

VPFLOWSCOPE M

Your next step in gas flow measurement





The Internet of things / Industry 4.0 is rapidly transforming our world. Production becomes smart, intelligent and autonomous. Production lines will make their own decisions and human intervention will only be needed when things go wrong. With the VPFlowScope M, you invest in an industry 4.0 ready platform, as it has a built-in Ethernet interface.

VPFLOWSCOPE M

- > Three-in-one flow meter
- > For compressed air and technical gases
- > Patented VPSensorCartridge®: no more recalibration required
- > Optional direction measurement
- > Ethernet interface: Industry 4.0/IOT ready
- > Ultra compact size and low weight

The next step in flow measurement

The VPFlowScope M is a three-in-one insertion flow meter for compressed air and technical gases. It can be installed under pressure and measures flow, pressure and temperature simultaneously. With the introduction of the VPFlowScope M, recalibration becomes history.

Unlike traditional flow meters, the VPFlowScope M does not require traditional recalibration, where you have to ship the unit back. Instead, the VPFlowScope M consists of a transmitter and the patented VPSensorCartridge® which reduces recalibration to a simple exchange.

Applications:

- > Compressed air audits
- > Nitrogen and technical gas flow measurement
- > Cost allocation
- > Leak detection
- > Pipe network optimization
- > Permanent monitoring



Industry 4.0 ready

With its standard internal Ethernet interface and optional Wi-Fi interface, the VPFlowScope M will connect directly to any network and will form seamlessly one of the cornerstones of any real-time energy management platform. But it is also compatible with the traditional world, thanks to the standard 4 ... 20mA signals and RS485 interface.

Features:

- > Ethernet (Modbus/ TCP)
- > RS485 (Modbus RTU)
- > 4 ... 20 mA linearized, alarm or pulse output
- > USB interface for configuration and downloading of data log files
- > Optional TFT color display
- > Optional data logger with more than 6 months @ 1 second interval + cyclic recording
- > Optional Wi-Fi interface (Web server for configuration, Modbus / TCP)



One transmitter. Many possibilities!

Thanks to the versatile IO, the VPFlowScope M transmitter can be connected to both the traditional 4 ... 20 mA, RS485 Modbus RTU, and modern Ethernet based systems. The transmitter is available in four versions.

TRANSMITTER MODEL	ETHERNET	RS485	4 ... 20 ALARM PULSE	COLOR DISPLAY	DATA LOGGER	WIFI	APPLICATION
VPM.T001.D000	•	•	•				VPVision, BMS, remote monitoring
VPM.T001.D010	•	•	•	•			Remote monitoring and local read-out
VPM.T001.D011	•	•	•	•	•		Audits
VPM.T001.D111	•	•	•	•	•	•	Audits, Wireless monitoring, quick meter check

No more recalibration

With the patented VPSensorCartridge® traditional recalibration is something of the past. From now on, you simply exchange the VPSensorCartridge® and continue your measurements. No more waiting, no more downtime.

Your benefits:

- > Near zero down-time
- > Less customs/on-site paperwork
- > Less transport costs
- > Consistent, reliable measurements

VSENSORCARTRIDGE® MODEL	DESCRIPTION	APPLICATIONS
VPM.R150.P350.PN10	Thermabridge™ thermal sensor: flow, pressure, temperature and calibration report.	Leakage management, demand and supply side flow measurements and general purpose flow measurements.
VPM.B150.P351.PN10	Thermabridge™ thermal mass sensor: bi-directional flow, pressure, temperature and calibration report.	Audits, internal billing and cost allocation, ring networks, multi plant compressor installations and shared compressor facilities.

VPM.R150.P35X flow range table

The VPFlowScope M is extremely flexible to use. The following table shows you the minimum and maximum flow for various pipe diameters between 2 and 16 inch. Please note that flow ranges apply only to compressed air and nitrogen. The ranges may vary when used with other technical gases. Contact us for more details.

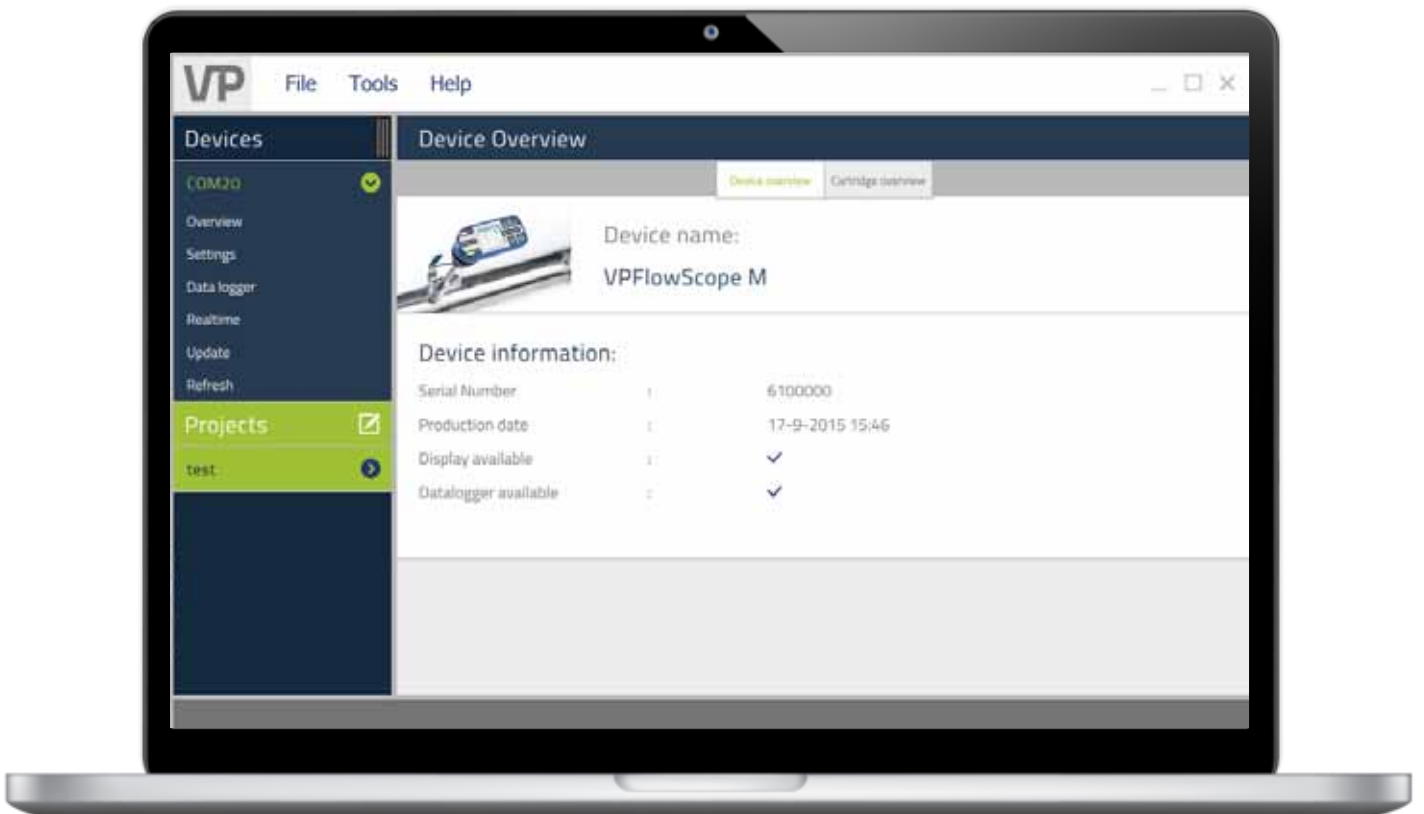
SCHEDULE 40 STANDARD SEAMLESS CARBON STEEL PIPE								SCHEDULE 10 STANDARD SEAMLESS CARBON STEEL PIPE					
Size (inch)	DN	ID (inch)	ID (mm)	Min flow (scfm)	Max flow (scfm)	Min flow (m³./hr)	Max flow (m³./hr)	ID (inch)	ID (mm)	Min flow (scfm)	Max flow (scfm)	Min flow (m³./hr)	Max flow (m³./hr)
2	50	2.1	52.5	2	688	4	1,169	2.2	54.8	2.5	749	4.2	1,273
3	80	3.1	77.9	5	1,516	9	2,576	3.3	82.8	5.7	1,712	10	2,908
4	100	4.0	102.3	9	2,610	15	4,435	4.3	108.2	9.7	2,923	17	4,966
6	150	6.1	154.1	20	5,924	34	10,065	6.4	161.5	22	6,508	37	11,057
8	200	8.0	202.7	34	10,259	58	17,429	8.3	211.6	37	11,173	63	18,982
10	250	10.2	259.1	56	16,756	95	28,468	10.4	264.7	58	17,487	99	29,709
12	300	11.9	303.2	77	22,953	130	38,995	12.4	314.7	82	24,724	140	42,004
16	400	15.0	381.0	121	36,237	205	61,565	15.6	396.8	131	39,315	223	66,794

Measure more in less time

VPStudio 2.0 takes flow measurement to the next level. Install and configure your flow meter in less time, thanks to the intuitive interface and the advanced data processing. Simply connect your flow meter and get the job done. You can use VPStudio 2.0 for configuration, read-out (real-time) and processing of data log sessions.

Features and benefits

- > Fully intuitive interface
- > Auto device detection
- > For VPFlowScope M®
- > Project module
- > CSV and XLSX data export

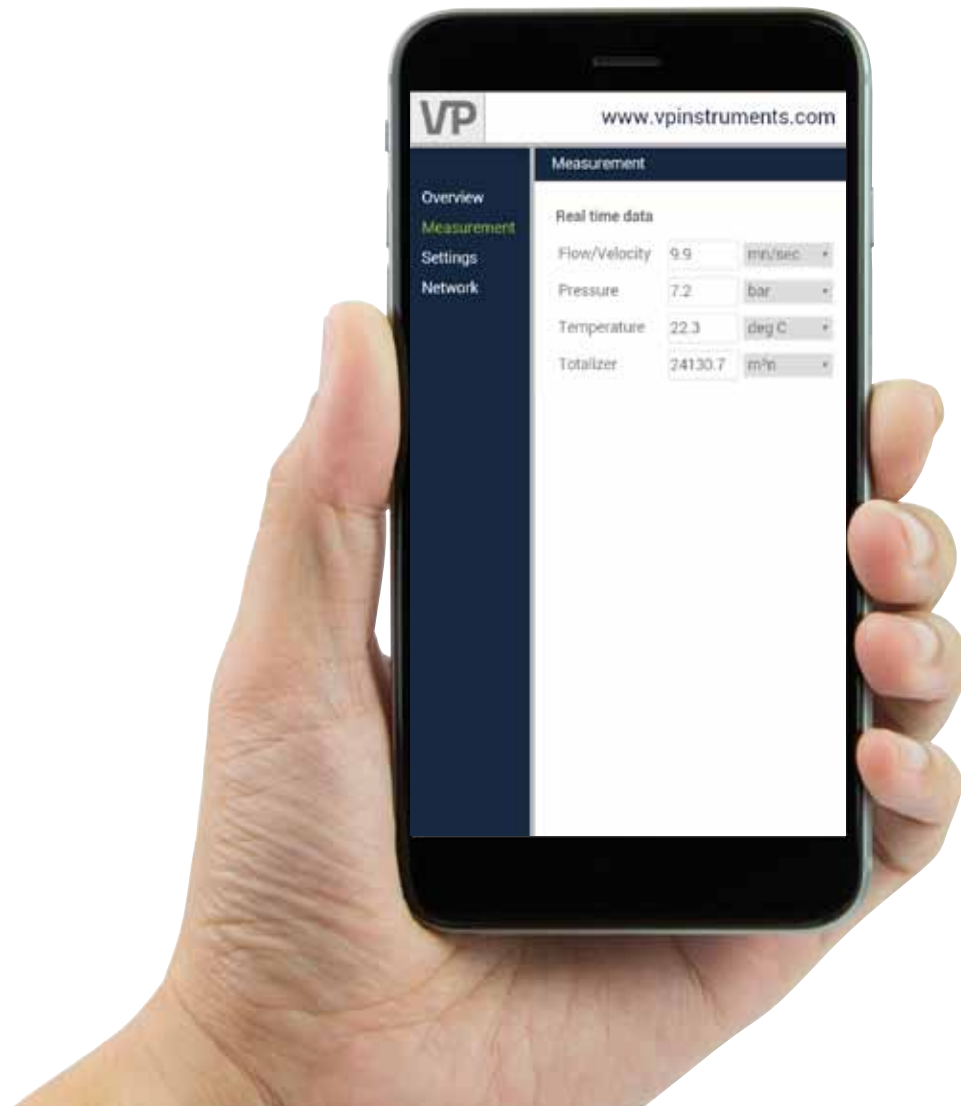


Built in webserver

When the VPFlowScope M is connected to your Ethernet or wireless network, you can use your tablet or smartphone to access the built-in webserver. The VPFlowScope M can set up its own network (and act as an access point) or it can act as a network client within an existing network. Features of the webserver are:

Features and benefits

- > Real time data view
- > Diameter configuration
- > Modbus TCP configuration
- > Wi-Fi configuration
- > Analog, pulse and alarm configuration



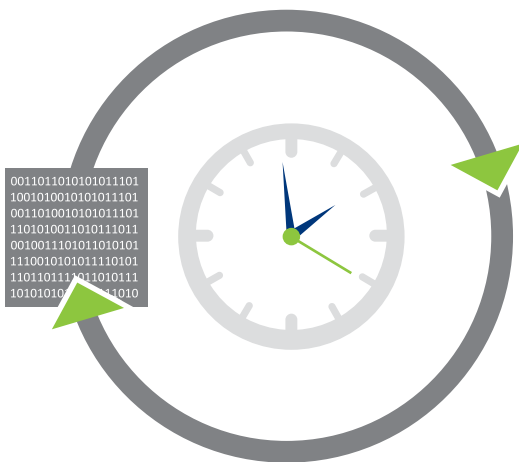
Limitless data logging

The optional data logger is the biggest and most flexible integrated data logger you will find on the market today. It can store multiple log sessions, in total over 6 months of flow, pressure, temperature and totalizer data at a resolution of 1 x per second. But that's not all. The new cyclic logging mode makes your data logger a limitless "black box". It will run forever. Just enable cyclic logging mode and you are done!

Features and benefits

- > More than 6 months @ 1x per second memory capacity
- > Optimized data structure enables fast downloading
- > Multi-session logging
- > Cyclic mode for permanent logging of data
- > Project based data filing in VPStudio 2.0

Cyclic logging mode



Multi session mode

The diagram illustrates multi-session mode. It shows a stack of data tables for different dates, with a grey arrow pointing from the top table to the bottom table. The tables are as follows:

24-03-2016					
Time	Flow	Pres	Temp		
09:33				18-05-2016	
09:34	Time	Flow	Pres	Temp	
09:35	09:33			21-06-2016	
09:36	09:34	Time	Flow	Pres	Temp
09:37	09:35	09:33			20-08-2016
09:36	09:34	Time	Flow	Pres	Temp
09:37	09:35	09:33	90.1	8.4	20.3
	09:36	09:34	93.1	8.4	20.1
	09:37	09:35	90.1	8.4	20.2
		09:36	92.1	8.4	20.3
		09:37	94.1	8.4	20.1

Specifications – Transmitter

VPM.T001.D000

VPM.T001.D010

VPM.T001.D011

VPM.T001.D111

SENSOR INTERFACE

VP Sensor Cartridge® Proprietary interface, rotational 360 degrees

DISPLAY

Display type (D010 and D011) 1,8" TFT color with auto power save

LED status (All models) LED indicators on all models for power, fault and communication

DATA LOGGER (D011 ONLY)

Memory 6 months @ 1 x per second logging interval for all parameters

Logging mode Cyclic and traditional start/stop

OUTPUTS

RS485 Modbus RTU

Analog / digital 4 ... 20 mA output or pulse or alarm. Output selectable via VPStudio 2.0

USB Mini USB, behind sealed cap (for configuration)

Ethernet (optional Wi-Fi) Modbus / TCP and built-in webserver for configuration

Wi-Fi interface Wi-Fi radio 2.4GHz 802.11 b/g/n channel 3 (max output power + 15dBm)

MECHANICAL & ENVIRONMENTAL

Dimensions 50 x 108 x 36 mm | 1.97 x 4.25 x 1.42 inch

Weight 220 grams | 7.76 ounces

Material Aluminum, anodized body with polycarbonate cover

O-ring seals NBR

Protection grade IP65 | NEMA 4 when mated to VP Sensor Cartridge®

ELECTRICAL

Power supply 12 VDC(1) ... 24 VDC +10% CLASS 2 (UL)

Power / RS485 / 4 ... 20 mA M12, 5 pin

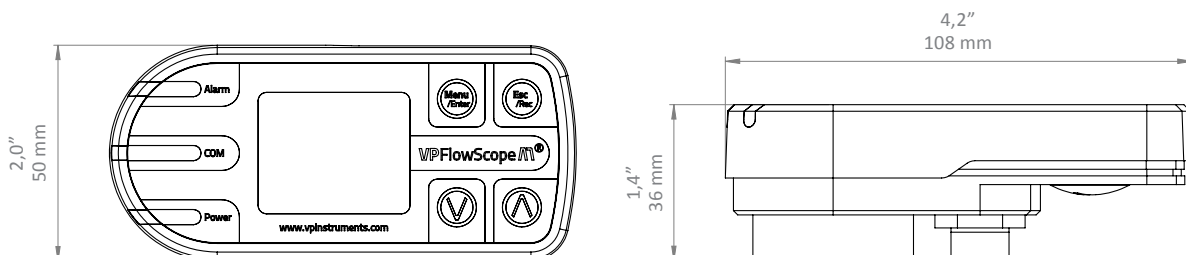
Ethernet M12, 4 pin d-coded

Power consumption 1 Watt (no flow) 3.5 Watt (full flow) +/- 10%
Varies per VP Sensor Cartridge® type and transmitter type

CE EN 60950-1, EN 61326-1, EN 61000-3-2, EN 61000-3-3, EN 61326-1

UL UL 508

(1) 12 Volt should be available at the input terminal under all flow conditions and all environmental conditions. Cable resistance and power supply impedance, which are temperature dependent, will cause permanent and transient voltage drops. These voltage drops have to be taken into account when designing and implementing the electrical installation. The VPFlowScope M continuously monitors available input voltage and will automatically turn into power save mode when the supply voltage drops below 11 Volt. For startup, a minimum voltage of 11.9 volt is required. For maximum power reliability under all circumstances, we recommend to use 24 VDC.



Specifications – VPSensorCartridge®

VPM.R150.350.PN10 VPM.R150.351.PN10

FLOW SENSOR

Measuring principle	Thermabridge™ Thermal Mass Flow sensor
Flow range	0 (0.5) ... 150 mn/sec 0 ... 500 sfps
Bi-directional flow	Model VPM.R150.351.PN10 only
Accuracy	2% of reading under calibration conditions; Please refer to the user manual for details. Recommended pipe diameter: 25 mm (1") and up.
Reference conditions	0 °C, 1013.25 mbar 32 °F, 14.65 psi
Gases	Compressed air, Nitrogen and inert, non condensing gases
Gas temperature range	0 ... +60 °C 0 ... +140 °F

PRESSURE SENSOR

Pressure sensor range	0 ... 10 bar 0 ... 145 psi gage
Accuracy	+/- 1% FSS (total error band) Temperature compensated

TEMPERATURE SENSOR

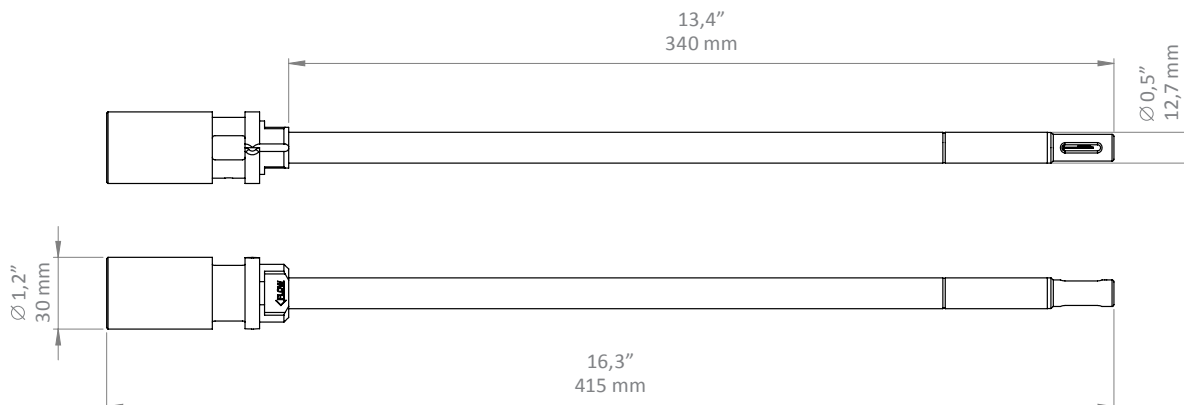
Temperature sensor range	0 ... +60 °C 32 ... +140 °F
Accuracy	> 10 m/sec: +/- 1 °C 1.8 °F < 10 m/sec: + 5 °C 9 °F

MECHANICAL & ENVIRONMENTAL

Probe lengths	340 mm 13.4"
Weight	200 grams 7.05 ounces
Process connection	Compression fitting, 1/2" NPT, Tapered
Pressure rating	PN10
Protection grade	IP65 NEMA 4 when mated to transmitter
Ambient temperature range	0 ... +60 °C 32 ... 140 °F. Avoid direct sunlight or radiant heat
Wetted materials	Anodized Aluminum, Stainless steel 316, Glass, Epoxy
Corrosion resistance	Highly corrosive or acid environments should be avoided

ELECTRICAL

Connection type	VPSensorCartridge® proprietary
Power consumption	See transmitter specifications for combined power consumption
CE	See transmitter
UL	See transmitter



Accessories

Complete your VPFlowScope M with the following accessories and spare parts.

PRODUCT	PRODUCT	PRODUCT
VPA.0000.200	Power supply adapter 12V	90 ... 240 VAC to 12 Volt DC, with 5 pin M12 connector
VPA.5003.010	Mini USB cable	For use with VPStudio software
VPA.5000.005	Cable 5m/16.4ft. with 5 pin M12 on one side	Shielded cable, unstripped wires at the other side
VPA.5000.010	Cable 10m/32.8ft. with 5 pin M12 on one side	Shielded cable, unstripped wires at the other side
VPA.5030.020	Modbus junction box (IP65)	For connecting multiple sensors in a Modbus RS485 network
VPA.5004.0005	Ethernet cable 5m/16.4ft.	With 4 pin M12 on one side and RJ45 connector on other side
VPA.5004.0001	Compression fitting for VPFlowScope M	Compression fitting with integrated safety cable for 340 mm VPSensorCartridge®
VPA.0001.001	Set of 5 Teflon ferrules for compression fitting	Spare part for the compression fitting
VPA.5004.1001	VPSensorCartridge® locking ring	Spare part for the VPFlowScope M transmitter
SFT.5003.500	VPStudio 2.0 software, free edition	For configuration and downloading data log sessions
VPA.5014.003	Explorer® Case for VPFlowScope M	Transport case for the VPFlowScope M
VPM.T001.D011.KIT	VPFlowScope M Auditor Start Kit	Items included: <ul style="list-style-type: none"> • Transmitter with Ethernet (Modbus/TCP), RS485 (Modbus RTU), 4 ... 20 mA pulse alarm output + display + data logger (6 months @ 1 second interval) • VPSensorCartridge®, 0 ... 150 mn/sec, 0 ... 10 bar, 0 ... 60 °C • Mini USB cable • Installation kit: compression fitting for VPFlowScope M + integrated safety cable (separate box) • VPStudio software • Ethernet cable 5m/16.4ft., with 4 pin M12 on one side and RJ45 connector on other side • Explorer® transport case





easy insight into energy flows™

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