VP INSTRUMENTS

VPFLOWSCOPE PROBE

The flow meter for all your compressed air and gas measurements

VPFlowScope Probe

The VPFlowScope® is the measurement tool for dry compressed air and other technical gases like nitrogen, carbon dioxide and argon. The VPFlowScope Probe measures thermal mass flow, pressure, temperature and total flow simultaneously.

The VPFlowScope Probe can be used in various pipe diameters, which makes it the perfect solution for measuring of both the supply side and demand side of compressed air systems. The flow meter shows you where, when and how much air is used in order to allocate cost and subsequently to save money and energy.

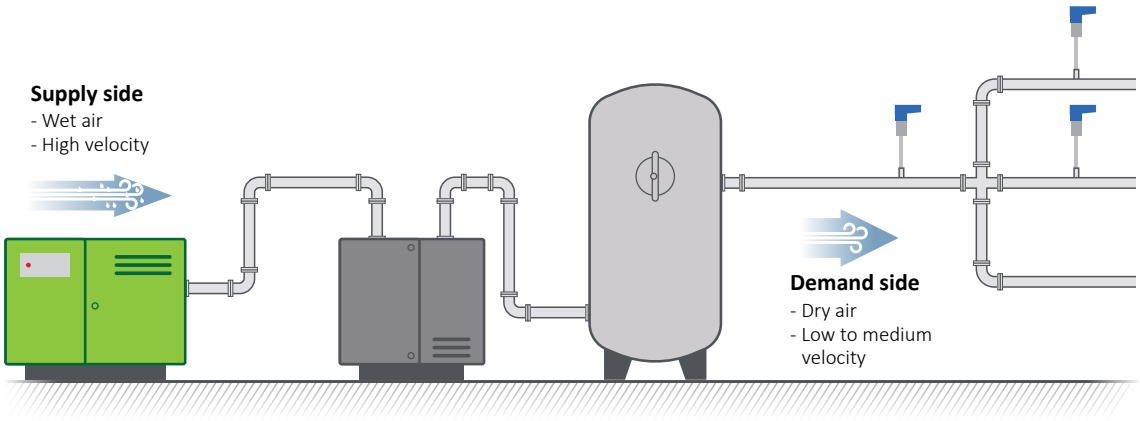
The bright blue LCD display provides real-time information and with the built-in data logger, you can record for certain periods of time. Combine this with our VPStudio software on your PC and you can use this information to process data, print reports and analyze where and how exactly you can save.

Highlights

- 4-in-1 sensor: flow, pressure, temperature and total flow
- Bi-directional flow measurement (optional)
- Patented Thermabridge™ technology for dry, clean gas measurements
- Standard RS485, 4..20mA and pulse output
- 3-line LCD display (optional) with real-time information and configuration keys.
- Built-in data logger with 2 million points (optional)

Applications

- Demand side compressed air monitoring
- Air audits
- Submetering of compressed air
- Ring networks (bi-directional)
- Industrial gas monitoring (air, nitrogen, carbon dioxide, argon and other dry, non-corrosive industrial gases)
- Cost allocation
- Leak detection
- 16 bar (250 psi) and 35 bar (500 psi) versions available for compressed air



Measure dry and clean gas only for correct measurements and a long lifetime.

Power of combined measurement

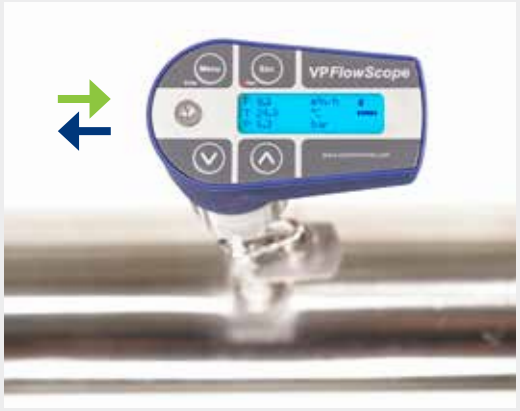
Get the complete picture by measuring flow, pressure and temperature simultaneously. Examples are: pressure drop caused by excessive flow, flow & temperature measurement combination downstream a refrigerant dryer, investigation if a machine can use less air at a lower pressure.

Bi-directional flow measurement

Bi-directional flow occurs frequently in compressed air systems, examples are in ring networks, at receivers in case of multiple compressed rooms, overseen branches or a leaking non-return valve. Discover the actual consumption and avoid mis-readings with VPFlowScope bi-directional flow measurement option.

Proprietary safety cable

We value your safety while you install your flow meter under pressurized conditions. The safety cable prevents unintended launching of the flow meter. As an extra benefit, the flow meter remains better in its position over time.



VPFlowScope Probe measurement range

VPS.R150.Pxxx flow range table

SCHEDULE 40 STANDARD SEAMLESS CARBON STEEL PIPE								SCHEDULE 10 STANDARD SEAMLESS CARBON STEEL PIPE					
Size (inch)	DN	ID (inch)	ID (mm)	Min flow (scfm)	Max flow (scfm)	Min flow (m^3_n/hr)	Max flow (m^3_n/hr)	ID (inch)	ID (mm)	Min flow (scfm)	Max flow (scfm)	Min flow (m^3_n/hr)	Max flow (m^3_n/hr)
2	50	2.1	52.5	2.3	688	3.9	1169	2.2	54.8	2.5	749	4.2	1273
3	80	3.1	77.9	5.1	1516	9	2576	3.3	82.8	5.7	1712	10	2908
4	100	4.0	102.3	8.7	2610	15	4435	4.3	108.2	9.7	2923	17	4966
6	150	6.1	154.1	20	5924	34	10065	6.4	161.5	22	6508	37	11057
8	200	8.0	202.7	34	10259	58	17429	8.3	211.6	37	11173	63	18982
10	250	10.2	259.1	56	16756	95	28468	10.4	264.7	58	17487	99	29709
12	300	11.9	303.2	77	22953	130	38995	12.4	314.7	82	24724	140	42004
16	400	15.0	381.0	121	36237	205	61565	15.6	396.8	131	39315	223	66794
20	500	18.8	477.8	190	56996	323	96832	19.6	496.9	205	61643	349	104729

The ranges only apply to compressed air and nitrogen. Contact us for other gases. The field accuracy of an insertion probe is typically +/- 5% due to installation conditions. Insertion probes may not be used for official compressor testing.

Display module

The VPFlowScope Probe is available in several versions: without display (with connector cap) (D2), with display module (D10), and with display module and integrated data logger (D11).
View options in this overview table:

PRODUCT CODE	FLOW	PRESSURE	TEMPERATURE	TOTALIZER	4 ... 20 MA AND PULSE	RS485 / MODBUS RTU	DISPLAY	2 MILLION POINT DATA LOGGER	APPLICATION
VPS.RXXX.PXXX.D0	•	•	•	•	•	•			Spare part
VPS.RXXX.PXXX.D2	•	•	•	•	•	•			BMS/ permanent monitoring
VPS.RXXX.PXXX.D10	•	•	•	•	•	•	•		Local display
VPS.RXXX.PXXX.D11	•	•	•	•	•	•	•	•	Local display, Auditing
VPS.RXXX.PXXX.KIT	•	•	•	•	•	•	•	•	Auditing

The display provides real-time information that can be recorded with the optional data logger. The display is reversible and shows all information on three lines, which are fully configurable. You can choose from SI and Imperial display units. The data logger offers 2 million data points, which makes recording as easy as taking pictures. This is enough storage to measure flow, pressure and temperature once per second for more than a week.

Software

VPStudio software

Correct flow measurements start with entering the correct inner pipe diameter into your flow meter. You program this easily via the display 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.

Start kits

Begin measuring energy savings immediately with a VPFlowScope start kit. The start kit features all the accessories needed to start measuring immediately. We offer several start kits, pending on your needs:

	VPFLOWSCOPE START KIT VPS.R150.400.BOX	VPFLOWSCOPE START KIT IN EXPLORER CASE VPS.R150.P400.KIT	VPFLOWSCOPE WITH VPFLOWTERMINAL VPS.R150.P400.VPT.KIT
VPFlowScope Probe sensor	•	•	•
Three row LCD display with built-in datalogger	•	•	
VPFlowTerminal* with: - 4 extra analogue inputs, - Three row LCD display with built-in datalogger. - Pre-wired 10m cable with connector cap			•
VPFlowScope JB5 interface KIT for configuration.	•	•	
Compression fitting with integrated proprietary safety cable	•	•	•
Rugged explorer case with pre-cut foam		•	
Calibration report	•	•	•
VPStudio software	•	•	•

* For the VPFlowTerminal, the power cord to be ordered separately for US/EU adapter selection.
* VPStudio software, free available at www.vpinstruments.com
* Order your VPFlowTerminal with flow meter always together. The standard connector cap has an M12 - 5 pin connector, whereas the VPFlowTerminal requires a connector cap with an M12 - 8 pin connector.

Specifications: VPFlowScope Probe

FLOW SENSOR	
Measuring principle	Thermabridge™ Thermal Mass flow sensor
Flow range	0.5 … 150 m_n/sec | 1.7 … 490 sfps Bi-directional measurement (option)
Accuracy	2% of reading under calibration conditions. Recommended pipe diameter: 40 mm (1.5”) and up.
Reference conditions	0 °C, 1013.25 mbar 32 °F, 14.65 psi - DIN 1343
Gases	Compressed air, nitrogen and inert, non-condensing gases, 95% non-condensing gases
Gas temperature range	0 … 60 °C | 0 … 140 °F

PRESSURE SENSOR	
Pressure sensor range, standard	0 ... 16 bar | 0 … 250 psi gage
Accuracy	+/- 1.5% FSS (0 … 60 °C) | (32 … 140 °F) Temperature compensated

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 | 1.8 °F

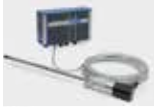
DATA OUTPUTS	
Digital	RS485, MODBUS RTU protocol
Analog	4 … 20 mA single analog / pulse output, selectable via VPStudio software

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

MECHANICAL & ENVIRONMENTAL	
Probe lengths	400 mm | 15” (300 mm or 600 mm on request)
Process connection	Compression fitting, 0.5” NPT thread
Pressure rating	PN16 (PN35 on request)
Ingress Protection (IP) grade	IP52 | NEMA 12 when mated to display module, avoid upside down installation IP63 | NEMA 4 when mated to connector cap, avoid upside down installation
Ambient temperature range	0 … 60 °C | 32 … 140 °F. Avoid direct sunlight or radiant heat
Wetted materials	Anodized aluminum, stainless steel 316, glass and epoxy
Corrosion resistance	Highly corrosive or acid environments should be avoided

ELECTRICAL	
Connection type	M12, 5-pin connector, female
Power supply	12 ... 24 VDC +/- 10 % Class 2 (UL)
Power consumption	3.6 Watt (no flow) 4.8 Watt (full flow) +/- 10% 150 mA (no flow) 200 mA (full flow) +/- 10% @24VDC
UL/ CUL	14 AZ, Industrial Control Equipment
CE	EN 61325-1 (2006), Class AEN 61000-6-1 (2007)

Order codes and accessories

START KITS AND MODELS		
	VPS.R150.P400.KIT VPS.R150.P400.BOX	VPFlowScope Probe start kits in explorer case VPFlowScope Probe start kit
	VPS.R150.P400.VPT.KIT	VPFlowScope start kit with VPFlowTerminal
	VPS.R150.P400.D0	VPFlowScope Probe sensor module (spare part)
	VPS.R150.P400.D2	VPFlowScope Probe with connector cap
	VPS.R150.P400.D10	VPFlowScope Probe with display, no datalogger
	VPS.R150.P400.D11	VPFlowScope Probe with display and datalogger

Our models have standard probe lengths of 400mm / 15.4”. Other probe lengths of 300mm and 600mm are available. Contact us for your quotation.
Calibration report and compression fitting with safety cable are included in all models.

OPTIONS		
	VPA.5000.911	Bi-directional flow option for VPFlowScope Probe
35bar	VPA.0001.092	Upgrade pressure to 35 bar | 500 psi for VPFlowScope Probe
	VPA.0001.921	Helium gas calibration for insertion flow meters. Includes calibration report.
	VPA.0001.951*	Special gas calibration for insertion probe flow meters. Includes calibration report with industrial gas, other than Helium; Argon, Carbon Dioxide, Nitrogen.

* Quantity discount possible for multiple flow meter in same order.

"VPInstruments tools give us easy insight into ways to correct the derivatives, found both in terms of production and use of compressed air."

ACCESSORIES		
	VPS.D110.000	VPFlowScope display, with datalogger
	VPS.D100.000	VPFlowScope display, no datalogger
	VPA.5001.900	VPFlowScope connector cap with 5 pin M12
	VPA.5000.005	Cable 5m/16.4ft. with 5 pin M12 on one side. For permanent installation.
	VPA.5000.010	Cable 10m/32.8ft. with 5 pin M12 on one side. For permanent installation.
	VPA.5001.205	VPFlowScope JB5 interface KIT for programming your flow meter via VPStudio. Interface box JB5 + 5m/16,4 ft cable (M12 connector) + 12V power supply + RS485 to USB cable.
	VPA.0000.200	Power supply adapter with 5 pin connector. Useful for air audits.

JB5 interface kit

The interface kit, which is included in the VPFlowScope start kit, can also be ordered as a separate item. The JB5 interface kit is needed to connect your flow meter to the PC with VPStudio. In the interface kit, you will find a splitter box with pre-mounted M12 cable, a DC power supply and an RS485 to USB converter.

Specifications

Mechanical & Environmental

Temperature: -20 ~ 50°C | -4 ~ 122°F

Weight: 0.9 kg | 1.98 lbs

Electrical

Supply input (mains): 100 - 240 VAC

Output: 12 - 24 VDC

Cable: 5 meter | 16.4 foot cable with M12

5-pin connector

RS485 output: via RS485 to USB converter

Part number

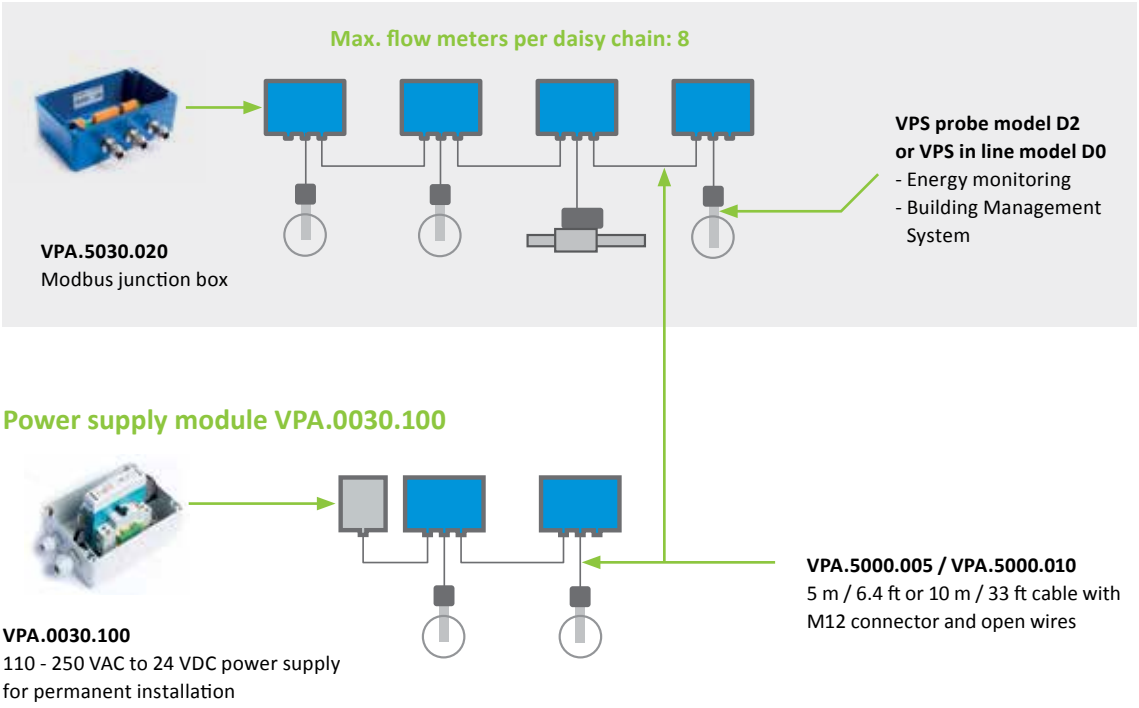
VPA.5001.205: VPFlowScope JB5 interface kit

Ease of connection

The VPFlowScope features a RS458 (Modbus RTU) interface, which is especially useful in energy monitoring applications, like VPVision. You can connect up to eight VPFlowScope flow meters in one daisy chain. It is recommended to use a junction box for each flow meter to ease proper connection to the Modbus network. The junction box has biasing, termination resistors and provides feedback by LED on the power supply.

However, if you would like to connect your flow meter to an existing Modbus network or 4..20mA / 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 and the 4 … 20 mA / pulse output for 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)



VPVision and energy monitoring applications

VPVision

VPVision is the complete real time energy monitoring solution for all utilities within your company. Get real-time data 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.

VPFlowScope family

Other VPFlowScope products:

VPFlowScope M
The VPFlowScope M is the next step in gas measurement. Unlike traditional flow meters, the VPFlowScope M consists of a Transmitter and the patented VPSensorCartridge® which reduces recalibration to a simple exchange.

VPFlowScope DP
The patented VPFlowScope DP enables you to take measurements in the discharge pipe of a compressor under 100% saturated conditions.

VPFlowScope In-line
The VPFlowScope In-line is the ideal flow meter for point of use consumption measurement. It is perfect for smaller diameters where it produces all the data you need to optimize your compressed air consumption.

easy insight into energy flows™

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VP INSTRUMENTS

Order today!

Please contact your local distributor for the various options and possibilities or contact us at www.vpinstruments.com