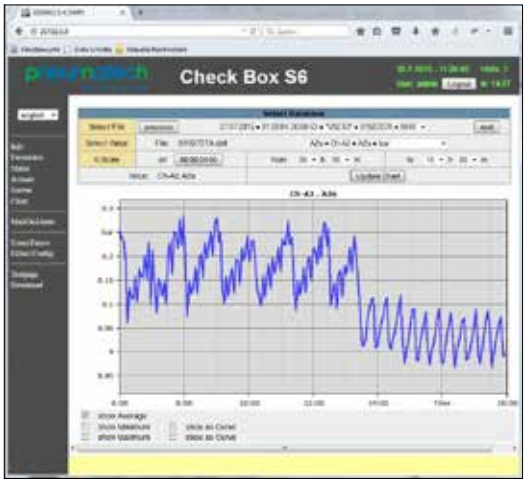
Automated „alarm e-mail“ for threshold value exceedance:

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)

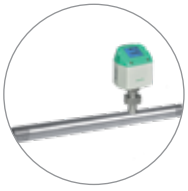
Check Box S1-S6 - Suitable sensors for Check Box S1-S6

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

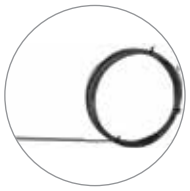
Flow meters for installation and removal under pressure (insertion-type)

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



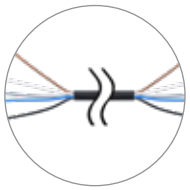
2255332491

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

Clamp-on ammeter

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

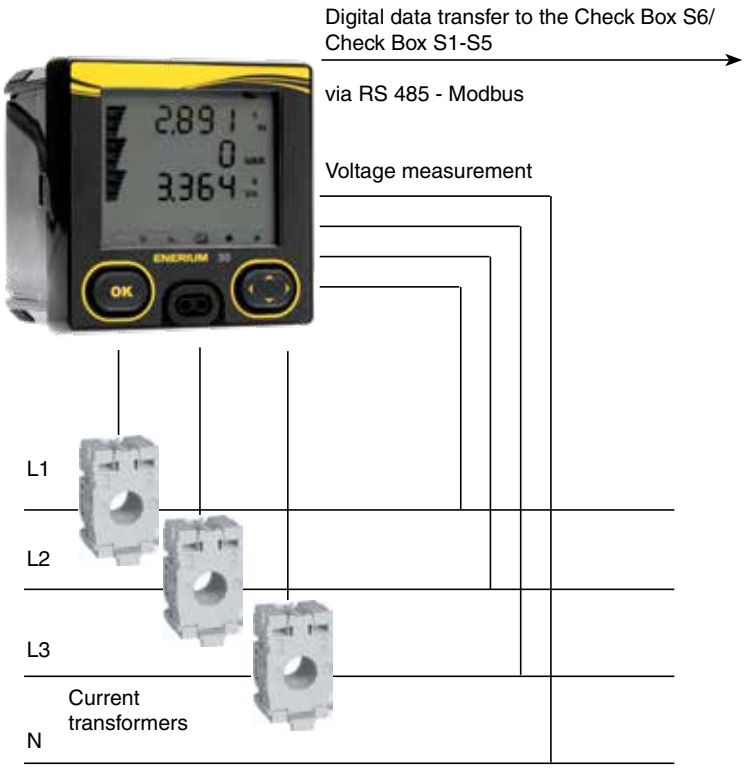


Connection cable

PMH Enerium 30 - 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 Enerium 30	
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 ENERIUM 30 current/effective power meter for panel mounting, with RS485 interface	2255332502
Install-construction for the Enerium 30, 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 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

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: „energy and flow report“ statistics, daily/weekly/monthly report	2255460220
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, CO2, 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 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

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, CO2, 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

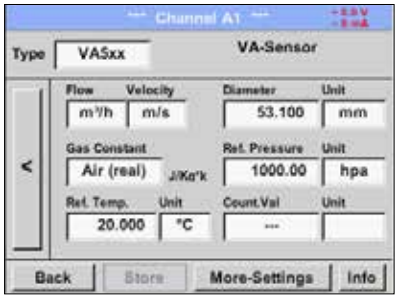
By means of the chart recorder Check Box M1-M5, all measured data of a compressor station can be recorded, indicated and evaluated. All digital sensors of our product range can be connected to the digital inputs.

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 option „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

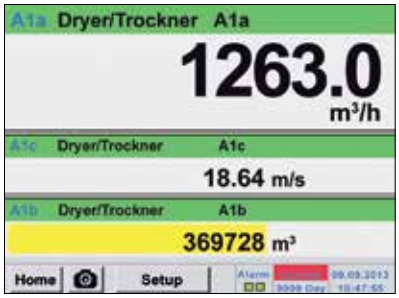
Selection of the language

- 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
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 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

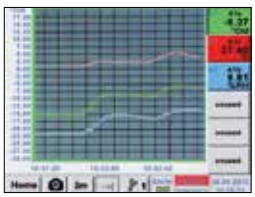
The graphic indication of colored measurement curves is inimitably.
Up to 100 million measured values can be stored with date and name of measuring site. The measured values can be transferred to the computer by means of al USB stick. The data can be comfortably evaluated with the PMH Basic software.

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

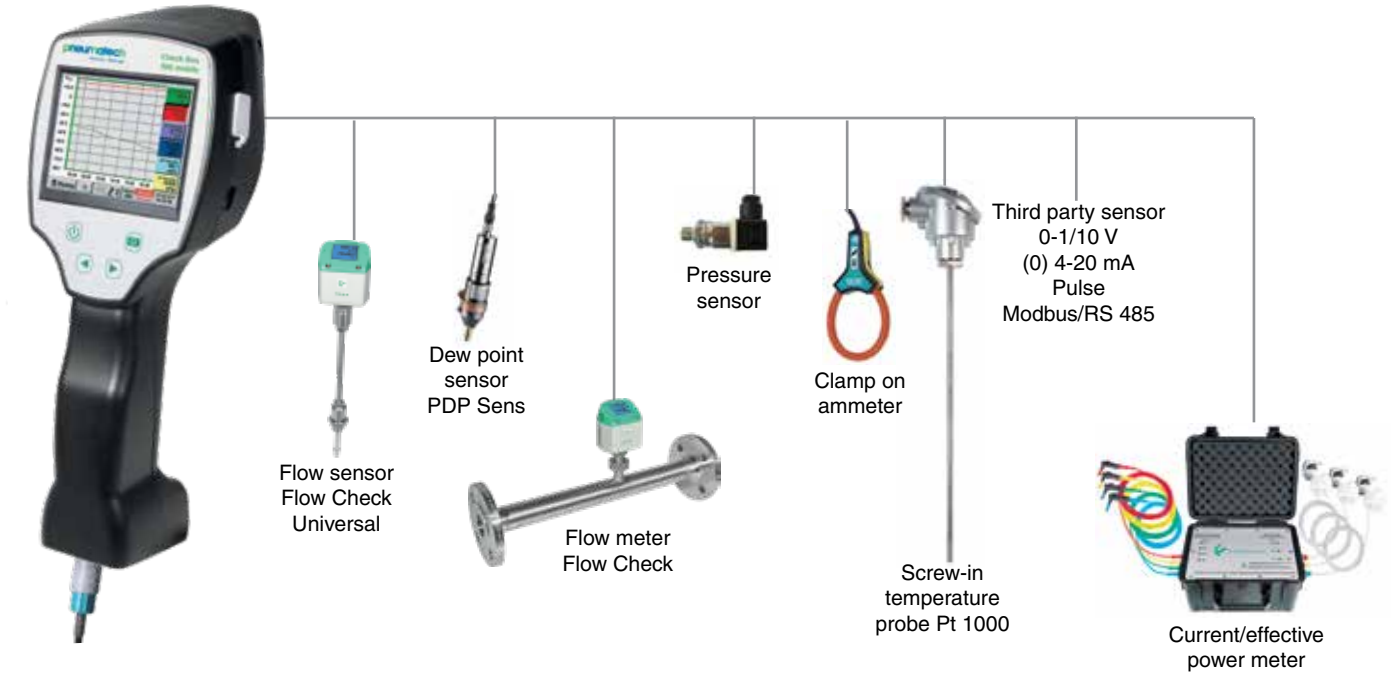


Measurement curves are indicated graphically and thus the user can see the behavior of the dryer at a glance since the start of the measurement.

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

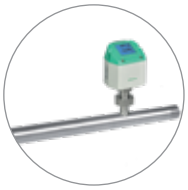
Technical data check box 500 mobile	
Display	3.5˝ touchpanel TFT transmissive, graphics, curves, statistics
Interface	USB interface
Power supply for sensors	Output voltage: 24VDC ± 10% Output current: 120 mA in continuous operation
Power supply	Internal rechargeable Li-Ion batteries, charging time approx. 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 C

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



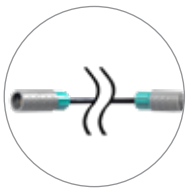
Flow Check

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

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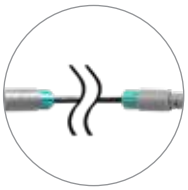
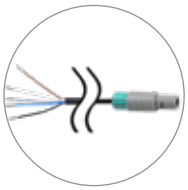
2255332491

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

Why dew point measurement is essential?

Air always contains humidity in form of vapor. Since air contrary to water can be compressed the water drops out during the compression procedure in form of condensate. The maximum humidity of the air depends on the temperature and the volume. It does not depend on any quantity. The ambient air can be imagined like a wet sponge. In relaxed condition, it is able to absorb a certain quantity of water. If the sponge is squeezed water drops out. Some water will remain in the sponge even in case of a strong compression. This process is similar to the compressed air applications.

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:

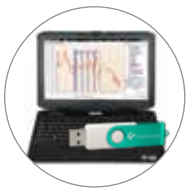
- Compressed air: Examination of refrigeration, membrane, adsorption dryers
- Technical gases: Residual moisture measurement in gases such as N2, O2 etc.
- Plastic industry: Examination of granulate dryers

Special features

Quick installation

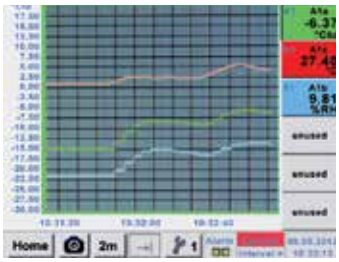
Ideal for service technicians

Dry container for sensor protection and quick adaptation time

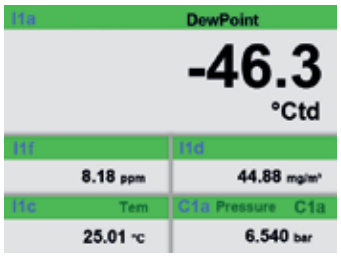


Transfer of data per USB stick to the PC

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 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 plastics 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 Check S - Dew point monitoring

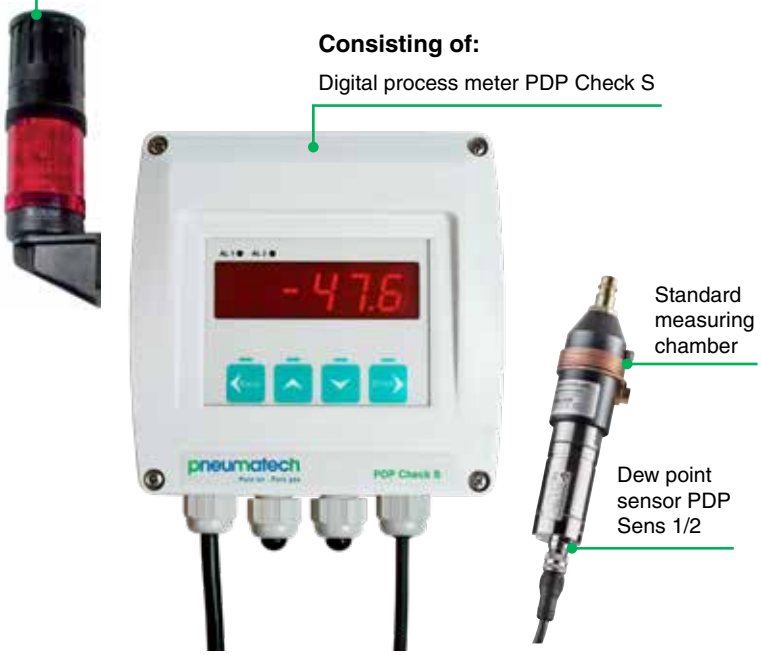
Dew point sensor for residual moisture measurement in compressed air and gases

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 S3/S4 - Dew point monitoring

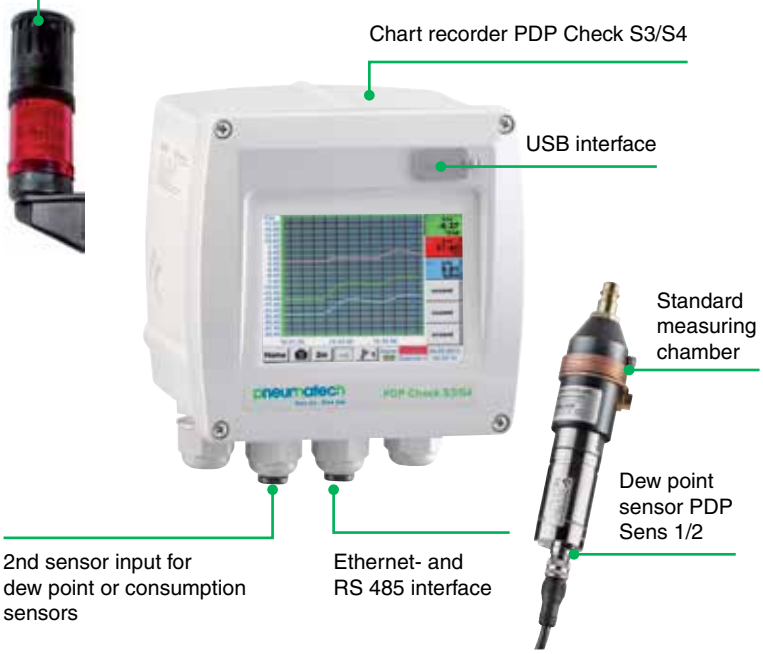
For stationary dew point monitoring of refrigeration or desiccant dryers. The touch screen graphic display enables an intuitive operation and shows the progress of the measured values. 2 alarm relays are available for monitoring of threshold values. Available either with a classic analogue output 4-20 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

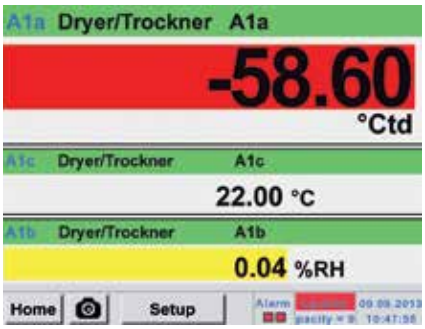
Alarm unit (Buzzer and continuous red light)



Feature

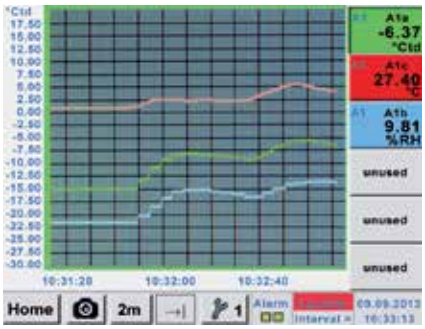
Transfer the data via USB stick to the PC

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.

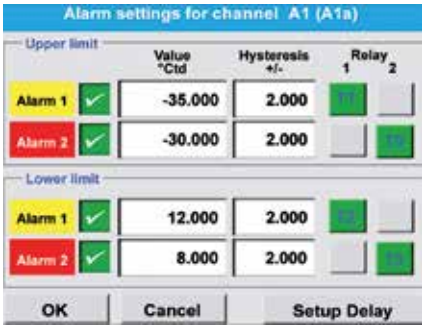


Graphic view

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

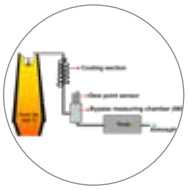
Accessories for PDP Sens - 1, 1A, 2, 2A

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

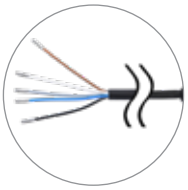
Description	Order no.
Control and calibration set 11,3 %RH	2255332538
Control and calibration set 33 %RH	2255332605
Control and calibration set 75,3 %RH	2255332606

- 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

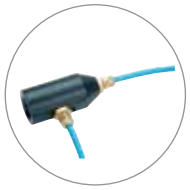
Measuring chambers

Description	Order no.
Measuring chamber for atmospheric dew point	2255332545

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

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



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

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:

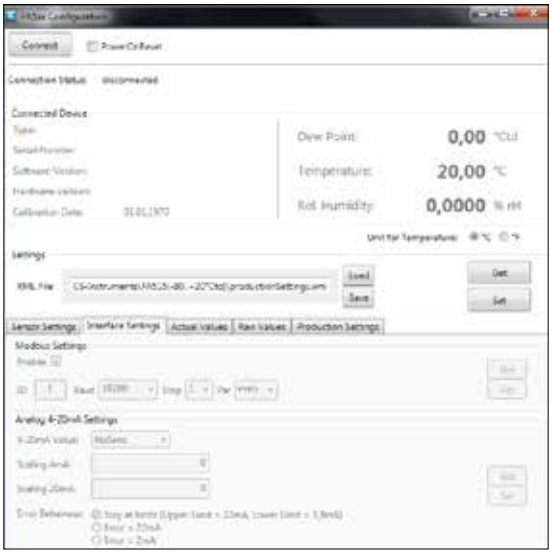
- Due to the digital data transmission, only the dew point sensor has to be calibrated. The display devices remain wired on site.
- **Calibration range:** from -80 to 20 °Ctd -
- **Accuracy of the DKD reference:** 0,1 °Ctd

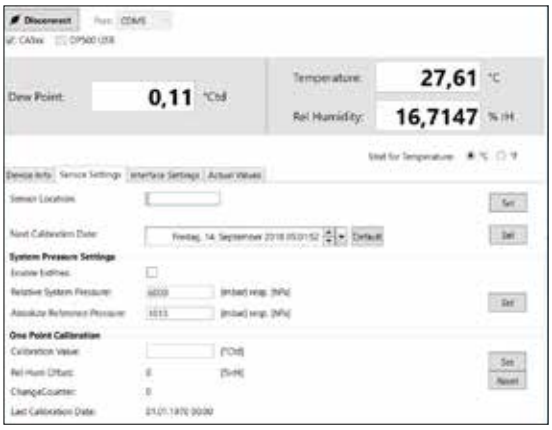
Control and calibration set

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

Flow

The pressure loss resulting from our consumption measurement method is, opposed to many other working principles, negligible. Optional interfaces for the consumption meter ensure the optimum connection to your control technology, data loggers or evaluation devices, including e.g. 4 - 20mA, pulse, Modbus RTU, M-BUS or even Ethernet. Our thermal mass flow meters comprise a wide range of applications and media.



Flow

The basic principle of Pneumatech's flow meters is calorimetric measuring. This means, while measuring the thermal mass flow or standard volume flow, no additional temperature and pressure compensation is required. The standard volume is a common volumetric unit used to compare gas quantities at different pressures and temperatures. To meet various standards, the reference conditions can be set directly on the display of each flow meter. Thus, our reliable flow meters grant consumption and flow measurement according to the individual standard our customers wish to use them.

All flow measurement devices come with a factory calibration certificate.

Flow Check Universal - Flow meter for compressed air and gases

Features & Benefits

- Incl. temperature measurement
- RS 485 interface, Modbus-RTU as a standard
- Integrated display for m³/h and m³
- Usable from 1/2“ to DN 1000
- Easy installation under pressure
- 4-20 mA analog output for m³/h resp. m³/min
- Pulse output for m³ or M-Bus (optional)
- Inner diameter adjustable via keypad
- Total counter resettable
- **Adjustable via keys at the display:** Reference conditions, °C and mbar, 4-20 mA scaling, pulse weight
- Option: Bi-directional measurement. Blue or green arrows in the display indicate the flow direction. A meter reading is available for each flow direction
- Inner diameter adjustable via keypad

Options

Bi-directional measurement. Blue ~~or~~ green arrows in the display indicate the flow direction. A meter reading is available for each flow direction

Description	Order no.
Flow Check Universal flow sensor in basic version: Standard (92.7 m/s), probe length 220 mm, without display	2255332455
Option: Bi-directional measurement - includes 2 x 4 - 20 mA analog outputs and 2x pulse outputs. These are not available for Ethernet (PoE) and M-Bus interface	2255332627
Options for Flow Check Universal :	
Display	2255332628
Max version (185 m/s)	2255332629
High Speed version (224 m/s)	2255332630
Low speed version (50 m/s)	2255332631
1 % Accuracy of m.v. ± 0,3 % of f.s.	2255332632
Ethernet-Interface for Flow Check/ Flow Check Universal	2255332633
Ethernet-Interface PoE for Flow Check/ Flow Check Universal	2255332634
M-Bus board for Flow Check/ Flow Check Universal	2255332635
Probe length 120 mm	2255332636
Probe length 160 mm	2255332637
Probe length 300 mm	2255332638
Probe length 400 mm	2255332639
Probe length 500 mm	2255332640
Probe length 600 mm	2255332641
ISO calibration certificate (5 calibration points) for Flow sensors	2255332642
Gas type: ___ (specify type of gas when ordering)	2255332643
Gas mixture: ___ (specify gas mixture when ordering)	2255332644
Real gas calibration	2255332645
Special cleaning oil and grease-free (e. g. oxygen application)	2255332646
Silicone-free version incl. cleaning free of oil and grease	2255332647
Additional calibration curve stored in the sensor (selectable via display)	2255332648
Certificate of origin	2255332649

Technical data flow check universal	
Parameters	m³/h, l/min (1000 mbar, 20 °C) in case of compressed air resp. Nm³/h, Nl/min (1013 mbar, 0 °C) in case of gases
Units adjustable via keys at display	m³/h, m³/min, l/min, l/s, ft/min, cfm, m/s, kg/h, kg/min, g/s, lb/min, lb/h
Adjustable via keypad	Diameter for volume flow calculation, counter resettable
Sensor	Thermal mass flow sensor
Measuring medium	Air, gases
Gas types are adjustable over PMH service software or PMH data logger	Air, nitrogen, argon, helium, CO2, oxygen, vacuum
Measure range	See table page 75
Accuracy (m.v.: of meas. value) (f.s.: of full scale)	± 1.5 % of m.v. ± 0.3 % of f.s. on request ± 1.0 % of m.v. ± 0.3 % of f.s.
Operating temperature	-30-110 °C probe tube -30-80 °C housing
Operating pressure	-1-50 bar
Digital output	RS 485 interface (Modbus-RTU), Optional: Ethernet-Interface PoE), M-Bus
Analog output	4-20 mA for m³/h e. g. l/min;
Pulse output	1 Pulse per m³ or per liter galvanically isolated. Pulse value can be set on the display. Alternatively, the pulse output can be used as an alarm relay
Supply	18-36 VDC, 5 W
Burden	< 500 Ω
Housing	Polycarbonate (IP 65)
Probe tube	Stainless steel, 1.4301 Mounting length 220 mm, Ø 10 mm
Mounting thread	G 1/2“
Ø Casing	65 mm
Mounting position	any

Further accessories see pages 54 to 58

Easy installation and removal under pressure

- Even under pressure, the flow sensor Flow Check Universal is mounted by means of a standard 1/2“ ball valve. During mounting and dismounting the circlip ring avoids an uncontrolled ejection of the probe which may be caused by the operating pressure.

  For the mounting into different pipe diameters Flow Check Universal is available in the following probe lengths: 120, 160, 220, 300, 400 mm. So the flow sensors are being mounted into existing pipelines with inner diameters of 1/2“ upwards.

  The exact positioning of the sensor in the middle of the pipe is granted by means of the engraved depth scale. The maximum mounting depth corresponds with the resprective probe length. Example: Flow Check Universal with probe length 220 mm has a maximum mounting depth of 220 mm.

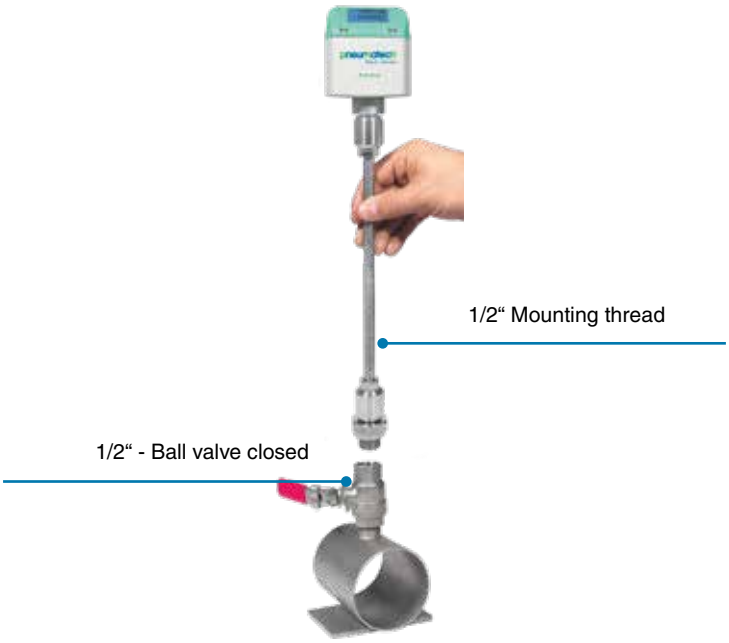
- If there is no suitable measuring point with 1/2 “ball valve, there are two easy ways to set up a measuring point:
  A. Weld on a 1/2“ screw neck and screw on a 1/2“
  ball valve

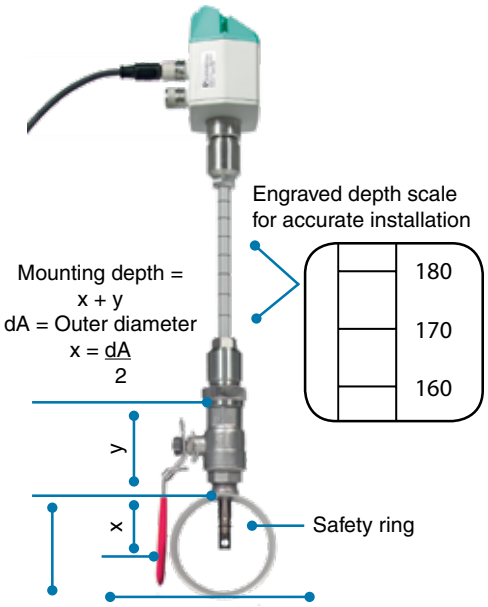
  B. Mount spot drilling collar incl. ball valve (see accessories)

  Drill holes can be drilled through the 1/2” ball valve into the existing tubing with the help of the drilling device, the drill chips are collected in a filter, then the probe is installed as described under 1).

- Due to the large measuring range of the probe even extreme requirements to the flow measurement (high volume flow in small pipe diameters) can be met.

  The measuring range is depending on the pipe diameter - see table on the right hand side.





Options


A Screw neck


B Spot drilling collar


Drill under pressure with the PMH Drill

Measuring ranges Flow Flow Check Universal for compressed air (ISO 1217: 1000 mbar, 20°C) Measuring ranges for other types of gas see pages 70-73

Inner diameter of pipe			**Flow Check Universal Standard (92,7 m/s)**		**Flow Check Universal Max. (185,0 m/s)**		**Flow Check Universal High Speed (224,0 m/s)**	
Inch	mm		Measuring range m³/h	(cfm)	Measuring range m³/h	(cfm)	Measuring range m³/h	(cfm)
1/2“	16,1	DN 15	759 l/min	26	1516 l/min	53	1836 l/min	64
3/4“	21,7	DN 20	89 m³/h	52	177 m³/h	104	215 m³/h	126
1“	27,3	DN 25	148 m³/h	86	294 m³/h	173	356 m³/h	210
1 1/4“	36,0	DN 32	266 m³/h	156	531 m³/h	312	643 m³/h	378
1 1/2“	41,9	DN 40	366 m³/h	215	732 m³/h	430	886 m³/h	521
2“	53,1	DN 50	600 m³/h	353	1197 m³/h	704	1450 m³/h	853
2 1/2“	68,9	DN 65	1028 m³/h	604	2051 m³/h	1207	2484 m³/h	1461
3“	80,9	DN 80	1424 m³/h	838	2842 m³/h	1672	3441 m³/h	2025
4“	110,0	DN 100	2644 m³/h	1556	5278 m³/h	3106	6391 m³/h	3761
5“	133,7	DN 125	3912 m³/h	2302	7808 m³/h	4594	9453 m³/h	5563
6“	159,3	DN 150	5560 m³/h	3272	11096 m³/h	6530	13436 m³/h	7907
8“	200,0	DN 200	8785 m³/h	5170	17533 m³/h	10318	21229 m³/h	12493
10“	250,0	DN 250	13744 m³/h	8088	27428 m³/h	16141	33211 m³/h	19544
12“	300,0	DN 300	19814 m³/h	11661	39544 m³/h	23271	47880 m³/h	28177

Flow Check - Inline flow meter

Easy installation into the existing pipeline due to integrated measuring section and weld neck flange (according to EN 1092-1 PN 40)

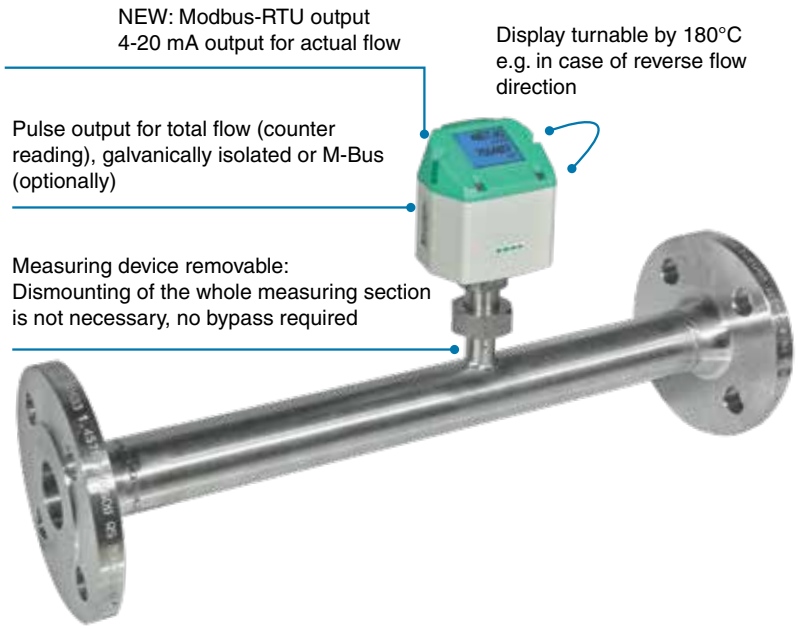
High measuring accuracy due to defined measuring section (inlet and outlet section)

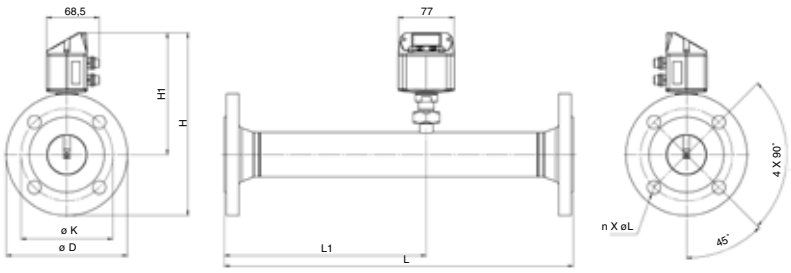
Display shows 2 values at the same time:

- Actual flow in m³/h, l/min
- Total consumption (counter reading) in m³, l resp. temperature measurement
- Values indicated in the display turnable by 180°C, e.g. in case of overhead installation

Application-technological features of the flow meters Flow Check:

- Digital interfaces such as Modbus RTU, Ethernet (PoE) and M-Bus enable connection to higher-level systems such as energy management systems, building management systems, SPS
- Easy and affordable installation
- Units freely selectable via keys at the display m³/h, m³/min, l/min, l/s, kg/h, kg/min, kg/s, cfm
- Compressed air counter up to 1.999.999.999 m³. Resetable to „zero“ via keypad
- Analogue output 4-20 mA, pulse output (galvanically separated)
- High measuring accuracy also in the lower measuring range (ideal for leakage measurement)
- Negligibly small loss of pressure
- Calorimetric measuring principle, no additional pressure and temperature measurement necessary, no mechanically moved parts
- Comprehensive diagnosis functions can be read out at the display or by remote access via Modbus-RTU like e. g. exceeding Max./Min values °C, calibration cycle, error codes, serial number. All parameters can be read out and changed via Modbus





Options

Zero-point adjustment, leak flow volume suppression

Bi-directional measurement. Blue or green arrows in the display indicate the direction of flow. A meter reading is available for each flow direction.

Measuring ranges flow Flow Check (Max version 185 m/s) for compressed air (ISO 1217: 1000 mbar, 20°C). Measuring ranges for other types of gas see pages 74 - 77									Flange DIN EN 1092-1		
Measuring section	**Outer pipe dia. mm**	**Inner pipe dia. mm**	**Measuring range m³/h**	**(cfm)**	**L mm**	**L1 mm**	**H mm**	**H1 mm**	**ØD mm**	**ØK mm**	**n x ØL**
DN 15	21,3	16,1	90	50	300	210	213,2	165,7	95	65	4 x 14
DN 20	26,9	21,7	170	100	475	275	218,2	165,7	105	75	4 x 14
DN 25	33,7	27,3	290	170	475	275	223,2	165,7	115	85	4 x 14
DN 32	42,4	36,0	530	310	475	275	235,7	165,7	140	100	4 x 18
DN 40	48,3	41,9	730	430	475*	275	240,7	165,7	150	110	4 x 18
DN 50	60,3	53,1	1195	700	475*	275	248,2	165,7	165	125	4 x 18
DN 65	76,1	68,9	2050	1205	475*	275	268,2	175,7	185	145	8 x 18
DN 80	88,9	80,9	2840	1670	475*	275	275,7	175,7	200	160	8 x 18
*Attention: Shortened inlet section! Please observe the recommended minimum inlet section (length = 15 x inner diameter) on site											

Description	**Order no.**
Flow Check 2F Flow meter with integr. DN 15 measuring section with Flange	2255332650
Flow Check 3F Flow meter with integr. DN 20 measuring section with Flange	2255332651
Flow Check 4F Flow meter with integr. DN 25 measuring section with Flange	2255332652
Flow Check 5F Flow meter with integr. DN 32 measuring section with Flange	2255332653
Flow Check 6F Flow meter with integr. DN 40 measuring section with Flange	2255332654
Flow Check 7F Flow meter with integr. DN 50 measuring section with Flange	2255332655
Flow Check 8F Flow meter with integr. DN 65 measuring section with Flange	2255332656
Flow Check 9F Flow meter with integr. DN 80 measuring section with Flange	2255332657
Bi-directional measurement - includes 2 x 4 - 20 mA analog outputs and 2x pulse outputs. These are not available for Ethernet (PoE) and M-Bus interface	2255332627
High-pressure version PN 40	2255332658
ANSI flange 150 lbs (instead of DIN flanges)	2255332659
ANSI flange 300 lbs (instead of DIN flanges)	2255332660
Measuring ranges	
Low Speed (50 m/s)	2255332661
Standard (92,7 m/s)	2255332662
High Speed (224 m/s)	2255332663
Options	
Special measuring range for Flow Check according to customer requirements	2255332664
1 % Accuracy of m.v. ± 0,3 % of f.s.	2255332632
Ethernet-Interface for Flow Check/ Flow Check Universal	2255332633
Ethernet-Interface PoE for Flow Check/ Flow Check Universal	2255332634
M-Bus board for Flow Check/ Flow Check Universal	2255332635
ISO calibration certificate (5 calibration points) for Flow sensors	2255332642
Gas type: ___ (specify type of gas when ordering)	2255332643
Gas mixture: ___ (specify gas mixture when ordering)	2255332644
Real gas calibration	2255332645
Special cleaning oil and grease-free (e. g. oxygen application)	2255332646
Silicone-free version incl. cleaning free of oil and grease	2255332647
Additional calibration curve stored in the sensor (selectable via display)	2255332648
Certificate of origin	2255332649

Technical data Flow Check	
Parameters	m³/h, l/min (1000 mbar, 20 °C) at compressed air or Nm³/h, Nl/min (1013 mbar, 0 °C) for gases
Units adjustable via keys at display	m³/h, m³/min, l/min, l/s, ft/min, cfm, m/s, kg/h, kg/min, g/s, lb/min, lb/h
Sensor	Thermal mass flow sensor
Measuring medium	Air, gases
Gas types are adjustable over PMH service software or PMH data logger	Air, nitrogen, argon, helium, CO2, oxygen, vacuum
Measure range	See table above
Accuracy (m.v.: of meas. value) (f.s.: of full scale)	± 1.5 % of m.v. ± 0.3 % of f.s. on request ± 1.0 % of m.v. ± 0.3 % of f.s.
Operating temperature	-30-80 °C
Operating pressure	-1 to 16 bar optional to PN 40
Digital output	RS 485 interface (Modbus-RTU), optional: Ethernet-Interface PoE), M-Bus
Analog output	4-20 mA for m³/h e. g. l/min
Pulse output	1 Pulse per m³ or per liter galvanically isolated. Pulse value can be set on the display. Alternatively, the pulse output can be used as an alarm relay
Supply	18-36 VDC, 5 W
Burden	< 500 Ω
Housing	Polycarbonate (IP 65)
Measuring section	stainless steel, 1.4301 or 1.4571
Process connection	Flange (to DIN EN 1092-1 e. g. ANSI 150 lbs or ANSI 300 lbs)
Mounting position	Any

Flow Check - Inline flow meter

Easy installation in existing piping through integrated measuring section (1/4˝ to 2“)

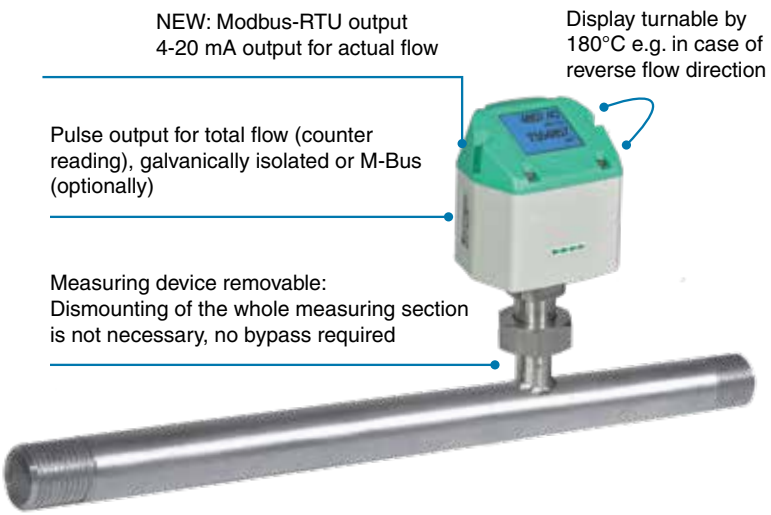
High measuring accuracy due to defined measuring section (inlet and outlet section)

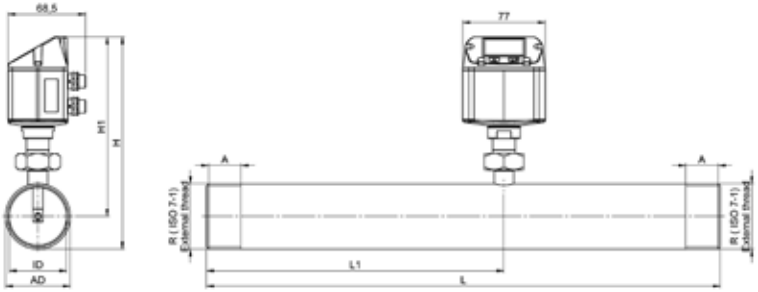
Display shows 2 values at the same time:

- Actual flow in m³/h, l/min,-
- Total consumption (counter reading) in m³, l resp. temperature measurement
- Values indicated in the display turnable by 180°C, e.g. in case of overhead installation

Application-technological features of the flow meters Flow Check:

- Digital interfaces such as Modbus RTU, Ethernet (PoE) and M-Bus enable connection to higher-level systems such as energy management systems, building management systems, SPS,-
- Easy and affordable installation
- Units freely selectable via keys at the display m³/h, m³/min, l/min, l/s, kg/h, kg/min, kg/s, cfm
- Compressed air counter up to 1.999.999.999 m³. Resetable to „zero“ via keypad
- Analogue output 4-20 mA, pulse output (galvanically separated)
- High measuring accuracy also in the lower measuring range (ideal for leakage measurement)
- Negligibly small loss of pressure
- Calorimetric measuring principle, no additional pressure and temperature measurement necessary, no mechanically moved parts
- Comprehensive diagnosis functions can be read out at the display or by remote access via Modbus-RTU like e. g. exceeding Max./Min values °C, calibration cycle, error codes, serial number. All parameters can be read out and changed via Modbus





Options

Zero-point adjustment, leak flow volume suppression

Bi-directional measurement. Blue or green arrows in the display indicate the direction of flow. A meter reading is available for each flow direction.

Measuring ranges flow Flow Check (Max. version 185 m/s) for compressed air (ISO 1217: 1000 mbar, 20 ° C) Measuring ranges for other types of gas see pages 74-77

Measuring section	Outer pipe dia. mm	Inner pipe dia. mm	Measuring ranges m³/h	cfm	L mm	L1 mm	H mm	H1 mm	A mm
R 1/4“	13,7	8,9	105 l/min	3,6	194	137	174,7	165,7	15
R 1/2“	21,3	16,1	90	50	300	210	176,4	165,7	20
R 3/4“	26,9	21,7	170	100	475	275	179,2	165,7	20
R 1“	33,7	27,3	290	170	475	275	182,6	165,7	25
R 1 1/4“	42,4	36,0	530	310	475	275	186,9	165,7	25
R 1 1/2“	48,3	41,9	730	430	475*	275	186,9	165,7	25
R 2“	60,3	53,1	1195	700	475*	275	195,9	165,7	30

*Attention: Shortened inlet section! Please observe the recommended minimum inlet section (length = 15 x inner diameter) on site

Description	Order no. Stainless steel 1.4571	Order no. Stainless steel 1.4301
Flow Check 1 Flow meter with 1/4“ measuring section	2255332744	2255330393
Flow Check 2 Flow meter with 1/2“ measuring section	2255332738	2255330394
Flow Check 3 Flow meter with 3/4“ measuring section	2255332739	2255330395
Flow Check 4 Flow meter with 1“ measuring section	2255332740	2255330396
Flow Check 5 Flow meter with 1 1/4“ measuring section	2255332741	2255330397
Flow Check 6 Flow meter with 1 1/2“ measuring section	2255332742	2255330398
Flow Check 7 Flow meter with 2“ measuring section	2255332443	2255330399
Bi-directional measurement - includes 2 x 4 - 20 mA analog outputs and 2x pulse outputs. These are omitted for Ethernet (PoE) and M-Bus		2255332627
High-pressure version PN 40		2255332658
Measuring ranges		
Low Speed (50 m/s)		2255332661
Standard (92,7 m/s)		2255332662
High Speed (224 m/s)		2255332663
Options		
Special measuring range for Flow Check according to customer requirements		2255332664
1 % Accuracy of m.v. ± 0,3 % of f.s.		2255332632
Ethernet-Interface for Flow Check/ Flow Check Universal		2255332633
Ethernet-Interface PoE for Flow Check/ Flow Check Universal		2255332634
M-Bus board for Flow Check/ Flow Check Universal		2255332635
ISO calibration certificate (5 calibration points) for Flow sensors		**2255332642**
Gas type: ___ (specify type of gas when ordering)		2255332643
Gas mixture: ___ (specify gas mixture when ordering)		2255332644
Real gas calibration		2255332645
Special cleaning oil and grease-free (e. g. oxygen application)		2255332646
Silicone-free version incl. cleaning free of oil and grease		2255332647
Additional calibration curve stored in the sensor (selectable via display)		2255332648
Certificate of origin		2255332649

Technical data flow check	
Parameters	m³/h, l/min (1000 mbar, 20 ° C) at compressed air or Nm³/h, Nl/min (1013 mbar, 0 °C) for gases
Units adjustable via keys at display	m³/h, m³/min, l/min, l/s, ft/min, cfm, m/s, kg/h, kg/min, g/s, lb/min, lb/h
Sensor	Thermal mass flow sensor
Measuring medium	Air, gases
Gas types are adjustable over PMH service software or PMH data logger	Air, nitrogen, argon, helium, CO2, oxygen, vacuum
Measure range	See table above
Accuracy (m.v.: of meas. value) (f.s.: of full scale)	± 1.5 % of m.v. ± 0.3 % of f.s. on request ± 1.0 % of m.v. ± 0.3 % of f.s.
Operating temperature	-30-80 °C
Operating pressure	-1 to 16 bar optional to PN 40
Digital output	RS 485 interface (Modbus-RTU), optional: Ethernet-Interface PoE), M-Bus
Analog output	4-20 mA for m³/h e. g. l/min
Pulse output	1 Pulse per m³ or per liter galvanically isolated. Pulse value can be set on the display. Alternatively, the pulse output can be used as an alarm relay
Supply	18-36 VDC, 5 W
Burden	< 500 Ω
Housing	Polycarbonate (IP 65)
Measuring section	Stainless steel, 1.4301 or 1.4571
Process connection	R 1/4“ to R 2“ (BSP British Standard Piping) or 1/2“ to 2“ NPT-thread
Mounting position	Any

Accessories Flow Check/ Flow Check Universal

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
Cable for alarm / pulse output, with M12 plug, 5 m	2255332609
Cable for alarm / pulse output, with M12 plug, 10 m	2255332610
Connection cable for Flow/ PDP series, 5 m shielded	2255332607
Connection cable for Flow/ PDP series, 10 m shielded	2255332608

Connection cable

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

Ethernet connection cable

Description	Order no.
M12 T-connector for Flow Check/ Flow Check Universal for connecting several sensors to an M-Bus or Modbus network	2255332666

M12 T-connection for flow check

Description	Order no.
M12 plug for Flow Check/ Flow Check Universal	2255332611
M12 plug angled 90°	2255332612

M12 plug for Flow Check

M12 plug angled 90°

Description	Order no.
Drilling jig incl. drill (Ø 13 mm)	2255332667

Accessories Flow Check/ Flow Check Universal

Description	Order no.
High pressure protection recommended for installations from 10 to 50 bar (Flow Check Universal)	2255332668

- Only suitable for Flow Check Universal with sensor length: 160 mm, 220 mm, 300 mm. For further sensor length on request

Description	Order no.
Thickness meter PMH 0495 incl. case and calibration block	2255332669

Thickness meter

Description	Order no.
Welding Nipple, L = 35 mm, male thread, R 1/2″ stainless steel 1.4301	2255332670
Welding Nipple, L = 35 mm, male thread, R 1/2″ stainless steel 1.4571	2255332671

Description	Order no.
X-connection for connection of pressure and dew point sensor at the same measuring point (incl. 2x quick-release coupling)	2255332673

Description	Order no.
Ball valve I / I G 1/2″ stainless steel	2255332672

Description	Order no.
Thread adapter G 1/2″ female thread to NPT 1/2″ male thread	2255332674

Thread adapter G 1/2

Accessories for all Flow Check

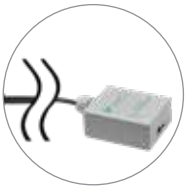
Description	Order no.
Power supply in wall housing for max. 2 sensors of the Flow / PDP Sens series 100-240 V, 23 VA, 50-60 Hz / 24 VDC, 0.35 A	2255332616
Power supply in wall housing for max. 4 sensors of the Flow Check/ Flow Check Universal series 100-240 V, 23 VA, 50-60 Hz / 24 VDC, 0.35 A	2255332690

Power supply in wall housing

Description	Order no.
Plug-in power supply 100-240 V, AC / 24 V for Flow / PDP Sens	2255332617

Plug-in power supply

Description	Order no.
PMH service software incl. PC connection set, USB port and interface adapter to the sensor	2255332597



PMH service software

Description	Order no.
External gateway PROFIBUS for connection to integrated RS 485 interface	2255332467
External gateway PROFINET for connection to integrated RS 485 interface	2255332676

External gateway PROFIBUS

Description	Order no.
Transport case for all sensors (dimensions: 500 x 360 x 120 mm)	2255332518

Transport case for all sensors

External thread	Pipe (outside ø thickness)	Total length	Order no.
R 1/2“	21,3 x 2,6 mm	500 mm	2255332678
R 3/4“	26,9 x 2,6 mm	600 mm	2255332679
R 1“	33,7 x 3,2 mm	750 mm	2255332680
R 1 1/4“	42,4 x 3,2 mm	900 mm	2255332681
R 1 1/2“	48,3 x 3,2 mm	1000 mm	2255332682
R 2“	60,3 x 3,6 mm	1250 mm	2255332683
R 2 1/2“	76,1 x 3,6 mm	1500 mm	2255332684
From DN 80 with flange DIN 2633			
DN 80/88,9	88,9 x 2,0 mm	1850 mm	2255332685
DN 100/114,3	114,3 x 2,0 mm	2104 mm	2255332686
DN 125/139,7	139,7 x 3,0 mm	2860 mm	2255332687
DN 150/168,3	168,3 x 3,0 mm	3110 mm	2255332688

Practical accessories measuring sections

Measuring sections for precise measurements: Measuring section in stainless steel 1.4301 incl. ball valve, up to DN 65 (R 2 1/2″) with R male thread, from DN 80 with welding neck to DIN 2633.

Measuring section 1/2“

Description	DN	Order no.
Spot drilling collar for pipe-Ø 032 - 036 mm, length: 100 mm*		2255332689
Spot drilling collar for pipe-Ø 036 - 040 mm, length: 100 mm*		2255332691
Spot drilling collar for pipe-Ø 040 - 044 mm, length: 150 mm*		2255332692
Spot drilling collar for pipe-Ø 044 - 051 mm, length: 200 mm*		2255332693
Spot drilling collar for pipe-Ø 048 - 055 mm, length: 200 mm*	40	2255332694
Spot drilling collar for pipe-Ø 052 - 059 mm, length: 200 mm*		2255332695
Spot drilling collar for pipe-Ø 057 - 064 mm, length: 200 mm*	50	2255332696
Spot drilling collar for pipe-Ø 063 - 070 mm, length: 200 mm*		2255332697
Spot drilling collar for pipe-Ø 070 - 077 mm, length: 200 mm*	65	2255332698
Spot drilling collar for pipe-Ø 075 - 083 mm, length: 200 mm*		2255332699
Spot drilling collar for pipe-Ø 082 - 090 mm, length: 200 mm*		2255332700
Spot drilling collar for pipe-Ø 087 - 097 mm, length: 200 mm*	80	2255332701
Spot drilling collar for pipe-Ø 095 - 104 mm, length: 200 mm*		2255332702
Spot drilling collar for pipe-Ø 102 - 112 mm, length: 200 mm*		2255332703
Spot drilling collar for pipe-Ø 108 - 118 mm, length: 200 mm*	100	2255332704
Spot drilling collar for pipe-Ø 118 - 128 mm, length: 200 mm*		2255332705
Spot drilling collar for pipe-Ø 125 - 135 mm, length: 200 mm*		2255332706
Spot drilling collar for pipe-Ø 133 - 144 mm, length: 200 mm*	125	2255332707
Spot drilling collar for pipe-Ø 145 - 155 mm, length: 250 mm*		2255332708
Spot drilling collar for pipe-Ø 151 - 161 mm, length: 250 mm*	150	2255332709
Spot drilling collar for pipe-Ø 159 - 170 mm, length: 250 mm*		2255332710
Spot drilling collar for pipe-Ø 168 - 180 mm, length: 250 mm*		2255332711
Spot drilling collar for pipe-Ø 180 - 191 mm, length: 250 mm*	175	2255332712
Spot drilling collar for pipe-Ø 193 - 203 mm, length: 300 mm*		2255332713
Spot drilling collar for pipe-Ø 200 - 210 mm, length: 300 mm*		2255332714
Spot drilling collar for pipe-Ø 209 - 220 mm, length: 300 mm*	200	2255332715

*Incl. 1/2″ ball valve
* not suitable for copper and plastic pipes

Useful accessories-spot drilling collars for compressed air lines

- If there is no measuring site with 1/2“ ball valve present it can be set up by means of spot drilling collars
- The spot drilling collar is imposed onto the pipe and tightened via thread rods. The enveloping rubber gasket is pressure-tight up to 10 bar. By means of the drilling jig it is possible to drill through the 1/2“ ball valve into the existing pipe.
- **Important**: Please indicate the exact outer diameter of the existing pipe when placing the order resp. please select the suitable spot drilling collar from the adjoining list.

PMH Service Software - for Flow Check meters

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

The flow sensors Flow Check can be connected to the PC and the following adjustments can be carried out by means of the PMH Service Software:

- Selection of the gas type (Compressed air, CO2, N2O, N2, O2, NG, Ar, CH4)
- Selection of the units for flow, velocity, temperature, consumption
- Selection of units: m³/h, Nm³/h, m³/min, Nm³/min, ltr/h, Nltr/h, ltr/min, Nltr/min, ltr/s, Nltr/s, cfm, SCFM, kg/h, kg/min, kg/s
- Adjustment of the reference temperature, reference pressure
- Zero-point adjustment, low flow cut-off adjustable
- Modbus and M-Bus settings
- Scaling of the 4-20 mA analog output
- Reading out of: Version number, production date, serial number, date of last calibration
- Adjustment of alarm limits
- Reset to factory defaults
- Transfer of updates to the sensor (firmware update, language update)

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

Measuring ranges Flow Check Universal

Measuring ranges Low-Speed version

Flow measuring ranges Flow Check Universal - insertion meter

Inner pipe diameter			Low-Speed version (50 m/s)									
			Measuring range Nm³/h * / [cfm]									
Inch	mm	DN	Air**	Nitrogen (N2)	Argon (Ar)	Oxygen (O2)	Carbon dioxide (CO2)	Methane Natural gas (CH4)	Helium (He)	Hydrogen (H2)	Propane (C3H8)	Recommended probe length
1/2“	16,1	DN 15	24 [14]	22 [13]	38 [22]	23 [13]	24 [14]	14 [8]	10 [6]	7 [4]	11 [6]	160 mm - 6,299 inch
3/4“	21,7	DN 20	48 [28]	44 [26]	75 [44]	45 [26]	47 [27]	28 [16]	20 [11]	14 [8]	22 [13]	
1“	27,3	DN 25	79 [46]	73 [43]	124 [73]	75 [44]	78 [46]	47 [27]	33 [19]	23 [13]	36 [21]	
1 1/4“	36,0	DN 32	143 [84]	132 [77]	224 [132]	136 [80]	142 [83]	85 [50]	60 [35]	42 [24]	66 [38]	
1 1/2“	41,9	DN 40	197 [116]	181 [107]	309 [182]	188 [111]	195 [115]	117 [68]	82 [48]	58 [34]	90 [53]	
2“	53,1	DN 50	323 [190]	297 [175]	506 [297]	308 [181]	320 [188]	191 [112]	135 [79]	95 [55]	148 [87]	
2 1/2“	68,9	DN 65	554 [326]	509 [300]	866 [510]	528 [311]	548 [322]	328 [193]	231 [136]	162 [95]	254 [150]	220 mm - 8,661 inch
3“	80,9	DN 80	768 [452]	706 [415]	1201 [706]	732 [431]	760 [447]	454 [267]	321 [188]	225 [132]	353 [207]	
4“	110,0	DN 100	1426 [839]	1311 [772]	2230 [1312]	1360 [800]	1411 [830]	844 [496]	596 [350]	418 [246]	655 [386]	
5“	133,7	DN 125	2110 [1241]	1940 [1141]	3299 [1941]	2011 [1183]	2088 [1228]	1248 [734]	881 [519]	619 [364]	970 [570]	
6“	159,3	DN 150	2999 [1765]	2758 [1623]	4689 [2759]	2859 [1682]	2967 [1746]	1774 [1044]	1253 [737]	880 [518]	1379 [811]	300 mm - 11,811 inch
8“	200,0	DN 200	4738 [2788]	4357 [2564]	7409 [4360]	4517 [2658]	4689 [2759]	2804 [1650]	1980 [1165]	1391 [819]	2178 [1282]	
10“	250,0	DN 250	7413 [4362]	6817 [4011]	11590 [6820]	7067 [4159]	7336 [4317]	4386 [2581]	3098 [1823]	2177 [1281]	3408 [2005]	
12“	300,0	DN 300	10687 [6289]	9828 [5783]	16710 [9833]	10189 [5996]	10576 [6224]	6324 [3721]	4466 [2628]	3138 [1847]	4914 [2891]	

Flow measuring ranges Flow Check Universal - insertion meter

Inner pipe diameter			Low-Speed version (50 m/s)											
			Measuring range Nm³/h * / [cfm]											
Inch	mm	DN	Corgon ®18	Corgon ®10	Corgon ®20	Forming gas 90% N2 + 10% H2	Natural gas L (CH4)	Biogas 50%CH4 + 50% CO2	Biogas 60% CH4 + 40% CO2	LPG 60% C3H8 + 40%C4H10	LPG 50% C3H8 + 50% C4H10	Nitrous (N2O)	Ethyne/ Acetylene (C2H2)	Recommended probe length
1/2“	16,1	DN 15	35 [21]	36 [21]	35 [20]	20 [12]	15 [9]	17 [10]	17 [10]	13 [7]	12 [7]	24 [14]	13 [8]	160 mm - 6,299 inch
3/4“	21,7	DN 20	70 [41]	71 [42]	69 [40]	40 [23]	30 [17]	34 [20]	34 [20]	25 [15]	25 [14]	47 [27]	26 [15]	
1“	27,3	DN 25	116 [68]	119 [70]	115 [67]	67 [39]	50 [29]	57 [34]	56 [33]	42 [24]	41 [24]	78 [45]	44 [26]	
1 1/4“	36,0	DN 32	209 [123]	214 [126]	208 [122]	121 [71]	91 [53]	104 [61]	101 [59]	76 [45]	74 [44]	140 [89]	80 [47]	
1 1/2“	41,9	DN 40	288 [170]	296 [174]	286 [168]	167 [98]	125 [73]	143 [84]	140 [82]	105 [62]	103 [60]	194 [114]	110 [65]	
2“	53,1	DN 50	472 [278]	484 [284]	468 [275]	273 [161]	205 [120]	235 [138]	229 [135]	172 [101]	168 [99]	317 [186]	181 [106]	
2 1/2“	68,9	DN 65	809 [476]	829 [488]	803 [472]	469 [276]	351 [207]	403 [237]	393 [231]	295 [173]	288 [169]	543 [320]	311 [183]	220 mm - 8,661 inch
3“	80,9	DN 80	1121 [660]	1149 [676]	1112 [654]	649 [382]	487 [286]	558 [328]	544 [320]	409 [240]	400 [235]	753 [443]	430 [253]	
4“	110,0	DN 100	2082 [1225]	2134 [1255]	2066 [1216]	1206 [710]	905 [532]	1037 [610]	1011 [595]	759 [447]	742 [437]	1399 [823]	800 [470]	
5“	133,7	DN 125	3080 [1813]	3156 [1857]	3056 [1798]	1785 [1050]	1338 [787]	1534 [903]	1496 [880]	1123 [661]	1098 [646]	2069 [1217]	1183 [696]	
6“	159,3	DN 150	4378 [2576]	4486 [2640]	4344 [2556]	2537 [1493]	1903 [1119]	2181 [1283]	2126 [1251]	1597 [939]	1561 [919]	2941 [1731]	1682 [990]	300 mm - 11,811 inch
8“	200,0	DN 200	6918 [4071]	7089 [4171]	6864 [4039]	4009 [2359]	3006 [1769]	3446 [2028]	3359 [1977]	2523 [1485]	2467 [1452]	4647 [2735]	2658 [1564]	
10“	250,0	DN 250	10823 [6369]	11090 [6526]	10738 [6319]	6271 [3690]	4703 [2768]	5392 [3173]	5255 [3093]	3947 [2323]	3860 [2271]	7270 [4278]	4158 [2447]	
12“	300,0	DN 300	15604 [9183]	15988 [9409]	15481 [9110]	9042 [5321]	6781 [3990]	7774 [4575]	7577 [4459]	5691 [3349]	5565 [3275]	10482 [6168]	5995 [3528]	

* Nm³/h according to DIN 1343: 0 °C, 1013,25 hPa for gases
** ISO 1217: 20 °C, 1000 hPa in air

If you want to measure the consumption / flow rate of a specific gas mixture, ask us.
We can offer a real gas adjustment under process conditions on request.

Measuring ranges Standard version

Flow measuring ranges Flow Check Universal - insertion meter

Inner pipe diameter			Standard version (92,7 m/s)									
			Measuring range Nm³/h * / [cfm]									
Inch	mm	DN	Air**	Nitrogen (N2)	Argon (Ar)	Oxygen (O2)	Carbon dioxide (CO2)	Methane Natural gas (CH4)	Helium (He)	Hydrogen (H2)	Propane (C3H8)	Recommended probe length
1/2“	16,1	DN 15	45 [26]	41 [24]	71 [41]	43 [25]	45 [26]	26 [15]	19 [11]	13 [7]	20 [12]	
3/4“	21,7	DN 20	89 [52]	81 [48]	139 [81]	84 [49]	88 [51]	52 [31]	37 [21]	26 [15]	40 [24]	
1“	27,3	DN 25	147 [86]	135 [79]	230 [135]	140 [82]	146 [86]	87 [51]	61 [36]	43 [25]	67 [39]	160 mm - 6,299 inch
1 1/4“	36,0	DN 32	266 [156]	244 [144]	416 [245]	253 [149]	263 [155]	157 [92]	111 [65]	78 [46]	122 [72]	
1 1/2“	41,9	DN 40	366 [215]	337 [198]	573 [337]	349 [205]	363 [213]	217 [127]	153 [90]	107 [63]	168 [99]	
2“	53,1	DN 50	600 [353]	551 [324]	938 [552]	572 [336]	593 [349]	355 [208]	250 [147]	176 [103]	275 [162]	
2 1/2“	68,9	DN 65	1028 [604]	945 [556]	1607 [945]	980 [576]	1017 [598]	608 [358]	429 [252]	301 [177]	472 [278]	
3“	80,9	DN 80	1424 [838]	1309 [770]	2227 [1310]	1358 [799]	1409 [829]	842 [496]	595 [350]	418 [246]	654 [385]	220 mm - 8,661 inch
4“	110,0	DN 100	2644 [1556]	2432 [1431]	4135 [2433]	2521 [1484]	2617 [1540]	1565 [921]	1105 [650]	776 [457]	1216 [715]	
5“	133,7	DN 125	3912 [2302]	3597 [2117]	6116 [3599]	3729 [2195]	3871 [2278]	2315 [1362]	1635 [962]	1149 [676]	1798 [1058]	
6“	159,3	DN 150	5560 [3272]	5113 [3009]	8693 [5116]	5301 [3119]	5502 [3238]	3290 [1936]	2324 [1367]	1633 [961]	2556 [1504]	
8“	200,0	DN 200	8785 [5170]	8079 [4754]	13736 [8083]	8376 [4929]	8694 [5116]	5198 [3059]	3672 [2160]	2580 [1518]	4039 [2377]	300 mm - 11,811 inch
10“	250,0	DN 250	13744 [8088]	12638 [7437]	21488 [12646]	13103 [7711]	13601 [8004]	8133 [4786]	5744 [3380]	4036 [2375]	6319 [3718]	
12“	300,0	DN 300	19814 [11661]	18221 [10723]	30980 [18232]	18891 [11117]	19609 [11539]	11725 [6900]	8281 [4873]	5819 [3424]	9110 [5361]	

Flow measuring ranges Flow Check Universal - insertion meter

Inner pipe diameter			Standard version (92,7 m/s)											
			Measuring range Nm³/h * / [cfm]											
Inch	mm	DN	Corgon ®18	Corgon ®10	Corgon ®20	Forming gas 90% N2 + 10% H2	Natural gas L (CH4)	Biogas 50% CH4 + 50% CO2	Biogas 60% CH4 + 40% CO2	LPG 60% C3H8 + 40% C4H10	LPG 50% C3H8 + 50% C4H10	Nitrous (N2O)	Ethyne/ Acetylene (C2H2)	Recommended probe length
1/2“	16,1	DN 15	66 [39]	68 [40]	66 [38]	38 [22]	28 [17]	33 [19]	32 [19]	24 [14]	23 [13]	44 [26]	25 [15]	
3/4“	21,7	DN 20	130 [76]	133 [78]	129 [75]	75 [44]	56 [33]	64 [38]	63 [37]	47 [27]	46 [27]	87 [51]	49 [29]	
1“	27,3	DN 25	215 [126]	220 [130]	213 [125]	124 [73]	93 [55]	107 [63]	104 [61]	78 [46]	76 [45]	144 [85]	82 [48]	160 mm - 6,299 inch
1 1/4“	36,0	DN 32	388 [228]	398 [234]	385 [227]	225 [132]	168 [99]	193 [114]	188 [111]	141 [83]	138 [81]	261 [153]	149 [87]	
1 1/2“	41,9	DN 40	535 [315]	548 [322]	531 [312]	310 [182]	232 [136]	266 [157]	260 [153]	195 [114]	191 [112]	359 [211]	205 [121]	
2“	53,1	DN 50	876 [515]	897 [528]	869 [511]	507 [298]	380 [224]	436 [256]	425 [250]	319 [188]	312 [183]	588 [346]	336 [198]	
2 1/2“	68,9	DN 65	1500 [883]	1537 [905]	1489 [876]	869 [511]	652 [383]	747 [440]	728 [428]	547 [322]	535 [315]	1008 [593]	576 [339]	
3“	80,9	DN 80	2079 [1223]	2130 [1254]	2063 [1214]	1205 [709]	903 [531]	1036 [609]	1009 [594]	758 [446]	741 [436]	1397 [822]	799 [470]	220 mm - 8,661 inch
4“	110,0	DN 100	3861 [2272]	3956 [2328]	3831 [2254]	2237 [1316]	1678 [987]	1923 [1132]	1875 [1103]	1408 [828]	1377 [810]	2594 [1526]	1483 [873]	
5“	133,7	DN 125	5711 [3361]	5852 [3444]	5666 [3335]	3309 [1947]	2482 [1460]	2845 [1674]	2773 [1632]	2083 [1226]	2037 [1198]	3837 [2258]	2194 [1291]	
6“	159,3	DN 150	8118 [4777]	8318 [4895]	8054 [4740]	4704 [2768]	3528 [2076]	4044 [2380]	3942 [2320]	2961 [1742]	2895 [1704]	5453 [3209]	3119 [1835]	
8“	200,0	DN 200	12827 [7548]	13143 [7734]	12726 [7489]	7432 [4374]	5574 [3280]	6390 [3760]	6229 [3665]	4678 [2753]	4575 [2692]	8616 [5071]	4928 [2900]	300 mm - 11,811 inch
10“	250,0	DN 250	20066 [11809]	20560 [12100]	19908 [11716]	11627 [6842]	8720 [5132]	9997 [5883]	9744 [5734]	7319 [4307]	7157 [4212]	13480 [7932]	7709 [4537]	
12“	300,0	DN 300	28930 [17025]	29643 [17444]	28702 [16891]	16763 [9865]	12572 [7399]	14413 [8482]	14048 [8267]	10552 [6209]	10318 [6072]	19434 [11437]	11115 [6541]	

* Nm³/h according to DIN 1343: 0 °C, 1013,25 hPa for gases
** ISO 1217: 20 °C, 1000 hPa in air

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Measuring ranges Max version

Flow measuring ranges Flow Check Universal - insertion meter

Inner pipe diameter			Max version (185,0 m/s)									
			Measuring range Nm³/h * / [cfm]									
Inch	mm	DN	Air**	Nitrogen (N2)	Argon (Ar)	Oxygen (O2)	Carbon dioxide (CO2)	Methane Natural gas (CH4)	Helium (He)	Hydrogen (H2)	Propane (C3H8)	Recommended probe length
1/2“	16,1	DN 15	90 [53]	83 [49]	142 [83]	86 [51]	90 [52]	53 [31]	38 [22]	26 [15]	41 [24]	160 mm - 6,299 inch
3/4“	21,7	DN 20	177 [104]	163 [96]	278 [163]	169 [99]	175 [103]	105 [61]	74 [43]	52 [30]	81 [48]	
1“	27,3	DN 25	294 [173]	271 [159]	460 [271]	280 [165]	291 [171]	174 [102]	123 [72]	86 [50]	135 [79]	
1 1/4“	36,0	DN 32	531 [312]	488 [287]	830 [489]	506 [298]	525 [309]	314 [185]	222 [130]	156 [91]	244 [143]	
1 1/2“	41,9	DN 40	732 [430]	673 [396]	1144 [673]	697 [410]	724 [426]	433 [254]	305 [180]	215 [126]	336 [198]	
2“	53,1	DN 50	1197 [704]	1101 [648]	1872 [1101]	1141 [671]	1185 [697]	708 [417]	500 [294]	351 [206]	550 [324]	
2 1/2“	68,9	DN 65	2051 [1207]	1886 [1110]	3207 [1887]	1955 [1151]	2030 [1194]	1214 [714]	857 [504]	602 [354]	943 [555]	220 mm - 8,661 inch
3“	80,9	DN 80	2842 [1672]	2614 [1538]	4444 [2615]	2710 [1594]	2813 [1655]	1682 [989]	1188 [699]	834 [491]	1307 [769]	
4“	110,0	DN 100	5278 [3106]	4854 [2856]	8252 [4856]	5032 [2961]	5223 [3074]	3123 [1838]	2206 [1298]	1550 [912]	2427 [1428]	
5“	133,7	DN 125	7807 [4594]	7179 [4225]	12206 [7183]	7443 [4380]	7726 [4546]	4620 [2718]	3263 [1920]	2293 [1349]	3589 [2112]	
6“	159,3	DN 150	11096 [6530]	10204 [6005]	17349 [10210]	10579 [6226]	10981 [6462]	6566 [3864]	4637 [2729]	3259 [1917]	5102 [3002]	300 mm - 11,811 inch
8“	200,0	DN 200	17533 [10318]	16123 [9488]	27413 [16132]	16716 [9837]	17351 [10211]	10375 [6105]	7328 [4312]	5149 [3030]	8061 [4744]	
10“	250,0	DN 250	27428 [16141]	25223 [14843]	42884 [25237]	26150 [15389]	27143 [15974]	16231 [9552]	11463 [6746]	8055 [4740]	12611 [7421]	
12“	300,0	DN 300	39544 [23271]	36364 [21400]	61827 [36385]	37701 [22187]	39133 [23030]	23400 [13771]	16527 [9726]	11614 [6834]	18182 [10700]	

Flow measuring ranges Flow Check Universal - insertion meter

Inner pipe diameter			Max version (185,0 m/s)											
			Measuring range Nm³/h * / [cfm]											
Inch	mm	DN	Corgon ®18	Corgon ®10	Corgon ®20	Forming gas 90% N2 + 10% H2	Natural gas L(CH4)	Biogas 50% CH4 + 50% CO2	Biogas 60% CH4 + 40% CO2	LPG 60% C3H8 + 40% C4H10	LPG 50% C3H8 + 50% C4H10	Nitrous (N2O)	Ethyne/ Acetylene (C2H2)	Recommended probe length
1/2“	16,1	DN 15	132 [78]	136 [80]	131 [77]	76 [45]	57 [33]	66 [38]	64 [37]	48 [28]	47 [27]	89 [52]	51 [30]	160 mm - 6,299 inch
3/4“	21,7	DN 20	259 [152]	266 [156]	257 [151]	150 [88]	112 [66]	129 [76]	126 [74]	94 [55]	92 [54]	174 [102]	99 [58]	
1“	27,3	DN 25	430 [253]	440 [259]	426 [251]	249 [146]	187 [110]	214 [126]	208 [122]	156 [92]	153 [90]	289 [170]	165 [97]	
1 1/4“	36,0	DN 32	775 [456]	795 [467]	769 [453]	449 [264]	337 [198]	386 [227]	376 [221]	283 [166]	276 [162]	521 [306]	298 [175]	
1 1/2“	41,9	DN 40	1068 [629]	1095 [644]	1060 [624]	619 [364]	464 [273]	532 [313]	519 [305]	389 [229]	381 [224]	718 [422]	410 [241]	
2“	53,1	DN 50	1748 [1029]	1791 [1054]	1734 [1020]	1013 [596]	759 [447]	871 [512]	849 [499]	637 [375]	623 [367]	1174 [691]	671 [395]	
2 1/2“	68,9	DN 65	2995 [1762]	3069 [1806]	2971 [1748]	1735 [1021]	1301 [766]	1492 [878]	1454 [856]	1092 [642]	1068 [628]	2012 [1184]	1150 [677]	220 mm - 8,661 inch
3“	80,9	DN 80	4150 [2442]	4252 [2502]	4117 [2423]	2404 [1415]	1803 [1061]	2067 [1216]	2015 [1186]	1513 [890]	1480 [871]	2788 [1640]	1594 [938]	
4“	110,0	DN 100	7706 [4535]	7896 [4647]	7646 [4499]	4465 [2628]	3349 [1971]	3839 [2259]	3742 [2202]	2811 [1654]	2748 [1617]	5177 [3046]	2961 [1742]	
5“	133,7	DN 125	11399 [6708]	11679 [6873]	11309 [6655]	6605 [3887]	4954 [2915]	5679 [3342]	5535 [3257]	4157 [2446]	4065 [2392]	7657 [4506]	4379 [2577]	
6“	159,3	DN 150	16201 [9534]	16600 [9769]	16074 [9459]	9388 [5524]	7041 [4143]	8071 [4750]	7867 [4630]	5909 [3477]	5778 [3400]	10883 [6405]	6224 [3663]	300 mm - 11,811 inch
8“	200,0	DN 200	25599 [15065]	26229 [15436]	25397 [14946]	14833 [8729]	11125 [6547]	12753 [7505]	12431 [7315]	9337 [5494]	9130 [5373]	17196 [10120]	9835 [5788]	
10“	250,0	DN 250	40046 [23567]	41033 [24148]	39731 [23382]	23205 [13656]	17404 [10242]	19951 [11741]	19447 [11444]	14606 [8596]	14283 [8406]	26901 [15831]	15386 [9054]	
12“	300,0	DN 300	57736 [33977]	59158 [34814]	57281 [33710]	33455 [19688]	25091 [14766]	28764 [16927]	28037 [16499]	21058 [12393]	20593 [12119]	38784 [22824]	22182 [13054]	

* Nm³/h according to DIN 1343: 0 °C, 1013,25 hPa for gases
** ISO 1217: 20 °C, 1000 hPa in air

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Measuring ranges High-Speed version

Flow measuring ranges Flow Check Universal - insertion meter

Inner pipe diameter			High-Speed version (224,0 m/s)									
			Measuring range Nm³/h * / [cfm]									
Inch	mm	DN	Air**	Nitrogen (N2)	Argon (Ar)	Oxygen (O2)	Carbon dioxide (CO2)	Methane Natural gas (CH4)	Helium (He)	Hydrogen (H2)	Propane (C3H8)	Recommended probe length
1/2“	16,1	DN 15	110 [64]	101 [59]	172 [101]	105 [61]	109 [64]	65 [38]	46 [27]	32 [19]	50 [29]	160 mm - 6,299 inch
3/4“	21,7	DN 20	215 [126]	198 [116]	336 [198]	205 [120]	213 [125]	127 [74]	89 [52]	63 [37]	99 [58]	
1“	27,3	DN 25	356 [210]	328 [193]	557 [328]	340 [200]	353 [207]	211 [124]	149 [87]	104 [61]	164 [96]	
1 1/4“	36,0	DN 32	643 [378]	591 [348]	1006 [592]	613 [361]	636 [374]	380 [224]	268 [158]	188 [111]	295 [174]	
1 1/2“	41,9	DN 40	886 [521]	815 [479]	1385 [815]	845 [497]	877 [516]	524 [308]	370 [218]	260 [153]	407 [239]	
2“	53,1	DN 50	1450 [853]	1333 [784]	2267 [1334]	1382 [813]	1434 [844]	858 [504]	606 [356]	425 [250]	666 [392]	
2 1/2“	68,9	DN 65	2484 [1461]	2284 [1344]	3883 [2285]	2368 [1393]	2458 [1446]	1469 [865]	1038 [611]	729 [429]	1142 [672]	220 mm - 8,661 inch
3“	80,9	DN 80	3441 [2025]	3165 [1862]	5381 [3166]	3281 [1931]	3406 [2004]	2036 [1198]	1438 [846]	1010 [594]	1582 [931]	
4“	110,0	DN 100	6391 [3761]	5877 [3458]	9992 [5880]	6093 [3586]	6324 [3722]	3782 [2225]	2671 [1572]	1877 [1104]	2938 [1729]	
5“	133,7	DN 125	9453 [5563]	8693 [5116]	14780 [8698]	9012 [5304]	9355 [5505]	5594 [3292]	3951 [2325]	2776 [1633]	4346 [2558]	
6“	159,3	DN 150	13436 [7907]	12355 [7271]	21007 [12362]	12810 [7538]	13296 [7825]	7950 [4679]	5615 [3304]	3946 [2322]	6177 [3635]	300 mm - 11,811 inch
8“	200,0	DN 200	21229 [12493]	19522 [11489]	33192 [19533]	20240 [11911]	21009 [12363]	12562 [7393]	8873 [5221]	6235 [3669]	9761 [5744]	
10“	250,0	DN 250	33211 [19544]	30540 [17973]	51925 [30557]	31663 [18633]	32865 [19341]	19652 [11565]	13880 [8168]	9753 [5740]	15270 [8986]	
12“	300,0	DN 300	47880 [28177]	44030 [25912]	74861 [44055]	45649 [26864]	47383 [27885]	28333 [16674]	20012 [11777]	14062 [8275]	22015 [12956]	

Flow measuring ranges Flow Check Universal - insertion meter

Inner pipe diameter			High-Speed version (224,0 m/s)										
			Measuring range Nm³/h * / [cfm]										
Inch	mm	DN	Corgon ®18	Corgon ®10	Corgon ®20	Forming gas 90% N2 + 10% H2	Natural gas L (CH4)	Biogas 50% CH4 + 50% CO2	Biogas 60% CH4 + 40% CO2	LPG 60% C3H8 + 40% C4H10	LPG 50% C3H8 + 50% C4H10	Nitrous (N2O)	Ethyne/ Acetylene (C2H2)	Recommended probe length
1/2“	16,1	DN 15	160 [94]	164 [96]	159 [93]	93 [54]	69 [41]	80 [47]	78 [45]	58 [34]	57 [33]	108 [63]	61 [36]	160 mm - 6,299 inch
3/4“	21,7	DN 20	314 [185]	322 [189]	311 [183]	182 [107]	136 [80]	156 [92]	152 [89]	114 [67]	112 [65]	211 [124]	120 [71]	
1“	27,3	DN 25	521 [306]	533 [314]	516 [304]	301 [177]	226 [133]	259 [152]	253 [148]	190 [111]	185 [109]	349 [205]	200 [117]	
1 1/4“	36,0	DN 32	939 [552]	962 [566]	932 [548]	544 [320]	408 [240]	468 [275]	456 [268]	342 [201]	335 [197]	631 [371]	360 [212]	
1 1/2“	41,9	DN 40	1294 [761]	1326 [780]	1284 [755]	749 [441]	562 [331]	644 [379]	628 [369]	472 [277]	461 [271]	869 [511]	497 [292]	
2“	53,1	DN 50	2117 [1245]	2169 [1276]	2100 [1236]	1226 [721]	920 [541]	1054 [620]	1028 [605]	772 [454]	755 [444]	1422 [836]	813 [478]	
2 1/2“	68,9	DN 65	3626 [2134]	3716 [2186]	3598 [2117]	2101 [1236]	1576 [927]	1806 [1063]	1761 [1036]	1322 [778]	1293 [761]	2436 [1433]	1393 [820]	220 mm - 8,661 inch
3“	80,9	DN 80	5025 [2957]	5149 [3030]	4985 [2934]	2911 [1713]	2183 [1285]	2503 [1473]	2440 [1436]	1832 [1078]	1792 [1054]	3375 [1986]	1930 [1136]	
4“	110,0	DN 100	9331 [5491]	9561 [5626]	9258 [5448]	5407 [3182]	4055 [2386]	4649 [2735]	4531 [2666]	3403 [2003]	3328 [1958]	6268 [3689]	3585 [2109]	
5“	133,7	DN 125	13802 [8122]	14142 [8322]	13693 [8058]	7997 [4706]	5998 [3530]	6876 [4046]	6702 [3944]	5034 [2962]	4923 [2897]	9271 [5456]	5302 [3120]	
6“	159,3	DN 150	19617 [11544]	20100 [11829]	19462 [11453]	11367 [6689]	8525 [5017]	9773 [5751]	9526 [5606]	7155 [4210]	6997 [4117]	13178 [7755]	7537 [4435]	300 mm - 11,811 inch
8“	200,0	DN 200	30996 [18241]	31759 [18690]	30752 [18097]	17960 [10569]	13470 [7927]	15442 [9087]	15051 [8858]	11305 [6653]	11055 [6506]	20821 [12253]	11908 [7008]	
10“	250,0	DN 250	48489 [28535]	49683 [29238]	48107 [28311]	28097 [16535]	21072 [12401]	24157 [14216]	23546 [13857]	17686 [10408]	17295 [10178]	32573 [19169]	18629 [10963]	
12“	300,0	DN 300	69907 [41140]	71629 [42153]	69357 [40816]	40508 [23839]	30381 [17879]	34828 [20496]	33947 [19978]	25498 [15005]	24934 [14674]	46961 [27636]	26858 [15806]	

* Nm³/h according to DIN 1343: 0 °C, 1013,25 hPa for gases
** ISO 1217: 20 °C, 1000 hPa in air

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Measuring ranges Flow Check

Measuring ranges Low-Speed version

Flow measuring ranges Flow Check											
Inner pipe diameter			**Low-Speed version (50 m/s)**								
			Measuring range Nm³/h * / [cfm]								
Inch	**mm**	**DN**	**Air****	**Nitrogen (N2)**	**Argon (Ar)**	**Oxygen (O2)**	**Carbon dioxide (CO2)**	**Methane Natural gas (CH4)**	**Helium (He)**	**Hydrogen (H2)**	**Propane (C3H8)**
1/4“	8,9	DN 8	25 Nl/min [0,9]	25 Nl/min [0,9]	45 Nl/min [1,5]	25 Nl/min [0,9]	25 Nl/min [0,9]	15 Nl/min [0,6]	735 Nl/h [0,3]	515 Nl/h [0,3]	810 Nl/h [0,3]
1/2“	16,1	DN 15	20 [14,4]	20 [13,2]	35 [20]	20 [13,5]	20 [14,1]	240 Nl/min [8,4]	170 Nl/min [6]	120 Nl/min [4,2]	185 Nl/min [6,6]
3/4“	21,7	DN 20	45 [25]	40 [25]	75 [40]	45 [25]	45 [25]	25 [15]	20 [11,7]	235 Nl/min [8,1]	20 [12,9]
1“	27,3	DN 25	75 [45]	70 [40]	120 [70]	75 [40]	75 [45]	45 [25]	30 [15]	20 [13,5]	35 [20]
1 1/4“	36,0	DN 32	140 [80]	130 [75]	220 [130]	135 [80]	140 [80]	85 [50]	60 [35]	40 [20]	65 [35]
1 1/2“	41,9	DN 40	195 [115]	180 [105]	305 [180]	185 [110]	195 [115]	115 [65]	80 [45]	55 [30]	90 [50]
2“	53,1	DN 50	320 [190]	295 [175]	505 [295]	305 [180]	320 [185]	190 [110]	135 [75]	95 [55]	145 [85]
2 1/2“	68,9	DN 65	550 [325]	505 [300]	865 [510]	525 [310]	545 [320]	325 [190]	230 [135]	160 [95]	250 [150]
3“	80,9	DN 80	765 [450]	705 [415]	1200 [705]	730 [430]	760 [445]	450 [265]	320 [185]	225 [130]	350 [205]

Flow measuring ranges Flow Check												
Inner pipe diameter			**Low-Speed version (50 m/s)**									
			Measuring range Nm³/h * / [cfm]									
Inch	**mm**	**DN**	**Corgon ®18**	**Corgon 10**	**Corgon ®20**	**Forming gas 90% N2 + 10% H2**	**Natural gas L (CH4)**	**Biogas 50%CH4 + 50% CO2**	**Biogas 60% CH4 + 40% CO2**	**LPG 60% C3H8 + 40% C4H10**	**LPG 50% C3H8 + 50% C4H10**	**Nitrous (N2O)**	**Ethyne/ Acetylene (C2H2)**
1/4“	8,9	DN 8	40 Nl/min [1,5]	40 Nl/min [1,5]	40 Nl/min [1,5]	20 Nl/min [0,6]	15 Nl/min [0,6]	20 Nl/min [0,6]	20 Nl/min [0,6]	15 Nl/min [0,3]	15 Nl/min [0,3]	25 Nl/min [0,9]	15 Nl/min [0,3]
1/2“	16,1	DN 15	35 [20]	35 [20]	35 [20]	20 [12]	15 [9]	15 [10,5]	15 [10,2]	215 Nl/min [7,5]	210 Nl/min [7,5]	20 [14,1]	225 Nl/min [8,1]
3/4“	21,7	DN 20	70 [40]	70 [40]	65 [40]	40 [20]	30 [15]	30 [20]	30 [20]	25 [15]	25 [14,7]	45 [25]	25 [15]
1“	27,3	DN 25	115 [65]	115 [70]	115 [65]	65 [35]	50 [25]	55 [30]	55 [30]	40 [20]	40 [20]	75 [45]	40 [25]
1 1/4“	36,0	DN 32	205 [120]	210 [125]	205 [120]	120 [70]	90 [50]	100 [60]	100 [55]	75 [45]	70 [40]	140 [80]	80 [45]
1 1/2“	41,9	DN 40	285 [170]	295 [170]	285 [165]	165 [95]	125 [70]	140 [80]	140 [80]	105 [60]	100 [60]	190 [110]	110 [65]
2“	53,1	DN 50	470 [275]	480 [280]	465 [275]	270 [160]	205 [120]	235 [135]	225 [135]	170 [100]	165 [95]	315 [185]	180 [105]
2 1/2“	68,9	DN 65	805 [475]	825 [485]	800 [470]	465 [275]	350 [205]	400 [235]	390 [230]	295 [170]	285 [165]	540 [320]	310 [180]
3“	80,9	DN 80	1120 [660]	1145 [675]	1110 [650]	645 [380]	485 [285]	555 [325]	540 [320]	405 [240]	400 [235]	750 [440]	430 [250]

* Nm³/h according to DIN 1343: 0 °C, 1013,25 hPa for gases
** ISO 1217: 20 °C, 1000 hPa in air

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Measuring ranges Standard version

Flow measuring ranges Flow Check

Inner pipe diameter			Standard version (92,7 m/s)								
			Measuring range Nm³/h * / [cfm]								
Inch	mm	DN	Air**	Nitrogen (N2)	Argon (Ar)	Oxygen (O2)	Carbon dioxide (CO2)	Methane Natural gas (CH4)	Helium (He)	Hydrogen (H2)	Propane (C3H8)
1/4“	8,9	DN 8	50 Nl/min [1,8]	50 Nl/min [1,5]	85 Nl/min [3]	50 Nl/min [1,8]	50 Nl/min [1,8]	30 Nl/min [0,9]	20 Nl/min [0,6]	15 Nl/min [0,3]	25 Nl/min [0,6]
1/2“	16,1	DN 15	45 [25]	40 [20]	70 [40]	40 [25]	45 [25]	25 [15]	15 [11,1]	220 Nl/min [7,8]	20 [12,3]
3/4“	21,7	DN 20	85 [50]	80 [45]	135 [80]	80 [45]	85 [50]	50 [30]	35 [20]	25 [15]	40 [20]
1“	27,3	DN 25	145 [85]	135 [75]	230 [135]	140 [80]	145 [85]	85 [50]	60 [35]	40 [25]	65 [35]
1 1/4“	36,0	DN 32	265 [155]	240 [140]	415 [245]	250 [145]	260 [155]	155 [90]	110 [65]	75 [45]	120 [70]
1 1/2“	41,9	DN 40	365 [215]	335 [195]	570 [335]	345 [205]	360 [210]	215 [125]	150 [90]	105 [60]	165 [95]
2“	53,1	DN 50	600 [350]	550 [320]	935 [550]	570 [335]	590 [345]	355 [205]	250 [145]	175 [100]	275 [160]
2 1/2“	68,9	DN 65	1025 [600]	945 [555]	1605 [945]	980 [575]	1015 [595]	605 [355]	425 [250]	300 [175]	470 [275]
3“	80,9	DN 80	1420 [835]	1305 [770]	2225 [1310]	1355 [795]	1405 [825]	840 [495]	595 [350]	415 [245]	650 [385]

Flow measuring ranges Flow Check

Inner pipe diameter			Standard version (92,7 m/s)										
			Measuring range Nm³/h * / [cfm]										
Inch	mm	DN	Corgon ®18	Corgon ®10	Corgon ®20	Forming gas 90% N2 + 10% H2	Natural gas L (CH4)	Biogas 50% CH4 + 50% CO2	Biogas 60% CH4 + 40% CO2	LPG 60% C3H8 + 40% C4H10	LPG 50% C3H8 + 50% C4H10	Nitrous (N2O)	Ethyne/ Acetylene (C2H2)
1/4“	8,9	DN 8	75 Nl/min [2,7]	80 Nl/min [2,7]	75 Nl/min [2,7]	45 Nl/min [1,5]	30 Nl/min [1,2]	35 Nl/min [1,2]	35 Nl/min [1,2]	25 Nl/min [0,9]	25 Nl/min [0,9]	50 Nl/min [1,8]	30 Nl/min [0,9]
1/2“	16,1	DN 15	65 [35]	65 [40]	65 [35]	35 [20]	25 [15]	30 [15]	30 [15]	20 [14,1]	20 [13,8]	40 [25]	25 [15]
3/4“	21,7	DN 20	130 [75]	130 [75]	125 [75]	75 [40]	55 [30]	60 [35]	60 [35]	45 [25]	45 [25]	85 [50]	45 [25]
1“	27,3	DN 25	215 [125]	220 [130]	210 [125]	120 [70]	90 [55]	105 [60]	100 [60]	75 [45]	75 [45]	140 [85]	80 [45]
1 1/4“	36,0	DN 32	385 [225]	395 [230]	385 [225]	225 [130]	165 [95]	190 [110]	185 [110]	140 [80]	135 [80]	260 [150]	145 [85]
1 1/2“	41,9	DN 40	535 [315]	545 [320]	530 [310]	310 [180]	230 [135]	265 [155]	260 [150]	195 [110]	190 [110]	355 [210]	205 [120]
2“	53,1	DN 50	875 [515]	895 [525]	865 [510]	505 [295]	380 [220]	435 [255]	425 [250]	315 [185]	310 [180]	585 [345]	335 [195]
2 1/2“	68,9	DN 65	1500 [880]	1535 [905]	1485 [875]	865 [510]	650 [380]	745 [440]	725 [425]	545 [320]	535 [315]	1005 [590]	575 [335]
3“	80,9	DN 80	2075 [1220]	2130 [1250]	2060 [1210]	1205 [705]	900 [530]	1035 [605]	1005 [590]	755 [445]	740 [435]	1395 [820]	795 [470]

* Nm³/h according to DIN 1343: 0 °C, 1013,25 hPa for gases
** ISO 1217: 20 °C, 1000 hPa in air

If you want to measure the consumption / flow rate of a specific gas mixture, ask us.
We can offer a real gas adjustment under process conditions on request.

Measuring ranges Max version

Flow measuring ranges Flow Check

Inner pipe diameter			Max version (185,0 m/s)								
			Measuring range Nm³/h * / [cfm]								
Inch	mm	DN	Air**	Nitrogen (N2)	Argon (Ar)	Oxygen (O2)	Carbon dioxide (CO2)	Methane Natural gas (CH4)	Helium (He)	Hydrogen (H2)	Propane (C3H8)
1/4“	8,9	DN 8	105 Nl/min [3,6]	100 Nl/min [3,3]	170 Nl/min [6]	100 Nl/min [3,6]	105 Nl/min [3,6]	60 Nl/min [2,1]	45 Nl/min [1,5]	30 Nl/min [0,9]	50 Nl/min [1,5]
1/2“	16,1	DN 15	90 [50]	80 [45]	140 [80]	85 [50]	90 [50]	50 [30]	35 [20]	25 [15]	40 [20]
3/4“	21,7	DN 20	175 [100]	160 [95]	275 [160]	165 [95]	175 [100]	105 [60]	70 [40]	50 [30]	80 [45]
1“	27,3	DN 25	290 [170]	270 [155]	460 [270]	280 [165]	290 [170]	170 [100]	120 [70]	85 [50]	135 [75]
1 1/4“	36,0	DN 32	530 [310]	485 [285]	830 [485]	505 [295]	525 [305]	310 [185]	220 [130]	155 [90]	240 [140]
1 1/2“	41,9	DN 40	730 [430]	670 [395]	1140 [670]	695 [410]	720 [425]	430 [250]	305 [180]	215 [125]	335 [195]
2“	53,1	DN 50	1195 [700]	1100 [645]	1870 [1100]	1140 [670]	1185 [695]	705 [415]	500 [290]	350 [205]	550 [320]
2 1/2“	68,9	DN 65	2050 [1205]	1885 [1110]	3205 [1885]	1955 [1150]	2030 [1190]	1210 [710]	855 [500]	600 [350]	940 [555]
3“	80,9	DN 80	2840 [1670]	2610 [1535]	4440 [2615]	2710 [1590]	2810 [1655]	1680 [985]	1185 [695]	830 [490]	1305 [765]

Flow measuring ranges Flow Check

Inner pipe diameter			Max version (185,0 m/s)									
			Measuring range Nm³/h * / [cfm]									
Inch	mm	DN	Corgon ®18	Corgon ®10	Corgon ®20	Forming gas 90% N2 + 10% H2	Natural gas L (CH4)	Biogas 50% CH4 + 50% CO2	Biogas 60% CH4 + 40% CO2	LPG 60% C3H8 + 40% C4H10	LPG 50% C3H8 + 50% C4H10	Nitrous (N2O)	Ethyne/ Acetylene (C2H2)
1/4“	8,9	DN 8	155 Nl/min [5,4]	160 Nl/min [5,7]	155 Nl/min [5,4]	90 Nl/min [3]	65 Nl/min [2,4]	75 Nl/min [2,7]	75 Nl/min [2,7]	55 Nl/min [1,8]	55 Nl/min [1,8]	105 Nl/min [3,6]	60 Nl/min [2,1]
1/2“	16,1	DN 15	130 [75]	135 [80]	130 [75]	75 [45]	55 [30]	65 [35]	60 [35]	45 [25]	45 [25]	85 [50]	50 [30]
3/4“	21,7	DN 20	255 [150]	265 [155]	255 [150]	150 [85]	110 [65]	125 [75]	125 [70]	90 [55]	90 [50]	170 [100]	95 [55]
1“	27,3	DN 25	430 [250]	440 [255]	425 [250]	245 [145]	185 [110]	210 [125]	205 [120]	155 [90]	150 [90]	285 [170]	165 [95]
1 1/4“	36,0	DN 32	775 [455]	795 [465]	765 [450]	445 [260]	335 [195]	385 [225]	375 [220]	280 [165]	275 [160]	520 [305]	295 [175]
1 1/2“	41,9	DN 40	1065 [625]	1095 [640]	1060 [620]	615 [360]	460 [270]	530 [310]	515 [305]	385 [225]	380 [220]	715 [420]	410 [240]
2“	53,1	DN 50	1745 [1025]	1790 [1050]	1730 [1020]	1010 [595]	755 [445]	870 [510]	845 [495]	635 [375]	620 [365]	1170 [690]	670 [395]
2 1/2“	68,9	DN 65	2995 [1760]	3065 [1805]	2970 [1745]	1735 [1020]	1300 [765]	1490 [875]	1450 [855]	1090 [640]	1065 [625]	2010 [1180]	1150 [675]
3“	80,9	DN 80	4150 [2440]	4250 [2500]	4115 [2420]	2400 [1415]	1800 [1060]	2065 [1215]	2015 [1185]	1510 [890]	1480 [870]	2785 [1640]	1590 [935]

* Nm³/h according to DIN 1343: 0 °C, 1013,25 hPa for gases
** ISO 1217: 20 °C, 1000 hPa in air

If you want to measure the consumption / flow rate of a specific gas mixture, ask us.
We can offer a real gas adjustment under process conditions on request.

Measuring ranges High-Speed version

Flow measuring ranges Flow Check

Inner pipe diameter			High-Speed version (224,0 m/s)								
			Measuring range Nm³/h * / [cfm]								
Inch	mm	DN	Air**	Nitrogen (N2)	Argon (Ar)	Oxygen (O2)	Carbon dioxide (CO2)	Methane Natural gas (CH4)	Helium (He)	Hydrogen (H2)	Propane (C3H8)
1/4“	8,9	DN 8	130 Nl/min [4,5]	120 Nl/min [4,2]	205 Nl/min [7,2]	125 Nl/min [4,2]	130 Nl/min [4,5]	75 Nl/min [2,7]	55 Nl/min [1,8]	35 Nl/min [1,2]	60 Nl/min [2,1]
1/2“	16,1	DN 15	110 [60]	100 [55]	170 [100]	105 [60]	105 [60]	65 [35]	45 [25]	30 [15]	50 [25]
3/4“	21,7	DN 20	215 [125]	195 [115]	335 [195]	205 [120]	210 [125]	125 [70]	85 [50]	60 [35]	95 [55]
1“	27,3	DN 25	355 [210]	325 [190]	555 [325]	340 [200]	350 [205]	210 [120]	145 [85]	100 [60]	160 [95]
1 1/4“	36,0	DN 32	640 [375]	590 [345]	1005 [590]	610 [360]	635 [370]	380 [220]	265 [155]	185 [110]	295 [170]
1 1/2“	41,9	DN 40	885 [520]	815 [475]	1385 [815]	845 [495]	875 [515]	520 [305]	370 [215]	260 [150]	405 [235]
2“	53,1	DN 50	1450 [850]	1330 [780]	2265 [1330]	1380 [810]	1430 [840]	855 [500]	605 [355]	425 [250]	665 [390]
2 1/2“	68,9	DN 65	2480 [1460]	2280 [1340]	3880 [2285]	2365 [1390]	2455 [1445]	1465 [865]	1035 [610]	725 [425]	1140 [670]
3“	80,9	DN 80	3440 [2025]	3165 [1860]	5380 [3165]	3280 [1930]	3405 [2000]	2035 [1195]	1435 [845]	1010 [590]	1580 [930]

Flow measuring ranges Flow Check

Inner pipe diameter			High-Speed version(224,0 m/s)										
			Measuring range Nm³/h * / [cfm]										
Inch	mm	DN	Corgon ®18	Corgon ®10	Corgon ®20	Forming gas 90% N2 + 10% H2	Natural gas L (CH4)	Biogas 50% CH4 + 50% CO2	Biogas 60% CH4 + 40% CO2	LPG 60% C3H8 + 40% C4H10	LPG 50% C3H8 + 50% C4H10	Nitrous (N2O)	Ethyne/ Acetylene (C2H2)
1/4“	8,9	DN 8	190 Nl/min [6,6]	195 Nl/min [6,9]	190 Nl/min [6,6]	110 Nl/min [3,9]	80 Nl/min [2,7]	95 Nl/min [3,3]	90 Nl/min [3,3]	70 Nl/min [2,4]	65 Nl/min [2,4]	125 Nl/min [4,5]	70 Nl/min [2,4]
1/2“	16,1	DN 15	160 [90]	160 [95]	155 [90]	90 [50]	65 [40]	80 [45]	75 [45]	55 [30]	55 [30]	105 [60]	60 [35]
3/4“	21,7	DN 20	310 [185]	320 [185]	310 [180]	180 [105]	135 [80]	155 [90]	150 [85]	110 [65]	110 [65]	210 [120]	120 [70]
1“	27,3	DN 25	520 [305]	530 [310]	515 [300]	300 [175]	225 [130]	255 [150]	250 [145]	190 [110]	185 [105]	345 [205]	200 [115]
1 1/4“	36,0	DN 32	935 [550]	960 [565]	930 [545]	540 [320]	405 [240]	465 [275]	455 [265]	340 [200]	335 [195]	630 [370]	360 [210]
1 1/2“	41,9	DN 40	1290 [760]	1325 [780]	1280 [755]	745 [440]	560 [330]	640 [375]	625 [365]	470 [275]	460 [270]	865 [510]	495 [290]
2“	53,1	DN 50	2115 [1245]	2165 [1275]	2100 [1235]	1225 [720]	920 [540]	1050 [620]	1025 [605]	770 [450]	755 [440]	1420 [835]	810 [475]
2 1/2“	68,9	DN 65	3625 [2130]	3715 [2185]	3595 [2115]	2100 [1235]	1575 [925]	1805 [1060]	1760 [1035]	1320 [775]	1290 [760]	2435 [1430]	1390 [820]
3“	80,9	DN 80	5025 [2955]	5145 [3030]	4985 [2930]	2910 [1710]	2180 [1285]	2500 [1470]	2440 [1435]	1830 [1075]	1790 [1050]	3375 [1985]	1930 [1135]

* Nm³/h according to DIN 1343: 0 °C, 1013,25 hPa for gases
** ISO 1217: 20 °C, 1000 hPa in air

If you want to measure the consumption / flow rate of a specific gas mixture, ask us.
We can offer a real gas adjustment under process conditions on request.

Measure compressed air consumption and save energy

Compressed air is one of the most expensive forms of energy at all. An intelligent use of compressed air holds enormous savings potential.

Therefore a consumption measurement that can measure and record the actual compressed air consumption and even the smallest leaks quickly and reliably is very helpful.

When talking about operating costs in compressed air systems, one actually means the energy costs, because the electricity costs make up about 70-80% of the total cost of a compressed air system.

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 case of well operated and maintained plants.

In case of a three shift operation with 200 kW compressor performance a bad compressed air distribution can create redundant energy costs of more than 50,000 € per year.

This mainly relates to the detection of leaks and the correct design of the compressed air lines to minimize the pressure losses. Energy resources like electricity, water or gas are usually monitored and therefore the costs are transparent.

Contrary to compressed air, a water leak is usually found quickly due to the visibility of the leak and therefore is fixed immediately. Leakages in the compressed air network „blow out“ unnoticed, even on weekends and during production stops.

Also during that time compressors are running continuously in order to establish a constant pressure within the system. In case of compressed air systems which have grown during the years the leakage rate can be between 25 and 35 per cent. They are the most industrious consumers working 365 days a year.

Not considered in these considerations are the costs of producing clean and dry compressed air. Refrigeration and desiccant dryers dry the air with significant operating costs, which then „blow out“ useless through leaks.

At constantly rising energy costs these potential energy savings have to be implemented in order to stay competitive within the market. Only if the consumption of single machines or plants becomes known and transparent for all it is possible to make use of possible savings.

However, often there is no knowledge about the leak ratio. In the following we show you how leakage rate can be determined easily in your company.

Formerly the simple but inaccurate container method was applied very often.

A simplified determination of the leakages is possible by means of the emptying of the tank.

To carry out this measurement you just need a clock and a manometer. Furthermore you should know the storage volume of the tank as well as of the compressed air system.

For measurement first the tank and the compressed air system are set to the upper cut-out pressure value. All compressed air consumers have to be switched off. Then the compressor is switched off and there will be no compressed air feeding into the system.

Now the time T is measured which passes by until there is a pressure drop of 1 to 2 bar due to the leakages.

The pressure drop between which the measurement is taking place can be selected freely.

However, in practice the described method is very time-consuming, not adequate and inaccurate due to the following reasons:

- Storage volume, distribution pipelines cannot be determined exactly
- The accuracy of the differential pressure measurement and time measurement has to be observed
- During pressure drop the compressed air volume cools down and therefore it changes the volume flow reference value
- An online measurement with consumption record is not possible

This method belongs to the so-called indirect measurements, like also the method of the load and unload measurement during which the current intake is measured by means of clamp-on ammeters and calculated back to the volume flow over the technical data of the compressor.

These indirect methods are antiquated and not suitable to detect leakages in the lower measuring range. Determination of compressed air leakages with modern flow meters

A modern compressed air consumption measurement resp. leakage measurement should be able to measure the real compressed air flow and also the smallest leakages quickly and reliably and record them.

New: Flow measurement Flow Check S3/ S4 for compressed air and gases

Worldwide unique with 3.5 inch, graphic display with touch screen and print function. With the new ”ready for plug-in” flow measurement Flow Check S3/ S4 the current flow in m^3/h, l/min etc. as well as the consumption in m^3 or l can be measured.

The new flow station works according to the approved calorimetric measuring principle. The heart is the flow sensor which has been proven and tested for years.

It is characterized by a new thermally more efficient sensor structure which shown a higher chip temperature in case of same electrical connection values.

Compared to other calorimetric measuring instruments the sensor has a considerably lower mass and therefore a faster response time. An additional pressure and temperature compensation is not necessary.

The advantage is that the user can use the flow meters in different pressures and temperatures without any further compensation.

Apart form compressed air also other gases like e. g.

- Nitrogen
- Oxygen
- CO2
- Argon
- Natural gas
- Helium

can be measured. The flow meter PDP Check S3/ S4 is supplied completely wired. There is no need for a time consuming instruction manual reading.

Exceeding of threshold values can be reported optically and acoustically. 2 relays for pre- and main alarm are freely adjustable.

An alarm delay can be set for each relay. This grants that only really long-term exceeding of the threshold values are indicated. Additionally every alarm can be reset.

The intuitive operation with the 3.5 inch touch screen graphic display with zoom function and print key is worldwide unique in this price class.

The graphic display with zoom function shows the actual flow, the peak values and the leakage at a glance, the values are stored in the data logger.

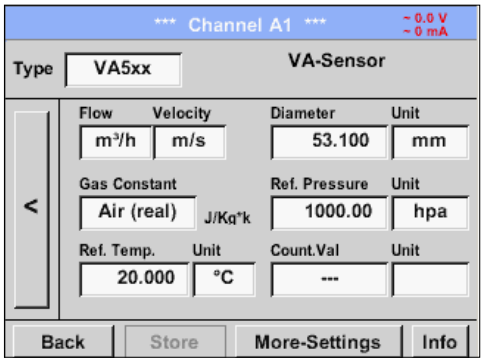
So the user can take a look at the stored measuring curves also without any computer at any time on site. This allows the user to view the stored measured curves without a PC at any time on site.

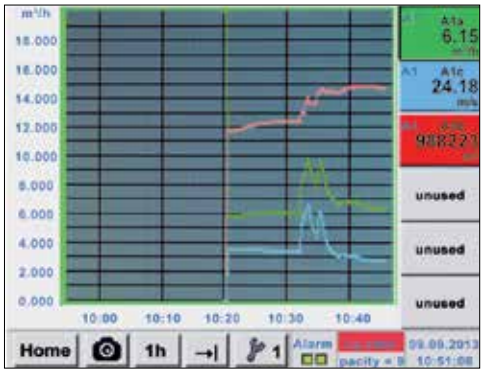
With the print button, the current screen can be saved as an image file on the internal SD card or on a USB stick and can be printed out without additional software on a PC. Ideal for documentation of the measured values/ curves on site. Colored measured curves can be sent by e-mail as image files or integrated into a service report.

The internal data logger enables the storage of the measured data for several years. The measured data can be evaluated via a USB stick of via Ethernet by means of the comfortable software PMH Soft Basic. Particularly comfortable is the consumption analysis at the touch of a button. The PMH Soft Basic automatically draws up daily, weekly and monthly reports.

Special features

- 3.5“ graphic display, intuitive operation via touch screen
- Zoom function for accurate analysis of measured values
- Consumption analysis with daily/weekly/monthly reports
- Colored measured curves with names
- Mathematical calculation function e. g. addition of several consumers to a total consumption or energy costs per kWh/m³
- Print key: Optional indications can be stored as image files directly on a USB stick and sent by e-mail without any software
- 2 alarm contacts for exceeding of threshold values
- Freely adjustable alarm delay for both alarm contacts
- With reset function
- Up to 4 sensor inputs for: Further flow sensors, dew point, pressure, temperature, consumption, active power meters, optional third-party sensors can be
- Connected: Pt100/1000, 0/4..20 mA, 0-1/10 V,
- Modbus, pulse
- Integrated data logger 8 GB
- USB, Ethernet interface, RS 485
- Webserver

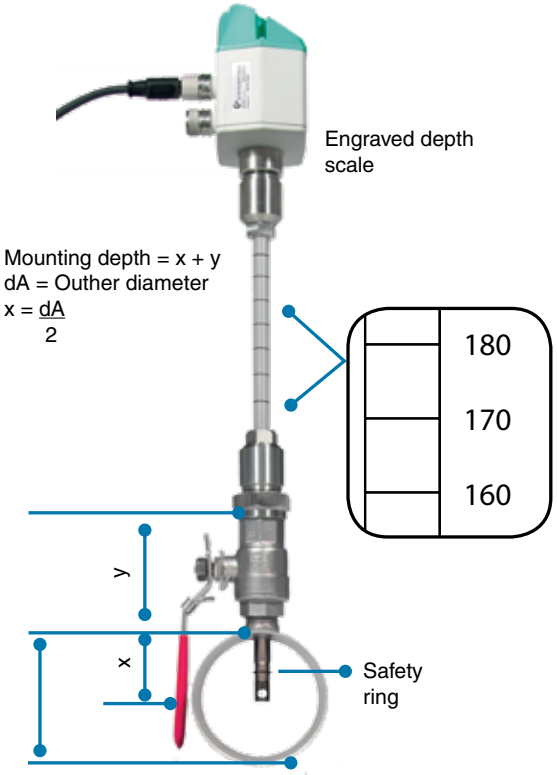




Installation Flow Check Universal under pressure

Flow Check Universal flow meter for compressed air and gases

- The Flow Check Universal flow meter is installed via a standard ball valve under pressure. The circlip prevents the instrument from being ejected during installation and removal by the operating pressure.
- For the installation at different pipe diameters, the Flow Check Universal can be ordered at special lengths: 120, 160, 220, 300, 400 mm. Therefore it is possible to use the Flow Check Universal flow sensor from inner pipe diameters of 1/2“ up to 12” and bigger.
- The exact positioning of the sensor is carried out with the aid of the engraved depth scale at the sensors shaft. The maximum insertion depth is therefore determined by the sensor length. Please see picture to determine the sensor length required.



Measuring site

- If no 1/2“ ball valve is present to carry out the installation of the Flow Check Universal sensor, we have two possible alternatives to offer:

A 1/2“-thread needs to be welded onto the pipe work and the ball valve is then threaded on.

B A spot drilling collar can be ordered and installed.

- Making use of the specialized drilling jig, it is then possible to drill a whole into the pipe work under load. The filings are caught in a special filter system at the drilling jig. Afterwards the Flow Check Universal probe should be installed as described above.
- The Flow Check Universal measuring range allows for measurements in almost all possible applications. Even high flow rates in small pipe diameters can be measured.

Measuring devices for leak detection and calculation

If gases escape through leaks in piping systems caused by corrosion or not properly tightened connections, ultrasonic noises occur. These small leaks are undetectable to the human eye and ear. Leak Check transforms the inaudible signals into a frequency which can be identified. Comfortable soundproof headset ensure that these detection sounds are heard even in the nosiest production environments.



Leakage

Leakages are a major problem for your compressed air system. Did you know that the biggest waste of energy in compressed air systems is caused by leakages? Almost as much as 30% of the cost of compressed air can be saved by eliminating leakages. Based on this, it is necessary to frequently check your compressed air systems to detect and eliminate leakages. With our Leak Check series you get all the function needed to detect leakages and measure the energy and more importantly the money wasted.

While Leak Check is reliable in detecting leaks the Leak Check Pro1 / Pro2 is also able to calculate the costs those leaks will cause over time. The user gets a review about the actual state of the tested system and about the estimated potential cost savings.

Our leak detectors are suitable for the following gas types:

- Air / compressed air
- Argon (Ar)
- Oxygen (O2)
- Nitrogen (N2)

Leak Check Pro 1/ Pro 2

Leak detector with camera indicates leakage rate in l/min and costs in €

- Find out your leak rate (l/min) and potential saving (€/year)
- Find the smallest leaks in far distance
- Auto level: adapts the sensitivity automatically to the environment and eliminates the ambient noise reliably
- Photograph leaking parts
- Describe the leak and necessary actions
- Transmit the leak details via USB to your desktop software
- Create an ISO 50001 report
- Seek the leak the whole day (9 hours)

Costs per year						
Pressure	Leak size - Diameter (mm)					
	0,5 mm	**1,0 mm**	**1,5 mm**	**2,0 mm**	**2,5 mm**	**3,0 mm**
3 bar	90 €	361 €	812 €	1.444 €	2.256 €	3.248 €
4 bar	113 €	451 €	1.015 €	1.805 €	2.820 €	4.061 €
5 bar	135 €	541 €	1.218 €	2.166 €	3.384 €	4.873 €
6 bar	158 €	632 €	1.421 €	2.527 €	3.948 €	5.685 €
7 bar	180 €	722 €	1.624 €	2.888 €	4.512 €	6.497 €
8 bar	203 €	812 €	1.827 €	3.248 €	5.076 €	7.309 €

Table: Leakage costs within one year in case of operation 24 h/365 days, calculated with compressed air costs of 1.9 ct/Nm³.

Leak Check Pro 1/ Pro 2 is a consistent advancement

The new leak meters Leak Check Pro 1/ Pro 2 with integrated camera and leakage calculation are ideal measuring instruments which help to find and document even smallest leakages (0.1 l/min corresponds to approx. 1 € per year) easily even in far distances.

Leak Check Pro 2 is the worldwide first leak meter with an additional freely assignable sensor input for all PMH sensors. In addition to the leakage measurement and detection also all necessary measurements with regards to dew point, flow, pressure, and temperature - can be carried out.

Accessories

- **Acoustic trumpet -** bundles the acoustic waves of smallest leakages, disturbing ambient noise will be eliminated
- **Focus tube with focus tip** - for precise locating of smallest leakages in narrow areas
- **Optionally available -** Gooseneck enables a positioning of the leakage on the spot – even in case of hardly accessile locations. Noise is hidden.
- **Optionally parabolic mirror -** for leak detection at long distances. Laser pointer and camera integrated.

Leak detection at:

- Compressed air, gas, steam and vacuum sytems
- Steam Traps
- Seals

The noise-proof headset enables the leak detection also in EXTREMELY loud ambient. The ambient noise will be faded out, the leakage (inaudible ultrasonic sound) will be transformed to an audible signal. The laser grants an exact locating.

Options


Acoustic trumpet


Focus tube with focus tip

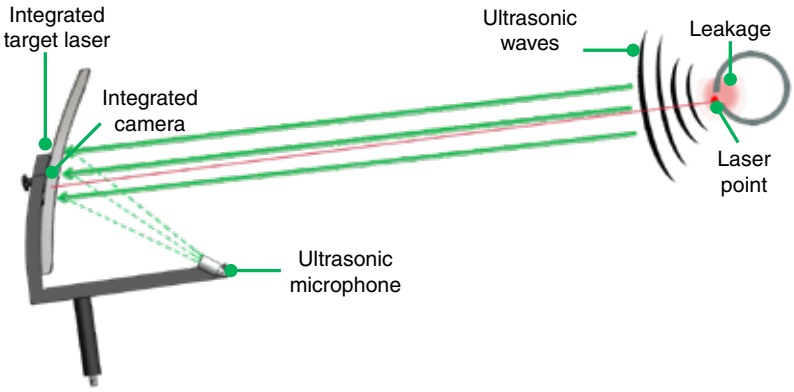

Optionally available


Parabolic mirror


Noise-proof headset

Professional accessory parabolic mirror

By bundling the ultrasonic waves in the parabolic mirror, even the smallest leaks of 0.8 l / min (ca. 8 € p.a.) at a distance of up to 10 - 15 m can be localized with pinpoint accuracy (± 15 cm). The shape of the parabolic mirror ensures that only ultrasonic waves of the targeted leak are evaluated. Disterbing noise is reduced to a minimum.



Checking high voltage overhead lines for corona discharge

Accurate leak detection during operation with laser pointer and integrated camera

Leakage files stored in Leak Check Pro 1/ Pro 2 are exported to a USB stick for issuing a report by software

If the leakage is detected and stored, the following data are also stored in the Leak Check Pro 1/ Pro 2 and will be available after the export to the PMH Leak Reporter software to issue a report:

Leak Tags in hardcopies for documentation on-site

- Photo of the leakage
- Date/time
- Company name/department / machine
- Size of the leakage in liters/min (unit selectable)
- Costs of the leakage per year in € (currency selectable)

Detailed reports can be issued via PC software, which can be placed at the disposal of the operators of compressed air systems resp. the head of the respective department.

The report can be issued for the whole company or for each department and it documents the detected leakages easily and clearly. Due to the summation at the end of the report it is easy to get an overview on the whole leakage amount in liters/min as well as the total leakage costs per year.

Leakage - report for ISO 50001 Audits

Leak Check Pro 1/ Pro 2

Transportation case Leak Check Pro 1/ Pro 2

Transportation case with Parabolic mirror

Description	Order no.
Set Leak Check Pro 1 consisting of:	2255331710
Leak Check Pro 1 leak detector with acoustic trumpet, and integrated camera,100 leak tags for marking the leakages on site	2255332718
Transportation case	2255332719
Sound-proof headset	2255332720
Focus tube with focus tip	2255332721
AC adapter plug	2255332722
Helix cable for connecting the ultrasonic sound sensor, length 2 m, (extended)	2255332723
Set Leak Check Pro 2 consisting of	2255332456
Leak Check Pro 2 leak detector incl. acoustic trumpet, with integrated camera and additional input for external sensors, 100 leak tags for marking the leakages on site	2255332724
Transportation case	2255332719
Sound-proof headset	2255332720
Focus tube with focus tip	2255332721
AC adapter plug	2255332722
Helix cable for connecting the ultrasonic sound sensor, length 2 m, (extended)	2255332723
Equipment	
PMH Leak Reporter – for detailed ISO 50001 reports. Gives an illustrated survey of the found leakages and their possible savings. Measures for elimination including status display can be defined for every leakage - License for 2 computers	2255332459
Gooseneck for leakage detection at sites which are difficult to access (length 600 mm)	2255332460
Gooseneck for leakage detection at sites which are difficult to access (length 1500 mm)	2255332729
Parabolic mirror for leak detection at long distances, incl. Transportation case	2255332461
Ultrasonic tone generator for leak testing	2255332725
500 leak tags for marking the leakages on site	2255332726
Calibration	
Recalibration Leak Check Pro 1/ Pro 2	2255332727
Further sensors / accessories for connection to Leak Check Pro 2	
PDP Sens 1/2 dew point sensor for mobile devices, -80…+20°Ctd, incl. mobile measuring chamber, 5 m connection cable and perforated protection cap	2255332526
Flow sensor Flow Check Universal , Max version (185 m/s) sensor length 220 mm, incl. 5 m connection cable	2255332524
Standard pressure sensor PMH 16, 0…16 bar, ± 1 % accuracy of f. s	2255330414
Differential pressure sensor 1.6 bar diff.	2255332486
Connection cable for pressure, temperature or external sensors on mobile instruments, ODU / open ends, 5 m	2255332514
PMH Basic - data evaluation in graphic and table form - reading out of the measured data via USB Stick Ethernet. License for 2 computers	2255332468

Technical data Leak Check Pro 1/ Pro 2	
Working frequency	40 kHz ± 2 kHz
Connections	3.5 mm stereo jack for headset Power supply socket for connecting an external recharger
Laser	Wave length: 645-660 nm Output power: < 1 mW (laser class 2)
Display	3,5“ Touch screen
Interface	USB interface
Data logger	8 GB SD memory card (100 million values)
Power supply	Internal rechargeable Li-Ion batteries approx. 9 h continuous operation, 4 h charging time
Ambient temperature	0-+50°C
EMC	DIN EN 61326
Auto level	Adapts the sensitivity automatically to the environment and eliminates the ambient noise reliably
Sensitivity	min: 0.1 l/min at 6 bar, 5 m distance, approx. 1€/year compressed air costs

Technical data external sensor input (only Leak Check Pro 2)	
Measuring range	Please see external PMH sensors
Accuracy	Please see external PMH sensors
Voltage supply	Output voltage: 24 VDC ± 10% Output current: 120 mA in continuous operation

Leak detector Leak Check

Features & Benefits

- Robustness and low weight ensure fatigue-free use in industrial environments
- Improved detection of leaks with optional acoustic trumpet
- Modern lithium-ion battery with high capacity, external recharger
- Minimum operating time 10 h
- Easy operation via keypad
- Leak detection in compressed air lines, gas, vapor and vacuum plants
- Leak detection in door seals
- Leak Check with focus tube and focus tip for precise locating.
- The set includes a robust impact-proof transportation case which contains all necessary components and accessories.
- Sound-proof headset enables leak detection in extremely noisy environments

Leak Check is available either as standalone device or in a complete set

If gases escape through leaks in piping systems (e.g. untight screwed connections, corrosions and so on) ultrasonic noises are generated. By means of Leak Check even the smallest leakages which cannot be heard by the human ear and which are not visible due to their size can be detected even from distances of several meters. Leak Check transforms the inaudible signals into a frequency which can be identified. By means of the comfortable sound-proof headset these noises can be realized even in extremely noisy environments.

The Leak Check leak detector convinces by its obviously refined sensor technology and its improved support in the tracing of leaks. By means of the integrated laser pointer which serves for target heading the leak can be localized more accurately.

Through the use of a specially designed trumpet, a better bundling of the sound waves is achieved. This trumpet acts like a directional microphone, suppressing unwanted noise and facilitating the pinpoint location of leaks even in hard-to-reach areas. Due to the special design of the bell, the use of the laser pointer is not hindered.

A handy ultrasonic transmitter is available for detecting leaks in pressureless systems. The transmitter is positioned so that the sound can enter the piping system. The ultrasonic signal penetrates the smallest openings, which can then be detected with the Leak Check.

Even very small leaks at hatches, doors and windows can be detected.

Description	Order no.
Set Leak Check consisting of:	2255330400
Leak Check Leak detector	2255332730
Transport case	2255332719
Sound-proof headset	2255332720
Focus tube with focus tip	2255332721
Battery charger	2255332722
Acoustic trumpet	2255332728
Accessory, not included in the set: Ultrasonic tone generator	2255332725

Technical data Leak Check	
Working frequency	40 kHz ± 2 kHz
Connections	3.5 mm stereo jack for headset. Power supply socket for connecting a external recharger
Laser	wave length: 645-660 nm output power: < 1 nW (laser class 2)
Operating duration	10 hours
Charging time	approx. 1.5 hours
Operating temp.	0 to 40 °C
Storage temp.:	-10 °C to 50 °C

Costs per year						
Pressure	**Leak size - Diameter (mm)**					
	0,5 mm	**1,0 mm**	**1,5 mm**	**2,0 mm**	**2,5 mm**	**3,0 mm**
3 bar	90 €	361 €	812 €	1.444 €	2.256 €	3.248 €
4 bar	113 €	451 €	1.015 €	1.805 €	2.820 €	4.061 €
5 bar	135 €	541 €	1.218 €	2.166 €	3.384 €	4.873 €
6 bar	158 €	632 €	1.421 €	2.527 €	3.948 €	5.685 €
7 bar	180 €	722 €	1.624 €	2.888 €	4.512 €	6.497 €
8 bar	203 €	812 €	1.827 €	3.248 €	5.076 €	7.309 €

Table: Leakage costs within one year in case of operation 24 h/365 days, calculated with compressed air costs of 1.9 ct/Nm³.

Peace of mind

Visualization, storing and analyzing of measured data via PMH Basic software gives the customer the confidence to find out the weaknesses in the compressed air installation and to create the most powerful and energy efficient system.

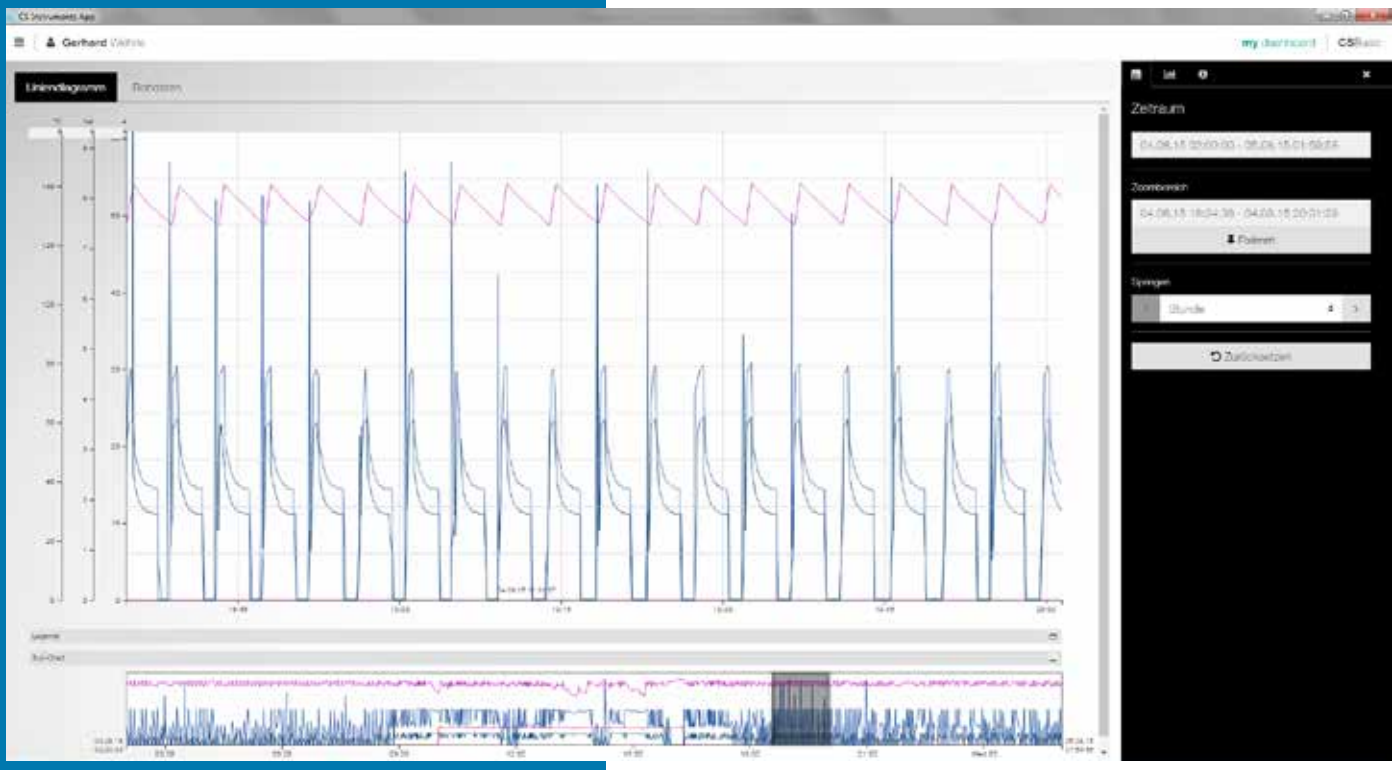


Software

PMH Basic Data evaluation in graphic and table form - reading out of the measured data via USB stick or Ethernet. Due to the intuitive operation all important functions can be retrieved via the dashboard. For better visualization the measurement curves are indicated in terms of color. The user can quickly see which minimum respectively maximum measured values occurred at which time and how long.

PMH Basic

With the PMH Basic the paperless recorder Check Box S6/ Check Box S1-S5 and all mobile devices with data logger can be read out. Depending on the device, data transfer is done either via USB stick or Ethernet connection.



Functions:

Graphic evaluation

All measuring curves are indicated in color. All necessary functions are integrated, like e. g. free zoom, selection/deselection of single measuring curves, free selection of periods, scaling of the axis, select colors and so on. This view can be stored as a PDF file and sent by e-mail. Different data can be combined in one common file.

Table view

All measuring points are listed with exact time interval. The desired measuring channels with the name of the measuring place can be selected via the diagram explorer.

Statistics

All required statistic data are visible at a glance. So the user can see very quickly which minimal or maximal measured values occurred when and for how long.

Consumption report

The software issues a consumption report for all connected flow sensors, it can be selected if it should be daily, weekly or monthly.

Data export to MS-Excel ® or csv

The measured data can be exported to Excel or csv.

Tariffes

The price per consumption unit can be can be stored for each energy form. Depending on the time and the day different tariffs can be stored. The validity of the tariffs can be defined via calendar function in order to grant that price increased resp. decreases can be updated.

Multi lingual

German, english and further languages are included in the scope of delivery.

Alarm history / Alarm logfile

The exceeding of the limit values is documented with the PMH Network.

Administration of the measuring sites

Each PMH sensor resp. each PMH chart recorder can be allocated to a department/hall (resp. cost centers).

Optional add-on modules:

Module „formular-editor“

By means of the formula editor e. g. the measured values of 2 sensors can be totaled or subtracted from each other.

PMH Basic	
Installation	Local PC installation
Data storage	Database (local)
Updates to new releases free of charge	Yes
Automatic information about upgrades	Yes (only in case of internet access)
Number of working place licenses	2
Number of measured values	All measured values transmitted by a device. (Max. 1 device at the same time)
Data transfer	USB Stick (manually) or Ethernet
User administration	No
E-Mail in case of threshold value exceeding	No
Storage of the measured data	Logger data have to be read-out manually via PMH Basic

PMH Basic

Intuitive operation

All important functions can be retrieved via the dashboard.

- Global Settings: Adjust units and change decimal places, store company name and logo
- Import real-time data: Establish Ethernet connection to PMH logger or sensor. Trace real-time measured data in graphic and in table form
- Import from PMH Soft Basic: Data migration from the previous version of PMH Soft Basic
- Data backup: Backup of the projects and the database

Intuitive operation

Grapic evaluation

- All measurement curves are indicated in terms of color. All necessary funktions like free zoom, selection/ deselection of single measured curves, free selection of periods, scaling of the axes, selection of colors and so on are integrated: This view can be stored as pdf file and sent by e-mail. Different data can be merged to one common file.

Graphic evaluation

Table view

- All measuring points are listed with the exact time interval. The desired measuring channels with the measuring site name can be selected via the diagram explorer.

		A2.1	B3.1	B3.2	B3.3
		Pressure	Dewpoint		
		A2a	DewPoint	Rel.Humid.	Temperatur
Date	Device	bar	°Ctd	%	°C
27.01.17 13:52:18	0	9,6749	-50,6462	0,1534	20,2556
27.01.17 13:52:28	0	9,676	-51,4187	0,1394	20,2517
27.01.17 13:52:38	0	9,6769	-52,0952	0,128	20,2499
27.01.17 13:52:48	0	9,678	-52,791	0,1173	20,2479

Table view

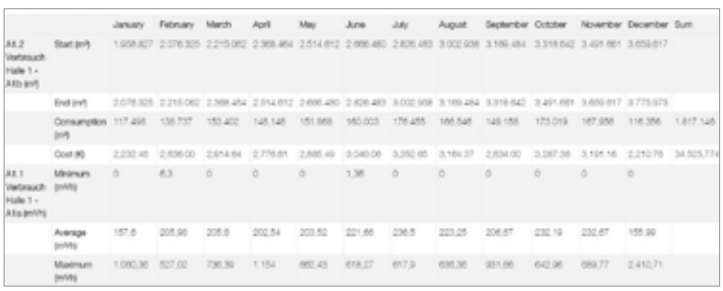
Statistics

- All necessary statistiPMH data are apparent at a glance. So the user can quickly see which minimum or maximum measured values occurred at which time and for how long.

Statistics

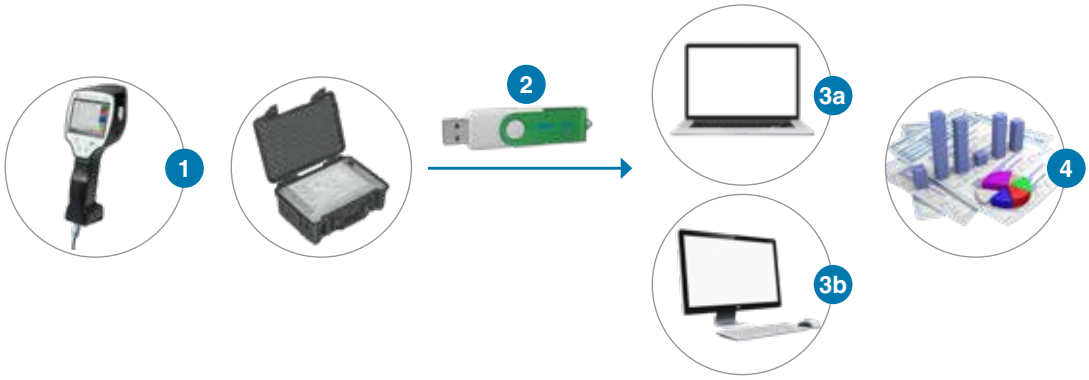
Flow evaluation

- The software carries out flow analysis for all connected flow sensors optionally as daily, weekly or monthly report.



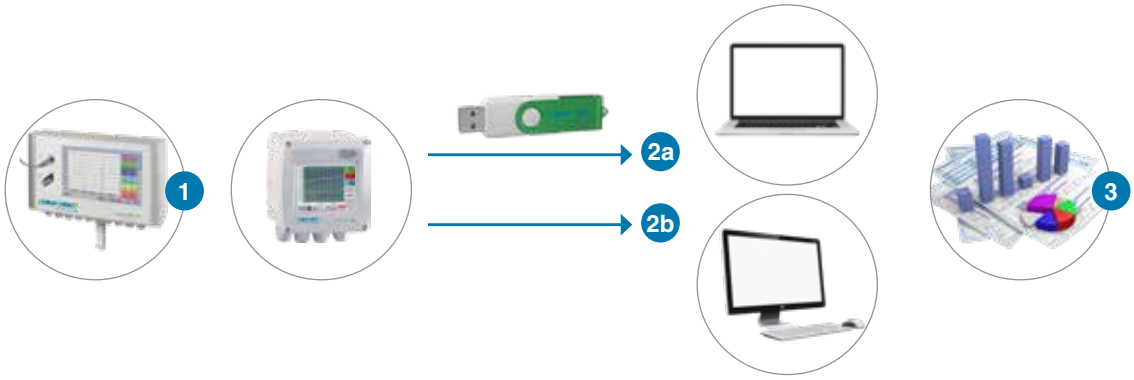
Flow evaluation

Data evaluation for mobile measurement:



1. Mobile measurement at the customer. Measured data are saved in the data logger in the selected measuring cycle
2. Export of the data to the USB stick
3a. Import of the measured data to the laptop directly on-site
3b. Import of the measured data to the computer in the office
4. Evaluation and print out of the measured data

Data evaluation for fix installed chart recorder in the company:



1. Chart recorder is fix installed in the company. Measured data will be saved in the data logger in the selected measurement cycle
2a. Transfer the data via USB stick to the computer
2b. Readout of the logger data via the computer network (LAN) by means of PMH Basic
3. Evaluation and print out of the measured data

Description	Order no.
PMH Basic - data evaluation in graphic and table form - readout of the measured data via USB or Ethernet. License for 2 working places	2255332468
Additional license for 1 further working place	2255332735
Module „Formula Editor“ – by means of the formula editor the measured data and constants can be calculated (addition, subtraction, division, multiplication, root function, exponentiation)	2255332736

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