VP INSTRUMENTS

VPFLOWSCOPE IN-LINE

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The VPFlowScope In-line measures flow, pressure and temperature simultaneously. It is the perfect solution for compressed air and technical gas flow measurement. You can choose between the 16 bar and 35 bar version, which is designed for high pressure applications.
The VPFlowScope In-line is also the perfect solution for technical gases, such as nitrogen oxygen, carbon dioxide, argon and mixed gases.

Thanks to the patented Thermabridge™ technology, the VPFlowScope In-line can perform bi-directional flow measurements, which is essential for correct cost allocation in large networks.

Because of the modular design, you can choose from various options: the basic model comes without display, the most advanced model has a built-in display with integrated two million point data logger.

Benefits

> Three-in-one sensor design: flow, pressure and temperature
> Built-in totalizer
> Standard RS485, 4 ... 20 mA and pulse output
> Integrated bi-directional option
> Reversible display text

Applications

> Sub-metering of compressed air
> Technical gas flow monitoring (N_2, O_2, He, Ar, $C0_2$, mixed gases)
> Leakage management
> Energy monitoring
> Cost allocation
> Condition monitoring of pneumatic equipment
> Technical gas sub-metering
> 16 bar | 250 psi and 35 bar | 500 psi solutions possible

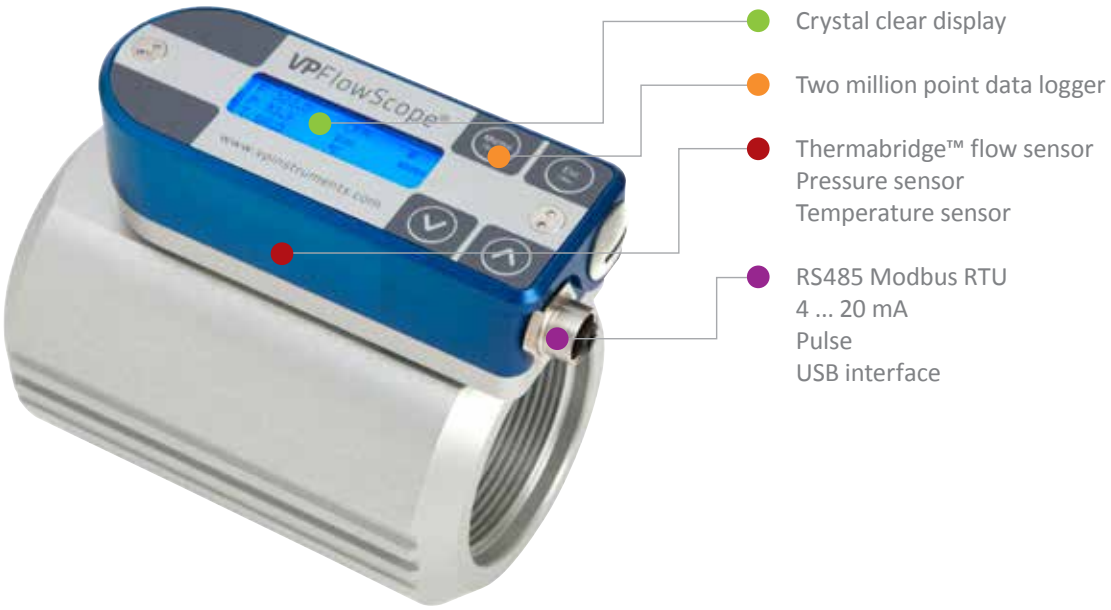
"With the VPFlowScope In-line, we were able to check the actual consumption of air knives and nozzles. In this case, the difference between our old open blow pipes and engineered venturi nozzles was tested with a VPFlowScope In-line. We could identify 7.5 K Euro (8 K USD) per annum cost savings. The ROI on the venturi nozzles was a couple of months."

Display options

The VPFlowScope In-line comes in three sizes; 0.5 inch (VPS.R080.M050), 1 inch (VPS.R250.M100) and 2 inch (VPS.R01K.M200). In these three sizes, you can choose three display options.

DISPLAY	MODEL	RS485	4 … 20 MA/ PULSE	3 LINE DISPLAY	2M POINT DATA LOGGER	APPLICATIONS
No display	D0	x	x			BMS, Remote monitoring, OEM. Order D8 model for VPFlowTerminal
Display	D10	x	x	x		BMS, Point of use measurement
Display with data logger	D11	x	x	x	x	Auditing, machine testing, portable use

The display provides real time information that can be recorded with the optional data logger. The display text is reversible and shows all information on three lines, which are fully configurable. You can choose from SI and IM display units. The data logger offers two million data points, which makes recording as easy as taking pictures. This is enough storage to measure all three parameters once per second for more than a week.



Tubing kits

Tubing kits are offered to integrate VPFlowScope In-line sensors easier and more accurate.
The tubing kits for the 0.5 inch and 1 inch have the respected length of 20x diameter before and 5x diameter after the flow sensors. For the 2 inch, due to weight, we used 15x diameter before and 5x diameter after the flow sensors. We offer tubing kits in BSP and NPT thread styles.

Specifications

FLOW SENSOR	
Measuring principle	Thermabridge™ Thermal Mass flow sensor
Flow range 0.5 inch	0.23 ... 80 m^3_n/hr | 0.13 ... 50 SCFM
Flow range 1 inch	0.91 ... 250 m^3_n/hr | 0.54 ... 150 SCFM
Flow range 2 inch	3.55 ... 1000 m^3_n/hr | 2.15 ... 600 SCFM
Accuracy	0.5% FSS with calibration report under calibration conditions with air
Reference conditions	0 °C, 1013.25 mbar | 32 °F, 14.695 psi
Gases	Compressed air, nitrogen, oxygen* and inert, non-condensing gases, 95% non-condensing gases
Gas temperature range	0 … 60 °C | 32 ... 140 °F

PRESSURE SENSOR	
Pressure sensor range	0 … 16 bar | 0 ... 250 psi gauge (35 bar | 500 psi on request)
Accuracy	± 1.5% FSS (0 ... 60 °C) ± 1.5% FSS (32 ... 140 °F)

TEMPERATURE SENSOR	
Temperature sensor range	0 … 60 °C | 32 ... 140 °F
Accuracy	> 10 m_n/sec: +/- 1 °C | 1.8 °F < 10 m_n/sec: + 5 °C | 9 °F due to self-heating of the flow sensor

DATA OUTPUTS	
Analog	4 … 20 mA or pulse, selectable via installation software
Serial IO	RS485 (Modbus RTU)
USB	Mini USB interface for configuration (display version only)

DISPLAY/DATA LOGGER	
Technology	Liquid Crystal (LCD)
Back light	Blue, with auto power save
Data logger (option)	2 million points memory

DIMENSIONS & WEIGHT		
0.5 inch	135 mm x 50 mm x 85 mm | 5.31” x 1.97” x 3.35”	0.7 Kg | 1.54 lbs
1 inch	135 mm x 55 mm x 91 mm | 5.31” x 1.97” x 3.58”	0.7 Kg | 1.54 lbs
2 inch	155 mm x 90 mm x 125 mm | 6.10” x 3.54” x 4.92”	1.6 Kg | 3.58 lbs

MECHANICAL & ENVIRONMENTAL	
Ingress Protection (IP) grade	IP65 when mated to connector, at room temperature; direct rain and sunlight should be avoided. Extreme temperature fluctuations may affect the IP grade over time.
Ambient temperature range	0 … 60 °C | 32 … 140 °F
Wetted materials**	Body: Anodized aluminum Sensor: Silicon, epoxy, glass Sealing: FTM 60, Polyurethane

ELECTRICAL	
Connection type	M12, 5-pin connector, female and optional USB mini connector
Power supply	12 … 24 VDC +/- 10 % Class 2 (UL)
Power consumption	2.4 Watt (no flow) 4.8 Watt (full flow) +/- 10% 100 mA (no flow) 200 mA (full flow) +/- 10% @24VDC
UL/ CUL	14 AZ, Industrial Control Equipment
CE	EN 61326-1(2006) Class A, EN61000-6-1 (2007)

** Decreasing for oxygen use double-bag product sealing available on request*
*** Other sensor body materials available on request*

Software

VPStudio software

Correct flow measurements start with entering the correct inner pipe diameter into your flow meter. You program this easily via the dispay keypad or via the VPStudio software.
For non-display models, the diameter can only be set via the software. VPStudio can be installed on your PC and communicates via the JB5 interface kit with the VPFlowScope via your PC's USB port.

Features of VPStudio:

> Setting your pipe diameter
> View real time measurements
> Viewing and retrieving your (air audit) data log sessions in a structured manner in the Projects module
> Setting your logging intervals
> Setting your Modbus and networking parameters
> Spanning the analogue output to 4 ... 20 mA or Pulse

Download from www.vpinstruments.com.

VPVision

VPVision is the complete real time energy monitoring solution for all utilities within your company. Get a grip on your usage and see the patterns on your supply and demand side. Take factual and well-founded decisions on your costs and investments. Reveal the consumption of all utilities, including compressed air, technical gases, steam, vacuum, natural gas, electricity, waste water, heating fuels etc. VPVision enables you to view data on any platform; from PC to smartphone. It will help your organization raise the energy awareness among your staff. It will be your guiding hand to target energy savings for individuals, teams or at company-wide level.

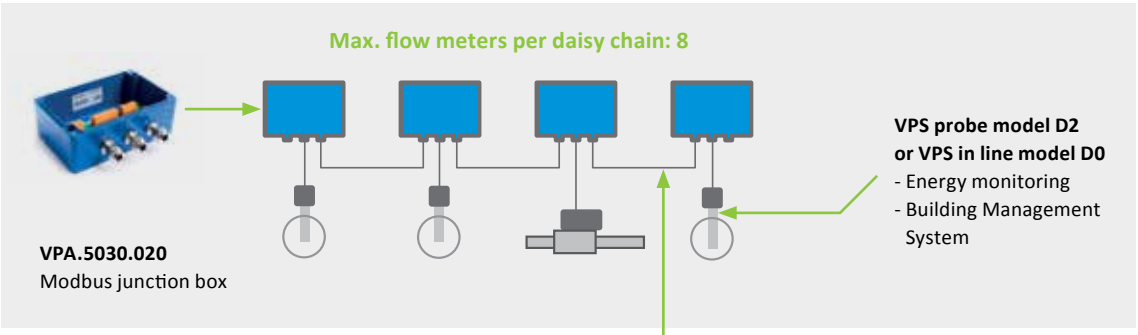
"With the VPFlowScope In-lines we can set the right dose of oxygen in our fish farms for faster growth rates and better quality of our fish."

Energy monitoring applications

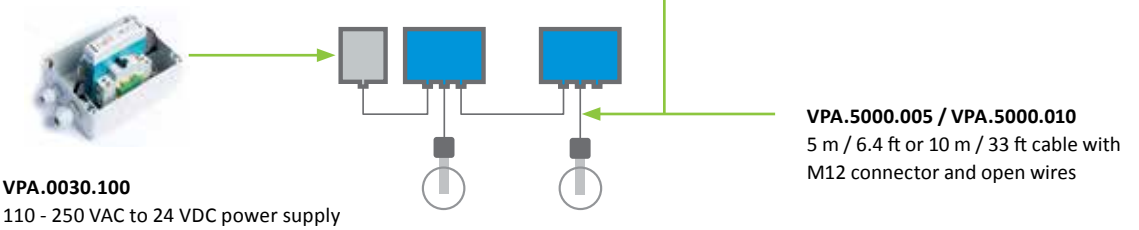
Once you are working with an energy monitoring application, such as VPVision for example, the VPFlowScope can be read out through Modbus RTU. When you look at the image below, you will notice that you can connect up to eight VPFlowscope flow meters to one daisy chain. Following, you will need a junction box for each flow meter in order to connect it properly to the Modbus network.

However, if you would like to connect your flow meter to an existing Modbus network or 4 … 20 / pulse based data acquisition system, you can use the power supply module to supply DC power to the flow meter. The power supply module can supply power to two flow meters at the same time. You will find screw terminals in the power supply module for both RS485 (Modbus RTU) and the 4 … 20 mA / pulse output at your convenience. If you require more installation examples, please refer to the user manual.

Modbus network with multiple flow meters (DC power supplied from VPVision M)



Power supply module VPA.0030.100



"Thanks to the VPFlowScope In-line we found nearly 80,000 USD Argon leaks in our system. This was really an eye opener for us. We now implemented a new maintenance program based on permanent monitoring of our Argon consumption."

Accessories

Power supply module

The VPInstruments power supply module has been developed for the permanent installation of maximum two VPFlowScopes. However, the power supply module can be used to power up any device at 24 VDC up to 1 ampere. The field enclosure of the power supply module is rated IP65, which means it is well protected from dust and splashing water. The module can be wall mounted.

Specifications

Mechanical & Environmental

Construction: IP65 ABS enclosure

Temperature: -20 ~ 40°C | -4 ~ 104°F

Weight: 0.9 kg | 1.98 lbs

Outer dimensions: 160 x 120 x 140 mm | 6.30” x 4.72” x 5.51”

Electrical

Supply input (mains): 110 - 250 VAC, 50 - 60Hz

Supply output: 24 VDC 24 Watt

Part number

VPA.0030.100: power supply module in IP65 enclosure

Specifications

Aluminum IP65 enclosure

3 high quality cable glands included

Built-in PCB with termination resistor and bias resistors

LED indicator for power

Constructions

Aluminum enclosure, painted

Dimensions

125 x 80 x 57 mm | 4.92 x 3.15 x 2.24 inch

Part number

VPA.5030.020: modbus junction box (IP65)

Modbus junction box

VPInstruments offers a convenient junction box for quick and easy connection between VPFlowScope sensor modules and your Modbus RS485 network. This junction box contains a special PCB, with screw terminals for the Modbus trunk cable and the derivation cable.
The built-in LED indicates when the sensor has sufficient power. This feature is very handy to check voltage drops over longer distances.

easy insight into energy flows™

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