



Catalogue Portable Measuring Instruments

17/18

Professional measuring systems for building technology and industrial applications

Suitable measuring systems for any application. AFRISO offers solutions for official measurements, adjustment, servicing, maintenance and repair work.

The pictograms indicate ideal suitability of the system for your specific application.



HVAC companies, customer service, service technicians



Chimney sweeps



Energy consultants, experts, environmental experts, facility management



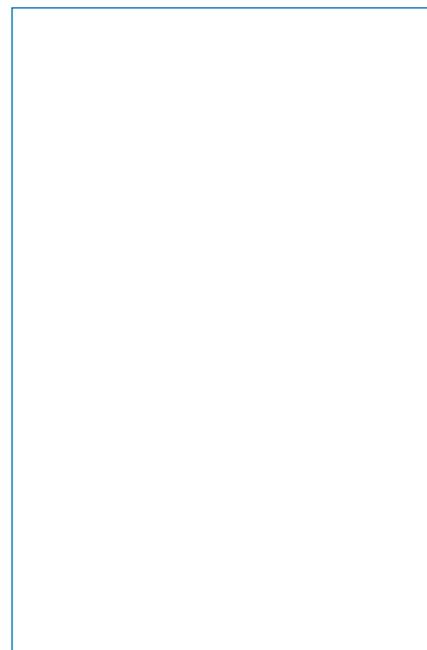
Architects, real-estate brokers



Industry: Production processes, servicing

All stock items have [part numbers printed in blue](#).

The catalogue has been presented by:



If you have questions: Please feel free to get in touch with us!

Extensions +49 7135 102-

On site consulting:	North/West	-446	North/East	-435
	South/West	-433	South/West	-255

Technical consulting:	-166
	-450

Hotline sales:	-134
-----------------------	------

(information on prices/delivery periods)

Service and repairs:	-211
-----------------------------	------

Further information on contact persons can be found at: www.afriso.de/kontakt

Portable service instruments for domestic and industrial technology

AFRISO service instruments	From page 4		
Selection guide and overview	From page 8		
Flue gas analysis	From page 11	Flue gas analyser BLUELYZER ST, EUROLYZER STx, MULTILYZER STe, dust measuring instrument STM 225, infrared multi-gas analyser IR 2000	1
Pressure measurement / tightness test	From page 27	Pressure measuring instruments S2600 and S4600 ST, leak test sets DPK 60 series, gas detectors GSP 1 and GSP 3 Flex	2
Temperature and humidity/moisture measurement	From page 43	Temperature measuring instruments TM 6, TM 7, TMD 7 und TMD 9, infrared temperature measuring instruments TM 8-IR, moisture measuring instrument MFM 22, humidity/air temperature measuring instruments FT series	3
CAPBs® sensor module systems/measuring units	From page 55	Base handle BG 10, sensor modules for: humidity/temperature RH 80, gas leak detection GS 10, pressure PS 10-61, pressure transmitter PT 70, pressure and temperature FP 10, air quality AQ 20, Temperature TK 10-50, flow rate and temperature measurement FlowTemp®ST, kits for tightness test, water, heating system check, 4 Pa test	4
Flow measurement	From page 75	Air velocity and air mass flow meter BlueAir-ST®, measuring instruments for hydraulic balancing HMG 01 and HMG 10, flow rate measuring instrument Flowtemp	5
Inspection and testing equipment	From page 89	Pressure gauge RF 50 PPS for oil burner pumps, test and refill set PNG, vessel filler for expansion vessels, testers PGA and PGW for pressure tests, universal digital pressure gauge DIM 20, level sensor tester GPR 4, anode tester AT1	6
Accessories and options for the BlueLine series	From page 97	Flue gas probes, modular probe system, probe plug-ins, condensate filter cartridges, temperature probe, clamping cones, probes for air velocity/moisture measuring instruments, connection kits, transport systems, printers, soot pumps, memory cards, power supply units, charging cables, accessories for leak test sets, evaluation software EuroSoft mobile, maintenance contracts, warranty extensions	7
Appendix	From page 113	AFRISO support centres and service points, service offerings, training, specialised company search, downloads, information material, information on EN 50379, VDI 3805, AFRISO at a glance, General Terms of Delivery, production sites	8
Notes on the catalogue	From page 135		



AFRISO development centre:
SYSTRONIK at the Illmensee site

The perfect instrument for all applications

Measuring and testing – reliably and professionally

Combustion systems must operate optimally. Oil, gas, pellets or log wood fired systems – AFRISO measuring systems ensure successful measurements. We support you in helping your customers achieve their goals: the right amount of heat at the right time, low energy consumption and low emissions.

Our instruments yield high-precision, reproducible measurement results. You can always rely on us. Our products are future proof and we have an impeccable reputation as a major innovation leader. Integration of the maximum number of measuring cells in minimum space, ergonomic design, smart and effective solutions such as wireless data transmission via QR codes, data evaluation and processing by means of apps for smartphones and tablet PCs or the latest interface technology Bluetooth® Smart: AFRISO keeps setting the standards.





A professional line of measuring systems Proven and unparalleled

Benefit from a comprehensive range of measuring instruments for all applications – from basic devices for simple tasks all the way to all-in-one analysis computers.

- Tested measuring instruments according to the applicable standards and TÜV directives
- H₂-compensated CO measuring cells for official measurements
- Maximum ease of use due to state-of-the-art technology such as TFT colour display, SD memory card and operation via touch pad
- Easy and fast communication with PCs, tablets, smartphones and printers via QR codes or interfaces such as Bluetooth®, Bluetooth® Smart, infrared and USB
- Android and iOS apps for graphical visualisation of measurement results
- Automatic device check with sensor test during program start for precise measurement results
- Magnets at the back of the instrument for hands-free operation
- Robust protective housing or sleeve against dirt, impact and shock
- Comprehensive range of accessories to adapt the instruments exactly to your requirements



Transmission of measurement data via Bluetooth®-interface

Innovative. Future proof. Simply powerful.

From a simple measuring instrument to an all-rounder.

You already own an AFRISO BlueLine measuring instrument* and want to use it for the majority of your daily measuring tasks, for example, tightness test, gas leak detection, flow rate measurement or 4 Pa test? No problem with your AFRISO measuring instrument. In conjunction with the new AFRISO CAPBs® for pressure, temperature, humidity and further applications, the most important tasks of heating system technicians and chimney sweeps can be performed easily and with high accuracy. The compact CAPBs® can be connected wirelessly via

Bluetooth® Smart to all measuring instruments of the AFRISO BlueLine series*. Measurement data can be transmitted directly to the AFRISO measuring instruments or, by means of a free app, to your smartphone or tablet. The measurement logs can be further transmitted from the measuring instrument as a QR code or, with the free iOS or Android app, as an Excel (CSV) file.



 See chapter 4 for detailed information on the available CAPBs®.

The CAPBs® excel with an unprecedented diversity of measuring possibilities with a single system. Numerous sensor modules CAPBs® sens can be easily plugged into the modular base handle BG 10. The ergonomic handle itself is made of high-quality plastic. It contains the power supply (battery, optionally rechargeable), a multi-purpose key and a multi-colour LED. The multi-purpose key features customisable function assignments. For example, it can be used for zero calibration regardless of the measuring site. In addition, a device for audible signals is inte-

grated into the handle. The unit and the measuring instrument or the mobile device are paired once; after that a wireless connection is available for immediate transmission via Bluetooth® Smart. The AFRISO measuring instrument or the free app for smartphone and tablet provide numerous pre-installed measurement menus for the CAPBs®. They include, for example, tightness test and load test, pressure loss measurement, gas leak detection, heating system check, flow rate measurement, etc.



i The following measuring instruments can be immediately used with the CAPBs®:

* BLUELYZER ST, EUROLYZER STx, MULTILYZER STe, pressure measuring instrument series S4600 ST and temperature measuring instrument TMD 9

The BlueLine measuring instrument series at a glance



	BLUELYZER ST	EUROLYZER STx	MULTILYZER STe	Dust measuring instrument STM 225	Series S2600
Parameters/measured values					
O ₂	•	•	•		
CO (up to 4,000 ppm)			•		
CO (up to 6,000 ppm)	•				
CO (up to 10,000 ppm)		•			
CO ₂ (calculated)	•	•	•		
NO		•***	•***		
NO ₂			•***		
NO _x		•***	•***		
CO (20,000 ppm)			•***		
SO ₂			•***		
Particulate matter				•	
Methane					
Propane (liquefied gas)					
Butane					
Lambda	•	•	•		
Eta efficiency / eta coefficient	•	•	•		
Flue gas loss qA	•	•	•		
Temperature	•	•	•		
Pressure	•	•	•		•
Dew point	•	•	•		
Humidity in %					
Volume flow		•***	•***		
Typical applications areas					
Measurements of filters, ventilation systems, ducts					•
Measurements of production facilities, tanks, gas pipes					•
Burner adjustment/servicing (gas, oil, solid fuel systems)	•	•	•	•	•
CO ambient measurement	•	•	•		
Servicing of water heaters	•	•	•		
Servicing of CHP systems		•	•		
Flue gas measurement	•	•	•		
Pressure measurement	•	•	•		•
Measurement of inlet pressure, flow pressure, static pressure, nozzle pressure		•	•		•
Pressure / vacuum measurement	•	•	•		•
Differential pressure measurement		•	•		•
Vacuum measurement					•
Temperature measurement (flue gas, air, external wall)	•	•	•		
Temperature measurement (water)					
Temperature measurement (moving objects)					
Surface temperature measurement	•	•	•		
Differential temperature measurement	•	•	•		
Draft / chimney draft measurement	•	•	•		•
Ventilation loss measurement					
Flue gas loss measurement	•	•	•		
Heating system check					
4 Pa test					
Gas leak detection					
Gas concentration measurement					
Flow rate measurement (water)					
Humidity measurement (material / moisture / climatic conditions in rooms / mould)					
Air velocity		•***	•***		
Approvals					
BlmSchV		•	•		
EN 50379-2		•	•		•
EN 15378					
KÜO		•	•		

* See product description on the catalogue page or in the operating instructions.

** Depends on product version.

*** Optional



MULTILYZER STe



EUROLYZER STx



Dust measuring instrument



BLUELYZER ST

FLUE GAS ANALYSIS

Portable measuring instruments BlueLine series for flue gas analysis, adjustment work and servicing

FLUE GAS MEASUREMENT	
Overview flue gas analysers	12
Flue gas analyser BLUELYZER ST	14
Flue gas analyser EUROLYZER STx	16
Flue gas analyser MULTILYZER STe	18
DUST MEASUREMENT	
Dust measuring instrument STM 225	20
INFRARED GAS ANALYSIS	
Mobile infrared multi gas analyser IR 2000	22

State-of-the-art technology at work for you

All-in-one flue gas analysers for heating systems

+ Innovative

Many devices with Bluetooth® Smart interface on board: Power-saving data transmission to PCs, Bluetooth® printers, to the app EuroSoft mobile and for pairing with CAPBs® and other measuring instruments.

+ Universal

All-in-one: Flue gas analysis, (differential) pressure measurement, (differential) temperature measurement and, depending on the device, CO room air monitoring, dust measurement, Pitot measurement (air velocity).

+ Multitasking

Measure, navigate, charge and evaluate measurement results at the same time.

+ Environmentally friendly

Lead-free ECO sensor (O₂) with long service life and optimised calibration phase, short response time, resistant to biogenous fuels (not BLUELYZER ST).

+ Proven

Infrared interface for IR printer.

+ Ergonomic

Light-weight handheld measuring instruments, ergonomic design with robust protective sleeve and integrated magnets.

+ Flexible

USB interface for charging.



+ Intuitive

Intuitive operation via touch pad for scrolling, large TFT colour display, well-structured step by step measurement programs.



+ Reliable

Fully automatic device check during program start.

+ Smart

Optional data logger function (1-999 seconds, interval freely selectable) for long-term measurement or diagnostics. Data is stored in XML format for flexible further processing with standard software applications such as MS Excel.

EuroSoft mobile app



+ Perseverant

Powerful lithium-ion battery for up to 12 hours of operation.

+ Mobile

Measurement logs as QR codes for smart-phones, tablets or management software.

+ Compatible

Suitable for all AFRISO flue gas probes and type K temperature probes.

+ Independent

MicroSD card for system-independent storage of measurement logs (HTML format) and fast software updates by user.



+ No hassle

5 / 7 years full warranty (sensors covered) in connection with a service contract.

FLUE GAS ANALYSER

BLUELYZER ST



Picture shows original size

EuroSoft
mobile app



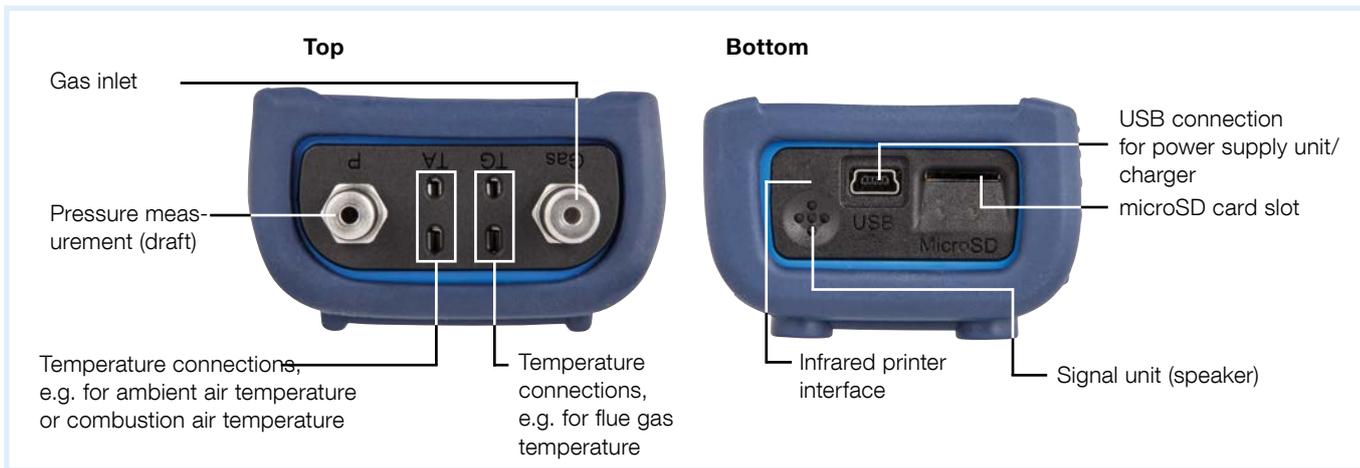
- + The world's smallest, fully-featured HVAC all-rounder with TFT colour display
- + Flue gas analysis, pressure measurement (draft) and (differential) temperature measurement with a single instrument
- + New, yet proven sensor technology with an extremely short response time
- + Program as per German Federal Immission Act with calculation of qA mean value
- + CO ambient measurement with two freely adjustable alarm thresholds
- + Fully-fledged temperature measurement program, differential temperatures (e.g. flow/return) can also be determined
- + Hold function: Display shows the measured value for a given period of time while the measurement keeps running in the background
- + Measurement programs, measured values and sequence of fuels can be freely edited via microSD card
- + Display reverse function: TFT display can be rotated by 180° for easy reading and excellent working conditions at the point of measurement
- + Zoom mode for entire display, "Single-value display"
- + Memory function with up to 100 measurement logs
- + CAPBs® enabled



Application

Ideal for HVAC professionals for accurate adjustments or inspections, on par level with official flue gas analysers. BLUELYZER ST is suitable for flue gas analysis, pressure measurement and (differential) temperature measurement. It is the universal, handheld measuring instrument of choice for measuring small and medium-sized oil and gas fired heating systems according to the 1st German Federal Immission Act (BlmSchV) and for CO concentration checks at gas fired systems.





Technical specifications

Measuring ranges (measured values)

Flue gas temperature/differential temperature
0/1,000 °C

Air temperature/combustion air temperature
-20/+200 °C

Draft/pressure
40 hPa

O₂
0/21 % by volume

CO
0/6,000 ppm (max.)

Indication (calculated values)
CO₂, CO undiluted (air-free), lambda, dew point, eta efficiency, flue gas loss qA, CO mg/m³ (natural gas), CO mg/kWh (fuel oil)

Operating temperature range
Ambient: 5/40 °C
Storage: -20/+50 °C

Weight (housing)
Approx. 275 g

Dimensions

W x H x D 66 x 143 x 37 mm

Display

TFT colour display 2.8"
W x H: 45 x 60 mm

Connections

Draft/pressure: Ø 7 mm
Gas: Ø 8 mm

Supply voltage

Via lithium-ion battery (3.6 V/1,800 mAh) or power supply unit (mini USB)

Hours of operation (Eco mode)

12 hours

Data memory

microSD card, max. 16 GB

Interfaces

Infrared, Bluetooth® Smart, QR code generator, microSD card slot

Approvals

EN 50379-2 for O₂/CO₂, T_A, T_G, pressure
EN 50379-3 for CO
VDI 4206 (sheet 1)

i
Please enquire for other device versions. See chapter 7 for options and accessories.

BLUELYZER ST Set

DG: H, PG: 4

	O ₂	CO	(Diff.) temperature	Draft/pressure	Calibration report, protective sleeve with magnets for device, power supply unit NTE mini USB-A, 5 x particle filter, 5 x Teflon membrane, condensate filter cartridge KFP 2P, case	microSD card with USB 2.0 SD card reader, charging cable USB-A to mini USB	Flue gas probe compact AKS-K 240 mm with draft, without KFP 2P	Ambient air probe TFB-UL-1	Bluetooth® Smart	Part no.	Price €
BLUELYZER ST Set	•	•	•	•	•	•	•	•	•	P04438116	

FLUE GAS ANALYSER

EUROLYZER STx



1

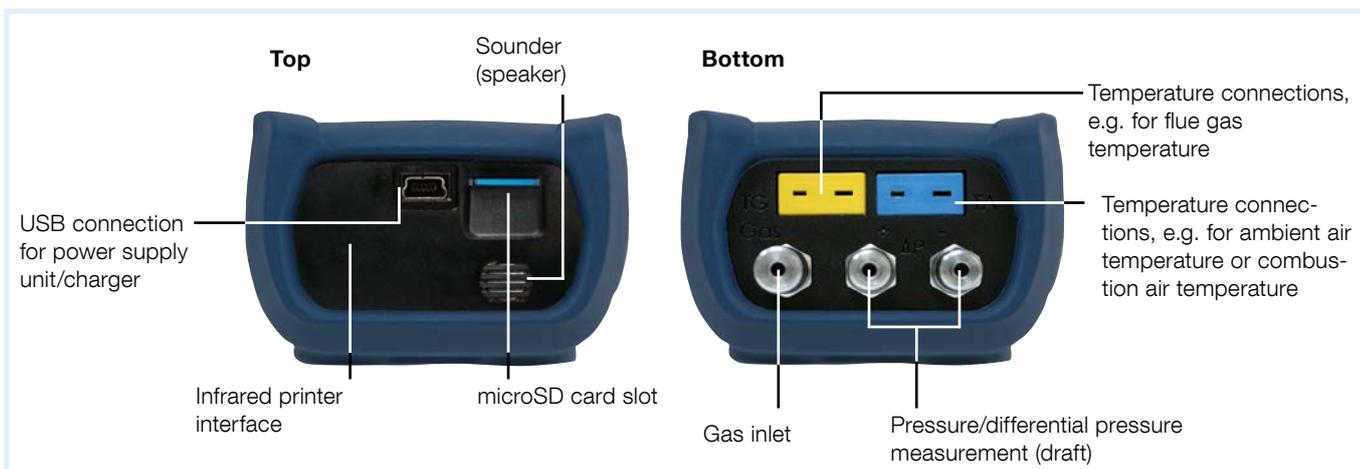
Picture shows original size

- + All-in-one: Flue gas analysis, (differential) pressure measurement, (differential) temperature measurement
- + Ready for the future: Pairing with the AFRISO CAPBs® measuring units
- + ECO sensor: Lead-free O₂ sensor with long service life and optimised calibration phase, short response time, resistant to biogenous fuels
- + H₂-compensated CO cell (measuring range up to 10,000 ppm)
- + CO ambient measurement
- + NO cell can be retrofitted
- + qA mean value measurement as per 1st German Federal Immission Act BImSchV
- + Measuring is possible with two active display levels
- + Measurement logs as QR code, database memory, customer data management
- + CAPBs® enabled
- + 5 years warranty on O₂ measuring cell
- + 7 years full warranty in connection with a service contract

EuroSoft
mobile app**Application**

Universal application for measuring small and medium-sized oil, gas and pellets fired heating systems according to the 1st German Federal Immission Act (qA mean value measurement) and for CO concentration safety checks at gas fired systems. EUROLYZER STx is the analyser of choice for measurements of bivalent, modulating CHP systems. Ideal for measurements at heating systems with a high proportion of biofuels.





Technical specifications

Measuring ranges (measured values)

Flue gas temperature/differential temperature
0/1,000 °C

Air temperature/combustion air temperature
-20/+200 °C

Draft
50 hPa

Differential pressure
150 hPa

O₂
0/21 % by volume

CO_{H2}
0/9,999 ppm (max.)

NO
0/2,000 ppm

Indication (calculated values)
CO₂, CO undiluted (air-free), lambda, dew point, eta efficiency, flue gas losses qA

Operating temperature range
Ambient: 5/40 °C
Storage: -20/+50 °C

Weight (housing)
Approx. 500 g

Dimensions
W x H x D 65 x 215 x 45 mm

Display
TFT colour display
W x H: 45 x 60 mm

Connections
Draft/pressure: Ø 7 mm
Gas: Ø 8 mm

Supply voltage
Lithium-ion battery (3.6 V/2,300 mAh) or power supply unit (mini USB)

Hours of operation (Eco mode)
14 hours

Data memory
microSD card (max. 16 GB)

Interfaces
Infrared, Bluetooth® Smart, QR code generator, microSD card slot

Approvals
As per BImSchV, KÜO (TÜV ByRgG 190), EN 50379-2, EN 15378

1

i
Please enquire for other device versions. See chapter 7 for options and accessories.

EUROLYZER STx Sets

DG: H, PG: 4

	O ₂ , CO _{H2} (differential) temperature	Draft/pressure	Differential pressure, connection kit ASS-DP	NO	Calibration report, protective sleeve with magnets for device, power supply unit NTE USB-A, 5 x Infiltec fine filter, 5 x Teflon membrane, covers for measurement holes (10 pieces), case	microSD card with USB 2.0 SD card reader, charging cable USB-A to mini USB	Base handle AWS-B, 2.4 m, draft, for interchangeable probes with KFP	Interchangeable probe AWS-S, 300 mm	Ambient air probe TFB-UL-50-1	Bluetooth® Smart	Part no.	Price €
EUROLYZER STx Set 1	•	•	•		•	•	•	•	•		P04629210	
EUROLYZER STx Set 2	•	•	•	•	•	•	•	•	•		P04630210	

1

Picture shows original size



FLUE GAS ANALYSER

MULTILYZER STe

- + All-in-one: Flue gas analysis, (differential) pressure measurement, (differential) temperature measurement, dust measurement, Pitot measurement (in conjunction with STM 225)
- + ECO sensor: Lead-free O₂ sensor with long service life and optimised calibration phase, short response time, resistant to biogenous fuels
- + Sensor equipment with a combination of up to six measuring cells: O₂, CO_{H2}, NO, SO₂, NO₂ and CO_{20,000}
- + CO room air monitoring
- + qA mean value measurement as per 1st German Federal Immission Act BImSchV
- + Measuring is possible with two active display levels
- + Measurement logs as QR code, database memory, customer data management
- + 5 years warranty on O₂ measuring cell
- + 7 years full warranty in connection with a service contract
- + CAPBs® enabled



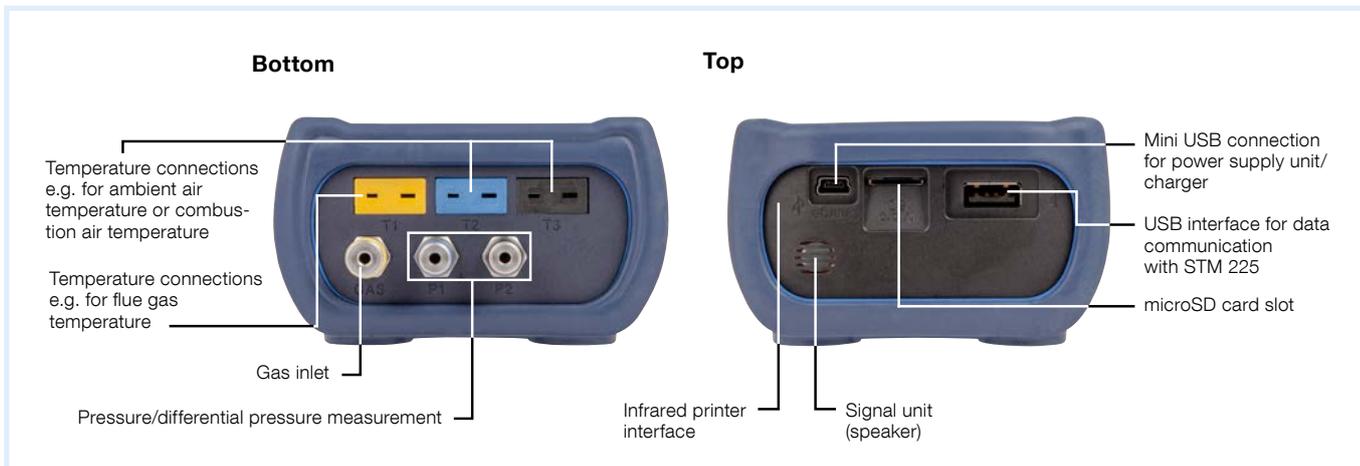
EuroSoft
mobile app



Application

Flue gas analyser for measuring small and medium-sized oil, gas and pellets fired heating systems according to the German Federal Immission Act and for CO concentration safety checks at gas fired systems. Ideal for servicing solid fuel systems (for example, coal or wood fired systems with temporary CO peaks) or bivalent, modulating combined heating and power plants. If used within the framework of dust measurements, MULTILYZER STe determines the flue gas value and serves as the central controller for the dust measuring instrument STM 225.





Technical specifications

Measuring ranges (measured values)

Flue gas temperature/differential temperature
0/1,000 °C

Air temperature/combustion air temperature
-20/+200 °C

Draft
70 hPa

Differential pressure
150 hPa

O₂ measurement
0/21 % by volume

CO_{H2} measurement
0/4,000 ppm

CO measurement
0/20,000 ppm

NO measurement
0/2,000 ppm

NO₂ measurement
0/200 ppm

SO₂ measurement
0/2,000 ppm

Indication (calculated values)
CO₂, CO undiluted (air-free), lambda, eta efficiency, flue gas losses qA, dew point, temperature difference

Operating temperature range

Operation: 5/40 °C
Storage: -20/+50 °C

Weight
Approx. 685 g

Dimensions
W x H x D 90 x 220 x 53 mm

Display
TFT colour display 3.5"
W x H: 53 x 71 mm

Connections
Draft/pressure: Ø 7 mm
Gas: Ø 8 mm

Supply voltage
Lithium-ion battery (3.6 V/2,900 mAh) or power supply unit (mini USB)

Hours of operation
Max. 12 hours

Data memory
microSD card (max. 32 GB)

Data logger
1-999 seconds, interval freely selectable

Interfaces
Infrared, Bluetooth® Smart, QR code generator, microSD card slot

Approvals
1. BImSchV, KÜO (TÜV ByRgG 301), EN 50379-2

i
Please enquire for other device versions. See chapter 7 for options and accessories.

MULTILYZER STe Sets

DG: H, PG: 4

	O ₂ , CO _{H2}	NO	CO _{20,000}	Draft, differential pressure, connection kit ASS-DP	Calibration report, protective sleeve for device with magnets, power supply unit NTE USB-A, power supply unit, 5 x Infiltec fine filter, 5x Teflon membrane, case	MicroSD card with USB 2.0 SD card reader, charging cable USB-A to mini USB	Base handle AWS-B, 2.4 m, draft, for interchangeable probes with KFP	Ambient air probe TFB-UL-50-1	Bluetooth® Smart	Module particulate matter measurement	Part no.	Price €
MULTILYZER STe set 1	•			•	•	•	•	•	•		P04529210	
MULTILYZER STe set 2	•	•		•	•	•	•	•	•		P04530210	
MULTILYZER STe set 3	•		•	•	•	•	•	•	•		P04541210	
MULTILYZER STe set 4	•	•	•	•	•	•	•	•	•		P04548210	
MULTILYZER STe set 5	•		•	•	•	•	•	•	•	•	P04541217	

DUST MEASURING INSTRUMENT

STM 225



- + Optical measuring principle for fast, accurate measurement results and real time diagnostics
- + Reliable measurement results, not influenced by interference (e.g. shocks)
- + Intuitive operation via menu-guided measuring sequences
- + Operation, flue gas analysis and data output via the optional flue gas analysis MULTILYZER STe as central controller
- + Visualisation via 5.7" colour touch display
- + Permanent indication of the current measured value
- + Output of the mass concentration of dust as a 15 minute mean value
- + Qualification-tested also for 30-minutes mean value measurement
- + Short setup time due to fast heat-up and calibration phase
- + Bluetooth® connectivity for flue gas analyser MULTILYZER NG/STe
- + Compact, robust measuring system

i

Easy operation an menu-guided measurements:



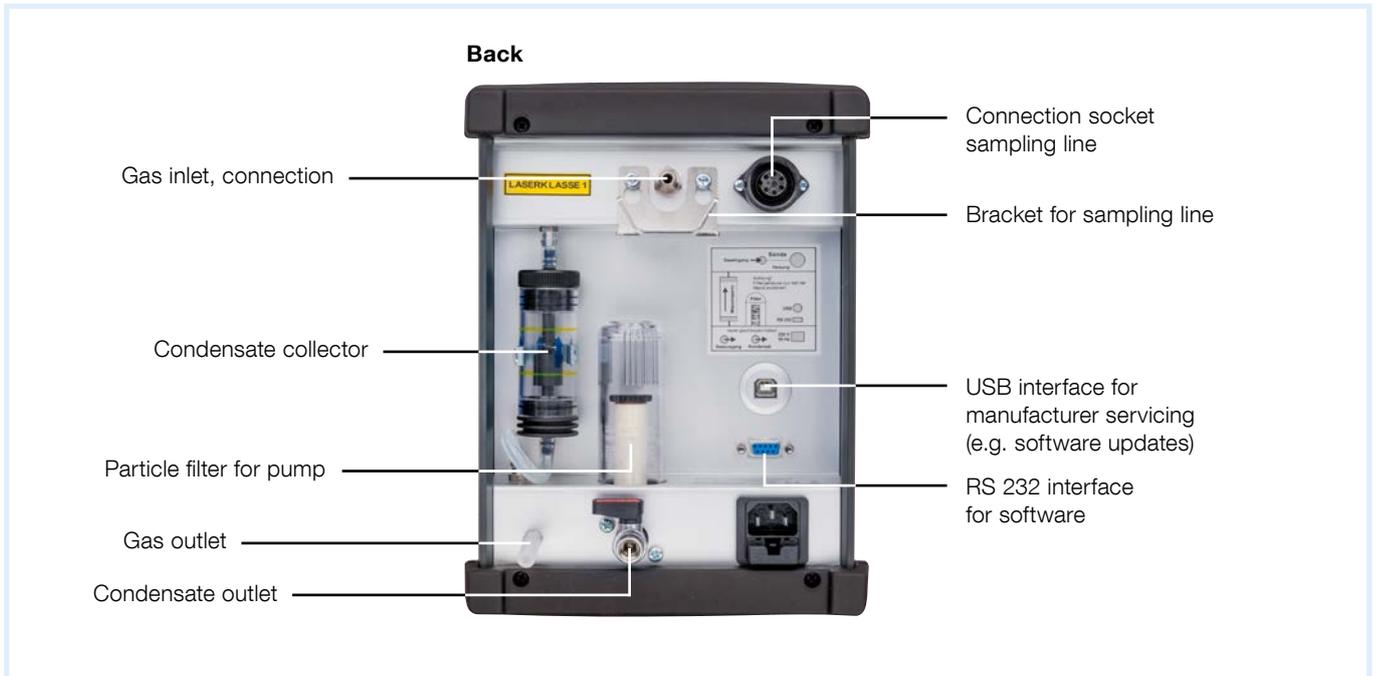
www.einfach-stark.net/stm225



Application

Dust measuring instrument specially designed for mobile use at solid-fuel systems such as pellets or wood fired systems for determining the mass concentration of particles/dust and for monitoring the limit values for particulate matter. Approved for stages 1 and 2, including limit value monitoring 150 mg/m³ for old systems as well as 30-minutes mean value measurement of single room combustion systems. The sampling probe can also be used for tightness tests of the entire gas path. Ideal for chimney sweeps, heating system engineers and service technicians for performing required particulate matter measurements, e.g. as per 1st German Federal Immission Act.





Technical specifications

Measuring range

0/300 mg/m³ dust

Measured values (via Multilyzer STe)

O₂: 0/21 % by volume

CO_{H2}: 0/4,000 ppm

CO: 0/20,000 ppm

Measuring resolution

0.1 mg/m³

Operating temperature range

Ambient: 5/40 °C

Storage: -20/+50 °C

Housing

W x H x D: 190 x 275 x 330 mm

Weight

Approx. 7.5 kg

Degree of protection

IP 40

Display

Colour touch display, 5.7" (14.5 cm)

Supply voltage

AC 230 V, 50 Hz

Power

Approx. 230 VA (with heated line)

Interfaces

Bluetooth®, USB, RS 232

Approvals

Certified suitability for stages 1 + 2, including 150 mg/m³, 30-minutes mean value measurement

Transport bag

Light-weight and heavy-duty with carrying strap and handle

1

i

See chapter 7 for options and accessories.

STM 225 Sets

PG: 4

	STM 225 with calibration report, zero point filter, mains cable, transport bag	Sampling probe with heated line, connection line, condensate filter cartridge KFP, Infiltec fine filter (5 pieces)	MULTILYZER STe with module particulate matter measurement, with calibration report, Bluetooth® Smart interface, protective sleeve with magnets for device, power supply unit, Infiltec fine filter (5 pieces), Teflon membrane (5 pieces)	Ambient air probe TFB-UL-50-1	Cleaning kit: 5 cleaning swabs and cleaning cloths, 1 cleaning brush	Part no.	Price €
Dust measuring instrument STM 225 Set 1	•	•			•	570200	
Dust measuring instrument STM 225 Set 2	•	•	•	•	•	570227	



MULTI GAS ANALYSER

IR 2000

- + Extractive multi gas analysis system for simultaneous measurement of up to 8 gas types
- + Optionally extensible to 10 gas types
- + Proven infrared measurement technology
- + Application-specific versions in terms of gas types, measuring ranges, gas transport and gas treatment
- + Robust, compact measuring instrument
- + Visualisation and operation via high-contrast 5.7" colour touch display
- + Fully automatic operation
- + Completely self-monitoring
- + IR 2000 is also available as a compact system together with the gas treatment system MGK 744

1

i



Gas treatment system MGK 744 for drying and cleaning the gas to be measured. See the catalogue Industrial Technology, chapter 7, for details and technical specifications.

Application Suitable for fully automatic operation in process control and process monitoring applications, for long-term diagnostics and for semi-stationary use. Simultaneous determination of up to eight gas components (CO, CO₂, C_nH_m, NO or SO₂). NDIR analysers use the property of polyatomic, non-elementary gas to absorb infrared light. Interference filters make the sensors selectively sensitive to specific wavelengths. Cross-sensitivities are compensated for by the microprocessor. It is recommended to use a gas treatment system if the gas to be measured is humid or contains dust.



Technical specifications

		Minimum		Maximum	
Measuring range NDIR*					
	CO	0 – 1000	ppmv	0 – 100	% by volume
	CO ₂	0 – 50	ppmv	0 – 100	% by volume
	HC	0 – 1000	ppmv	0 – 2	% by volume (equiv. C ₆ H ₁₄)
	C ₃ H ₈	0 – 1000	ppmv	0 – 2	% by volume
	CH ₄	0 – 1	% by volume	0 – 100	% by volume
	NO	0 – 2000	ppmv	0 – 5000	ppm
	SO ₂	0 – 1000	ppmv	0 – 2000	ppm
Measuring ranges electro-chemical					
	O ₂			0 – 21	% by volume
	NO	0 – 2500	ppmv	0 – 5000	ppmv
	NO ₂	0 – 500	ppmv	0 – 500	ppmv
Measuring ranges paramagnetic					
	O ₂			0 – 21	% by volume

i

Enquire for other gases.

Mega measuring ranges*

Several measuring ranges per gas with/without automatic switching

Measuring accuracy

≤ 3 % of full scale value (NDIR)

Zero drift

≤ 1 % of full scale value/week (NDIR)

Setup time

T63 < 15 s (NDIR)

Operating temperature range

5/45 °C (*1 5/35 °C)

Humidity

Up to 95 % r.h., non-condensing

Dimensions

Height: 133 mm (3 U)

Width: 449 mm (84 HP, 19" rack), with mounting elements 483 mm

Depth*: 316/376/436 mm plus mounting elements (34 mm) and connections

Weight*

Approx. 12 kg

Degree of protection

IP 20

Supply voltage

AC 230 V (AC 110 V on request); P_{max} 60 VA

Interfaces*

Digital output: RS 232

Analogue outputs: Max. 8, 0/4–20 mA, channel and limit value freely configurable

Limit values: 5 voltage-free switching outputs, freely configurable

Device and calibration status: Three voltage-free switching outputs

Features

Languages: German/English

Functions: Password-protected configuration mode, freely configurable zero and calibration cycles, internal system and fault monitoring

Gas treatment system (option)

- Internal gas cooler, electronically controlled *
- Separate inlets for zero point/gas calibration
- Particle filter
- Flow indication
- Gas pump

* Depends on configuration

1

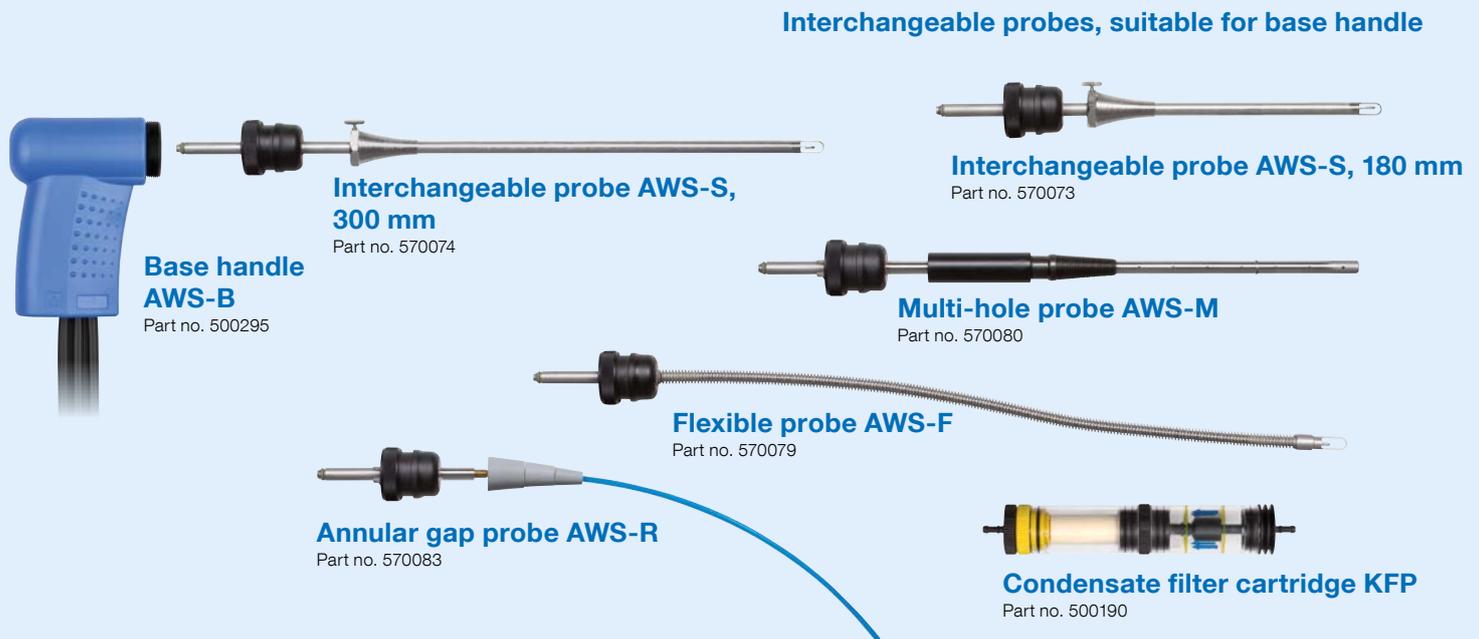
i

See chapter 7 for options and accessories. Please enquire for additional combinations and housing versions (wall mounting housing, portable housing), heated gas sampling probes or gas lines, Peltier and compressor type gas coolers.

PG: 4	Part no.	Price €
Gas analyser IR 2000 O ₂ , CO, CO ₂	61076	
Gas analyser IR 2000 O ₂ , CO, NO	61077	
Gas analyser IR 2000 O ₂ , CO, CO ₂ , SO ₂	61078	
Gas analyser IR 2000 O ₂ , CO, CO ₂ , NO	61079	
Gas analyser IR 2000 O ₂ , CO, CO ₂ , NO, SO ₂	61080	

Options and accessories for flue gas analysers

Modular probe system with interchangeable probes



1

From a simple measuring instrument to an all-rounder with CAPBs®

AFRISO CAPBs® is a modular system consisting of the universal base handle CAPBs® BG 10 and an application-specific sensor module CAPBs® sens for a wide variety of measured variables such as pressure, temperature, humidity. The base handle can be easily and quickly combined with any sensor module to form a complete CAPBs® measuring unit. It immediately transmits the measurement data via Bluetooth® Smart to your BlueLine measuring instrument or via an app to your mobile device.



i See chapter 4 for detailed information.



Thermal printer EUROprinter

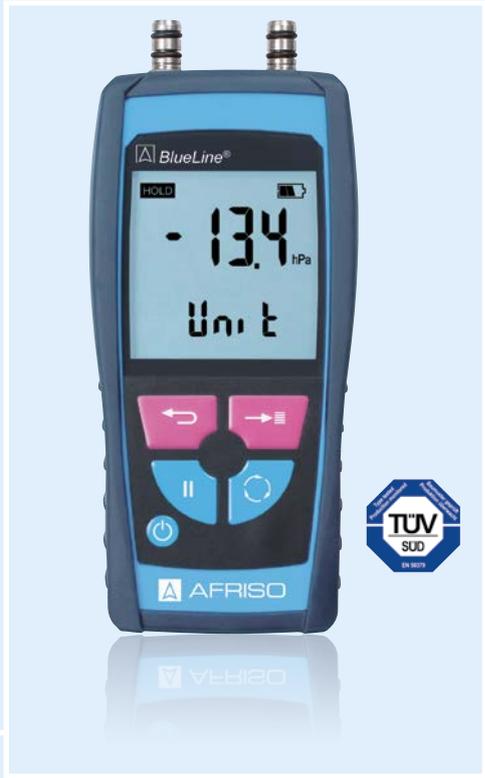
Compact printer with four magnets at the back for hands-free operation. Infrared interface for easy connection of all BlueLine series measuring instruments. Documents all measured results on paper for official purposes - anywhere.
Part no. 522394

i See chapter 7 for detailed information and additional options as well as a comprehensive range of accessories.



Android/iOS app "EuroSoft mobile"

For smartphones and tablets or as PC evaluation software for Windows operating systems



Series S2600



Series S4600 ST



Gas detectors



Leak test sets DPK series

PRESSURE MEASUREMENT

Precision measuring instruments and complete sets for checks, tightness tests and leak location

PRESSURE MEASURING INSTRUMENTS

Product highlight pressure measuring instruments: Series S4600 ST	28
Pressure measuring instrument S2600	29
Pressure measuring instrument S4600 ST	30

TIGHTNESS TEST / LEAK LOCATION

Selection table leak test sets	32
Test procedures at gas, oil, solar and water installations	33
Leak test set DPK 54	107
Leak test set DPK 60-5	35
Leak test set DPK 60-6 ST , CAPBs® enabled	36
Leak test set DPK 60-7 ST , CAPBs® enabled	38
Gas detectors GSP 1 and GSP 3 Flex	40

The compact pressure measuring instrument

Product highlight: Series S4600 ST

+ All-in-one

Measurement of pressure, vacuum and differential pressure and, depending on the version, Pitot measurement (air velocity).

+ Proven

Infrared interface for IR printer.

+ Ergonomic

Extremely compact and light-weight design for convenient handling, including hands-free operation thanks to the magnet integrated in the protective housing.

+ Full coverage

Covers the entire range of measuring requirements: From measuring instrument for ultra-low pressure (20 mbar) to version for very high pressure (18 bar).

+ Perseverant

Powerful lithium-ion battery for up to 38 hours of operation.

+ Mobile

Measurement logs as QR codes for smartphones, tablets or management software

+ Accurate

Highly accurate measurements due to integrated barometric pressure sensor and temperature compensation. Measured values are displayed in nine units: mbar, Pa, hPa, kPa, mmWC, mmHg, inHg, psi, bar.

+ Innovative

Bluetooth® Smart interface on board: Power-saving data transmission to AFRISO CAPBs® or to the AFRISO apps.



+ Smart

Optional data logger function (1-999 seconds, interval freely selectable) for long-term measurement or diagnostics. Data is stored in XML format for flexible further processing with standard software applications such as MS Excel.

+ Comprehensive

Six (differential) pressure measuring ranges

+ Independent

microSD card for system-independent storage of measurement logs (HTML format) and fast software updates.

+ Energy-saving

The ECO mode for energy-saving operation ensures long battery life.

+ Reliable

Fully automatic device check, manual and automatic zero calibration during program start.

+ Striking

More convenience: The large TFT colour display (W x H: 45 x 60 mm) shows four measured values simultaneously and lets you clearly see the results, even in dark rooms.



**EuroSoft
mobile app**





Also
available
as
CAPBs®

PRESSURE MEASURING INSTRUMENT

S2600

- + Four (differential) pressure measuring ranges
- + Measured values displayed in 8 units: mbar, Pa, hPa, kPa, mmHg, inHg, psi, bar
- + Automatic zero calibration
- + Hold function for short-term freezing of measured value
- + Fully automatic device check, manual and automatic zero calibration during program start
- + Hose connection via 8 mm plug in connection or 3 mm Festo clamp connection

2

Application For measuring pressure, vacuum and differential pressure. For non-corrosive gaseous, dry media. Ideal for industrial, medical and air conditioning technology applications. Other typical application areas: Measurement of chimney draft, measurement of inlet pressure, flow pressure and nozzle pressure, pressure loss in flowing gases, filter inspection, ventilation systems or ducts, production and extraction facilities, vacuum measurement (laboratory), check of the connection pressure (natural gas supply pipes), burner pressure check, inspection of tanks for liquids (inlet and outlet pressure).

Technical specifications

Model	Measuring range (mbar)	Max. over-pressure (bar)	Resolution (mbar)	Accuracy (% of measured value)
S2601 (FZM 30)	-20/+150	1.35	0.01 (< 19.99) or 0.1 (> 20)	1.0 ± 1 digit (< 130.0 mbar)
S2610 (DMG 15)	-50/+1,000	3	0.1 (< 199.9) or 1.0 (> 200)	1.0 ± 1 digit (< 1,000 mbar)
S2650-F (DMG 25)	-100/+5,000	10	0.1 (< 199.9) or 1.0 (> 200)	1.0 ± 1 digit (< 5,000 mbar)
S2680-F (DMG 35)	-100/+8,000	10.5	0.1 (< 199.9) or 1.0 (> 200)	1.0 ± 1 digit (< 8,000 mbar)

Operating temperature range

Ambient: 0/40 °C
Storage: -20/+50 °C

Hours of operation

Max. 100 hours

Weight (housing)

Approx. 250 g

Dimensions

W x H x D 66 x 143 x 37 mm

Display

LCD, transfective
W x H: 46 x 48 mm

Hose connection

S2601, S2610: Ø 8 mm
S2650-F, S2680-F: Ø 3 mm (Festo)

Supply voltage

2 x 1.5 V Mignon (AA) batteries

Approvals

1st German Federal Immission Act (1. BImSchV), EN 50379-2

Scope of delivery

Measuring instrument with batteries, calibration report, protective sleeve with magnet

DG: H, PG: 4	Part no.	Price €
S2601 (FZM 30)	569680	
S2610 (DMG 15)	569681	
S2650-F (DMG 25)	569682	
S2680-F (DMG 35)	569684	



PRESSURE MEASURING INSTRUMENT

S4600 ST



**EuroSoft
mobile app**



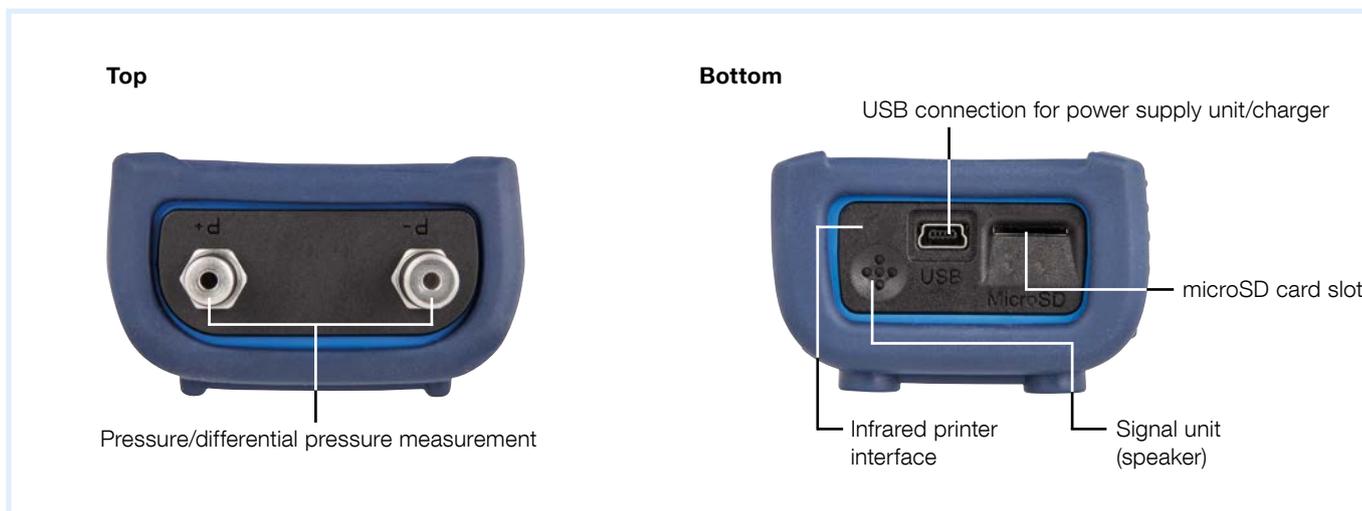
- + For measuring pressure, vacuum and differential pressure
- + Six (differential) pressure measuring ranges from measuring instrument for ultra-low pressure (20 mbar) to version for very high pressure (18 bar)
- + Barometric pressure sensor and temperature compensation for highly accurate measured value
- + Large TFT colour display (W x H: 45 x 60 mm) for simultaneous display of 4 measured values
- + Measured values displayed in 9 units: mbar, Pa, hPa, kPa, mmWC, mmHg, inWC, psi, bar
- + Fully automatic device check, manual and automatic zero calibration during program start
- + microSD card for system-independent storage of measurement logs (HTML format) and fast software updates
- + Optional data logger function for long-term measurement or diagnostics (data in XML format)
- + Pitot measurement (air velocity) for measuring range up to 20 mbar or 150 mbar



Application

For measuring pressure, vacuum and differential pressure. For non-corrosive gaseous, dry media. Ideal for industrial, medical and air conditioning technology applications. Other typical application areas: Measurement of chimney draft, measurement of inlet pressure, flow pressure and nozzle pressure, pressure loss in flowing gases, filter inspection, ventilation systems or ducts, production and extraction facilities, vacuum measurement (laboratory), check of the connection pressure (natural gas supply pipes), burner pressure check, inspection of tanks for liquids (inlet and outlet pressure). Minimum and maximum values can be set before the measurement; if these values are reached, visual or audible alarms are triggered. The free Android app "EuroSoft mobile" allows for transfer of measurement results to smartphones and tablets via QR code and for the visualisation of such results. Measurement logs can also be sent via e-mail.





Technical specifications

Model	Measuring range (mbar)	Pitot (m/s)	Max. over-pressure (bar)	Resolution (mbar)	Accuracy (% of measured value)
S4601 ST	± 150	2 – 50	1.35	0.01 (< 99.99) / 0.1 (> 100) Pitot (m/s): 0.1	0.5 ± 1 digit Pitot: ±0.8 m/s
S4602 ST	± 20	0.5 – 50	0.25	0.001 Pitot (m/s): 0.1	0.5 ± 1 digit Pitot: ±0.3 m/s
S4610 ST	± 1,000	–	16	0.1 (< 999.9) / 1.0 (> 1,000)	0.5 ± 1 digit
S4650 ST (-F)	± 5,000	–	16	0.1 (< 999.9) / 1.0 (> 1,000)	0.5 ± 1 digit
S4680 ST (-F)	± 8,000	–	16	0.1 (< 999.9) / 1.0 (> 1,000)	0.5 ± 1 digit
S4699 ST-F	± 18,000	–	28	1	0.5 ± 1 digit

Operating temperature range

Ambient: 0/40 °C
Storage: -20/+50 °C

Hours of operation

Max. 38 hours

Weight

Approx. 250 g

Dimensions

W x H x D 66 x 143 x 37 mm

Display

TFT colour display, 2.8"
W x H: 45 x 60 mm

Hose connection

S4601 ST, S4602 ST, S4610 ST
S4650 ST, S4680 ST: Ø 8 mm
S4650 ST-F, S4680 ST-F,
S4699 ST-F: Ø 3 mm (Festo)

Supply voltage

Lithium-ion battery (3.6 V/1,800 mAh)
or power supply unit (mini USB)

Data memory

microSD card, max. 16 GB

Data logger

1-999 seconds, interval freely selectable

Interfaces

Infrared, Bluetooth® Smart, QR code generator,
microSD card slot

Approvals

EN 50379-2 (except for S4699 ST)

Scope of delivery

- Measuring instrument with power supply unit and data cable
- Calibration report
- microSD card
- Protective sleeve with magnet



See chapter 7 for options and accessories.

DG: H, PG: 4	Part no.	Price €
S4601 ST (150 mbar)	571301	
S4602 ST (20 mbar)	571300	
S4610 ST (1,000 mbar)	571302	
S4650 ST (5,000 mbar)	571303	
S4650 ST-F (5,000 mbar), with Festo connection ø 3 mm	571304	
S4680 ST (8,000 mbar)	571305	
S4680 ST-F (8,000 mbar), with Festo connection ø 3 mm	571306	
S4699 ST-F (18,000 mbar), with Festo connection ø 3 mm	571307	

DPK series for professional pressure tests



DPK 54

DPK 60-5

DPK 60-6 ST

DPK 60-7 ST

		DPK 54	DPK 60-5	DPK 60-6 ST	DPK 60-7 ST
Load test as per TRGI 2008	Gas		•	•	•
Tightness test as per TRGI 2008			•	•	•
Evaluation of serviceability/ determination of amount of gas leakage TRGI 2008					•
Tightness test as per TRF 86		•		•	•
Pressure measurement		•	•	•	•
Strength test as per ZVSHK	Drinking water		•	•	•*
Tightness test as per ZVSHK				•	•
Pressure measurement		•	•	•	•
Tightness test as per EN 1610	Waste water		•	•	•*
Pressure measurement			•	•	•*
Pressure measurement	Heating systems		•	•	•
0/200 mbar	Pressure ranges		•	•	•
-0.5/+1.5 bar				•	•
-1/+5 bar				•	•*
0/2 bar		•	•	•	•*
0/3 bar			•	•	•*
0/20 bar					•*
Air	Test medium	•	•	•	•
Inert gas		•	•	•	•
Water					•*
Mechanical determination of measured values		•	•		
Digital determination of measured values				•	•
Freely adjustable measurement times				•	•
IR interface				•	•
Bluetooth® Smart interface			•	•	
MicroSD/SDHC card			•	•	
Data logger function			•**	•**	
Barometric pressure sensor	Specifications			•	•
Hose coupling system			•	•	•
Connection temperature sensor (type K)					•
Connection pressure sensor					•

* Possible with external pressure sensor (optional).

** Optional.

Page 107

Page 35

Page 36

Page 38

Test procedures at gas, oil, solar and water installations

All gas, oil, solar and water pipe installations are subject to a mandatory pressure test after installation. The specialised company certifies the tightness of the system or parts of the system in the

test report and confirms proper installation with a signature.



Test of heating systems

Tightness test

Time of test	New installations prior to closing of wall chases, wall or ceiling openings and prior to screeding or installation of panelling
Pipe parts to be tested	Freely accessible pipes with fittings
Test medium	Air or inert gas (N ₂ , CO ₂)
Test pressure	2.5/3 (response pressure of safety valve)

Test of solar systems

Solar systems are subject to a mandatory pressure test prior to flushing according to the manufacturer's instructions. It is not advisable to perform a test with water.

Time of test	New installations prior to filling and flushing of the solar circuit	
Pipe parts to be tested	Pipes with connection points and fittings	
Test medium	Air or inert gas (N ₂ , CO ₂)	
	1. Pressure test	2. Strength test
Test pressure	110 mbar to 1 bar	≤ DN 50: 3 bar > DN 50: 1 bar
Test duration	10 min	System ≤ 100 l: 30 min Each additional 100 l: +10 min

Test of oil pipes

The pressure test must be performed as per TRÖL (German Technical Rules for Oil Systems); it can be extended by a tightness test. Requirements concerning the measuring instruments:

- Accuracy class at least 1.0
- Measuring uncertainty ≤ 5 % (with reference to measured value)
- A pressure drop of 0.1 mbar must be detectable

Time of test	Prior to initial commissioning, in the case of underground oil pipes prior to covering and after all types of work on the oil pipe (except for oil filter change)
Pipe parts to be tested	Pipes with connection points and fittings

1. Pressure test

Test medium	Air/inert gas (N ₂ , CO ₂)	Liquid
Test pressure	Max. operating pressure x 1.1	Max. operating pressure x 1.3, at least 5 bar
Temperature compensation	10 min	10 min
Test duration	Aboveground pipes: 10 min Underground pipes: 30 min	Aboveground pipes: 10 min Underground pipes: 30 min

2. Tightness test

Test pressure	110 mbar (overpressure)	300 mbar (vacuum)
Temperature compensation	10 min	10 min
Test duration	10 min	10 min

Test of gas pipes

DVGW (German Technical and Scientific Association for Gas and Water) TRGI 2008 (German Technical Rules for Gas Installations) defines the rules for all pressure tests on gas pipes (underground pipes, aboveground outdoor pipes, indoor pipes). Affected pipe sections must be isolated from the gas-carrying pipe. After the test

has been performed and gas admitted, the final test is carried out using leak detectors (e.g. GSP). All connection points, for example at the gas meter, the pressure controller or the gas-consuming equipment, are tested for leaks.

Load test

Time of test	New installations prior to painting, insulation, plastering or other types of covering
Pipe parts to be tested	Pipes without fittings or with fittings if the nominal pressure rating of such fittings is at least as high as the test pressure. Pipe openings must be closed with metallic components; connection of gas-carrying pipes is not permitted. Connection points without corrosion protection.
Test medium	Air or inert gas (N ₂ , CO ₂)
Test pressure	1 bar
Test duration	10 min

Pressure test

Time of test	New installations immediately prior to blowing in of the gas if the tightness test or the evaluation of serviceability has not been performed immediately before
Pipe parts to be tested	Pipes with fittings
Test medium	Air or inert gas (N ₂ , CO ₂)
Test pressure	Max. 50 mbar
Temperature compensation	System < 100 l: 10 min System > 100/200 l: 30 min System > 200 l: 60 min
Test duration	Approx. 5 minutes

Evaluation of serviceability/ determination of amount of gas leakage

2

Pipe parts to be tested	Pipes including fittings, but without gas-consuming equipment, control and safety equipment.
Test medium	Air or inert gas (N ₂ , CO ₂)
Test pressure	Operating pressure, usually 23 mbar
Test duration	Min. 1 min, max. 10 min

Test result	Amount of leakage	Serviceability
	0 l/h	Tight
	< 1 l/h	Unlimited
	≥ 1 l/h and < 5 l/h	Reduced
	≥ 5 l/h	None

Tightness test

Time of test	New installations prior to painting, insulation, plastering or other types of covering, decommissioned pipes prior to re-commissioning, decommissioned pipes
Pipe parts to be tested	Freely accessible pipes with fittings, however, without gas-consuming equipment, control and safety equipment. Connection points without corrosion protection.
Test medium	Air or inert gas (N ₂ , CO ₂)
Test pressure	150 mbar
Temperature compensation	System < 100 l: 10 min System > 100/200 l: 30 min System > 200 l: 60 min
Test duration	System < 100 l: 10 min System > 100/200 l: 20 min System > 200 l: 30 min

Test of drinking water systems

Pipe parts to be tested	Newly laid pipes with fittings	
Test medium	Air, inert gas (N ₂ , CO ₂) or water	
	1. Tightness test*	2. Strength test*
Test pressure	150 mbar	≤ DN 50: 3 bar > DN 50: 1 bar
Temperature compensation	30 min	-
Test duration	System < 100 l: 120 min Each additional 100 l: +20 min	10 min

* Specifications for test medium air

The tightness test with water may only be performed by means of hygienic components and with filtered drinking water. In the case of an extended duration between the pressure test and commissioning, a dry tightness test must be performed to avoid pollution/microbial contamination of the system. The test is carried out as per ZVSHK (German Central Association of the HVAC Industry) specifications.



LEAK TEST SETS

DPK 60-5

- + Mechanical test set for starters
- + Ideal for pressure tests of gas/oil and water lines
- + 2 pressure gauges for improved reading accuracy
- + Pressure test valve with high-precision adjustment for easy adjustment of the filling pressure
- + Convenient quick-action coupling system for easy and fast adaptation to the task at hand

2

Application For easy tightness checks (150 mbar) and load tests (1 bar) on gas pipes and for checking the connection and flow pressure. Can also be used for tightness checks (150 mbar) and strength tests (3 bar) on drinking water pipes as per ZVSHK (German Central Association of the HVAC Industry). Ideal for acceptance tests of heating system pipes, solar system pipes, underfloor heating systems, liquid gas pipes and waste water pipes. Also suitable for pressure adjustments/tests or vacuum/tightness tests on oil pipes and oil pumps.

Technical specifications

Ranges

Test pressure gauge 1: 0/6 bar
 Test pressure gauge 2: Dual scale 0/200 mbar and 0.5/1.5 bar

Application areas

Atmospheric pressure: 750/1100 hPa
 Humidity: 20/80 % rH

Operating temperature range

Ambient: 0/40 °C
 Medium: 0/40 °C
 Storage: -20/+50 °C

Dimensions

Test pressure gauge with impact protection: Ø 100 mm
 Case (W x H x D): 450 x 136 x 365 mm

Weight

4.6 kg

Scope of delivery

- Pressure gauge 0/6 bar with impact protection
- Pressure gauge with dual scale 0/200 mbar and 0.5/1.5 bar with impact protection
- Pressure test valve with quick-action coupling and high-precision adjustment valve
- Hand-operated bulb pump with valve and connecting hose
- 2 x conical test plug 3/4" to 1 1/4" with plug-in nipple
- 2 x connection hose (300 mm) with quick-action coupling and plug-in nipple
- Connection hose (1 m) with quick-action coupling and plug-in nipple
- Y connector with shut-off valve, 2 x quick-action coupling and 1 x plug-in nipple
- Robust plastic case with foam inlay



DG: H, PG: 4	Part no.	Price €
Leak test set DPK 60-5	569290	



LEAK TEST SETS

CAPBs[®]-enabled set DPK 60-6 ST

- + Ready-to-use test set for professional tightness tests
- + Can be modularly extended for other tests
- + With CAPBs[®]-enabled digital pressure measuring instrument (S4600 ST) with Bluetooth[®] Smart technology, high measuring accuracy and barometric pressure determination for compensation of air fluctuations during measurements and for temperature compensation
- + Extended measuring range 0/5,000 bar
- + Integrated timer function for long-term measurements, measuring duration freely selectable in increments of one minute (up to 900 min).
- + Pressure test valve with high-precision adjustment for easy adjustment of the filling pressure
- + microSD card for data management and documentation on the PC
- + Large TFT colour display (W x H: 45 x 60 mm)
- + Convenient quick-action coupling system for easy and fast adaptation to the task at hand
- + Option data logger: Data logging once per second during measurements (XML format)
- + Measurement logs as QR codes

2

Bluetooth[®]
SMART

NEW



Application For pressure tests as per DVGW worksheet G600. Suitable for tightness tests (150 mbar) and load tests (1 bar) on gas pipes and for checking the connection and flow pressure as well as the pressure loss. Can also be used for tightness tests (150 mbar) and strength tests (3 bar) on drinking water pipes as per ZVSHK (German Central Association of the HVAC Industry). Ideal for acceptance tests of heating system pipes, solar system pipes, underfloor heating systems, liquid gas pipes and oil pipes. The enclosed digital pressure measuring instrument meets the current DVGW (German Technical and Scientific Association for Gas and Water) requirements as per TRGI 2008 (German Technical Rules for Gas Installations) and the required reading accuracy (0.1 mbar) for tests of oil pipes.

Technical specifications

Measuring range

± 5,000 mbar

Resolution

0.1 mbar

Operating temperature range

Ambient: 0/40 °C

Storage: -20/+50 °C

Hours of operation

Max. 55 hours

Weight

2.65 kg

Dimensions (W x H x D)

S4600 ST: 66 x 143 x 37 mm

Case: 450 x 136 x 365 mm

Display

TFT colour display, W x H: 45 x 60 mm

Supply voltage

Lithium-ion battery (3.6 V/1,800 mAh)

or USB power supply unit

Scope of delivery

- Digital pressure measuring instrument S4600 ST with Bluetooth® Smart technology, power supply unit and charging cable
- MicroSD card and USB adapter
- Pressure test valve with quick-action coupling and high-precision adjustment valve
- Hand-operated bulb pump with valve and connecting hose
- 2 conical test plugs for pipe diameter 3/4" to 1 1/4" with plug-in nipple
- Y connector (2 x quick-action coupling/1 x plug-in nipple)
- Connection hoses with plug-in nipple and quick-action coupling
- Robust plastic case



See chapter 7 for options and accessories.

DG: H, PG: 4	Part no.	Price €
Leak test set DPK 60-6 ST	560006	

LEAK TEST SETS

CAPBs[®]-enabled
set DPK 60-7 ST

**TÜV-
tested**
as per
DVGW
G5952

 **Bluetooth**
SMART

NEW

- + Ready-to-use set for all tightness tests, fully integrated in robust system case
- + Can be modularly extended for other pressure tests
- + Digital CAPBs[®]-enabled pressure measuring instrument (DPK 60-7 ST) with Bluetooth[®] Smart technology, high measuring accuracy and barometric pressure determination for compensation of air fluctuations during measurements and for temperature compensation
- + Ideal serviceability evaluation/determination of amount of gas leakage
- + Additional external sensors can be connected (temperature, pressure)
- + Large TFT colour display (W x H: 45 x 60 mm)
- + Integrated timer function for long-term measurements, measuring duration freely selectable in increments of one minute (up to 900 min).
- + Pressure test valve with high-precision adjustment for easy adjustment of the filling pressure
- + Convenient quick-action coupling system for easy and fast adaptation to the task at hand
- + microSD card for data management and documentation on the PC
- + Option data logger: Data logging once per second during measurements (XML format)
- + Measurement logs as QR codes (QR code reader in EuroSoft mobile)
- + Printer connectivity via IR interface



Application For pressure tests as per DVGW worksheet G600. Suitable for tightness tests (150 mbar) and load tests (1 bar) on gas pipes and for checking the connection and flow pressure. Can also be used for tightness tests (150 mbar) and strength tests (3 bar) on drinking water pipes as per ZVSHK (German Central Association of the HVAC Industry). Ideal for evaluation of serviceability and acceptance tests of heating system pipes, solar system pipes, underfloor heating systems, liquid gas pipes and oil pipes. The enclosed digital pressure measuring instrument is already TÜV-tested as per VP952 and meets the current DVGW (German Technical and Scientific Association for Gas and Water) requirements as per TRGI 2008 (German Technical Rules for Gas Installations) for measuring instruments of class D and the required reading accuracy (0.1 mbar) for tests of oil pipes.

Technical specifications

Measuring range

± 1,500 mbar

Resolution

0.1 mbar

Operating temperature range

Ambient: 0/40 °C

Storage: -20/+50 °C

Hours of operation

Max. 55 hours

Weight

5.85 kg

Dimensions (W x H x D)

S4600 ST: 66 x 143 x 37 mm

Case: 500 x 170 x 420 mm

Display

TFT colour display, W x H: 45 x 60 mm

Supply voltage

Lithium-ion battery (3.6 V/1,800 mAh)

or USB power supply unit

Capacity per stroke of hand-operated pump

Approx. 200 cm³

Approval

TÜV-tested as per DVGW G5952

Scope of delivery

- Digital pressure measuring instrument DPK 60-7 ST with Bluetooth® Smart technology, power supply unit and charging cable
- microSD card
- Adapter to USB
- Pressure test valve with quick-action coupling and high-precision adjustment valve
- Valve unit with shut-off fitting
- Syringe for test volume
- Hand-operated pump with check valve
- Hand-operated bulb pump with valve and connecting hose
- 2 conical test plugs for pipe diameter ¾" – 1¼" with plug-in nipple and 1 conical test plug for pipe diameter ½" – ¾" with plug-in nipple
- Y connector (2 x quick-action coupling/1 x plug-in nipple)
- Connection hoses with plug-in nipple and quick-action coupling
- Robust plastic system case



See chapter 7 for options and accessories.

DG: H, PG: 4	Part no.	Price €
Leak test set DPK 60-7 ST	560007	

Gas detectors GSP



GSP 1

GSP 3

GSP 3 Flex

- + Fast and reliable detection of flammable gases
- + Sensor for a wide range of flammable gases (base calibration: methane)
- + Sensor protection for long service life
- + Flexible gas probe for use in spaces difficult to access (GSP 1, GSP 3 Flex)
- + Audible alarm if limit values are exceeded
- + Adjustment of alarm threshold by means of a key and zero correction (GSP1)

Application

Detection of gas leaks (flammable gases) in gas pipes as well as connection pieces and fittings, gas meters, gas burners and gas tanks. Alarm GSP1: When a freely adjustable limit value is exceeded, the instrument activates an audible alarm. Alarm GSP3: The intensity of the escaping gas is indicated by the three LEDs. At the same time, the instrument generates an audible signal whose frequency is proportional to the gas concentration.

Technical specifications

	GSP 1	GSP 3 / GSP 3 Flex
Measuring range (methane)	0/2,000 ppm	
Sensitivity (methane)	20/50 ppm	
Operating temperature range	Ambient: 5/40 °C Storage: -5/+40 °C	
Hours of operation	24 hours	10 hours
Weight (with battery)	360 g	160 g
Dimensions	W x H x D 72 x 130 x 26 mm	W x H x D 60 x 124 x 30 mm
Indication	Diode chain, 20 diodes	3 LEDs
Supply voltage	NiMH battery 5 V/1,600 mAh, external power supply unit	2 x 1.5 V alkaline battery (Mignon, AA)

DG: H, PG: 4	Part no.	Price €
Gas detector GSP1 with flexible probe, battery and power supply unit	561191	
Gas detector GSP3	503401	
Gas detector GSP3 Flex	503402	



Options and accessories for pressure measuring instruments



Connection kit ASS-DP

for pressure measuring instruments for differential pressure measurement
Part no. 500237



Pressure test valve ADV 2

with quick-action coupling and high-precision adjustment valve for easy adjustment of the filling pressure
Part no. 500670

Test plugs

Conical and cylindrical test plugs with plug-in nipple wing screw, suitable for quick-action coupling system

Part no. 500678.1
Part no. 500678.2
Part no. 500678.3
Part no. 500678.4
Part no. 500678.5
Part no. 500679.1
Part no. 500679.2
Part no. 500679.3



Connection kit tank protection ASS-TS

For inspecting and adjusting Eurovac/Europress
Part no. 569843



High-pressure hose kit

Pressure-resistant up to 15 bar
Part no. 500234



Single pipe union connector

For gas fittings
Part no. 500693



Option Pitot range

For air velocity measurement in conjunction with Pitot tube 360 mm (part no. 500238) or 460 mm (part no. 500238.1)

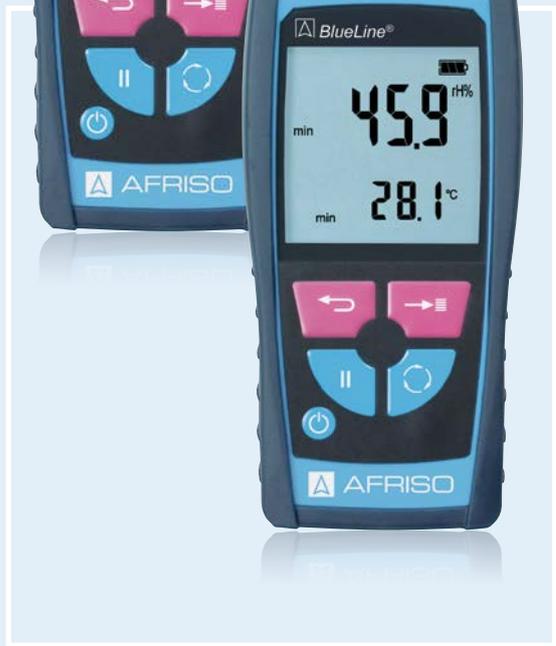


Option data logger

Data logging once per second during measurements (XML format)
Part no. 511010



TMD 9



Series FT



MFM 22

TEMPERATURE/MOISTURE MEASUREMENT

Handheld measuring instruments for moisture in materials and for humidity

OVERVIEW

Product highlight: Moisture measuring instrument [MFM 22](#) 44

TEMPERATURE MEASUREMENT

Temperature measuring instrument [TM 7 / TMD 7](#) 46

Temperature measuring instrument [TMD 9](#) 47

Temperature measuring instrument [TM 6](#) 48

Infrared temperature measuring instrument [TM 8-IR](#) 48

HUMIDITY/MOISTURE MEASUREMENT

Moisture measuring instrument [MFM 22](#) 49

Humidity/air temperature measuring instrument [FT 30 – FT 50](#) 51

TÜV-tested measurement of moisture in materials

Product highlight: MFM 22

+ All-rounder

Probes for the assessment of a great variety of materials such as pellets, wood chips, log wood, plaster, concrete, screed, straw, textiles, etc. turn MFM 22 into an all-purpose handheld measuring instrument for chimney sweeps, experts, surveyors, architects, companies specialised in removing water damage or wood-processing companies.

+ Ergonomic

Compact and light-weight design for convenient handling

+ Knowledgeable

400 wood characteristics and 28 construction material characteristics as well as special characteristics for the determination of the moisture content in wood are stored in the device and can be selected by simply pressing a button.

+ User-friendly

Ready in no time: Assignment of favourites "Sort" with frequently measured firewood types and wood chips as per 1st German Federal Immission Act.

TÜV-
approved
only with
MFM 22!





+ Accurate

Temperature-compensated evaluation of the residual moisture content of materials in compliance with directives and standards (1st German Federal Immission Act)

+ Intuitive

Menu-guided three-point mean value measurement for split logs.

+ Reliable

Fully automatic Hold function for stable measurements even in the case of variations caused by, for example, electrostatic charges.

+ Fast

Fast evaluation of the condition of the material via indication of a reference value "DRY" to "WET".

+ Approved

TÜV-approval as per VDI 4206-4. First TÜV-tested standalone wood moisture measuring instrument as per 1st German Federal Immission Act.



Temperature measuring instrument

TM 7 / TMD 7



Also available as CAPBs®

- + Short response time for measurements at cycles of a second
- + Large, lit LC display for simultaneous indication of two measured values
- + Hold function for measured values
- + Fast determination of differential temperature (TMD 7)
- + Automatic segment test when program starts
- + Magnet in protective housing for hands-free operation
- + Robust protective housing against dirt, impact and shock



3

Application For temperature measurement on surfaces, liquids, soft plastic media or in air and gases.

Technical specifications

Model	Measuring range	Resolution	Accuracy (% of measured value)
TM 7	-50/+1,100 °C	0.1 °C (-50.0/+99.9 °C)	3.0 % ± 2.0 K (-50.0 to 0 °C) 0.5 % ± 0.5 K (0 to 99.9 °C)
		1 °C (100/1,100 °C)	0.5 % ± 1 K (100 to 1,100 °C)
TMD 7	-50/+1,100 °C	0.1 °C (-50.0/+99.9 °C)	3.0 % ± 2.0 K (-50.0 to 0 °C) 0.5 % ± 0.5 K (0 to 99.9 °C)
		1 °C (100/1,100 °C)	0.5 % ± 1 K (100 to 1,100 °C)

Operating temperature range

Ambient: 0/50 °C

Storage: -10/+50 °C

Hours of operation

100 hours

Weight

Approx. 250 g

Dimensions

W x H x D 66 x 143 x 37 mm

Display

LCD, transfective

W x H: 46 x 48 mm

Indication of measured values

°C or °F

Probe connection

TM 7: 1 x socket for thermocouple

TMD 7: 2 x socket for thermocouple

Supply voltage

2 x 1.5 V Mignon (AA) batteries

Approvals

BlmSchV, EN 50379-2

Scope of delivery

Measuring instrument with batteries, protective sleeve with magnet



See chapter 7 for accessories.

DG: H, PG: 4	Part no.	Price €
Temperature measuring instrument TM 7	570056	
Temperature measuring instrument TMD 7	570057	



Temperature measuring instrument

TMD 9



- + Short response time for measurements at cycles of a second
- + Large TFT colour display (W x H: 45 x 60 mm) for simultaneous display of four measured values
- + microSD card for system-independent storage of measurement logs (HTML format)
- + Data logger function for long-term measurement
- + Multifunctional use of temperature probes with "type K connection"
- + Fully automatic device check, manual and automatic zero calibration during program start
- + Three magnets in protective housing for hands-free operation



3

Application For temperature measurement on surfaces, liquids, soft plastic media or in air and gases.

Technical specifications

Model	Measuring range	Resolution	Accuracy (% of measured value)	Thermocouple
TMD 9	-50/+1,100 °C	0.1 °C	± 1 °C + 1 digits (up to 300 °C) ± 1 % of meas. value (> 300 °C)	Type K (NiCr-Ni)

Operating temperature range

Ambient: 0/40 °C
Storage: -20/+50 °C

Hours of operation

Up to 38 hours (Eco mode)

Weight

Approx. 154 g

Dimensions

W x H x D: 66 x 143 x 37 mm

Display

2.8 " TFT colour display
W x H: 45 x 60 mm

Indication of measured values

°C or °F

Probe connection

2 x socket for thermo couple

Supply voltage

Lithium-ion battery (3.6 V/1800 mAh)
or power supply unit (mini USB)

Interfaces

Infrared, Bluetooth® Smart,
QR code generator, microSD card slot

Data memory

microSD card (incl. data logger function)

Data logger

1-999 seconds, interval freely selectable

Scope of delivery

Measuring instrument, power supply unit, mini USB and microSD card with USB 2.0 SD card reader



See chapter 7 for accessories.



DG: H, PG: 4	Part no.	Price €
Temperature measuring instrument TMD9	P071000916	

Measuring instruments for temperature and temperature/moisture TM



TM 6

- + Short response time for measurements at cycles of a second
- + Min./max. and Hold function
- + Memory for 19 measured values
- + 1 point Cal function: Correction of measured values, e.g. for compensation of probe tolerances
- + Standard connector type K for all NiCr-Ni probes

Application For temperature measurement on surfaces, liquids, soft plastic media or in air and gases.

Technical specifications **Measuring range** -99.9/+1,370 °C

Resolution 0.1 °C from -99.9/+299.9 °C

Accuracy ± 0.5 °C ± 1 digit

Operating temperature range Ambient/storage: 0/50 °C

Hours of operation 200 hours

Weight 240 g

Dimensions W x H x D 65 x 130 x 25 mm

Display LCD, 1 line
W x H: 42 x 21 mm

Supply voltage 2 x 1.5 V AA batteries

Scope of delivery Measuring instrument with batteries



TM 8-IR

- + Non-contact temperature measurement
- + Backlit LC display
- + Hold function for measured values
- + Short response time (< 1 s) for measurements at cycles of a second
- + Ratio distance to Ø measuring point 11:1

For temperature measurements of surfaces and for measurements of moving parts (e.g. paper reels, tyres) or live parts (e.g. electrical assemblies, transformers). Ideal for applications in the food industry.

Measuring range Infrared: -33/+500 °C (ratio 11:1)
Thermocouple: -64/+1400 °C

Accuracy Infrared: ± 2 °C
Thermocouple: ± 1 °C

Operating temperature range Ambient: 0/50 °C
Storage: -20/+65 °C

Hours of operation 140 hours

Weight 180 g

Dimensions W x H x D 39 x 175 x 80 mm

Display LCD, W x H: 25 x 24 mm

Supply voltage 2 x 1.5 V AAA batteries

Scope of delivery Measuring instrument with protective pocket and batteries

3

i See chapter 7 for accessories.

DG: H, PG: 4	Part no.	Price €
Temperature measuring instrument TM 6	570038	
Temperature measuring instrument TM 8-IR	570039	



MOISTURE MEASURING INSTRUMENT



MFM 22

- + TÜV-approval as per VDI 4206-4. First TÜV-tested standalone wood moisture measuring instrument as per 1st German Federal Immission Act
- + Device comes with characteristics for 400 wood types and 28 construction materials stored in the software – no complex conversion tables for construction material required
- + Ready in no time: Assignment of favourites "Sort" with frequently measured firewood types and wood chips as per 1st German Federal Immission Act
- + Menu-guided three-point mean value measurement for split logs
- + Auto-hold function: Fully automatic for determination of an accurate measured value in the case of electrostatic charge (e.g. dry wood)
- + Visual range alarm: The characteristic flashes if the u value is < 8 % or > 40 %
- + Special electrode with temperature probe TÜV-tested according to test report M 1167-01/15 as per VDI 4206-4 for wood chips and pellets
- + Insertion probe for wood chips and pellets with improved ergonomics and optimised cable routing for superior handling
- + Versatile application by means of special probes for pellets, wood chips, log wood, screed, plaster, concrete, brickwork, paper, etc.

3

Application For precise and standards-compliant evaluation of the residual moisture content and the temperature of pellets and wood. The integrated three-point mean value function (measured value as a result of the mean value of measurements at three reference points of the split log) also complies with the requirements of the 1st German Federal Immission Act. MFM 22 is also suitable for measurements of moisture in buildings (e.g. plaster, concrete, screed). Water content and material moisture are determined by means of a resistance method directly at the sample. The correct measured value is calculated on the basis of material-specific characteristics. The integrated temperature compensation is an essential feature in obtaining correct measurements at wood fuels and the corresponding wood chips or pellets. MFM 22 is the ideal general purpose measuring instrument for residual moisture.



Technical specifications

Measuring range

Moisture: 0/100 % u
 Temperature: -40/+200 °C
 Resolution 0.1 % u

Accuracy

± 0.2 % u
 ± 0.5 % of measured value ± 0.3 °C

Operating temperature range

Ambient: -25/+50 °C
 Storage: -25/+70 °C

Weight

Approx. 175 g

Dimensions

W x H x D 71 x 142 x 26 mm

Display

LCD, W x H: 38 x 25 mm

Supply voltage

1 x 9 V block battery

Approval

TÜV approval as per VDI 4206-4

3



MFM 22 sets

DG: H, PG: 4

	Measuring instrument MFM 22, measurement cable 1 m with connector, 9 V battery, steel pins 40 mm, case	Hammer electrode HLH-HE 22 With TÜV approval	Ram electrode ELE-SE 10	Part no.	Price €
Moisture measuring instrument MFM 22, set 1	•	•		P569087-1	
Moisture measuring instrument MFM 22, set 2	•		•	P569087-2	

i See chapter 7 for options and accessories.

Humidity/air temperature measuring instruments series FT30 – FT50



Also available as CAPBs®

FT 30



FT 40

FT 50

- + High accuracy
- + Four-digit LC display for temperature, dew point and relative humidity
- + Min./max. and Hold function
- + Magnet in protective housing for hands-free operation
- + Robust protective housing against dirt, impact and shock
- + Various probe versions

3

Application For temperature and relative humidity measurements as well as fast checks of climatic conditions in rooms.

The different types of probes are permanently connected to the measuring instrument.
 FT30: With probe at housing of measuring instrument
 FT40: With probe at flexible spiral cable
 FT 50: With probe at 30 cm probe

Technical specifications

Measuring range temperature
-40/+80 °C

Measuring range humidity
0/100 % rH

Measuring range dew point (calculated)
-40/+120 °C

Operating temperature range
Ambient: 0/40 °C

Hours of operation
100 hours

Weight (with battery)
210 g/250 g
(depending on version)

Dimensions
W x H x D 70 x 125 x 34 mm

Display
LCD, transfective
W x H: 46 x 48 mm

Indication of measured values
°C or °F

Supply voltage
2 x 1.5 V AA batteries

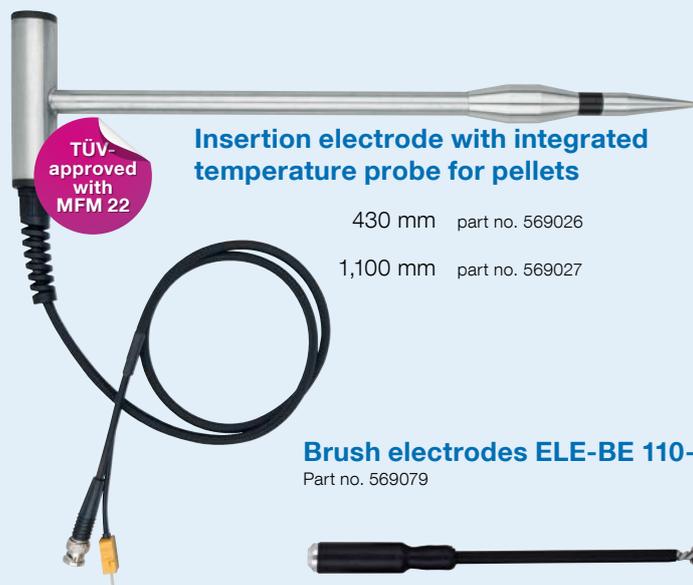
Scope of delivery
Measuring instrument with batteries

DG: H, PG: 4	Part no.	Price €
Humidity/air temperature measuring instrument FT 30	570052	
Humidity/air temperature measuring instrument FT 40	570053	
Humidity/air temperature measuring instrument FT 50	570054	



Options and accessories for temperature and moisture/humidity

Probes and deep electrodes for MFM 22



TÜV-
approved
with
MFM 22

Insertion electrode with integrated temperature probe for pellets

430 mm part no. 569026

1,100 mm part no. 569027



Part no. 569055



Insertion probe TFB-ES 200

Part no. 569020

Brush electrodes ELE-BE 110-1, 100 mm

Part no. 569079



Insertion probe TFB-ES 600

Part no. 569868



Air, gas, liquid probe TFB-LGF 900

Part no. 569867



Combustion air probe TFB-VL 100 M

Part no. 500141



Clamp probe TFB-ZF 200

Part no. 569011

i Also suitable for CAPBs® TK 10.



Thermal printer EUROprinter

Compact printer with four magnets at the back for hands-free operation. Infrared interface for easy connection of all BlueLine series measuring instruments. Documents all measured results on paper for official purposes - anywhere.

Part no. 522394

i

See chapter 7 for detailed information and additional options as well as a comprehensive range of accessories.



CAPBs® measuring units



Universal sensor module system with Bluetooth® Smart technology

OVERVIEW

CAPBs® sensor modules at a glance	56
CAPBs® – the modular system	60
BlueLine measuring instruments for CAPBs®	72

MEASURING UNITS

CAPBs® base handle BG 10	61
CAPBs® humidity/temperature RH 80	62
CAPBs® gas leak detection GS 10	62
CAPBs® pressure PS 10 – 61	63
CAPBs® pressure transmitter PT 70	65
CAPBs® pressure and temperature FP 10	65
CAPBs® air quality AQ 20	66
CAPBs® temperature TK 10 (type K connection)	66
CAPBs® temperature TK 20 – 50	67
CAPBs® flow rate and temperature measurement FlowTemp® ST	68

SETS

CAPBs® set for tightness test DPK 60-6 sens	69
CAPBs® water set ADS-WS	70
CAPBs® set heating system check 2.0	70
CAPBs® set 4 Pa test	71
CAPBs® combination set 4 Pa test/heating system check 2.0	71

CAPBs® sensor modules at a glance



	Humidity/ temperature	Gas leak detection	Pressure measure- ment	Pressure measurement	Pressure measurement	Pressure measure- ment
CAPBs®	RH 80	GS 10	PS 10 (20 mbar)	PS 20 (180 mbar)	PS 40/41 (6 bar)	PS 60/61 (20 bar)
Application examples	Monitoring or humidity in closed rooms	Detection of leaking flammable gases (e.g. methane)	Measurement of ultra-fine pressure (Pitot measurement)	Check of connection and flow pressure in gas fired heating systems	Tightness and load test of gas lines	Stress pressure test at pipe systems
Methane		•				
Propane (liquefied gas)		•				
Butane		•				
Temperature	•					
Pressure			•	•	•	•
Dew point						
Humidity in %	•					
CO ₂						
VOC						
Volume flow			•*			
Flow rate measurement (water)						
Measurements of filters, ventilation systems, ducts				•	•	•
Measurements of production facilities, tanks, gas pipes				•	•	•
Burner adjustment/servicing (gas, oil, solid fuel systems)				•	•	
Servicing of water heaters						
Pressure measurement			•	•	•	•
Tightness test (gas)				•	•	
Load test (gas)					•	
Serviceability test (gas)						
Tightness test (ZVSHK)				•**	•**	
Strength test (ZVSHK)					•**	
Stress pressure test						•
Measurement of inlet pressure, flow pressure, static pressure, nozzle pressure				•	•	
Pressure / vacuum measurement			•	•	•	•
Differential pressure measurement			•	•		
Vacuum measurement			•	•	•	•
Temperature measurement (flue gas, air, external wall)						
Temperature measurement (water)						
Temperature measurement (moving objects)						
Surface temperature measurement						
Draft/chimney draft measurement			•	•		
Ventilation loss measurement						
Heating system check						
4 Pa test						
Gas leak detection		•				
Gas concentration measurement		•				
Moisture measurement (material / moisture / climatic conditions in rooms / mould)	•					
Air velocity			•*	•*		

Parameters/measured values

Typical applications areas

4

* Accessories required, see catalogue page.

** With test medium air.

*** With test medium water.

Welcome to the future

Cutting edge measuring technology - AFRISO CAPBs® measuring units.

+ Comprehensive

Easy extension of BlueLine measuring instruments* by a great variety of applications such as pressure measurement, temperature measurement, humidity measurement, volume flow and Pitot measurement, gas leak detection, flow measurement, etc.

+ Wireless

Wireless, immediate transmission of the measurement data to your AFRISO measuring instrument, smartphone or tablet with Bluetooth® Smart technology.

+ Flexible

Multi-purpose key with customisable function assignment for ease of use and consistent operation of the CAPBs®, regardless of site.

+ Accurate

Position-independent, temperature-compensated sensor technology for maximum precision in all measuring scenarios.

+ Modular

Numerous, versatile application thanks to modular design with universal base handle for all sensor modules.

+ Universal

Compatible with our proven BlueLine measuring instruments* or your smartphone and tablet.



4

i The following measuring instruments can be immediately used with the CAPBs®:

* BLUELYZER ST, EUROLYZER STx, MULTILYZER STe, pressure measuring instrument series S4600 ST and temperature measuring instrument TMD 9

+ Proven

Easy documentation of measurement results on site via IR or Bluetooth® Smart interface.

+ Focused

Measurement data centre for saving the measurement results in the device and creating printouts on site. Optional data logger function for data output in XML format for flexible further processing with standard software applications such as MS Excel.

+ Error-free

Simultaneous storage of all measured data to the measuring instrument or the mobile devices avoids errors, for example caused by incorrect readings.

+ Ergonomic

Light-weight, ergonomic handle made of robust, high-quality plastic with integrated magnet for hands-free operation.

+ Ready for measurement

Free firmware update for BlueLine measuring instruments* with pre-installed measurement menus for all available CAPBs® – can be done by the user at any time via the microSD card.

+ Independent

Free app for EuroSoft live for operation of all CAPBs® via smartphone and tablet. With pre-installed measurement menus for special applications (for example, gas line checks) and graphical representation of the measurement results.

+ Quality

100 % made in Germany.

+ Energy-saving

Automatic switching off of the CAPBs® when the Bluetooth® Smart connection is closed ensures low energy consumption.

+ Revolutionary

Continuous, simultaneous flow and temperature measurement in water applications with the new, TÜV-tested flow rate/temperature measuring instrument FlowTemp® ST.

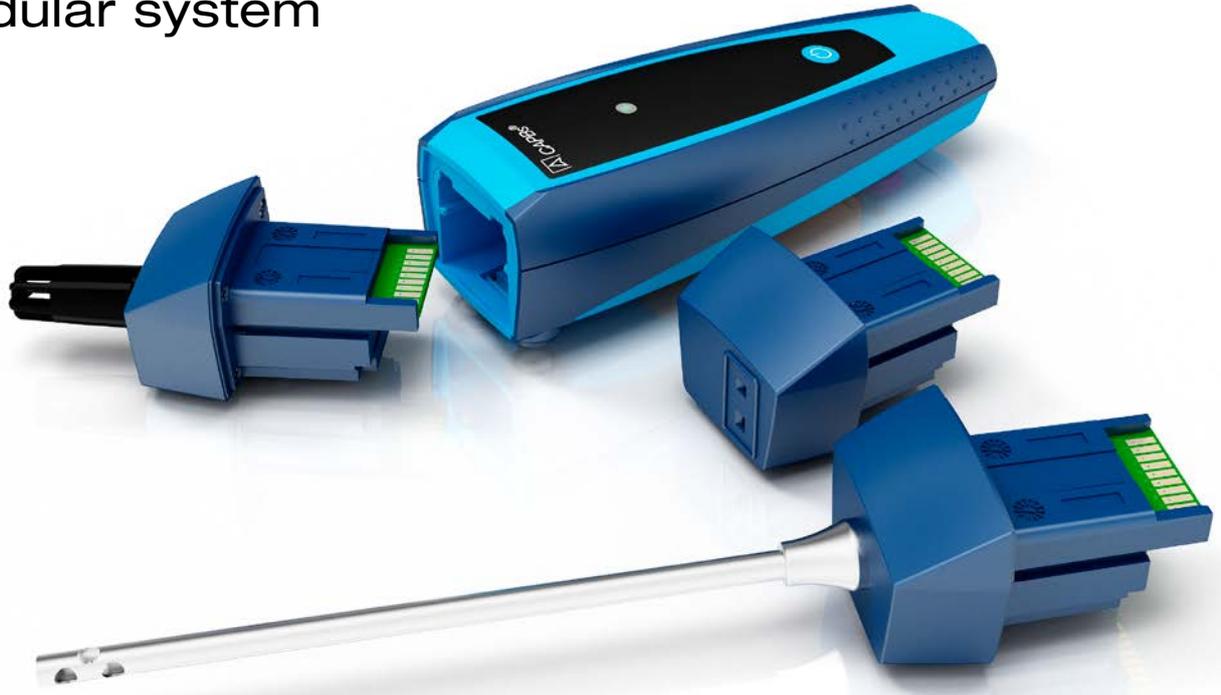
NEW



Further information:

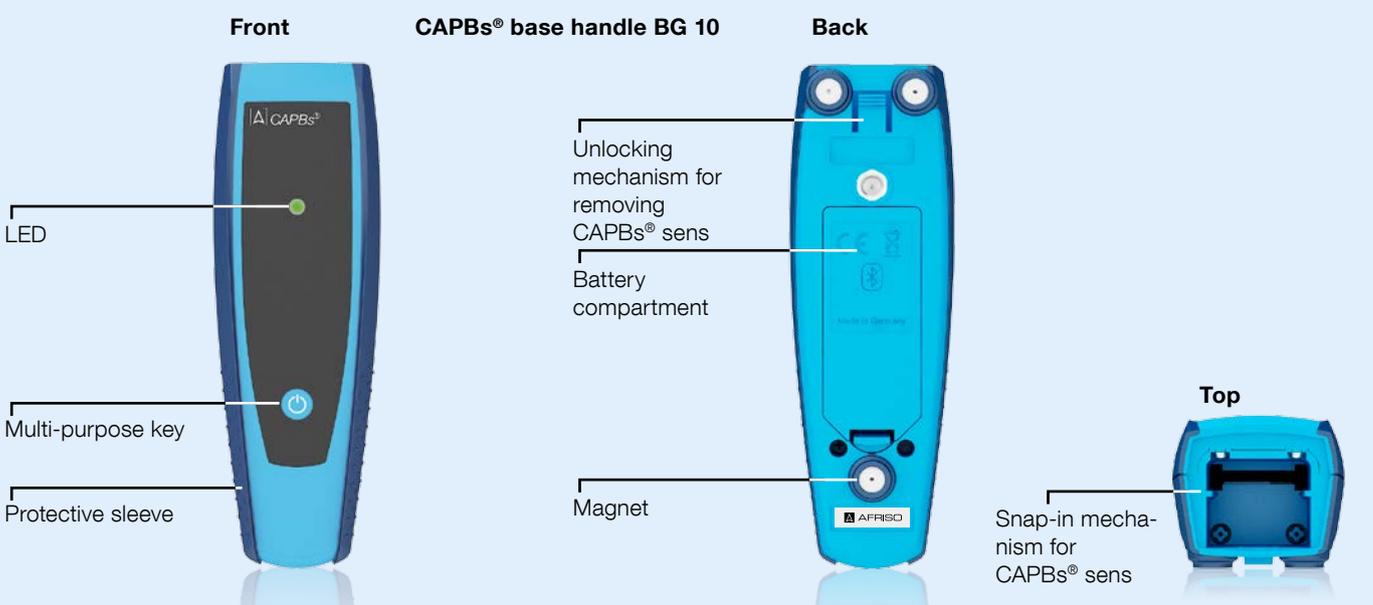


Universal. Accurate. Flexible. Modular system



4 The new AFRISO CAPBs® constitute a modular system consisting of the universal base handle CAPBs® BG 10 and an application-specific sensor module CAPBs® sens for a wide variety of measured variables such as pressure, temperature, humidity. The base handle CAPBs® BG 10 holds the various sensor modules CAPBs® sens. The base handle can be combined with any sensor module to form a complete CAPBs® measuring unit. Each measuring unit can transmit the measured data immediately and without a delay to the AFRISO BlueLine measuring instruments via Bluetooth® Smart and, via a free app for different operating systems, also to a smartphone or tablet. This results in a vast array of measuring units – all tasks of, for example, a heating system engineer or a chimney sweep can be performed with a single measuring instrument. The ergonomic base handle CAPBs® BG 10 is equipped with three magnets at the rear side. The battery compartment and the unlock button for exchanging

the CAPBs® sens are also located at the rear. The snap-in mechanism on top of the base handle is standardised for all CAPBs® sens. A multi-purpose key is located at the front; it is used for switching the unit on and off, for zero adjustment, for activating the Hold mode or for starting the data logger function. The multi-colour LED displays the status of the CAPBs® measuring unit by means of different colours and flashing frequencies. For example, BLUE means "Establishing Bluetooth® Smart connection" or GREEN "Connected to an evaluation unit". The base handle also contains a device which indicates excess concentrations or limit values by means of audible signals with different frequencies.





CAPBs®

Base handle BG 10

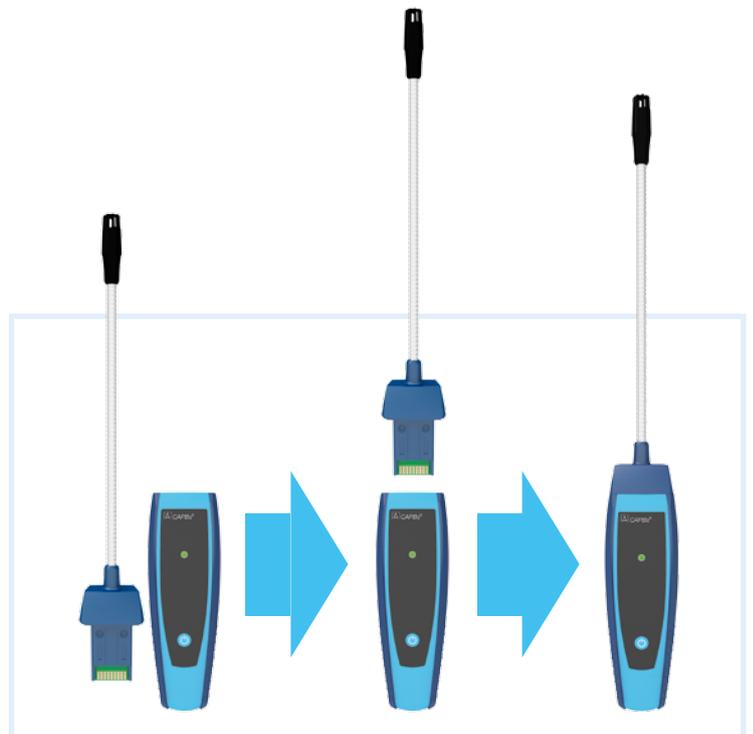
Description

Universal base handle for all CAPBs® sensor modules. Ergonomic handle with three magnets and battery compartment at the rear of the housing. Multi-colour LED and multi-purpose key on the front. With integrated device for audible signals and Bluetooth® Smart module.

Technical specifications

Dimensions (H x W x D):	140 x 45 x 39 mm
Weight:	113 g
Supply voltage:	2 x 1.5 V AAA alkaline batteries or 2 x AAA NiMH batteries (1.2 V / 900 mAh)
Interface:	Bluetooth® Smart

4



Modular replacement system



DG: H, PG: 4	Part no.	Price €
CAPBs® base handle BG 10	M091000017	



**CAPBs®
humidity/temperature RH 80**

- Application**
- Checks of the climatic conditions in rooms
 - Mould prevention

Description Sensor module for measurement of temperature and relative humidity in ambient air.

Technical specifications **Dimensions**
W x H x D 82 x 42 x 35 mm

Weight
51 g

Interface
Bluetooth® Smart

Measuring ranges
0 / 100 % r.h.
-40 / +80 °C

Accuracy
±2 % rH ±1 digit
±0.5 °C ±1 digit

Resolution
0.1 % rH
0.1 °C



**CAPBs®
gas leak detection GS 10**

- Application**
- Gas leak detection
 - Detection of gas leaks (flammable gases) in gas pipes as well as connection pieces and fittings, gas meters, gas burners and gas tanks.

Description Sensor module for fast and reliable gas leak detection. The flexible probe allows for use in spaces difficult to access. The gas concentration is displayed by the evaluation unit in "ppm"; the CAPBs® measurement unit provides an audible signal. The alarm threshold can be adjusted as required. Due to the base calibration for methane, a wide range of flammable gases is detectable. The anti-poisoning protection function for the sensor ensures a long service life.

Dimensions
W x H x D 290 x 42 x 35 mm

Weight
51 g

Interface
Bluetooth® Smart

Measuring range (methane)
0 / 2,000 ppm

Resolution
10 ppm



DG: H, PG: 4	Part no.	Price €
CAPBs® base handle BG 10	M091000017	
Humidity CAPBs® sens RH 80	M090111210	
Gas leak detection CAPBs® sens GS 10	M090131410	



Base handle BG 10



CAPBs®

Pressure PS

Pressure CAPBs® sens PS 10,
20 mbar 2 x D8Pressure CAPBs® sens PS 20,
180 mbar 2 x D8Pressure CAPBs® sens PS 40,
6 bar 1 x D8Pressure CAPBs® sens PS 41,
6 bar 1 x F3Pressure CAPBs® sens PS 60,
20 bar 1 x D8Pressure CAPBs® sens PS 61,
20 bar 1 x F3

-  Measurement of ultra-fine pressure (PS 10)
-  Check of connection and flow pressure in gas fired heating systems (PS 20)
-  Tightness and load test of gas lines (PS 40/41)
-  Stress pressure test at pipe systems (PS 60/61)

4

Description Sensor module for measurement of pressure, vacuum and differential pressure of non-corrosive, gaseous, dry media. The pressure sensors are available with various connections in four measuring ranges from 20 mbar, 180 mbar, 6 bar and 20 bar. Manual shifting of the zero point allows you to double the measuring range. The high-quality sensors are extremely accurate, orientation-independent and temperature-compensated.



PS 10
(20 mbar)PS 20
(180 mbar)PS 40 / PS 41
(6 bar)PS 60 / PS 61
(20 bar)**Application**

Differential pressure	•	•		
Pressure loss	•	•	•	•
Connection pressure/flow pressure		•	•	
Flow rate	•	•		
Stress pressure test				•
Test of gas pipes as per TRGI				
Tightness test		•	•	
Load test			•	•
Combined tightness and load test			•	•
Test of drinking water systems as per ZVSHK				
Tightness test		•	•	
Strength test			•	•
Test of heating systems				
Tightness test			•	•
Test of solar systems				
Pressure test		•	•	•
Strength test			•	•
Test of oil pipes				
Tightness test		•	•	
Pressure test			•	•
Technical specifications				
Dimensions (H x W x D):	74 x 42 x 35 mm	74 x 42 x 35 mm	74 x 42 x 35 mm	74 x 42 x 35 mm
Weight:	34 g	34 g	30 g	26 g
Interface:	Bluetooth® Smart	Bluetooth® Smart	Bluetooth® Smart	Bluetooth® Smart
Measuring range:	-20 / +20 mbar 0.5 / 50 m/s	-180 / +180 mbar 0.5 / 50 m/s	-1 / +6 bar	-1 / +20 bar
Accuracy:	±0.003 mbar 0.5 % displayed value ±1 digit	±0.03 mbar 0.5 % displayed value ±1 digit	±0.3 mbar 0.5 % displayed value ±1 digit	±1 mbar 0.5 % displayed value ±1 digit
Resolution:	0.001 mbar 0.1 m/s	0.01 mbar (< 99.99) 0.1 mbar (> 100.0) 0.1 m/s	0.1 mbar (< 999.99) 1 mbar (> 1,000)	0.1 mbar (< 999.99) 1 mbar (> 1,000)
Hose connection:	Ø 8 mm	Ø 8 mm	Ø 8 mm or Ø 3 mm (Festo)	Ø 8 mm or Ø 3 mm (Festo)

DG: H, PG: 4	Part no.	Price €
CAPBs® base handle BG 10	M091000017	
Pressure CAPBs® sens PS 10, 20 mbar 2 x Ø 8 mm	M090050110	
Pressure CAPBs® sens PS 20, 180 mbar 2 x Ø 8 mm	M090010110	
Pressure CAPBs® sens PS 40, 6 bar 1 x Ø 8 mm	M090082910	
Pressure CAPBs® sens PS 41, 6 bar 1 x Ø 3 mm (Festo)	M090083010	
Pressure CAPBs® sens PS 60, 20 bar 1 x Ø 8 mm	M090102910	
Pressure CAPBs® sens PS 61, 20 bar 1 x Ø 3 mm (Festo)	M090103010	



Base handle BG 10

Pressure transmitter CAPBs® sens PT 70,
25 bar DIN5

Base handle BG 10

Pressure/temperature CAPBs® sens FP 10

CAPBs® pressure transmitter PT 70

- Application**
- Pressure tests of oil pipes
 - Tightness tests/strength tests of drinking water installations as per ZVSHK
 - Pressure loss test
 - Pressure test at pipe systems
 - Stress pressure test at pipe systems

Description Pressure transmitter for measurements in liquids and corrosive media.

Technical specifications

Dimensions
W x H x D 76 x 42 x 35 mm

Weight
55 g

Interface
Bluetooth® Smart

Measuring ranges
0 / +25 bar

Accuracy
0.5 % of full scale
±1 digit

Resolution
0.1 bar

Hose connection
Plug connection DN 5



CAPBs® pressure and temperature FP 10

- Flow rate measurement (Pitot tube)
- Surface loss
- Ventilation loss (Pitot tube)
- 4 Pa measurement (hose kit)
- Heating system check 2.0 (Pitot tube)

Sensor module for simultaneous, continuous measurement of temperature and pressure. The CAPBs® allows for convenient flow rate measurement with a stable zero point.

Dimensions
W x H x D 74 x 42 x 35 mm

Weight
33 g

Interface
Bluetooth® Smart

Measuring ranges
-20 / +20 mbar
0.2 / 20 m/s
-50 / +600 °C

Accuracy
±0.003 mbar
0.5 % displayed value ±1 digit
±0.1 m/s or ±5 % displayed value
±1.5 °C

Resolution
0.0001 mbar / 0.01 m/s / 0.1 °C



DG: H, PG: 4	Part no.	Price €
CAPBs® base handle BG 10	M091000017	
Pressure transmitter CAPBs® sens PT 70, 25 bar	M090142810	
Pressure/temperature CAPBs® sens FP 10	M090053210	



CAPBs® air quality AQ 20

- Application**
- Evaluation of the air quality in rooms
 - Inspection of filters
 - Detection of leaks in conjunction with hazardous substances
 - Redundant measurement in conjunction with PID measurements
 - Evaluation of the air quality in closed rooms (e.g. in schools, offices, conference rooms, libraries, etc.)

Description Sensor module for fast and reliable detection of VOCs (volatile organic compounds) and CO₂ in ambient air. The gas concentration is displayed by the evaluation unit as CO₂ (ppm) and TVOC (ppb); the CAPBs® measurement unit provides an audible signal.

Technical specifications

Dimensions
W x H x D 58 x 42 x 35 mm

Weight
30 g

Interface
Bluetooth® Smart

Measuring ranges
450 / 2,000 ppm CO₂ equivalent (relative)
125 / 600 ppb TVOC equivalent

Resolution
1 ppm



CAPBs® temperature TK 10 type K

- Temperature measurement

Temperature transmitter with standardised temperature socket type K. This allows for the connection of all type K two-pole thermocouples and temperature probes (for example, the complete AFRISO temperature probe range).

Dimensions
W x H x D 58 x 42 x 35 mm

Weight
22 g

Interface
Bluetooth® Smart

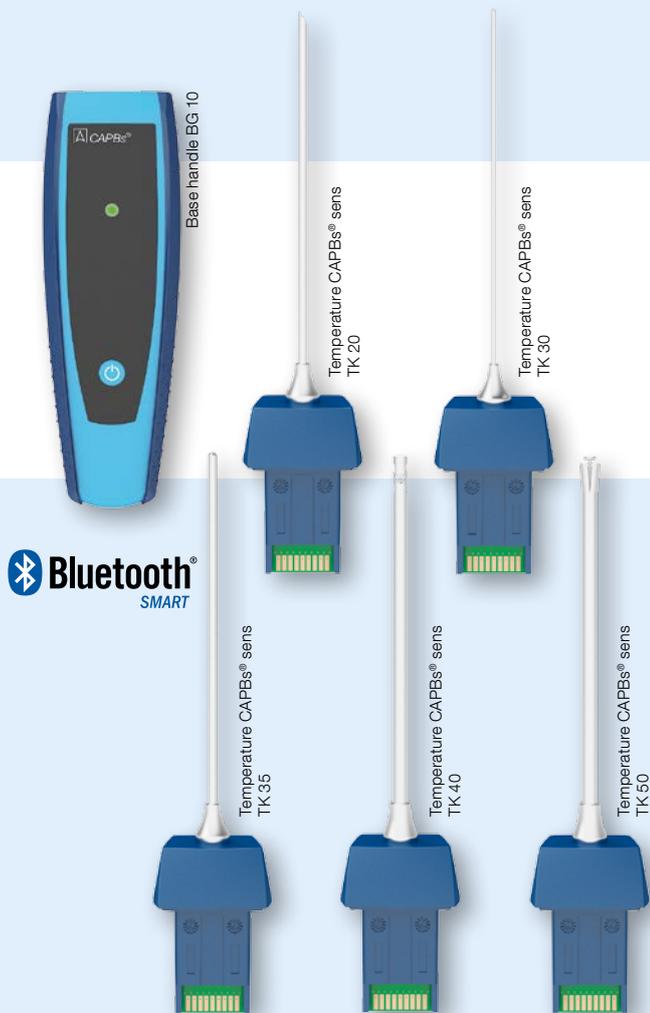
Measuring ranges
-50 / +1,150 °C
(depends on thermocouple used)

Accuracy
±1.5 °C

Resolution
0.1 °C

DG: H, PG: 4	Part no.	Price €
CAPBs® base handle BG 10	M091000017	
Air quality CAPBs® sens AQ 20	M090120010	
Temperature CAPBs® sens TK 10 type K	M090000810	





CAPBs®

Temperature TK

Application

- Temperature measurement

Description

Sensor module for measurement of the temperature on surfaces, in liquids, soft plastic media or in air with different, application-specific temperature probes.

4

Technical specifications

	Spike probe TK 20	Liquid probe TK 30	Liquid probe TK 35	Air probe TK 40	Surface probe TK 50
Dimensions (H x W x D):	186 x 42 x 35 mm	187 x 42 x 35 mm	190 x 42 x 35 mm	187 x 42 x 35 mm	187 x 42 x 35 mm
Probe diameter	3 mm	1.5 mm	3 mm	4.7 mm	4 mm
Weight:	32 g	28 g	32 g	32 g	34 g
Interface:	Bluetooth® Smart				
Measuring ranges:	-50 / +800 °C	-50 / +1,100 °C	-50 / +1,100 °C	-50 / +400 °C	-50 / +400 °C
Accuracy:	±1.5 °C 1 % displayed value				
Resolution:	0.1 °C				

DG: H, PG: 4	Part no.	Price €
CAPBs® base handle BG 10	M091000017	
Insertion probe CAPBs® sens TK 20, Ø 3 mm	M090002210	
Liquid probe CAPBs® sens TK 30, Ø 1.5 mm	M090002310	
Liquid probe CAPBs® sens TK 35, Ø 3 mm	M090002410	
Air probe CAPBs® sens TK 40, Ø 4.7 mm	M090002510	
Surface probe CAPBs® sens TK 50, Ø 4 mm	M090002610	





CAPBs®

Flow rate and temperature measurement FlowTemp® ST



Application

- Verification of performance key "NL" of accumulator and continuous capacity
- Function checks of decentralised drinking water heaters
- Checking the output capacity of heat exchangers
- Inspection of heat exchangers
- Function tests of circulation lines
- Inspection of fittings (minimum volume flow)
- Determination of the water temperature at water taps
- Inspection of thermal mixing valves
- Acceptance tests of newly installed drinking water installations
- Verification and documentation of thermal disinfection

4

Description Sensor module for continuous, simultaneous determination of flow rate (l/min) and temperature (°C) in water applications. The flow rate is measured with a high-precision capacitance flow sensor, the temperature with a PT1000 module. Both sensors are integrated in a robust housing made of high-quality plastic with degree of protection IP 67. Thanks to the compact design, measurements at low water fittings are very convenient. The device is tested as per TÜV report S1217-00/15. The measured data is transmitted to the BlueLine measuring instruments Bluelyzer ST, Eurolyzer STx, Multilyzer STe, series S4600 ST, TMD 9 or to a mobile device via the integrated Bluetooth® Smart interface.

Technical specifications

Dimensions

H x W x D: 158 x 71 x 97 mm

Weight

370 g

Interface

Bluetooth® Smart

Measuring ranges

Flow rate: 1.5 / 17.5 l/min
Temperature: 5 / 80 °C

Accuracy

Flow rate: ± 0.3 l/min or ± 5 % of measured value
Temperature: ± 2 °C or ± 3 % of measured value

Resolution

Flow rate: 0.1 l/min
Temperature: 0.1 °C

T₉₀

Flow rate: 10 s
Temperature: 40 s

Sensor

Capacitance sensor
PT 1000

Sampling rate

1 s

Further information:

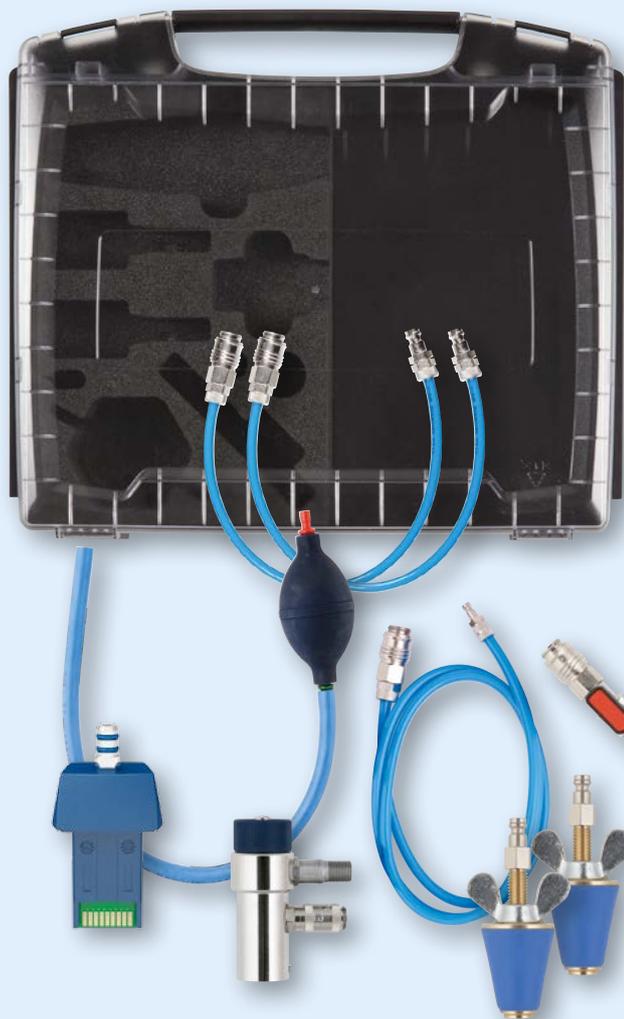


www.flowtemp.st



DG: H, PG: 4	Part no.	Price €
FlowTemp® ST	502001	

CAPBs® set for tightness test DPK 60-6 sens



- + Starter set for professional tightness tests with the wireless CAPBs® sensor modules
- + CAPBs® sensor module for pressure (6 bar) for CAPBs®-enabled measuring instruments of the BlueLine series with Bluetooth® Smart technology
- + Robust, modular system case M "DPK", suitable for box and shelf system Sortimo-BOXX



4

Application For pressure tests as per DVGW worksheet G600. Suitable for tightness tests (150 mbar) and load tests (1 bar) on gas pipes and for checking the connection and flow pressure as well as the pressure loss. Can also be used for tightness tests (150 mbar) and strength tests (3 bar) on drinking water pipes as per ZVSHK (German Central Association of the HVAC Industry). Ideal for acceptance tests of heating system pipes, solar system pipes, underfloor heating systems, liquid gas pipes and oil pipes.

- Scope of delivery**
- Sensor module Pressure CAPBs® sens
PS 40, 6 bar, connection Ø 8 mm
 - Pressure test valve with quick-action coupling and high-precision adjustment valve
 - Hand-operated bulb pump with valve and connecting hose
 - 2 conical test plugs for pipe diameter ¾" – 1¼"
with plug-in nipple
 - Y connector (2 x quick-action coupling/1 x plug-in nipple)
 - Connection hoses with plug-in nipple and quick-action coupling
 - Modular system case M "DPK"



Base handle BG 10



DG: H, PG: 4	Part no.	Price €
Base handle CAPBs® BG 10	M091000017	
Leak test set DPK 60-6 sens with sensor module Pressure in system case M "DPK", optional base handle, prepared for CAPBs®-enabled BlueLine measuring instruments	560005	

Modular extension sets in system case S

 **Bluetooth®**
SMART



CAPBs® water set ADS-WS

Application Water set for pressure tests at water pipes with test medium water. Consisting of pressure transmitter CAPBs® sens PT 70 (25 bar), test plug 1/2" with plug-in nipple, T connector with 2 quick-action couplings and adapter for compressor connection in system case S.

Base handle BG 10

 **Bluetooth®**
SMART



CAPBs® set heating system check 2.0

Sensor module pressure/temperature CAPBs® sens FP 10 with Pitot tube and surface temperature probe in system case S for measurement of the flow rate and determination of the temperature in the residual core flow of the flue gas line. The measured data is used to calculate the ventilation loss. If the channel cross section is known, it is possible to calculate the volume flow. The measurement results of the surface temperature probe serve as the basis for calculating the surface loss of the heat generator.

Base handle BG 10



DG: H, PG: 4	Part no.	Price €
Base handle CAPBs® BG 10	M091000017	
CAPBs® water set ADS-WS sens	560008	
CAPBs® set heating system check sens	560009	

Modular extension sets in system case S

 **Bluetooth®**
SMART



Base handle BG 10

CAPBs® set 4 Pa test

Application If multiple heat systems using indoor intake air and ventilation systems are operated in a closed space, this can result in a hazardous low pressure. The 4 Pa test set, consisting of the sensor module pressure/temperature CAPBs® sens FP 10 with hose kit in the system case S, it is possible to check and document the low pressure limit value of 4 Pa.



 **Bluetooth®**
SMART



Base handle BG 10

CAPBs® combination set 4 Pa test and heating system check 2.0

For performing 4 Pa test and heating system check 2.0. Combination set consisting of sensor module pressure/temperature CAPBs® sens FP 10 with hose kit, Pitot tube and surface temperature probe in system case S.



DG: H, PG: 4	Part no.	Price €
Base handle CAPBs® BG 10	M091000017	
CAPBs® set 4 Pa sens	560010	
CAPBs® set 4 Pa with heating system check sens	560011	

The application counts.

BlueLine measuring instruments for CAPBs®



4

Flue gas analyser BLUELYZER ST

Flue gas analysis, pressure measurement 40 mbar (draft) and (differential) temperature measurement with a single instrument

Flue gas analyser EUROLYZER STx

All-in-one: Flue gas analysis, (differential) pressure measurement 150 mbar and (differential) temperature measurement

Application	microSD card	Max. 16 GB	Max. 32 GB
	Flue gas measurement	•	•
	Draft/chimney draft measurement	•	•
	Pressure measurement	•	•
	Differential pressure measurement	•	•
	Vacuum measurement	•	•
	Temperature measurement	•	•
	Pitot measurement		•
Particulate matter measurement			

- The world's smallest, fully-featured HVAC all-rounder with TFT colour display
- Program as per German Federal Immission Act with calculation of qA mean value
- CO ambient measurement with two freely adjustable alarm thresholds
- Fully-fledged temperature measurement program, differential temperatures (e.g. flow/return) can also be determined

- ECO sensor: Lead-free O₂ sensor with long service life and optimised calibration phase, short response time, resistant to biogenous fuels
- 5 years warranty on O₂ measuring cell
- H₂-compensated CO cell (measuring range up to 10,000 ppm)
- NO cell can be retrofitted



**Flue gas analyser
MULTILYZER STe**

All-in-one: Flue gas analysis, (differential) pressure measurement 150 mbar and (differential) temperature measurement

Max. 32 GB

-
-
-
-
-
-
-
-

(in conjunction with STM 225)

- ECO sensor: Lead-free O₂ sensor with long service life and optimised calibration phase, short response time, resistant to biogenous fuels
- 7 years full warranty in connection with a service contract
- Sensor equipment with a combination of up to six measuring cells: O₂, CO_{H2}, NO, SO₂, NO₂ and CO_{20,000}



**Pressure measuring
instrument S4600 ST**

For measuring pressure, vacuum and differential pressure

Max. 32 GB

-
-
-
-

Max. 150 mbar

- Six (differential) pressure measuring ranges
- Barometric pressure sensor and temperature compensation for highly accurate measured value
- Also available as measuring instrument for ultra-low pressure (20 mbar) and version for very high pressure (18 bar)



**Temperature measuring
instrument TMD 9**

For temperature measurement on surfaces, in liquids, soft plastic media or in air and gases.

Max. 32 GB

-

- Short response time for measurements at cycles of a second
- Multifunctional use of temperature probes with "type K connection"
- Very long battery life due to lithium-ion battery (up to 35 h)
- Data logger included
- Suitable for differential temperature measurements



BlueAir-ST®



HMG 10



Flowtemp

FLOW MEASUREMENT

Handheld measuring instruments for adjustment and balancing of heating, cooling and ventilation systems

AIR VELOCITY

Air velocity and air mass flow meter [BlueAir-ST®](#) 76

HYDRAULIC BALANCING

Overview hydraulic balancing 80

Measuring instrument for hydraulic balancing [HMG 01](#) 84

Measuring instrument for hydraulic balancing [HMG 10](#) 85

VOLUME FLOW

Flow rate measuring instrument [FlowTemp](#) 86

Air velocity and air mass flow meter

Product highlight BlueAir-ST®

+ Universal

Measuring and adjusting ventilation systems:
air velocity, air flow, temperature and humidity.

+ Accurate

High-performance probes for accurate measurements
in daily use.

+ Intuitive

Intuitive operation, large TFT colour display
(W x H: 45 x 60 mm) and well-structured
measurement programs.

+ Individual

Measurement of current value or interval measurement.

+ Perseverant

Powerful lithium-ion battery for up to 20 hours
of operation.

+ Proven

Infrared interface for IR printer.

+ Reliable

Fully automatic device check, manual and automatic
zero calibration during program start.



+ Interoperable

App EuroSoft mobile for graphical visualisation of the measurement results, transmission of values to smartphones/tablets and as e-mails (HTML format).

+ Independent

microSD card for system-independent storage of measurement logs (HTML format).

+ User-friendly

Automatic probe detection when probe is connected, ergonomic, modern design.

+ Clear

Simultaneous display of 3 or 4 measured values.

+ Innovative

Bluetooth® Smart interface on board: Power-saving data transmission to Bluetooth® printers and mobile devices

+ Smart

Optional data logger function (1-999 seconds, interval freely selectable) for long-term measurement or diagnostics. Data output in XML format for flexible further processing with standard software applications such as MS Excel.



AIR VELOCITY

BlueAir-ST®



Picture shows original size

- + Clearly structured measurement programs, simultaneous display of 3 measured values
- + Measurement of current value
- + Automatic probe detection when probe is connected
- + Range of high-performance probes for accurate measurements in daily use
- + Evaluation function displays minimum, maximum and mean values
- + Calculation of air volume after you have entered the channel cross section
- + Large TFT colour display (W x H: 45 x 60 mm)
- + Fully automatic device check, manual and automatic zero calibration during program start

5

EuroSoft
mobile app



Application Modular, multi-channel instrument for, flow rate, temperature and humidity. Ideal for checking and setting the air velocity of ventilation and air conditioning systems and fans and for measurements in ventilation and exhaust ducts.





Technical specifications probe range	Vane probe BlueAir-ST® MiniAir 20 Micro	Vane probe BlueAir-ST® MiniAir 20 Mini	Vane probe BlueAir-ST® MiniAir 20 Macro	Temperature and humidity probe BlueAir-ST®
Air velocity (nom.)	0.6 to 20 m/s	0.4 to 20 m/s	0.2 to 20 m/s	-
Air velocity (max.)	0.7 to 40 m/s	0.5 to 40 m/s	0.3 to 40 m/s	-
Humidity	-	-	-	0 to 100 % r.h.
Temperature	-	-	-	-40 / +80 °C
Resolution	0.01 m/s	0.01 m/s	0.01 m/s	Humidity: 0.1 % r.h. Temperature: 0.1 °C
Accuracy	± 1.0 % fs ± 3.0 % rdg	± 1.0 % fs ± 1.5 % rdg	± 1.5 % fs ± 1.5 % rdg	Humidity: ± 2 % r.h. at 10 to 90 % r.h. Temperature: ± 0.5 °C at 0 / 40 °C
Reproducibility	-	-	-	Humidity: ± 0.2% r.h. Temperature: ± 0.2 °C
Operating temperature range medium	-20 / +140 °C	-20 / +140 °C	-20 / +140 °C	-40 / +80 °C
Sensor size	Ø 11 x 15 mm	Ø 22 x 28 mm	Ø 85 x 80 mm	Ø 15 x 48 mm
Probe length	165 mm	175 mm	235 mm	-
Cable length	1.5 m	1.5 m	1.5 m	-

Technical specifications

Operating temperature range

Operation: 0 / 40 °C
Storage: -20 / +50 °C

Dimensions

W x H x D: 66 x 143 x 37 mm,
with protective sleeve

Weight

Approx. 220 g

Degree of protection

IP40

Display

TFT colour display: 2.8", W x H: 45 x 48 mm
Resolution: 240 x 320 pixels

Supply voltage

Lithium-ion battery
(3.6 V/1,800 mAh)

Hours of operation

Up to 20 hours in normal mode
Up to 30 hours in auto mode
Up to 40 hours in eco mode

Data memory

1-999 seconds, interval freely selectable

Data logger

microSD card

Interfaces

Infrared, Bluetooth® Smart, QR code generator,
microSD card slot

Approvals

EN 50379-2

5



See chapter 7 for options and accessories.

BlueAir-ST® Sets

DG: H, PG: 4

	BlueAir-ST®, power supply unit NTE 5 USB-A socket, MicroSD card with USB card reader	Case BlueAir-ST®	Vane probe MiniAir 20 Micro	Vane probe MiniAir 20 Mini	Vane probe MiniAir 20 Macro	Part no.	Price €
BlueAir-ST® set 1	•					560001	
BlueAir-ST® set 2	•	•	•			560002	
BlueAir-ST® set 3	•	•		•		560003	
BlueAir-ST® set 4	•	•			•	560004	

Hydraulic balancing: Highest efficiency, maximum energy saving and comfort

Has your heating system been balanced?

On its way to the radiators and back to the boiler, the hot water flow always chooses the path of least resistance. Due to this natural law, in heating systems without hydraulic balancing radiators further away from the pump are supplied with insufficient amounts of hot water while radiators close to the pump receive too much hot water. Typical countermeasures such as increased pump

capacities or higher flow temperatures do not improve this situation, but rather amplify the negative effects. Such systems consume much more energy than necessary without providing the expected convenience.

Consequences of lack of hydraulic balancing:

- Uneven heat release
- Heating times of rooms/apartments differ
- Thermostat valves cannot properly control the room temperature
- Limited frost protection
- Disturbing flow noise in valves and pipes
- Excessive power consumption due to oversized and/or incorrectly set circulation pumps
- High losses when the heating system starts or is not used
- Low efficiency of condensing systems: Excessive flow through radiators close to the pump leads to high return temperatures and reduces the condensation effect (energy recovery during condensation of the flue gas)

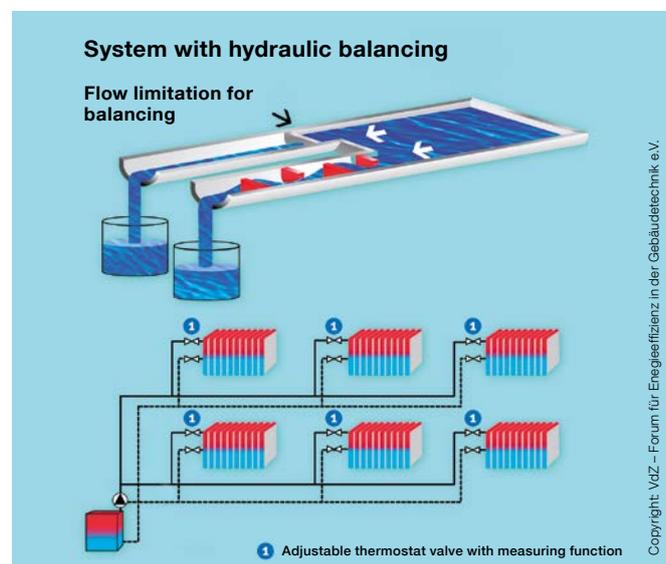
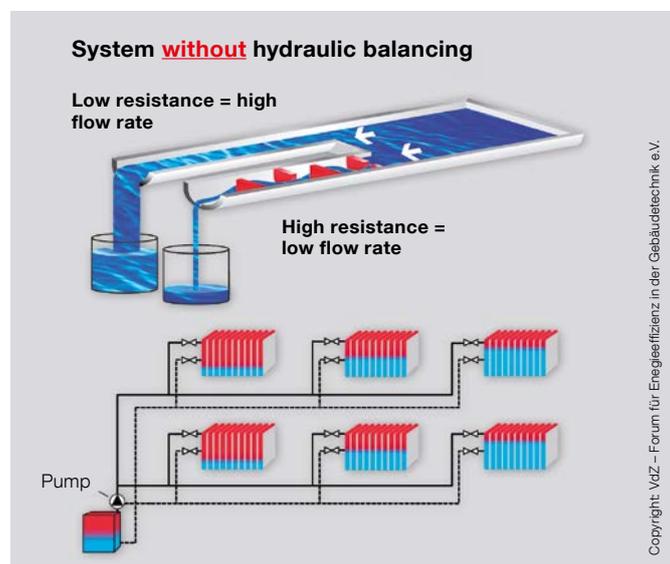


What is hydraulic balancing?

5

Hydraulic balancing ensures optimum distribution of the water in the heating system. Based on the actual heat requirements of the building, the circulation pump, the control (flow temperature), the fittings and the valves are adjusted to change the volume flow in the pipes in such a way as to obtain the required flow resistance for all radiators. This forces the hot water to flow through the sys-

tem exactly as required. The right method and suitable components allow for considerable savings. In individual cases, this may amount to as much as 15% and more of the annual heating capacity.





Advantages – your benefits

- + Convenience: Rooms are heated evenly
- + Radiators respond quickly to new thermostat valve settings
- + Maximum frost protection safety
- + No flow noise in the heating system
- + Heating system/pump operate with maximum efficiency to save energy
- + Increased system reliability
- + Improved energetic quality of the building
- + Reduced energy consumption saves money and protects the environment due to less emission



Legal obligations hydraulic balancing

In Germany, hydraulic balancing is mandatory, as stipulated by the German VOB, part C (German Construction Contract Procedures), DIN 18380 as well as the German EnEV (Energy Savings Ordinance).

Fast and easy hydraulic balancing with AFRISO-GAMPPER components

In existing buildings, hydraulic balancing often involves a lot of estimating and approximation since precise information on the pipe system is unavailable. In old buildings, the lengths and diameters of pipes are often not sufficiently documented, the pipe systems have been changed or there are different levels of renovation. In such cases, a fundamental prerequisite is missing.

AFRISO offers two systems for hydraulic balancing. In both cases, the heating system expert adjusts the heat distribution directly at

each radiator by limiting the amount of hot water at the adjustable thermostat valves - without additional adjustment fittings. The decision as to which system is most suitable for a given building depends on a variety of factors and requirements:

Automatic hydraulic balancing for the HVAC professional

The system Vario-DP

Pre-adjustable thermostat valves Vario-DP with patented dynamic valve insert for automatic limitation of the water volume set at the valve. Vario-DP controls the water volume independent of pressure variation in the heating system. Therefore, Vario-DP ensures that the right water volume is always supplied to the radiator, regardless of the number of open or closed thermostat valves in the system.

Your benefits:

- Automatic control of water volume
- Adjusted flow is not exceeded
- Building type: Primarily for single-/two-family homes, residential buildings
- Fast hydraulic balancing without measuring instrument
- Wide range of products, easy planning
- High reserve due to wide adjustment range up to 290 l/h
- Geometry of valve insert provides protection against unwanted pollution, failure due to blocking is practically impossible



NEW

Valve range Vario-DP

The control membrane is installed directly in the valve insert and the valve spindle is used as the pressure sensor – therefore, there are no additional control components which might be subject to pollution. The valve operates with a standard valve gasket and does not require additional dirt filters.

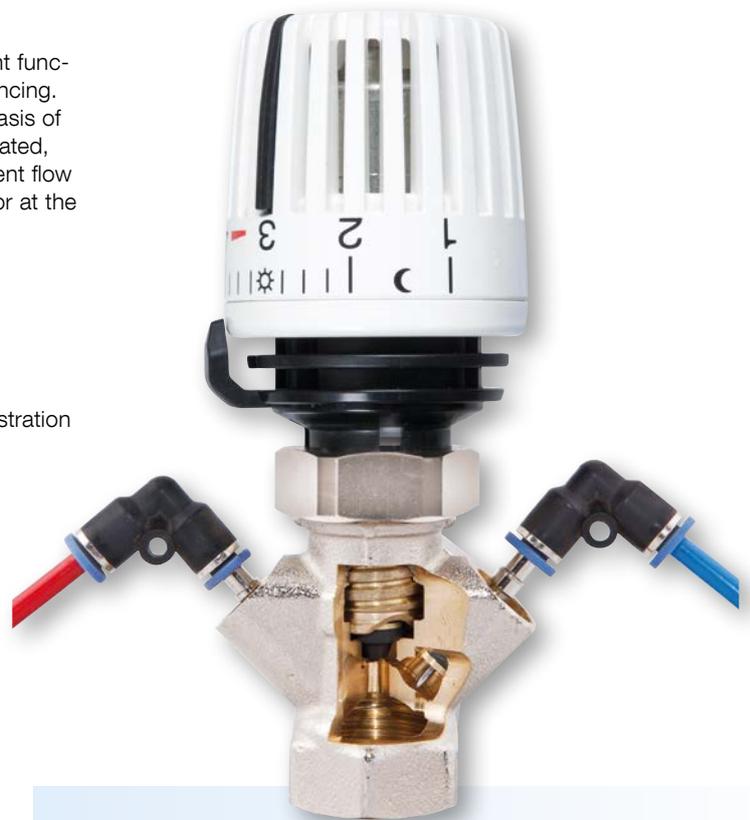
Hydraulic balancing with measurement function for the HVAC system planner

The triple-stage VarioQ system

The pre-adjustable VarioQ thermostat valves with measurement function allow for an even more precise approach to hydraulic balancing. The triple-stage system optimises the heating system on the basis of calculation, measurement and adjustment. Thanks to an integrated, fixed measuring unit, it is possible to directly measure the current flow and adjust the calculated water volume at each radiator valve or at the lockshield valve.

Your benefits:

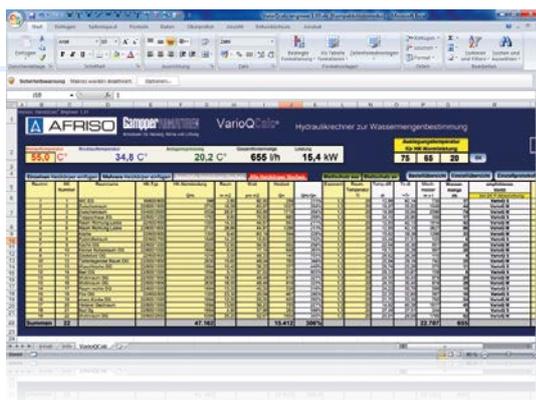
- Precise measurement and adjustment of the required water volume per radiator.
- Building type: Primarily for public buildings, schools, administration buildings and generally for larger heating systems
- Reliable procedure for larger and complex heating systems
- Measurement option at the valve for documentable and verifiable adjustment
- Time and cost savings: Neither dynamic valves nor line fittings are required
- Up to 80 % savings with regard to pump capacity as compared to automatically balanced heating systems
- Further optimisation potential due to, for example, fewer burner starts or increased condensing effect



Valve range VarioQ

The fixed measuring unit of VarioQ allows for the precise adjustment of the water volume at the valve of the radiator. The pre-adjustable thermostat valves feature a fixed, calibrated measuring unit for adjustment of the volume flow directly at the valve.

5



Calculation software VarioQCalc

The easy-to-use software determines the required optimum water volume as well as the VarioQ valves for each radiator. Only the flow temperature of the system, the radiator capacity and the heat requirements of the rooms to be heated are needed as a basis for the calculation. Parameters and estimated values of the pipe system do not have to be considered.



Measuring instrument HMG 10

HMG 10 receives its data from VarioQCalc via a USB interface. The measuring instrument measures the flow rate in litres per hour and the water volume can be easily set at the valve without conversion. In addition, all standard measuring valves and line fittings are stored and can be intuitively selected via the graphical user interface.



Handheld measuring instrument for hydraulic balancing HMG 01

- + Hydraulic balancing directly at the radiator with VarioQ valves
- + Simple measuring instrument for line fittings
- + Measurement/check of differential pressure and flow rate
- + For heating circuit water and media of other densities



Application For differential pressure measurement and flow rate adjustment in heating and refrigerating systems during hydraulic balancing. To be used in conjunction with VarioQ thermostat valves and combination blocks.

Description HMG 01 is a simple, lightweight handheld measuring instrument with a display for visualisation of the results of measurements. The flow coefficients of the valves with measuring function can be manually set via the keypad (valve bodies VarioQ S, M, L are stored in the memory); the flow rate at the valve can be displayed and the water volume can be easily set at the VarioQ valve without conversion. The measured flow rate and pressure values can be displayed in various units. HMG 01 features an intuitive calibration function for zero calibration.

Technical specifications

Measuring range

0/1,000 kPa / 0/10 bar

Max. overpressure

- side: 1,000 kPa / 10 bar
+ side: 1,500 kPa / 15 bar

Operating temperature range

Ambient/storage: -5/+50 °C
Medium: -5/+90 °C

Weight

380 g

Dimensions

W x H x D 94 x 218 x 40 mm

Display

Backlit display
128 x 64 Pixel

Connection

2 x plug connection (red/blue)

Supply voltage

2 x 1.2 V AA batteries (rechargeable)

Options

- Hose kit for line fittings
- Measuring needles for line fittings

Scope of delivery

Measuring instrument with calibration report,
2 x batteries,
1 pair of measuring hoses for connection of VarioQ valves, adapters and accessories for connection to the system to be balanced, mounting tools

DG: H, PG: 4	Part no.	Price €
HMG 01	68785	
Accessories for line fittings		
Measuring needles	480 000.805	
Hose kit	480 000.801	



Measuring instrument for hydraulic balancing HMG 10



- + Lightning-fast hydraulic balancing at the radiator with VarioQ valves
- + Software-supported measurement/check of differential pressure and flow rate
- + Characteristic curves of standard line valves and radiator valves stored in the software
- + For heating circuit water and media of other densities



Application For differential pressure measurement and flow rate adjustment in heating and refrigerating systems during hydraulic balancing. To be used with VarioQ thermostat valves, VarioQ combination blocks or standard line fittings with measuring function.

Description HMG 10 is an ergonomic, lightweight handheld measuring instrument. A large, backlit colour display allows for convenient visualisation of all measurement results. All standard measuring valves are stored and can be intuitively selected via the graphical user interface. The measuring instrument measures the flow rate in litres per hour and the water volume can be easily set at the VarioQ valve without conversion. HMG 10 uses all data and calculation results from VarioQCalc and returns all measured and adjusted values of the balancing procedure for documentation purposes. In addition, projects can be defined with the PC software as required and then transferred to the memory of HMG 10. A mini USB port is provided for communication and battery charging.

Technical specifications

Measuring range

0/1,000 kPa / 0/10 bar

Max. overpressure

1,200 kPa / 12 bar

Operating temperature range

Ambient/storage: -5/+50 °C

Medium: -5/+90 °C

Hours of operation

Max. 12 hours

Weight

420 g

Dimensions

W x H x D 80 x 180 x 52 mm

Display

Backlit colour display

240 x 320 pixels

Connection

2 x plug connection (red/blue)

Supply voltage

Lithium-ion battery 950 mAh

Scope of delivery

Measuring instrument with calibration report, USB charging adapter, 2 pairs of measuring hoses for connection of VarioQ valves and line fittings, adapters and accessories for connection to the system to be balanced, mounting tools, USB data cable, USB flash drive with PC software



DG: H, PG: 4	Part no.	Price €
HMG 10	68794	

Volume flow/temperature measuring instrument FlowTemp



Also available as CAPBs®

- + Fast, easy determination of the temperature per water volume
- + Selection of measuring range for the volume flow measuring by means of a disc with different holes

Application For checking and adjusting water heaters. FLOWTEMP is held under an open water tap and indicates the water temperature reached at the corresponding flow rate.

5 **Technical specifications** **Measuring ranges**
 1.6 up to 4 l/min
 4 up to 8 l/min
 8 up to 16 l/min

Scope of delivery
 Instrument with robust plastic enclosure to protect against dirt, impact and shock



DG: H, PG: 4	Part no.	Price €
Measuring instrument for volume flow and temperature Flowtemp	569790	

Options and accessories

Vane probes for BlueAir-ST®

MiniAir 20 Micro
Part no. 523507



MiniAir 20 Mini
Part no. 523508

MiniAir 20 Macro
Part no. 523509



5



Thermal printer EUROprinter

Compact printer with four magnets at the back for hands-free operation. Infrared interface for easy connection of all BlueLine series measuring instruments. Documents all measured results on paper for official purposes - anywhere
Part no. 522394



Option data logger

Data logging once per second during measurements (XML format)
Part no. 511010



Tester for expansion vessels



Digital service pressure gauge



Level sensor tester

Inspection and testing equipment for maintenance and service

TESTERS

Pressure gauge RF 50 PPS for oil burner pumps	90
Test and refill set PNG , filler for expansion vessels	91
Testers PGA , PGW , PGW-10-Set for pressure tests	92
Universal digital pressure gauge DIM 20	94

TESTERS

Level sensor tester GPR 4	95
Anode tester AT1	95

Pressure gauge RF 50 PPS for pump test set



Description Pressure gauge for checking the pressure and suction capacity at oil burner pumps. Preferably in conjunction with standard pump test valve with G $\frac{1}{8}$.

RF 50 PPS D 101 - without glycerine filling

Technical specifications

Housing diameter
50 mm

Connection
G $\frac{1}{8}$ B bottom without sealing plug

Housing
Plastic

Window
Plastic

Accuracy class (EN 837-1/6)
1.6

RF 50 PPS D 601 - with glycerine filling

Housing diameter
50 mm

Connection
G $\frac{1}{8}$ B bottom without sealing plug

Housing
Plastic with crimped bezel

Window
Plastic

Accuracy class (EN 837-1/6)
1.6

DG: M, PG: 2	Range	Part no.	Price €
RF 50 PPS D 101 - without glycerine filling	-1/0 bar	63991	
RF 50 PPS D 101 - without glycerine filling	0/25 bar	63995	
RF 50 PPS D 601 - with glycerine filling	-1/0 bar	67165	
RF 50 PPS D 601 - with glycerine filling	0/25 bar	67166	



Test and refill sets PNG, vessel filler



PNG-1 / PNG-3

Application For testing and adjusting the pressure cushion of diaphragm expansion vessels of heating systems and oil supply systems.

Description The test and refill set consisting of a 60 cm long, flexible filling hose with union nut Vg8 for the test valve at the expansion vessel and a ball valve with 7/16-28 UNEF thread for vessel filler cylinder and a test pressure gauge Ø 40 mm. The vessel filler cylinder is not included.

Technical specifications

Ranges
PNG-1: 0/4 bar
PNG-3: 0/10 bar

Accuracy class
1.6

PNG-2

For testing and adjusting the pressure cushion of diaphragm expansion vessels of heating and oil supply systems, specially for systems with test valves which are not easily accessible.

Test and refill set consisting of a rigid, 200 mm long test lance with test head for pressing against the test valve of the expansion vessel and a ball valve with 7/16-28 UNEF thread for vessel filler cylinder and a test pressure gauge Ø 40 mm, 0/4 bar. During testing and refilling, the fitting is pressed against the test valve.

Ranges
0/4 bar

Accuracy class
1.6

Scope of delivery
PNG-2 including vessel filler cylinder and plastic case

Vessel filler

Vessel filler for increasing the pressure cushion in expansion vessels.

Suitable for PNG-1, PNG-2 and PNG-3. With corrosion protection component, not flammable.

Connection thread
7/16-28 UNEF

Table of Contents
400 ml



DG: H	PG	Part no.	Price €
Test and refill set PNG-1, 0/4 bar	2	39616	
Test and refill set PNG-3, 0/10 bar	2	39637	
Vessel filler cylinder, 400 ml	1	39633	
Test and refill set PNG-2	2	39634	
Spare case of PNG-2	1	39635	

Testers PGA



Tester PGA

Application For pressure tests of expansion vessels, tanks and tyres.

Description Robust, very accurate pressure gauge in aluminium housing with ring for zero correction. Measuring range 0/4 bar. With 45° adapter for use even if space is limited.



Test set PGA-4-Set

For pressure tests of expansion vessels, tanks and tyres.

Robust, very accurate pressure gauge in aluminium housing with ring for zero correction. Measuring range 0/4 bar. With three adapters for car valves which are also used for expansion vessels. The three adapters (straight, 45°, 90°) allow for usage even if space is limited. Plastic case with insert included in scope of delivery.



DG: H, PG: 3	Part no.	Price €
Tester PGA, 0/4 bar	39615	
Test set PGA-4-Set	39614	

Testers PGW



Tester PGW

Application For measuring the tyre pressure

Description Robust pressure gauge in aluminium housing with ring for zero correction. Measuring range 0/10 bar, with adapter for car valves. Also suitable for testing water pressure when used in conjunction with adapters from PGW-10-Set.



Test set PGW-10-Set

For pressure tests of water pipes, tanks and tyres.

Robust, very accurate pressure gauge in aluminium housing with ring for zero correction. Measuring range 0/10 bar. With adaptor for hose tap 1/2" (thread G3/4), aerator M 24 x 1 female thread and M 22 x 1 male thread. Scope of delivery includes plastic case with insert and a connector piece for car valves.



DG: H, PG: 3	Part no.	Price €
Tester PGW, 0/10 bar	39618	
Test set PGW-10-Set	39617	



Digital pressure gauges DIM 20 service instrument

- + Universal test pressure gauge with high measuring accuracy
- + High flexibility due to selectable units: bar/mbar/psi/inHg/mmHg/cmHg/kPa/MPa/mWC
- + Min./max. memory
- + Intuitive operation via menus
- + Display can be rotated by 330°
- + Zero and full scale can be calibrated
- + Adjustable auto-off function

Application For high-precision electronic pressure measurement with local digital display, for applications such as hydraulics, pneumatics, mechanical and plant engineering. Compact microprocessor-controlled pressure gauge with thick film ceramic measuring cell. The signal received from the pressure sensor is processed by the microprocessor, converted into the desired unit and displayed. Each device is shipped with its own measurement log.

Technical specifications

Measuring ranges

Relative pressure: -1/0 bar, 0/2.5 bar to 0/700 bar

Measuring accuracy

±0.5 % FSO as per BFSL
±1 % FSO (-1/0 bar)

Overpressure safety

At least 1.5 x FS

Operating temperature range

Medium: -20/+125 °C
Ambient: -20/+45 °C
Storage: -30/+80 °C

Temperature error

In compensated range
0/70 °C ≤ 0.5 % FSO/10 K

Dynamic characteristics

Measuring rate 5/s

Display

Multi-line LC display
Display can be rotated by 330°

Process connection

G1/4B (EN 837-1/7.3), bottom

Supply voltage

1 x lithium battery 3.6 V (included), battery life depends on usage (max. 5 years)

Materials

Housing: PA6, glass-loaded
Pressure connection: Stainless steel 304
Diaphragm: Ceramic (Al₂O₃ 96 %)
Seal: FKM

Degree of protection

IP 51 (EN 60529)

6



DIM 20

DG: H, PG: 4

	Measuring range										
	-1/0 bar	0/2.5 bar	0/6 bar	0/10 bar	0/25 bar	0/40 bar	0/100 bar	0/160 bar	0/250 bar	0/400 bar	0/700 bar
Part no.	32500	32503	32505	32506	32508	32509	32511	32512	32513	32514	32516
Price €											

Level sensor tester GPR 4, Anode tester AT1



Level sensor tester GPR 4

Application For use with storage tanks for fuel oils and diesel fuels. Not permitted for use in hazardous areas and not for level sensors which are installed in tanks containing hazardous media.

Description Simple level sensor tester with connector, suitable for all level sensor fittings. A signal lamp indicates function or error. Battery-operated. Delivery with level sensor connection fitting, also suitable for level sensor with brass fitting.



Anode tester AT1

Tester for consumption check of anode I or isolated standard sacrificial anodes.

- Handheld tester with 4-level LED indication
- Fast and easy indication of the condition of the anode
- Reliability of the water heater due to preventive maintenance – consumed anodes are replaced in good time



Level sensor testers with connector – suitable for all level sensor fittings.

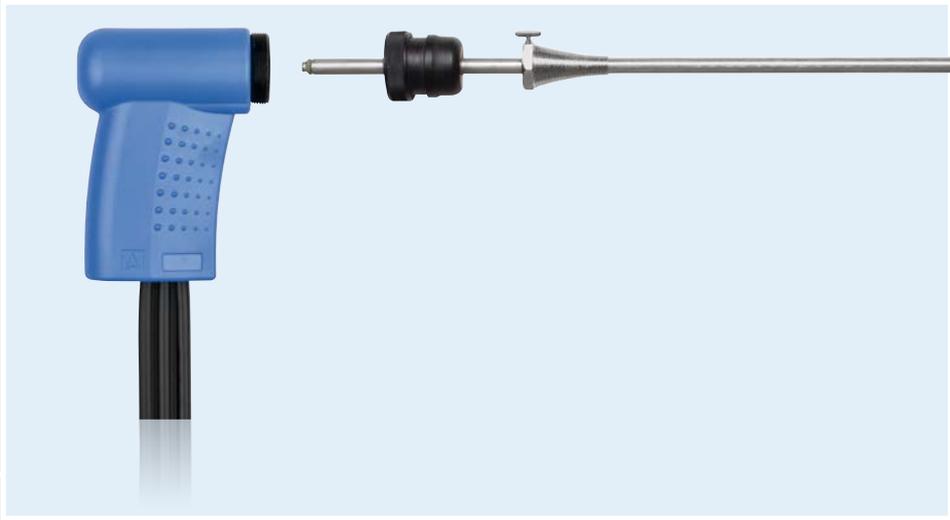
i

See the catalogue DOMESTIC TECHNOLOGY for the complete range of level sensors and anodes.

6

DG: H, PG: 4	Part no.	Price €
Level sensor tester GPR 4	62301	
Anode tester AT1 for anode I	69842	





Flue gas probes



Mobile apps



Printer



Modular system cases

ACCESSORIES

Accessories and options for the BlueLine series

PROBES

Modular probe system, universal plug-in units	98
Flue gas probe compact AKS-K	99
Gas sampling probe PSP 4000	99
Probes for dust measuring instrument STM 225	99
Condensate filter cartridges KFP	100
Probes for air velocity meters BlueAir-ST®	101
Probes and accessories for moisture measuring instruments MFM 22	101
Temperature probes TFB , clamping cones KLK	102

FOR ALL BLUELINE MEASURING INSTRUMENTS

Memory card microSD	103
Options, power supply units, charging cables	103
Connection kits: ASS-DP , ASS-TS , SLS , ASS-HD	104
Printer EUROprinter	104
Soot pumps RSP	104
Cases and modular system cases	105

TIGHTNESS TEST

Leak test sets DPK 54	107
Foot-operated pump FSP-L , test plugs, adapters, single pipe union connector, pressure test valve ADV 2	107

COMMUNICATION

Evaluation software and app EuroSoft mobile	109
---	-----

MAINTENANCE/WARRANTY

Maintenance contracts and extended warranty for flue gas analysers	111
--	-----

Probes for flue gas analysers

DG: H, PG: 4	Part	Description	BLUELYZER ST	EUROPOLYZER STx	MULTIPLYZER STe	Part no.	Price €
			Suitable for				
Modular probe system							
	Base handle AWS/B for interchangeable probes	Compensation line: 2.4 m, with condensate filter cartridge KFP, with draft		•	•	510921	
		Compensation line: 5 m, with condensate filter cartridge KFP, with draft		•	•	510931	
	Interchangeable probe AWS-S suitable for base handle	100 mm, Ø 8 mm		•	•	570084	
		180 mm, Ø 8 mm		•	•	570073	
		300 mm, Ø 8 mm		•	•	570074	
		500 mm, Ø 8 mm		•	•	570075	
		750 mm, Ø 8 mm		•	•	570076	
		1,000 mm, Ø 8 mm		•	•	570077	
1,500 mm, Ø 8 mm		•	•	570078			
	Multi-hole probe AWS-M suitable for base handle	Length-adjustable 60–170 mm, Ø 8 mm		•	•	570080	
	Annular gap probe AWS-R suitable for base handle	For measurement of CO and O ₂ concentrations in the annular gap of double-walled chimney chimneys of gas furnaces		•	•	570083	
	Flexible probe AWS-F suitable for base handle	400 mm, Ø 9 mm		•	•	570079	
Universal plug-in units							
	Annular gap probe RSO-UG	2 m hose length with connection piece	•	•	•	500236	
	Annular gap probe RSO-UA	Universal, can be plugged onto all flue gas probes	•	•	•	570082	
	Multi-hole probe MSO-U with connection fitting	Length-adjustable 60–250 mm	•	•	•	569580A	
	Intermediate filter NO_x/SO_x for connection Ø 8 mm	With 1 refilling	•	•	•	511064	
	Refilling for intermediate filter	5 pieces				511066	

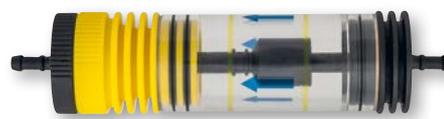
DG: H, PG: 4	Part	Description	Suitable for					Part no.	Price €
			BIUELYZER ST	EUROPOLYZER STx	MULTILYZER STe	S4600 ST	STM 225		
Probes									
	Flue gas probe compact AKS-K	240 mm, with draft connection, without condensate filter cartridge KFP 2P	•					500246.5	
	High temperature sampling probe	Up to 1,000 °C Length 1,500 mm Hose length 2.4 m	•	•	•			500273.1	
	Gas sampling probe PSP 4000				•		568900		
	Analysis line HL 4-3, heated	Length: 3 m			•		569478		
	Analysis line HL 4-5, heated	Length: 5 m			•		569476		
	Sampling line ENL-H 2, heated	Length: 2 m, with compensation line and connection possibility for MULTILYZER STe					•	570205	
	Sampling probe ENS-G	280 mm, straight					•	570202	
	Sampling probe ENS-G	400 mm, straight					•	570211	
	Sampling probe ENS-W	300 mm, bent					•	570203	
	Connection kit ASS-STM	Connection line withdrawal line ENL-H2 and MULTILYZER STe, with KFP					•	500296	
	Pitot tube	Probe insertion depth 360 mm		•	•	•		500238	
		Probe insertion depth 460 mm		•	•	•		500238.1	

Condensate filter cartridges KFP for flue gas analysers

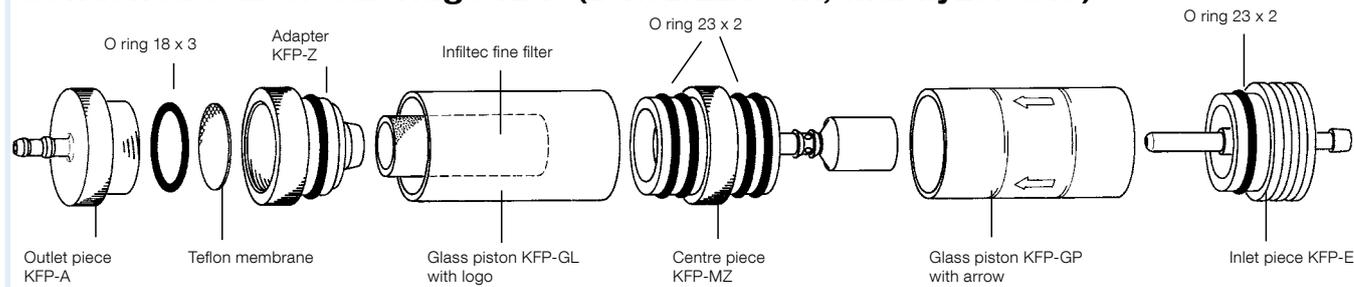
KFP



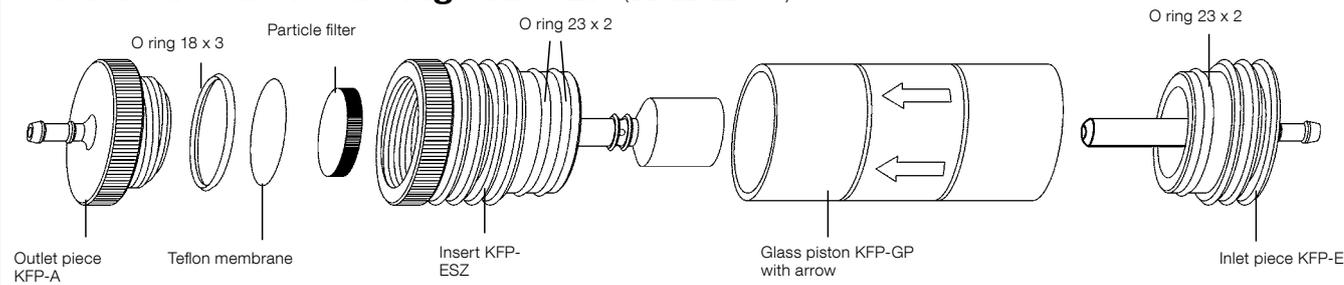
KFP 2P



Condensate filter cartridge KFP (EUROLYZER STx, Multilyzer STE)



Condensate filter cartridge KFP 2P (BLUELYZER ST)



DG: H, PG: 4			Part no.	Price €
Condensate filter cartridge KFP			500190	
Condensate filter cartridge KFP 2P			500192	
Spare parts package gas treatment KFP: 5 x Infiltec fine filter, 5 x Teflon membrane			500208	
Spare parts package gas treatment KFP 2P: 5 x Infiltec fine filter, 5 x Teflon membrane			500214	
	Spare parts use			
	KFP	KFP 2P		
Assortment of O rings, sorted	•	•	511002	
Inlet piece KFP-E	•	•	520594	
Glass piston KFP-GP with arrow	•	•	520596	
Centre piece KFP-MZ with cylinder	•		521990	
Intermediate piece KFP-Z	•		520592	
Outlet piece KFP-A	•	•	520591	
Glass piston KFP-GL with logo	•		521778	
Teflon membrane, 10 pieces	•	•	511004	
Infiltec fine filter, 5 pieces	•		511003	
Particle filter, 5 pieces		•	511009	
Insert KFP-ESZ with cylinder		•	522183	

7

Probes for BlueAir-ST® and MFM 22

			BlueAir-ST® MFM 22	Part no.	Price €
DG: H, PG: 4			Suitable for		
Air velocity meters					
	Temperature and humidity sensor TFS-BA	Connector 8 pins	•	511011	
	Extension for temperature/humidity sensor	Length: 1.8 m	•	523511	
	Vane probe MiniAir 20 Micro 20 m/s		•	523507	
	Vane probe MiniAir 20 Mini 20 m/s		•	523508	
	Vane probe MiniAir 20 Macro 20 m/s		•	523509	
	Snap-on head MiniAir 20 Micro 20 m/s		•	523544	
	Snap-on head MiniAir 20 Mini 20 m/s		•	523545	
	Snap-on head MiniAir 20 Macro 20 m/s		•	523546	
	Extension rod VLS 180	Length: 180 mm	•	523626	
	Extension rod VLS 300	Length: 300 mm	•	523627	
	Extension rod VLS 1000	Length: 1 m	•	523628	
Moisture measuring instruments					
	Measuring cable MFM	Length: 1 m, with connector	•	569083	
	Hammer electrode ELE-HE 20 for log wood	With TÜV approval	•	569053	
	Ram electrode ELE-SE 10 for log wood and moisture in construction materials		•	569054	
	Handle ELE-G	for ram electrode	•	569049	
	Insertion electrode ELE-ST 50-1 TF with TÜV approval	Length: 430 mm, for wood chips and pellets, with integrated temperature probe	•	569026	
	Insertion electrode ELE-ST 50-2 TF with TÜV approval	Length: 1,100 mm, for wood chips and pellets, with integrated temperature probe	•	569027	
	Insertion probe TFB-ES 200		•	569020	
	Steel pins 12, 16, 23 mm	3 pieces each	•	569081	
	Steel pins 40 mm	10 pieces	•	569082	
	Deep electrode ELE-MS 110	for ram electrode, length: 300 mm	•	569055	
	Brush electrodes ELE-BE 110-1, 100 mm	for moisture in construction materials	•	569079	
	Brush electrodes ELE-BE 110-2, 300 mm	for moisture in construction materials	•	569058	
	Conductive paste for brush electrode ELE-BE		•	569078	

Temperature probes for BlueLine series

DG: H, PG: 4	Part	Description	Suitable for							Part no.	Price €
			BLUELYZER ST	EUROLYZER STX	MULTILYZER STe	MFM 22	TM 6 / TM 7 / TMD 7 / TMD 9	TK 10 CAPBS®			
Temperature probes											
	Insertion probe TFB-ES 600		•	•	•	•	•	•	569868		
	Air, gas, liquid probe TFB-LGF 900		•	•	•	•	•	•	569867		
	Surface probe TFB-OF 450		•	•	•	•	•	•	569866		
	HT probe TFB-HT 1150-1	700 mm	•	•	•	•	•	•	569853		
	HT probe TFB-HT 1150-2	1,000 mm	•	•	•	•	•	•	569854		
	Combustion air probe	TFB-VL 600-1, 200 mm	•	•	•	•	•	•	500147		
		TFB-VL 600-2, 290 mm	•	•	•	•	•	•	500147.2		
	Combustion air probe TFB-VL 100 M	With magnetic holder	•	•	•	•	•	•	500141		
	Combustion air probe TFB-VL 100 MG	With magnetic holder and rubber cone	•	•	•	•	•	•	500141.1		
	Ambient air probe	TFB-UL 50-1	•	•	•	•	•	•	521844		
		TFB-UL 50-2 for MAXILYZER	•	•	•	•	•	•	500129		
	Clamp probe TFB-ZF 200		•	•	•	•	•	•	569011		

7 Clamping cones for the BlueLine series

DG: H, PG: 4	Part	Description	Part no.	Price €
	Cones for probes	Clamping cone KLK-P 50	Made of PDM, hole Ø 5.0 mm, suitable for combustion air probe	522221
		Clamping cone KLK-T 80	Made of Teflon, hole Ø 8.0 mm, suitable for flue gas combination probe	521637
		Clamping cone KLK-E 80	Made of stainless steel, hole Ø 8.0 mm, suitable for flue gas combination probe	520588
		Clamping cone KLK-E 88	Made of stainless steel, hole Ø 8.8 mm, suitable for EP-Check	522918
		Rubber cones KLK-G	Made of rubber, set of 3, Ø 5.0 mm, suitable for combustion air probe	568981

Options and accessories for the BlueLine series

DG: H, PG: 4		BLUELYZER ST	EUROLYZER STx	MULTILYZER STe	S-4600 ST	STM 225	GSP 1	DPK 60-6 ST / DPK 60-7 ST	BlueAir-ST®	Suitable for	Part no.	Price €
Dust measuring instruments												
Cleaning kit	10 cleaning swabs, 10 cleaning cloths, 2 cleaning brushes						•				570210	
O ring kit	9 pieces						•				511028	
Zero point filter							•				523564	
Flushing filter							•				523565	
Options												
Device function MGF DL-S, data logger		•	•	•	•			•	•		511010	
Database memory	Extension of memory function, customer database, customer information	•	•*	•*	•			•	•		511030	
Measuring instruments BlueLine series												
microSD card	including USB 2.0 SD card reader	•	•	•	•			•	•		511035	
Module USB-A "BT-STM 225" MULTILYZER STe	USB dongle for MULTILYZER STe for communication with STM 225			•							500854	
Module USB-A for PC	Bluetooth® Smart dongle for PC application EuroSoft mobile	•	•	•	•			•	•		500856	
Power supply unit NTE USB-A		•	•	•	•			•	•		523493	
Charging cable USB-A / mini USB		•	•	•	•			•	•		523506	
Power supply unit NTE 5 mini USB for car	Car adapter for power supply unit NTE mini USB-A	•	•	•	•			•	•		523476	
Power supply unit NTE 6							•				522199	

* Included in scope of delivery of measuring instrument.

Accessories for the BlueLine Series

DG: H, PG: 4	Part	Description	Part no.	Price €
	Connection kit ASS-DP for differential pressure measurement	For handheld measuring instruments with connection Ø 7/8 mm and Festo Ø 3 mm	500237	
	Connection kit tank protection ASS-TS Length: 1 m	Plug connection Ø 8 mm	569843	
	Connection kit high pressure ASS-HD	Plug connection hose (Ø 3 mm) to G ¹ / ₈ , up to 15 bar	500234	
	Hose kit SLS 4 Pa test		500664	
	Adapter Festo connection Adapter piece Ø 8 mm to Ø 3 mm for BlueLine series pressure measuring instruments	1 piece	500677.1	
	Printer	Thermal printer EUROprinter-IR	Compact infrared printer with 4 magnets at the back	522394
		Thermal printer EUROprinter-IR Bluetooth® Smart	Compact infrared printer with 4 magnets at the back. Interfaces: Infrared and Bluetooth® Smart	523525
		Printer paper for EUROprinter Thermo	5 rolls	523374
		Printer paper for EUROprinter	For official documentation, self-adhesive, 1 roll	522666
	Soot pump RSP-L	With smoke spot number comparison scale and filter paper (100 pieces)	569581	
	Soot pump RSP-XL	Complete kit with sampling probe (220 mm long) and plastic measuring head, smoke spot number comparison scale, threaded cone, cleaning agent, filter paper (100 pieces)	569086	
	Filter paper for soot pumps	200 pieces	568400	
	Smoke spot number comparison scale		568300	
	Covers for measurement holes	Contains 10 sets (1 set = 10 pieces)	561099	

DG: H, PG: 4	Part	Description	Part no.	Price €
	Transport systems / cases	Plastic case Universal	For EUROLYZER and MULTILYZER	570106
		Plastic case	For BlueAir-ST®	523603
		Plastic case MFM	For MFM 22	569021
		Transport bag	For STM 225	570201
		Aluminium case universal	For EUROLYZER and MULTILYZER	500541

Modular system cases for BlueLine measuring instruments and CAPBs®



DG: H, PG: 4		Part no.	Price €
System case L "DPK"	With document compartment and high-grade foam inlay for DPK 60-6 ST Dimensions (H x W x D): 151 x 442 x 357 mm Weight: 2.2 kg	500902	
System case L "Gas analysis"	With document compartment and high-grade foam inlay for BLUELYZER ST, EUROLYZER STx, MULTILYZER STe and accessories Dimensions (H x W x D): 151 x 442 x 357 mm Weight: 2.2 kg	500900	
System case M "DPK"	With high-grade foam inlay for CAPBs® set DPK 60-6 sens Dimensions (H x W x D): 72 x 367 x 316 mm Weight: 0.9 kg	500904	
System case M "CAPBs"	With high-grade foam inlay for CAPBs® base handles and sensor modules Dimensions (H x W x D): 72 x 367 x 316 mm Weight: 0.9 kg	500905	
System case S	With foam inlay Dimensions (H x W x D): 63 x 260 x 155 mm Weight: 0.4 kg	523976	
Rack for system case M	Dimensions (H x W x D): 100 x 442 x 342 mm Weight: 1.1 kg	523977	

Leak test set DPK 54, accessories for DPK 60 series

Leak test set DPK 54

Application For pressure tests of pipes of liquid gas installations or for tightness tests with air according to the pressure measuring principle and the visual inspection method.

Description Leak test set in sturdy wooden case, consisting of:

- Test pressure gauge Ø 63 mm with impact protection, measuring range 0/2 bar with expanded initial graduation up to 250 mbar
- Connection piece
- Hand pump
- Various adapters



Foot-operated pump FSP-L

Description With check valve, quick-action coupling and 2.5 m connecting hose.

Capacity per stroke
200 cm³



Test plugs

Description Conical or cylindrical test plugs with plug-in nipple for quick-action coupling system and easy-to-handle wing screw for standard pipe diameters ½", ¾", 1" and 1¼".



Single pipe union connector

Description With connection for single-line gas meter. With plug-in nipple suitable for all quick action coupling systems of the DPK series.



Pressure test valve ADV 2

Description Pressure test valve with quick-action coupling and high-precision adjustment valve for easy adjustment of the filling pressure. Suitable for all BlueLine series pressure measuring instruments with hose connection Ø 8 mm.



Accessories for DPK 60 series

DG: H, PG: 3	Part no.	Price €
Leak test set DPK 54	39540	
Spare pressure gauge for DPK 54	39541	
Connection piece for DPK 54	37303	
Foot-operated pump FSP-L	563034	
Hose for foot-operated pump FSP-L	563033	
Test plug conical ½" to ¾" with plug-in nipple	500678.1	
Test plug conical ¾" to 1¼" with plug-in nipple	500678.2	
Test plug cylindrical ½" with plug-in nipple	500678.3	
Test plug cylindrical ¾" with plug-in nipple	500678.4	
Test plug cylindrical 1" with plug-in nipple	500678.5	
Test plug cylindrical 1¼" with plug-in nipple	500678.6	
Hand-operated bulb pump with 2 x valve	523082	
Connection hose for hand/operated bulb pump	522952	
Hand-operated bulb pump with connection hose	511018	
Adapter for compressor connection	500696	
Test plug ½" with plug-in nipple	500694	
Multiple connection plug ⅜" and ¾" with plug-in nipple	500679.1	
Multiple connection plug ½" and 1" with plug-in nipple	500679.2	
Multiple connection plug 1" and 1¼" with plug-in nipple	500679.3	
Connection hose 0.3 m with plug-in nipple, DN 5 coupling	500687	
Connection hose 1 m with plug-in nipple DN 2.7, DN 5 coupling	500685	
Connection hose 2 m with plug-in nipple DN 2.7, DN 5 coupling	500689	
Connection hose 3 m, 2 x locking coupling DN 5	500686	
Connection hose for low pressure, plug-in socket DN 5	500688	
Y connector, 2 x coupling DN 5, 1 x shut-off valve, 1 x plug-in nipple	500690	
T connector, 2 x coupling, 1 x shut-off valve, 1 x plug-in nipple	500695	
Single pipe union connector with plug-in connection, NW 5	500693	
Pressure test valve ADV 2 with quick-action coupling and high-precision adjustment valve	500670	

Evaluation software and app EuroSoft mobile for BlueLine measuring instruments



- Benefits**
- + Android/iOS app "EuroSoft mobile" for smartphones and tablets
 - + PC evaluation software "EuroSoft mobile" for Windows operating systems*
 - + Free and suitable for many devices of the BlueLine series

Application For processing and visualisation of measurement results/logs of BlueLine measuring instruments. Ideal for long-term measurements and adjustments or for use of the optional data logger function for professional, comprehensive documentation of results for customers. The EuroSoft mobile software allows you to transmit measured values to smartphones, tablets or PCs. The data can then be further processed or sent via e-mail. The evaluation software is suitable for BlueLine measuring instruments and can be used on iOS, Android or Windows operating systems.



i



Example of a measuring log as a QR code

Evaluation software and app EuroSoft mobile for BlueLine measuring instruments

Description If the software is used as a PC software, the data is transmitted via a Bluetooth® Smart connection. A USB-Bluetooth® Smart dongle connects to the BlueLine measuring instrument and provides the functions "Live Display" and "Remote Device Control".

The app provides for various communication possibilities:

1. Via the QR code generator integrated into the BlueLine measuring instruments. The generator creates a QR code with the measurement data; this code can be scanned by smartphones and tablets and then be processed with the application. The measurement logs are shown as HTML files so that they can also be displayed in any browser or administration software or sent via e-mail, regardless of the operating system used.
2. Via the Bluetooth® interface of the measuring instruments EUROLYZER ST/STe, MULTILYZER NG or MAXILYZER NG/NG Plus. Pairing with mobile devices requires Android 4.0 or higher. Measurement results are directly processed and visualised in the Android app EuroSoft mobile.
3. Via the Bluetooth® Smart interface of the measuring instruments BLUELYZER ST, EUROLYZER STx, MULTILYZER STe, S4600 ST, TMD 9 or BlueAir-ST®. Measurement results are directly processed and visualised in the iOS or Android app EuroSoft mobile.

EuroSoft mobile	Use as app	Use as PC software
Compatibility measuring instruments	Bluetooth® interface: EUROLYZER ST/STe, MULTILYZER NG and MAXILYZER NG/NG Plus Bluetooth® Smart interface: BLUELYZER ST, EUROLYZER STx, MULTILYZER STe, S4600 ST, TMD 9, BlueAir-ST®	BLUELYZER ST, EUROLYZER STx, MULTILYZER STe, S4600 ST, TMD 9, BlueAir-ST®
Operating system	Devices with Bluetooth® interface: Android 4.0 or higher for Bluetooth connections Devices with Bluetooth® Smart interface: Android 4.3 or higher, iOS 6.0 (Bluetooth 4.0) or higher for Bluetooth® Smart connections Other Android versions: Transmission via QR code	Windows XP, Windows Vista, Windows 7, Windows 8, Windows 10
Functions	<ul style="list-style-type: none"> ▪ Live visualisation of measured value as graphic or bar chart ▪ Digital pressure gauge for pressure measurement ▪ Conversion of QR code into indication of measurement result ▪ Measurement logs can be directly transmitted (e-mail, social networks, etc.) ▪ Transmission of the measurement logs created, Windows version ▪ Etc. 	<ul style="list-style-type: none"> ▪ Creation of customer database ▪ Editor for creating measurement logs ▪ Arrangement and editing of fuels and measured variables ▪ Creation of user-specific fuels ▪ Live visualisation of measured values as graphic or bar chart* ▪ Remote device control of the measuring instrument via Remote Viewer* ▪ Etc.

* Possible with USB Bluetooth® Smart dongle.

Software download

▪ Google Play:



▪ PC evaluation software EuroSoft mobile:



▪ App Store:



DG: H, PG: 4	Part no.	Price €
USB Bluetooth® Smart dongle for the functions Live Display and Remote Device Control when PC evaluation software is used	500856	

Maintenance contracts and extended warranty for flue gas analysers



Get maximum reliability for your flue gas analyser

AFRISO offers comprehensive maintenance contracts with different terms for the flue gas analysers BLUELYZER, EUROLYZER, MULTILYZER and MAXILYZER as well as the dust measuring instrument. In addition to a complete function test and a device

calibration, annual service includes an inspection and, if necessary, replacement of the O₂ and CO measuring cells. The basic maintenance contract can be extended to cover additional measuring cells.

Maintenance contract selection

	Term		Replacement of cells							Part no.	Price € / year	
	5 years	7 years	Device calibration	Function test	O ₂ cell	CO cell	NO cell	NO ₂ cell	CO _{high} cell			SO ₂ cell
BLUELYZER ST	•		•	•	•	•					579041	
EUROLYZER STx		•	•	•	•	•					579047	
MULTILYZER STe		•	•	•	•	•					579044	
Dust measuring instrument STM 225	•		•	•							579046	
Additional cell NO							•				579000	
Additional cell NO ₂								•			579001	
Additional cell CO _{high}									•		579002	
Additional cell SO ₂										•	579003	

i

*To be able to benefit from the full scope of the maintenance contract, you must close the maintenance contract for the complete term (5 or 7 years) with annual maintenance intervals immediately after purchasing the flue gas analyser. Maintenance must be performed regularly at the specified intervals of max. 11 to 13 months.

Selection extended warranty

AFRISO warrants all flue gas analysers for a period of 12 months. An extended warranty covering damage to electronic components or system peripherals is available.

	For device series			Scope of warranty					Part no.	Price €
	BLUELYZER ST	EUROLYZER STx	MULTILYZER STe	Term 12 months	Display	Battery/power supply unit	Thermocouple	Connection sockets/nipples		
Extended warranty	•	•	•	•	•	•	•	•	579100	



AFRISO service and technical information

SERVICE

AFRISO support centres and service points	114
AFRISO service	116
Courses and training	117
AFRISO specialised company search	118
Downloads	119
AFRISO information material, brochures, flyers, DVDs	120
Information on EN 50379	121
VDI 3805 – TGA data interchange format	122

GENERAL INFORMATION

AFRISO at a glance	124
General Terms of Delivery	128
AFRISO production sites	134
Notes on the catalogue	135

Powerful sales.

AFRISO support centres

- ▲ AFRISO sales office/field expert portable measuring instruments
- ▲ AFRISO production site



We ensure that you get professional, personal service.

With a staff of more than 70 field and internal experts! Please visit www.afriso.de/contact for further information on your specific contact person.

Business hours:

Monday – Thursday: 7:00 a.m. – 4:50 p.m.

Friday: 7:00 a.m.– 3:00 p.m.

If you have questions:

Extensions +49 7135 102-

Consulting on site:

North/West -446

South/West -433

North/East -435

South/East -255

Technical consulting

-166

-450

Hotline sales

-134

(information on prices/delivery periods)

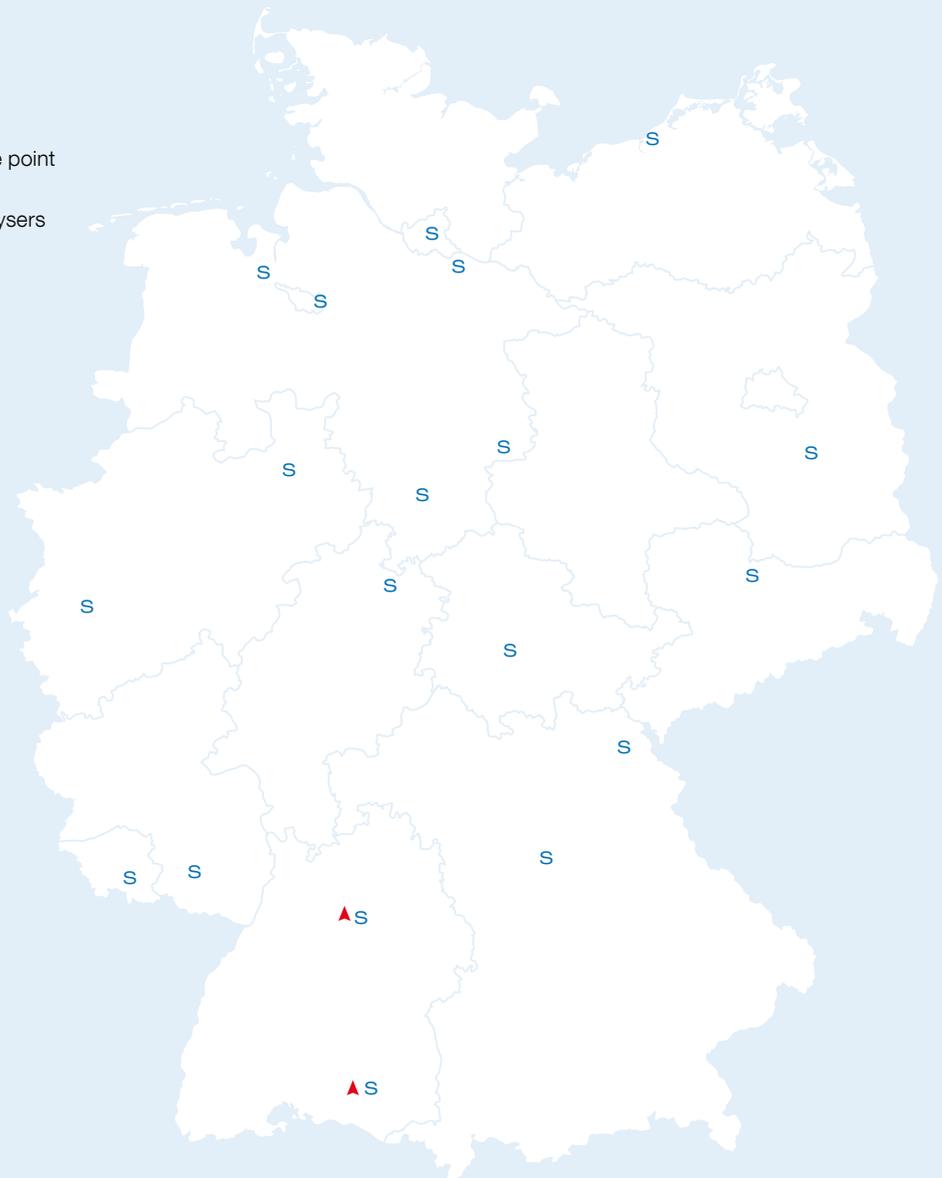
Service and repairs

-211

AFRISO service points – close by, guaranteed.

Service Germany

- ▲ AFRISO production site with service point
- Ⓢ AFRISO service point for measuring instruments and analysers



Our Service – Your Benefit

Flexible, cost-aware, on schedule, solution-orientated and fast – the AFRISO team always provides the decisive added value.



Information and presentation

Whether telephone support or on site: Our consultants speak your language – we provide you with personal and individual consulting worldwide. And if you have an in-house event for your customers, we will be glad to participate.

After sales service

Whether commissioning, professional maintenance, calibration or function checks – a network of service centres and our specialists in the plant support you in getting the maximum out of your AFRISO product. For safe processes, precise measurement results, compliance with legal requirements and a long service life.

Repair service

In the case of a malfunction, send us your instrument along with a short description of the problem. We will repair it within five workdays.

Rental service

You cannot afford to do without your instrument? No problem, our on-site service ensures that you remain on duty. We will have your instrument picked up and send you a rental instrument. For a low rental fee. Ask for availability of this service in your country.

8

i
Our service and repair department will be glad to answer your questions. Please get in touch with us.
Telephone: +49 7135 102-211

Courses and Training

Professional and practical. With our courses, workshops and seminars, you benefit from our many years of in-depth experience in the field of measuring and control technology. Our entire offering responds to current issues and standards as well as customer requirements. Of course, it is also possible to arrange for individual in-house courses and seminars to be provided at your site.



AFRISO training programme

Tank protection and leak protection lining

Two-day seminar on the installation of leak protection linings and leak detectors (theory and practice).

Hydraulic Balancing

One-day seminar on hydraulic balancing with the VarioQ valve program with measuring function.

Heating system check

One-day seminar on the inspection and evaluation of heating systems.

Gas check

One-day seminar on checking gas installations.

Testing of drinking water pipes

One-day seminar on testing drinking water installations and drainage lines. Legal foundations.

i

We will be glad to answer your questions concerning our seminars. Please get in touch with us.

E-mail: training@afribo.de

Telephone: +49-7135-102-222

AFRISO specialised company search

Find a specialised professional company fast



AFRISO has an excellent reputation with end users – numerous consumers visit our website every day. The feature "Specialised company search" on our website assists users in finding qualified companies specialised in AFRISO products. You are a company specialised in HVAC, electrical engineering or tank protection and like

to use AFRISO quality products for the professional equipment of tanks, heating systems, drinking water installations or for hydraulic balancing? Then register for our service – free of charge, no obligations

www.afriso.de/registration.

This is how the "Find a specialised company" feature works

1. Enter the post code/ZIP or the city, limit the range, if required, and start the search.
2. All registered specialised companies are shown on a map with the appropriate information, sorted by distance from your site.



Downloads

Visit www.afriso.com for comprehensive product information and details, technical specifications, terms and conditions, valuable downloads and the latest news.

Operating instructions

In addition to product descriptions, the operating instructions include detailed technical data, mounting, installation and safety information as well as information on approvals for all AFRISO products.



Forms

Checklists with indication of application conditions and planned use of AFRISO products allow us to quickly process your enquiries or returns.



Software

Due to continuous improvements and to changes in legislation and directives, we provide software updates for electronic measuring instruments on an ongoing basis. The updates and the appropriate instructions can be downloaded from our website for free.



Certificates

A number of manufacturer certificates and declarations as well as numerous specific approvals, certificates and compliance tests attest to the outstanding quality and performance of AFRISO products.



AFRISO information material – brochures, flyers and DVDs

Discover new opportunities and sales potential with AFRISO quality products. We offer a large variety of information materials and media for wholesalers, points of sale, associations, HVAC companies and tank protection companies. You can order these media from us free of charge – even large numbers of copies. All printed materials allow you to add your company stamp to the back page.

Flyers, brochures and product overviews

Flyers, brochures, and product overviews provide information on individual products or complete product ranges for various application areas.



Product literature for end consumers

Product literature for end users is a great medium for fairs, exhibition rooms, mail campaigns and other activities. They present the benefits and applications of AFRISO products for building technology and tank protection in private households in a concise, easy-to-understand way.



All information material can be downloaded from www.afriso.com. If you want to order printed material for free, simply specify the number of copies required in your e-mail to marketing@afriso.de.

Information on EN 50379 portable measuring instruments

As of March 01, 2007 EN 50379 for portable measuring instruments went into effect. This standard covers devices used to determine the gas concentration and other combustion parameters in the installation and maintenance of domestic and industrial heating systems with standard fuels. The standard defines the design, testing and operating requirements for portable devices which are used to determine specific flue gas parameters such as the concentration of individual gas components, the temperature and/or the pressure in combustion processes in order to ensure the compliance of the operating behaviour of combustion systems with national directives.

The standard is divided into three parts:

■ Part 1: General requirements and test procedures

EN 50379-1 specifies the general requirements concerning the design, testing and operating behaviour of devices used for short-term measurements to determine specific flue gas parameters such as the concentration of individual gas components, the temperature and/or the pressure in combustion processes in order to ensure the compliance of the operating behaviour of combustion systems using commercially available fuels in domestic and industrial applications with national directives.

■ Part 2: Requirements concerning the operating behaviour of devices used in statutory measurements and assessments

EN 50379-2 applies to devices which are used in statutory measurements or measurements specified by regulations. National legislation covering the operating behaviour of combustion systems exists in several European countries. Authorised inspectors use such devices to measure flue gas parameters and verify the compliance of combustion systems with national directives.

Since the results of such measurements have statutory consequences, there are stringent requirements concerning the accuracy of these devices. Therefore, EN 50379-2 specifies maximum values for measuring inaccuracy. Tests with real flue gases constitute an essential part in the proof of suitability for statutory measurements. The determination of the measuring inaccuracy must be demonstrated and confirmed with internationally approved methods for the entire measuring range.

■ Part 3: Requirements for devices in non-regulated areas in the maintenance of gas-fuelled heating facilities

EN 50379-3 applies to devices which are used in non-statutory applications. The requirements are less stringent because the devices are used in determining whether a gas-fuelled combustion system may require maintenance or in setting up a gas-fuelled combustion system during maintenance. The measuring inaccuracy does not need to be determined for such devices. These devices do not meet the technical measuring specifications as required in part 2. Therefore, devices certified according to EN 50379-3 are not suitable for measuring combustion systems. Therefore, devices certified according to EN 50379-3 are not suitable for measuring combustion systems.

All flue gas measuring instruments as well as BlueLine pressure and temperature measuring instruments meet the stringent requirements of EN 50379-2. The TÜV quality mark (OCTAGON) certifies EN 50379-2 compliance and may only be used if the production is audited by TÜV-SÜD at regular intervals. This line of measuring instruments with the TÜV-OCTAGON mark is backed by experience and competence. High quality pays off – both price/performance ratio and cost of ownership are convincing. High-quality measuring instruments also help you avoid conflicts and problems in terms of product liability. **All models of the BlueLine series meet the stringent requirements of EN 50379-2 and can continue to be used without limitations after March 01, 2007.**

VDI 3805 – TGA product data interchange format for design

What is VDI 3805?

The VDI directive VDI 3805 defines the interchange of product data between manufacturers, planners, builders and owners in the area of technical building equipment (TGA). It ensures a uniform data description of the entire technical building equipment. Files as per VDI 3805 are manufacturer- and software-independent and contain all relevant data such as performance and sizing data, characteristics, function descriptions, special properties, assignment of images, data sheets, suitable accessories, part numbers or classification according to the corresponding main groups (VDI sheets). Information on geometry such as connection and design data, materials, surfaces and colours is also available.

The open standard of the TGA product data interchange format allows planners and architects to optimise their planning and design processes. If the components are integrated into heating, ventilation and sanitary system planning, it can be easily checked whether they fit into the design and the product information is automatically integrated into specifications and tenders. Even after completion of the project and the building, the product data allow for efficient support in Facility Management tasks such as maintenance and repair.



With the VDI 3805 data record from AFRISO-GAMPPER all relevant technical building equipment product data for specifications and tenders is available.

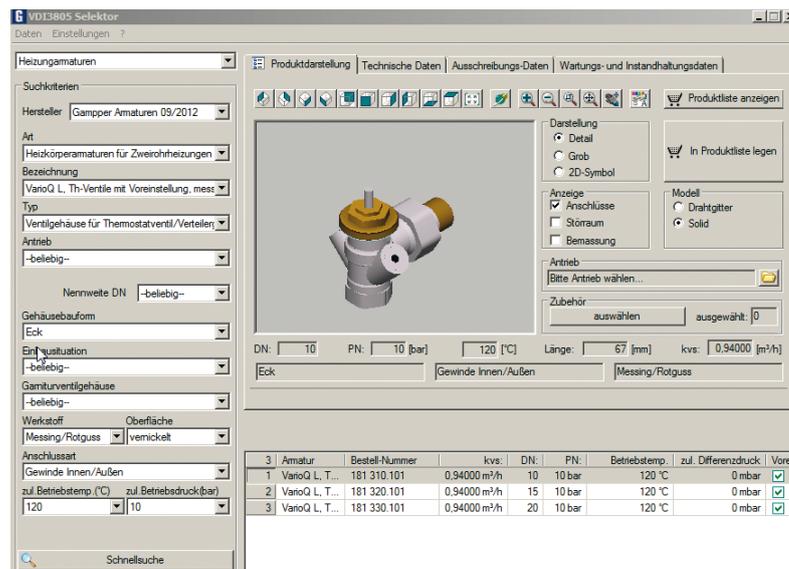
Advantages of VDI 3805

- Various CAD representation modes: coarse and detail view as well as symbolic view
- Easy and reliable collision check via defined spaces
- Detailed description of the connections for easy installation in distribution systems
- Representation of connection points, direction of flow, installation dimensions and collision dimensions
- Assignment of accessories at a glance
- Can be used for technical calculations, analyses and simulation (e.g. pipeline calculation, system evaluation)
- Low data volume
- Support of the main CAD formats basing on DXF as well as other formats such as IGES and STEP
- Can be used for calculation, business processes and Facility Management

Easy product selection: WebSelektor

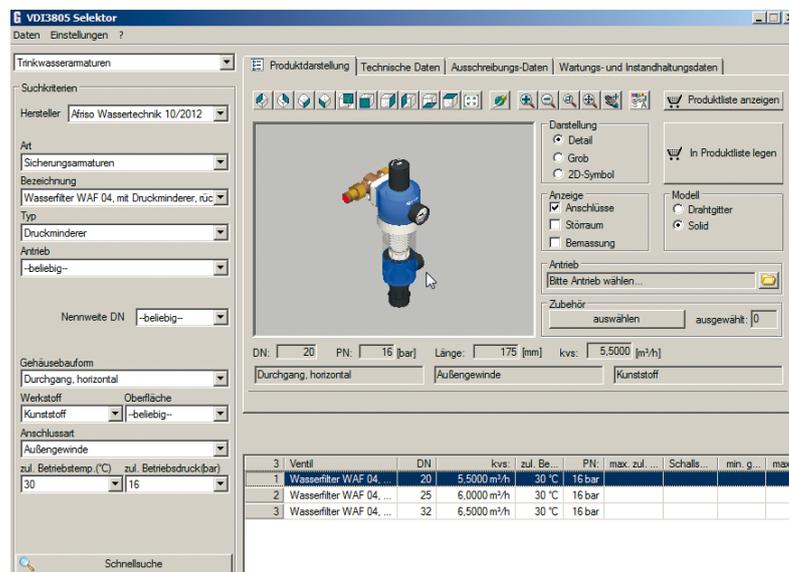
The current version of the VDI 3805 product data record of AFRISO and GAMPPER is available for download at www.afriso.de/vdi3805. In addition, the WebSelektor provides online access to the data and you can select the desired product using a range of selection criteria. The geometry data can be placed as 2D or 3D objects in detail and coarse representations or as a symbol, for example by means of drag&drop – independent of the CAD platform used.

In addition, the WebSelektor provides high transparency by offering an easy product search and making it possible to switch between the required information on the component such as technical, commercial or geometric data.



The screenshot shows the 'VDI3805 Selektor' interface with search criteria for heating valves. The search results table is as follows:

3	Amatur	Bestell-Nummer	kvs:	DN:	PN:	Betriebtemp.	zul. Differenzdruck	Vore
1	VanoQ L. T...	181 310.101	0.94000 m³/h	10	10 bar	120 °C	0 mbar	<input checked="" type="checkbox"/>
2	VanoQ L. T...	181 320.101	0.94000 m³/h	15	10 bar	120 °C	0 mbar	<input checked="" type="checkbox"/>
3	VanoQ L. T...	181 330.101	0.94000 m³/h	20	10 bar	120 °C	0 mbar	<input checked="" type="checkbox"/>



The screenshot shows the 'VDI3805 Selektor' interface with search criteria for water filters. The search results table is as follows:

3	Ventil	DN	kvs:	zul. Be...	PN:	max. zul. ...	Schalls...	min. g...	max.
1	Wasserfilter WAF 04...	20	5.5000 m³/h	30 °C	16 bar				
2	Wasserfilter WAF 04 ...	25	6.0000 m³/h	30 °C	16 bar				
3	Wasserfilter WAF 04 ...	32	6.5000 m³/h	30 °C	16 bar				

WebSelektor for easy product selection and representation of the TGA product data record at www.afriso.de/vdi3805 or www.vdi3805.org

AFRISO product programme.

Technology for environmental protection

AFRISO monitors, controls and protects the elements fire, water, earth and air – in the broadest sense. On the one hand, these elements symbolically stand for the relief and protection of the environment – and on the other, they illustrate our fields of activity:

- Flue gas control
- Energy savings
- Groundwater protection
- Conservation of resources

Product development revolves around our motto "Technology for Environmental Protection". We strive to improve the environment, to make processes which work with greater environmental compatibility and to avoid putting a strain on the environment. With a balanced portfolio of innovations, proven products, systems and services, we offer our customers efficient solutions which are of great benefit.



Tank. Heating. Water Technology.

With a comprehensive range of building technology products, AFRISO prides itself in "Making Heating Systems Safe". Irrespective of whether the heating system uses regenerative energy or fossil fuels. In addition to this extensive range, a large selection of alarm instruments for the fast detection of level, liquid spillage, leakage, gas or smoke is available.

- Mechanical/pneumatic level indicators
- Overfill prevention systems/overfill alarm systems
- Leak detectors/leak monitoring systems
- Inner tank linings
- Equipment for fuel oil storage tanks, oil carrying pipes, boiler rooms, boilers and heating systems
- Heating controllers
- Distribution manifolds for heating, cooling and geothermal systems
- Smart home systems for building automation
- Valves and control technology for radiators and hydraulic balancing
- Equipment for drinking water supply



Gas analysis and service instruments

The BlueLine series is the perfect solution for official measurements, adjustment, servicing, maintenance and repair work. You benefit from an optimally tuned range of measuring instruments which is continuously setting new standards – from basic devices all the way to portable all-in-one flue gas analysers. AFRISO offers gas analysers, gas sampling probes and turnkey analysis systems with data acquisition systems for continuous emission monitoring.

- Portable gas analysers
- Portable measuring instruments, analysers and testers
- Modular sensor module systems
- Gas alarm units
- Stationary gas analysers
- Emission measurement technology
- Measurement data acquisition systems



Pressure. Temperature. Level.

In addition to our comprehensive range of mechanical and electronic pressure, temperature and level instruments, we also offer suitable mounting and installation accessories as well as display, control and evaluation devices.

AFRISO measuring instruments cover the following ranges:
 Pressure: 0/2.5 mbar to 0/4,000 bar
 Temperature: -50 °C to +1,100 °C
 Level: 0/20 cm to 0/250 m

- Pressure gauges
- Accessories for pressure gauges
- Chemical seals
- Pressure transducers
- Bimetal thermometers and gas filled thermometers
- Thermostats
- Resistance thermometers
- Electronic level indicators
- Display, evaluation and control units
- Event reporting systems/communication systems



Special designs and system solutions

In addition to our comprehensive range of standardised, proven off-the-shelf products, we also offer customised special products made exactly to your requirements. We are constantly setting new standards with innovative concepts, e.g. using plastic fittings instead of metal ones or a combination of plastic and brass materials in complex assemblies. Our range does not only cover the delivery of individual sensors, but includes suitable components for power supply and evaluation of the measurement signals. In the case of system solutions, we do the entire engineering for you, all the way to the production of the finished system.

Adapted to your specific requirements

- Housing geometry
- Shape and colour
- Mechanical or electrical connections
- Pre-assembled, tested, ready-to-connect assemblies

Convincing solutions for a wide variety of applications.

We know your industry

AFRISO is at home wherever there is measuring, controlling or monitoring required. As a full-range manufacturer, we offer our customers a broad product portfolio from a single source. A wealth of experience from numerous applications as well as

our knowledge of the requirements in the individual markets make us a reliable partner in your industry. We know what is necessary as a result of our many years as a supplier in the OEM business and our intensive contact with standardisation commit-

Building technology



The subject of saving energy has been our focus for more than 45 years. From the start, we have supported the move towards geothermal and solar systems as well as the use of biogenous fuels by supplying professional components and assemblies. Our range for the secure storage of fuel oil and professional equipment for heating systems reduces operating costs, helps make optimum use of fuels, provides timely warnings if hazardous situations arise and constitutes an active contribution to

environmental protection. Innovative measuring instruments for flue gas analysis yield high-precision and reproducible results so that your customers can achieve their goals: the right amount of heat at the right time, low energy consumption and low emissions. And we always respond to sustainable new technologies, for example, by providing compelling sensors and systems for increasing security and convenience in smart homes.

8

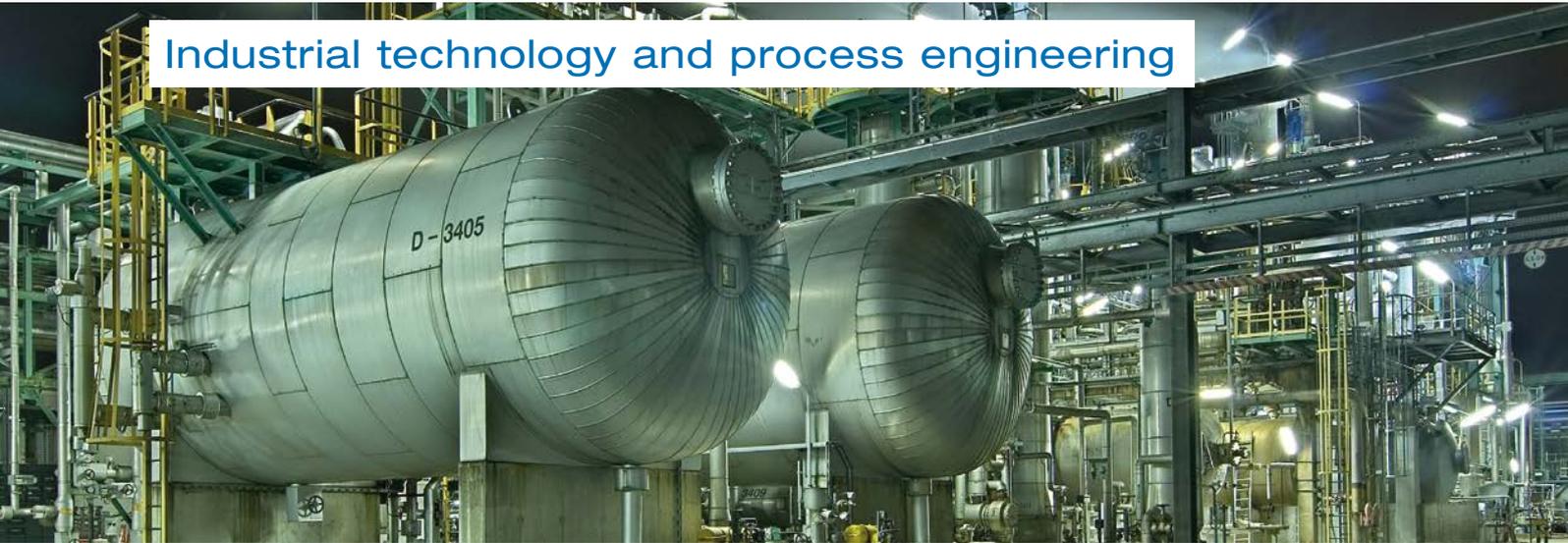
Target markets

- Manufacturer of heat generators
- Manufacturers of solar thermal systems
- System suppliers of panel heating systems
- Tank protection/revision
- Tank manufacturers
- Heating and plumbing system wholesalers
- Electrical wholesalers
- Engineering and planning consultancies
- Smart home and building automation
- Manufacturers of fittings
- Chimney sweeps
- Public institutions, municipalities

tees, associations and guilds. We tap our employees' know-how and expertise in the industry to make our customers' processes simpler, safer and more competitive. In process engineering, in

building technology or facilities – you benefit with a strong partner at your side.

Industrial technology and process engineering



Reliability, precision and a long service life are crucial when it comes to highly automated processes. Our robust measuring devices deliver perfect measurement results and reliably monitor and control simple to highly complex processes – even under the most adverse conditions. AFRISO solutions meet the

pertinent directives and standards. Certificates, for example for food-quality materials, explosion protection and resistance to media and temperatures attest to this.

AFRISO products meet the requirements

- Wide variety of process connections
- Large selection of materials
- Compact designs
- Hygienic and easy to clean
- Suitable for CIP and SIP
- FDA-listed materials
- Silicone-free versions
- Resistant to corrosive and abrasive media
- High overload safety
- Resistant to vibration and temperature

Target markets

- Machines and plants
- Tanks
- Food and beverages industry
- Chemical industry
- Pharmaceutical industry
- Cosmetics industry
- Biotechnology
- Refineries
- Offshore industry
- Mineral oil industry
- Raw materials industry
- Hydraulic and pneumatics (fluid engineering)
- Medical technology, safety engineering
- Energy production
- Technical trade

General Terms of Delivery

of AFRISO-EURO-INDEX GmbH · Lindenstraße 20 · 74363 Güglingen

§ 1 Validity

- (1) All our deliveries, services and offers are exclusively made on the basis of the General Terms of Delivery. These General Terms of Delivery are part of all contracts with our contract partners (hereinafter referred to as "customers") we conclude pertaining to the deliveries or services provided by us.
- (2) General terms and conditions of the customer shall only become part of the contract if we expressly consent to their validity in writing. This consent requirement shall apply in any and all cases, even if, for example, we carry out deliveries to the customer without expressly rejecting the customer's general terms and conditions even though we are aware of such terms and conditions.
- (3) Our General Terms of Delivery shall only apply if the customer is a business person (§ 14 BGB, German Civil Code), a legal person of public law or a public-law fund.
- (4) The General Terms of Delivery shall apply in particular to contracts covering the sale and/or delivery of movable goods ("goods"), regardless of whether we manufacture the goods ourselves or purchase them from suppliers (§§ 433, 651 BGB, German Civil Code). Unless otherwise agreed, the General Terms of Sale in the version valid at the time of the customer's order shall be deemed to be an outline agreement for future contracts of the same kind; we shall not be obliged to state their validity for each and every individual case.
- (5) Individual agreements with the customer (including supplementary agreements, amendments and modifications) which have been made in individual cases shall always take precedence over these General Terms of Delivery. The contents of such agreements shall be subject to a written contract and/or our written confirmation, subject to proof of the contrary.
- (6) Material declarations and notifications which are to be submitted to us by the customer after conclusion of contract (e.g. deadlines, notification of defects, declaration of withdrawal or reduction) must be made in writing to be effective.
- (7) Any reference to the validity of statutory provisions is only for the purpose of clarification. Even without such a clarification, therefore, the statutory provisions shall apply if and to the extent that they have not been modified or expressly excluded in these General Terms of Delivery.

§ 2 Offer and conclusion of contract

- (1) All our offers are free and non-binding, unless they are expressly marked as binding or contain a certain acceptance period. We shall have the right to accept orders within a period of fourteen days after receipt.
- (2) The legal relationship between us and the customer shall be governed solely by the written purchase agreement, including these General Terms of Delivery. The written purchase agreement contains all agreements between the parties with regard to the contract. Any communication by us not made in writing prior to the conclusion of this contract is legally non-binding; any agreements of the contract parties not made in writing shall be replaced by the written contract, unless it is expressly stated that they shall be binding.
- (3) Amendments and modifications to the agreements, including these General Terms of Delivery, must be made in writing in order to be effective. With the exception of managers or authorized signatories, our employees are not entitled to make any differing verbal agreements. Transmission via telecommunication systems, in particular via fax or via e-mail, shall be deemed to be a sufficient instrument in writing, provided that the copy of the signed declaration is transmitted.
- (4) Any information or representation whatsoever on our part with regard to the delivery or service (such as, but not limited to weights, dimensions, performance values, loads, tolerances and technical data) shall be deemed to be approximate, unless the usability for the purpose provided by the contract requires accurate conformity. Such information or representations do

not constitute guaranteed characteristics, but descriptions or markings of the delivery or service. Any standard deviations and deviations which are made according to statutory provisions or which represent technical improvements, as well as the replacement of components by equivalent parts, are permissible if they do not impair the usability for the purpose intended by the contract.

- (5) We reserve the right to property or copyright to all offers and cost estimates submitted by us as well as to all drawings, illustrations, calculations, brochures, catalogues, models, tools and other documents and equipment provided to the customer. The customer shall not be permitted to disclose these objects, as such or in content, to third parties, to make them known, to use them himself or through third parties or to reproduce them. At our request, he shall be obliged to completely return such objects to us and to destroy any copies produced if they are no longer required by him in the normal course of business or if negotiations do not lead to the conclusion of a contract. Storage of data provided electronically for the purpose of standard data backup shall be the only exception to this.

§ 3 Prices and payment

- (1) The prices apply to the scope of services and delivery specified in the order confirmations. Additional or special services will be charged separately. The prices are in EURO ex works plus packaging, the applicable value added tax, and, for export deliveries, customs duties as well as fees and other public charges.
- (2) If the agreed prices are based on our list prices and if the delivery is to be effected more than four months after conclusion of the contract, our list prices valid at the time of delivery shall apply (minus any percentage discount or fixed discount that may have been agreed).
- (3) Invoices shall be payable within 30 days from the invoice date without any deduction, unless otherwise agreed in writing. The date of unconditional credit on our business account shall be decisive for payment in due time. Payment by check shall be excluded, unless agreed separately, as the case may be. If the customer does not pay by the due date, an interest of 5 % per year shall be due on the amounts payable; we shall be entitled to claim higher interest and further damages.
- (4) Any set-off with counterclaims of the customer or retention of payments due to such claims shall only be permissible if and to the extent that such counterclaims are undisputed or asserted by a court.
- (5) We shall be entitled to deliver or provide outstanding deliveries or services after prepayment or provision of security if, after the conclusion of the contract, we become aware of circumstances which substantially reduce the creditworthiness of the customer and which jeopardise the payment of our outstanding claims arising from the contract against the customer (including claims from other individual contracts pursuant to the same outline agreement).

§ 4 Delivery and delivery period

- (1) Deliveries are made ex works.
- (2) Time limits and deadlines for deliveries and services mentioned by us are only approximate, unless a fixed deadline or a fixed date has been explicitly assured or agreed. If shipping has been agreed, delivery periods and delivery dates refer to the date of transfer to the forwarding agent, freight carrier or to any other third party in charge of shipping.
- (3) Without prejudice to our rights arising from default of the customer, we shall be entitled to demand from the customer an extension of delivery and performance periods or a postponement of delivery and performance dates for the period during which the customer does not meet his obligations pursuant to the contract.

- (4) We shall not be liable for impossibility of delivery or for delays in delivery, if such impossibility or delay is caused by force majeure or other events unforeseeable at the time of the conclusion of the contract which are beyond our control or for which we cannot be held responsible or which we have not caused (e.g. disruptions of operations of any kind, difficulties in procuring materials or energy, transport delays, strikes, lawful lockouts, lack of labour, energy or raw materials, difficulties in procuring necessary regulatory approvals, governmental measures, or incorrect or delayed supply by suppliers. Insofar as such events make the delivery or service substantially more difficult or impossible and the hindrance is not only of temporary duration, we are entitled to withdraw from the contract. In the case of hindrances of a temporary nature, the delivery or performance periods shall be extended or the delivery or performance dates shall be postponed by the period of the hindrance plus a reasonable start-up period. If, as a result of the delay, the customer cannot reasonably be expected to accept the delivery or service, the customer shall be entitled to withdraw from the contract, which is to be performed immediately by an instrument in writing.
- (5) We shall be entitled to deliver and provide partial deliveries and partial services only:
- if the partial delivery is reasonable for the customer and sufficient consideration is given to his legitimate interests,
 - if the delivery of the remaining ordered goods is assured and
 - if, as a result, the customer does not incur any substantial additional costs or additional efforts (unless we are willing to pay for such costs).
- (6) If we are in default with a delivery or service or if a delivery or service is impossible for any reason whatsoever, our liability for compensation shall be limited pursuant to provision § 8 of these general Terms of Delivery.

§ 5 Place of performance, shipping, packaging, passage of risk, acceptance

- (1) The place of performance for all obligations resulting from the contract shall be the registered office of our company in Güglingen, unless other agreements have been made. If the installation is part of the contract, the place of performance shall be the place at which the installation is to be performed.
- (2) The type of shipping and packaging are subject to our discretion. The cost of shipping and packaging shall be borne by the customer. If the customer requires drop shipping delivery, we shall charge a processing fee of EUR 10.00 for each delivery.
- (3) In cases of small orders with a net purchase value of less than EUR 100.00, we will charge a processing fee of EUR 15.00 in addition to shipping and packaging.
- (4) The passage of risk to the customer shall be the point in time of the transfer of the good to be delivered (the beginning of the loading process being decisive) to the forwarding agent, freight carrier or to any other third party in charge of shipping. This shall also apply in the case of partial deliveries or if we have undertaken other obligations (e.g. shipping or installation). If the shipment or the transfer is delayed for a reason caused by the customer, the transfer of risk shall be the day on which the good to be delivered is ready for shipment and we have notified the customer to this effect.
- (5) Storage costs incurred by us after transfer of risk shall be borne by the customer. If we store the goods to be delivered, the storage costs amount to 0.25% of the invoice amount of the delivered goods per completed week. We reserve the right to assert and prove further or lower storage costs.
- (6) We shall provide for transportation insurance of the consignment.
- (7) If acceptance has to take place, the purchase item shall be deemed accepted if:
- the delivery and, provided we also have to perform installation, the installation are completed,
 - we have communicated this to the customer with reference to the deemed acceptance in accordance with this provision § 5 (7) and have prompted the customer to accept the delivery,
 - 12 business days have passed since the delivery or installation, or the customer has begun to use the purchased item (e.g. a delivered plant has been put into operation) and, in

this case, six workdays have passed since delivery or installation, and

- within this period, the customer has refused acceptance for any reason other than for a defect of which the customer has notified us and which substantially impedes or makes impossible the use of the purchased item.

§ 6 Warranty, material defects, acceptance of the disposal obligation by the customer

- (1) The warranty period shall be one year from the date of delivery or, if acceptance is required, from the date of acceptance. This period shall not apply to claims for damages on the part of the customer resulting from injury to life, body or health or from wilful or grossly negligent breach of duty by us or our vicarious agents, which are subject to the limitation periods according to the statutory provisions.
- (2) The goods delivered must be carefully inspected immediately after delivery to the customer or to the third party designated by the customer. With regard to obvious defects or other defects which would have been recognizable in the case of an immediate, careful examination, they shall be deemed to be accepted by the customer if we do not receive written notification of defects within seven workdays after delivery. With regard to other defects, the delivery items shall be deemed to have been accepted by the customer if the notice of defect does not reach us within seven workdays after the date of detection of the defect; if the defect was already recognizable by the customer at an earlier point in time in normal use, this earlier point in time shall be decisive for the beginning of the complaint period. Upon request by us, a rejected delivery item must be returned to us free of freight charges. In the case of a justified complaint, we shall reimburse the costs of the least expensive type of shipping; this shall not apply if the costs increase because the delivery item is located at a place other than the place of the intended use.
- (3) In the case of material defects of the goods delivered, we shall first be obliged and entitled to rectify or replace the goods within a reasonable time. In case of failure, i.e. impossibility, unreasonableness, refusal or unreasonable delay of the improvement or replacement delivery, the customer shall be entitled to withdraw from the contract or to reasonably reduce the purchase price.
- (4) Insignificant or typical variations in colour, dimensions, weight and quality shall not be considered to be defects of the delivery items
- (5) If a defect is the result of fault on our part, the customer shall be entitled to claim damages under the conditions stipulated in provision § 8 hereto.
- (6) In the case of defects of components of other manufacturers, which we cannot remedy for license or actual reasons, we will, at our discretion, assert our warranty claims against the manufacturers and suppliers on behalf of the customer or assign them to the customer. In the case of such defects, there shall only be warranty claims against us subject to the other conditions and according to the provisions of these General Terms of Delivery and only if the aforementioned claims against the manufacturer and suppliers could not be enforced or if such enforcement is futile, for example, due to insolvency. During the duration of the legal dispute, the period of limitation of the customer's warranty claims against us shall be suspended.
- (7) The warranty shall be void if the customer modifies the delivery item without our consent or has it modified by a third party and such modification renders the rectification of the defect impossible or unreasonable. In any such case, the customer shall bear the additional costs arising from such modification for rectification of the defect.
- (8) If, in individual cases, a delivery of used items is agreed with the customer, such delivery shall be performed under exclusion of any warranty for material defects.
- (9) The customer shall be obliged to dispose of the delivered goods when they are no longer used at his own cost and in full compliance with all pertinent regulations. The customer shall indemnify us from the obligations pursuant to § 10, section 2 of the German Electronic Equipment Act (obligation of manufacturers to take back their products) and from any claims of third parties related to this.

The customer shall contractually oblige any other commercial third party to which the customer transfers the delivered goods to dispose of such goods according to the pertinent regulations when such goods are no longer used. Our claim to the above transfer of obligation/indemnification through the customer shall be extended by a period of limitation of two years after the final termination of the usage of the delivery item. The two-year period of suspension of the limitation shall not begin until we receive a written notice from the customer stating that he has ceased to use the device.

§ 7 Infringement of property laws

- (1) Pursuant to this provision § 7, we shall ensure that the delivery item is free from industrial property rights or third-party copyrights. Each contract partner shall immediately notify the other contract partner in writing if claims with regard to the infringement of such rights are asserted against him.
- (2) In the event that the delivery item infringes an industrial property right or copyright of a third party, we shall, at our discretion and at our expense, alter or replace the delivery item in such a way that no rights of third parties are infringed, but the delivery item continues to fulfil the contractually agreed functions; or we shall enter into a license agreement in order to obtain the right to use the delivery item for the customer. If we should not be able to succeed within a reasonable period, the customer shall be entitled to withdraw from the contract or to reasonably reduce the purchase price. Any claims for damages of the customer are subject to the restrictions of provision § 8 of these General Terms of Delivery.
- (3) In the case of infringements of laws by products of other manufacturers delivered by us, we shall, at our discretion, assert our claims against the manufacturers and suppliers on behalf of the customer or assign such claims to the customer. In these cases, there shall only be claims against us subject to the provisions of this provision § 7 and only if the aforementioned claims against the manufacturer and suppliers could not be enforced or if such enforcement is futile, for example, due to insolvency.
- (4) If an order is to be filled (designs, etc.) according to customer specifications, drafts or instructions, the customer shall be fully responsible for obtaining all rights of commercial exploitation of the property rights that may be contained in his specifications, drafts or instructions. If the execution of an order according to specifications, etc. of the customer violates third-party property rights or labelling obligation, the customer shall undertake to indemnify us from any resulting claims for compensation, compensation for expenses and / or reimbursement of third parties.

§ 8 Liability for damages in case of fault

- (1) Our liability for damages, irrespective of the legal grounds, in particular from impossibility, delay, defective or incorrect delivery, breach of contract, breach of obligations in the case of contractual negotiations and tort, shall be limited subject to the provisions of this provision § 8.
- (2) We shall not be liable in the case of simple negligence on the part of our organs, legal representatives, employees or other vicarious agents, to the extent that this is not a violation of contractual obligations. Essential with regard to the contract are the obligation to deliver and/or install the delivery item in good time, its freedom from deficiencies in law and its freedom from defects which impair its functionality or usability more than insignificantly, as well as advisory, protection and custodial obligations which allow the customer to use the delivery item as per contract, or which serve the protection of the health or life of the customer's personnel or the protection of his property against substantial damage.
- (3) To the extent that we are liable for damages pursuant to provision § 8 (2) hereto, such liability shall be limited to damages which we have foreseen at the time of conclusion of the contract as a possible consequence of an infringement of the contract or which we should have foreseen applying due diligence. Indirect damages and consequential damages which are the result of defects of the delivery item shall only be subject to damages to the extent that such damage is typically to be expected when the delivery item is used as intended.
- (4) In the case of liability for simple negligence, our obligation to

indemnify for damage to property and consequential financial loss shall be limited to the amount covered by our liability insurance and standard in our industry, even in the case of a breach of essential contractual obligations. Upon request, we will gladly provide the customer with a corresponding insurance confirmation stating the amount covered by the liability insurance carrier.

- (5) The above exclusions and limitations of liability shall apply to the same extent on behalf of our organs, legal representatives, employees and other vicarious agents.
- (6) If we provide technical information or consultancy services and such information or services are not a part of the scope of services agreed upon by contract and owed by us, this shall be free of charge and without any liability whatsoever.
- (7) The limitations of this provision § 8 shall not apply to our liability for intentional conduct, for guaranteed characteristics, for injury to life, body or health or pursuant to the German Product Liability Act (Produkthaftungsgesetz).

§ 9 Retention of title

- (1) We retain the title to the sold goods until we have received full payment of all our present and future receivables arising from the purchase contract and from an ongoing business relationship (secured claims).
- (2) Prior to full payment of the secured claims, the goods subject to retention of title shall neither be pledged to third parties nor transferred to third parties for security. The customer shall notify us in writing immediately if an application for the opening of insolvency proceedings is filed or if third parties attempt to seize the goods under retention of title (e.g. by means of distraint or attachment).
- (3) In the case of a breach of contract by the customer, in particular in the event of non-payment of the purchase price due, we shall be entitled to withdraw from the contract pursuant to the statutory provisions and to reclaim the goods as a result of retention of title and withdrawal. If the customer does not pay the purchase price due, we shall only be entitled to assert these rights if we have previously set the customer a reasonable deadline for payment without success, or if such a deadline is not required pursuant to the statutory provisions.
- (4) The customer shall be entitled to resell and/or process the goods under retention of title in the ordinary course of business, subject to revocation pursuant to (c) below. In this case, the following provisions shall apply in addition.
 - (a) The retention of title shall cover the full value of the products resulting from processing, mixing or combining our products; we shall be deemed the manufacturer. If, in the case of processing, mixing or combining with goods of third parties, their rights of ownership remain, we shall acquire co-ownership to the ratio of the invoice amounts of the processed, mixed or combined goods. The same provisions that apply to the goods delivered under retention of title shall apply to the resulting new product.
 - (b) The customer shall assign to us, as a security, the claims arising against third parties from the resale of the goods or of the product in whole or to the amount of our possible co-ownership pursuant to the preceding paragraph. We accept the assignment. The obligations of the customer pursuant to provision § 9 (2) hereto shall also apply in respect of the assigned claims.
 - (c) The customer shall remain entitled to collect the claim in addition to us. We undertake not to collect the claim as long as the customer meets his payment obligations, as long as the customer performs and as long as we do not assert the retention of title by exercising a right pursuant to provision § 9 (3) hereto. If any of the above conditions are not met, we shall be entitled to request the customer to notify us of the assigned claims and the corresponding debtors and provide us with any information and the appropriate documents necessary for us to collect such claims, and to notify the debtors (third parties) of such assignment. In this case, we shall also be entitled to revoke the customer's authorization to resell and process the goods subject to retention of title.
 - (d) If the liquidable value of the securities exceeds our claims by more than 10 %, we shall, at the customer's request, release securities at our discretion.

§ 10 Final clause

- (1) If the customer is a merchant, a legal person under public law or a public-law fund or if the customer has no general court of jurisdiction in the Federal Republic of Germany, the place of jurisdiction for all disputes arising from the business relationship between us and the customer shall be our registered office in Güglingen or the registered office of the customer. However, in such cases, Güglingen shall be the exclusive place of jurisdiction for actions against us. This provision does not affect statutory provisions regarding exclusive places of jurisdiction.
- (2) The relations between us and our customers are subject exclusively to the laws of the Federal Republic of Germany. The United Nations Convention on Contracts for the International Sale of Goods (CISG) of April 11, 1980 shall not apply.
- (3) If and to the extent that the contract or these General Terms of Delivery contain gaps in the provisions, those statutory provisions shall be deemed to have been agreed upon which the contract parties would have agreed upon in view of the economic objectives of the contract and the purpose of these General Terms of Delivery if they had been aware of the gaps.

Note

The customer shall be deemed to have been notified that we store data relating to the contractual relationship pursuant to § 28 Bundesdatenschutzgesetz (German Federal Data Protection Act) for the purpose of processing such data and that we retain the right to disclose such data to third parties (e.g. insurance companies) if and to the extent such disclosure is required to perform the contract.

November 2016

AFRISO production sites in Germany

Headquarters
AFRISO-EURO-INDEX GmbH
Lindenstr. 20
74363 Güglingen
Baden-Württemberg



A staff of more than 550 are at work for you in our four German production sites.



Plant Amorbach
AFRISO-EURO-INDEX GmbH
Friedhofstr. 3
63916 Amorbach
Odenwald/Bavaria



Plant Amorbach – Production of linings
AFRISO-EURO-INDEX GmbH
Von-Stein-Straße 17
63916 Amorbach
Odenwald/Bavaria



Plant Illmensee
Systronik GmbH
Gewerbestr. 57
88636 Illmensee
Lake Constance/Baden-Württemberg



Alsenz plant
GAMPPER GmbH
Niedermoscheler Str. 2
67821 Alsenz
Rhineland-Palatinate

Minimum order quantities / packing units

Many products can be manufactured in small quantities – in many cases, you may even order a single piece.

However, for some items there are minimum ordering quantities or packing units. The price list sections provide the appropriate information.



The product package contains the specified number of products or can be delivered in the specified order quantity



An additional package contains the specified number of products

Small order handling fee / minimum order value

For very small orders with net values below € 100 a handling fee of € 15 will be charged. No other minimum order conditions apply.

Return of goods

Goods can only be returned after prior approval by us and only up to 3 months after delivery. Please note that only standard stock items can be returned; products not available from stock and devices with ATEX approval cannot be returned. For returned stock items we charge 30 % of the price for testing and handling or at least € 40. Shipping costs for returns are to be borne by the customer.

Prices / terms of delivery

Please refer to your local AFRISO representation or get in touch with the AFRISO headquarters for detailed price information and conditions. We will charge a fee of € 10,- per shipment for drop shipping. Our Terms of Delivery apply (see page 128 or www.afriso.com or appendix). This catalogue supersedes all previous versions, including previous prices. All prices subject to change; the catalogue may contain printing errors.

Technical modifications

As we are constantly improving our products, we reserve the right to technical modifications without prior notice.

Copyright

Copyright 2016 by AFRISO-EURO-INDEX GmbH.

No part of the catalogue may be reproduced, copied, distributed, translated or in any other way processed without prior written approval of AFRISO-EURO-INDEX GmbH.

FLUE GAS ANALYSIS PRESSURE TEMPERATURE HUMIDITY/MOISTURE TIGHTNESS TEST

Technology for environmental protection
Measuring. Controlling. Monitoring.



AFRISO

AFRISO-EURO-INDEX GmbH
Lindenstraße 20
74363 Güglingen
Germany

Phone +49 7135 102-0
Fax +49 7135 102-147

info@afribo.com
www.afribo.com