

# VPFLOWSCOPE M

Your next step in gas flow measurement



# VPFLOWSCOPE M

- ✓ Three in one flow meter
- ✓ For compressed air and technical gases
- ✓ Patented VPSensorCartridge®: no more recalibration required
- ✓ Operational direct on 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, the VPFlowScope M will connect directly to your network and forms seamlessly one of the cornerstones of any real-time energy management platform. But it is also compatible to 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 logs
- › Optional TFT color display
- › Optional Data logger with more than 6 months @ 1 second interval + cyclic recording



## 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 three versions.

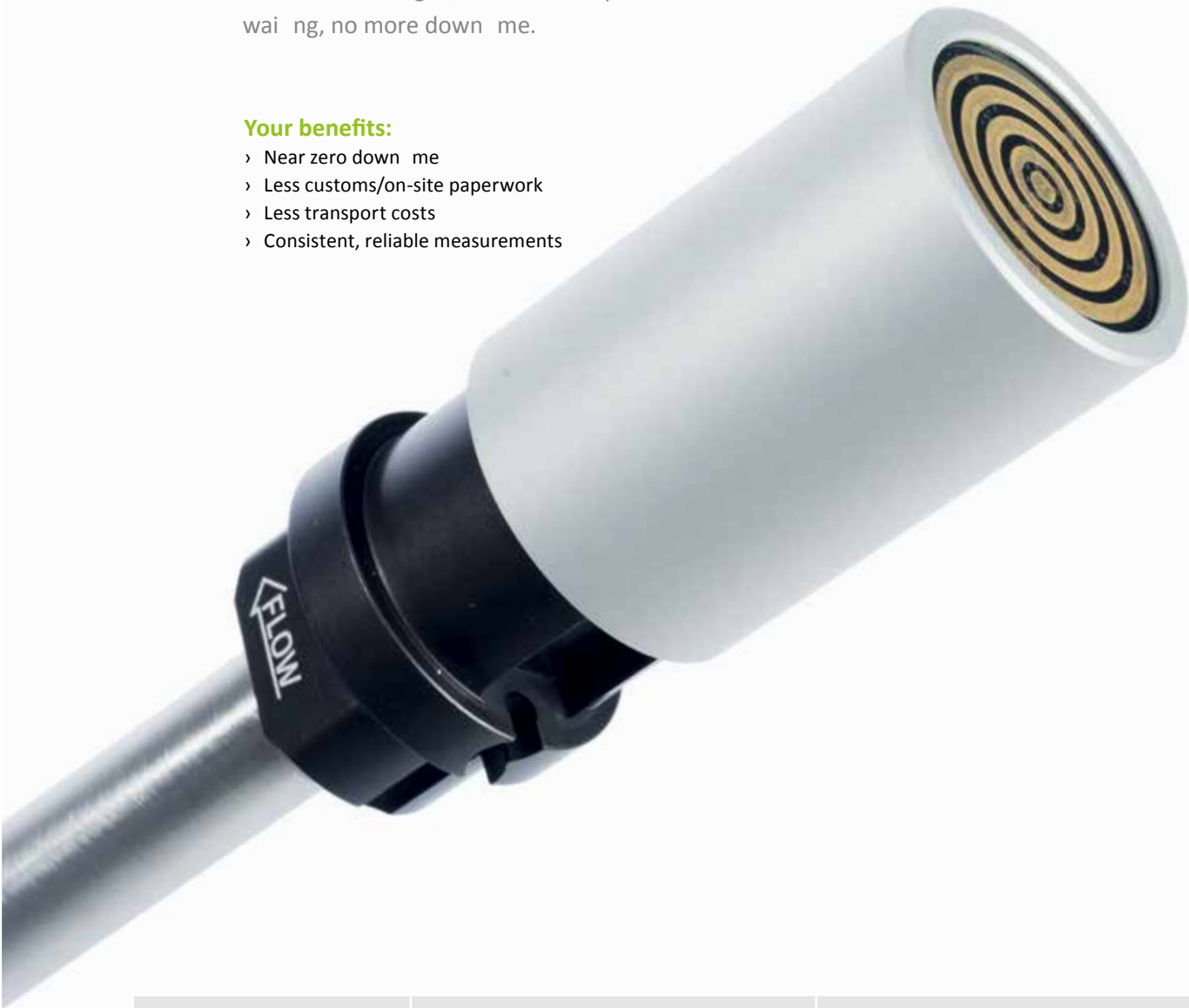
Transmitter model	Ethernet	RS485	4 ... 20 Alarm Pulse	Color Display	Data Logger	Application
VPM.T001.D000	●	●	●			VPVision, BMS, remote monitoring
VPM.T001.D010	●	●	●	●		Remote monitoring and local readout
VPM.T001.D011	●	●	●	●	●	Audits

## 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:

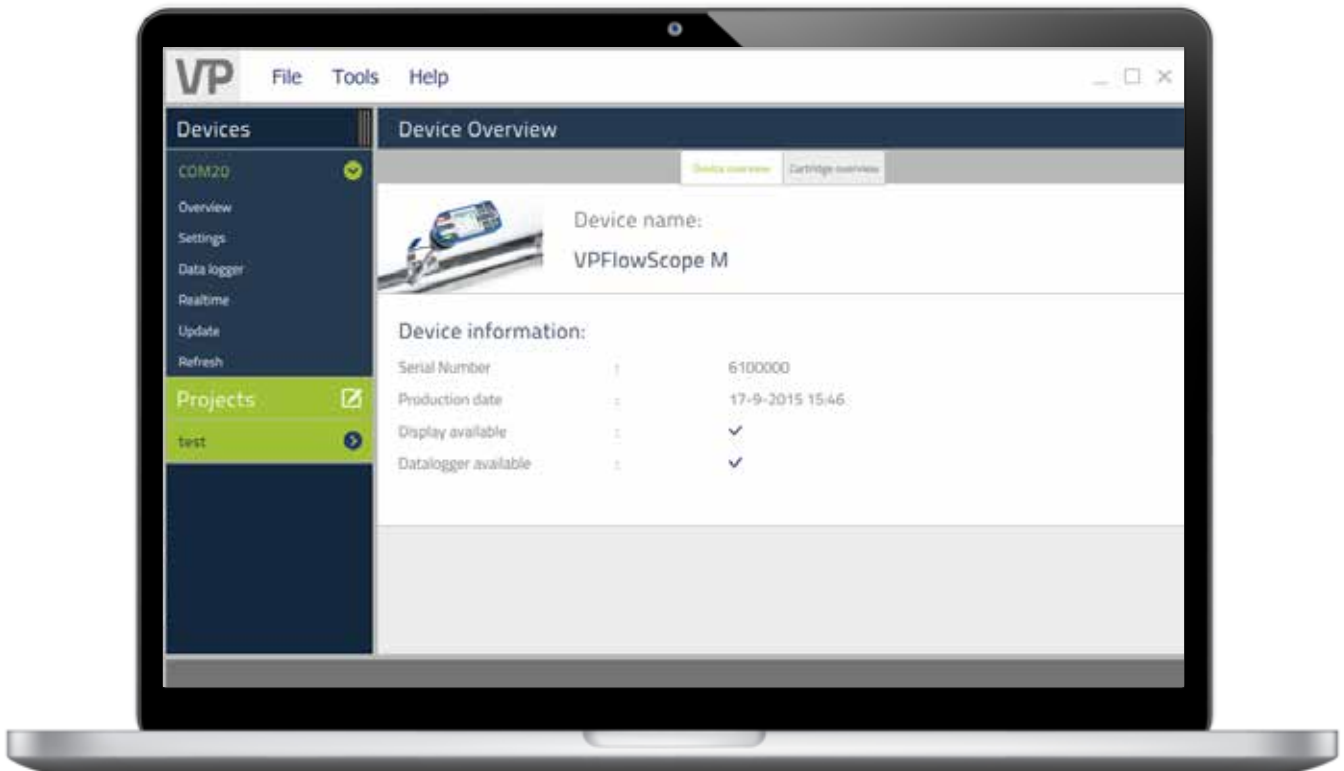
- › Near zero downtime
- › Less customs/on-site paperwork
- › Less transport costs
- › Consistent, reliable measurements



VPSensorCartridge® model	Description	Applications
VPM.R150.P350.PN10	Thermabridge™ thermal sensor: Flow, Pressure, Temperature, calibration report.	Leakage management, demand and supply side flow measurement, general purpose flow measurement.
VPM.B150.P351.PN10	Thermabridge™ thermal mass sensor: <b>bi-directional</b> Flow, Pressure, Temperature, calibration report.	Audits, internal billing and cost allocation, ring networks, multi plant compressor installations, shared compressor facilities.

## 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, readout (real time) and processing of data log sessions.



### Features and benefits

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





## Built in webserver

When the VPFlowScope M is connected to your Ethernet network, you can use your tablet or smartphone to access the built-in Webserver. Features of the webserver are:

### Features and benefits

- › Real time data view
- › Diameter configuration
- › Modbus TCP configuration
- › Analog, pulse, alarm configuration



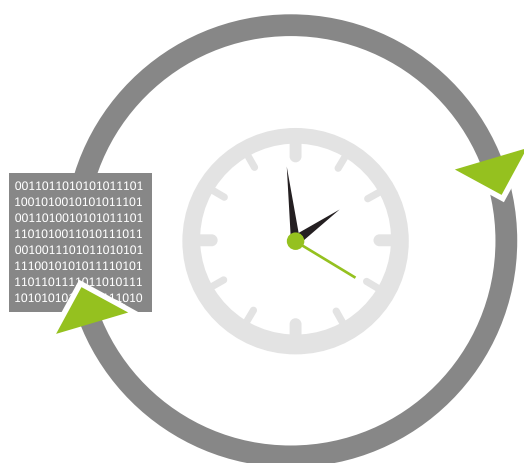
## Limitless data logging

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 1x 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!

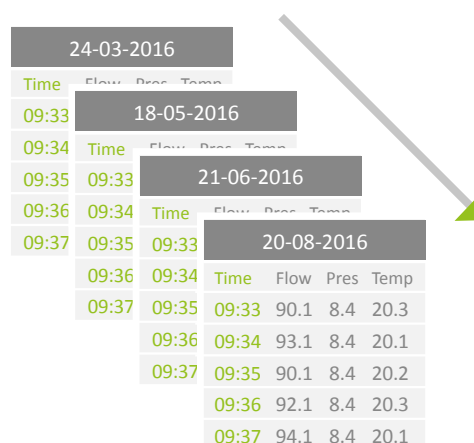
### Features and benefits

- › 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 logging in VPStudio 2.0

### Cyclic logging mode



### Multi-session mode



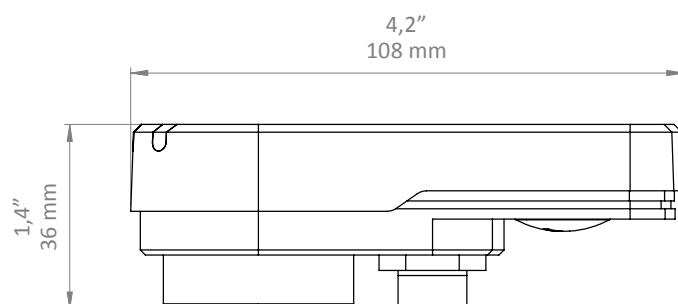
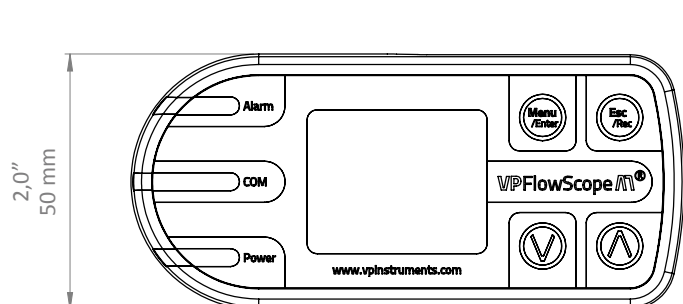
The diagram illustrates multi-session mode. It shows a stack of data log snippets for different dates, with a grey arrow pointing from the top date to the bottom date, indicating the progression of sessions. The data is organized as follows:

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

<b>Sensor interface</b>	
VPSensorCartridge®	Proprietary interface, rotational 360 degrees
<b>Display</b>	
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
<b>Data logger (D011 only)</b>	
Memory	6 months @ 1 x per second logging interval for all parameters
Logging mode	Cyclic and traditional start/stop
<b>Outputs</b>	
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	Modbus / TCP and built-in webserver for configuration
<b>Mechanical &amp; Environmental</b>	
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 VPSensorCartridge®
<b>Electrical</b>	
Power supply	12 VDC <sup>(1)</sup> ... 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 VPSensorCartridge® 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
<p>(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.</p>	

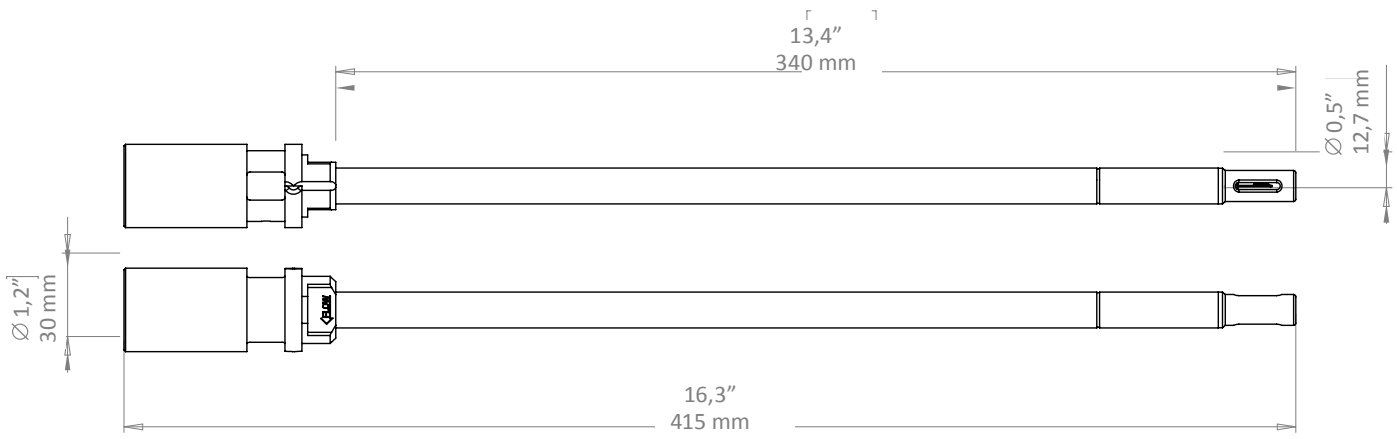




## Specifications – VPSensorCartridge®

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

<b>Flow sensor</b>	
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
<b>Pressure sensor</b>	
Pressure sensor range	0 ... 10 bar   0 ... 145 psi gage
Accuracy	+/- 1% FSS (total error band) Temperature compensated
<b>Temperature sensor</b>	
Temperature sensor range	0 ...+60 °C   32 ... +140 °F
Accuracy	> 10 m/sec: +/- 1 °C   1.8 °F < 10 m/sec: + 5 °C   1.8 °F
<b>Mechanical &amp; environmental</b>	
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
Welded materials	Anodized Aluminum, Stainless steel 316, Glass, Epoxy
Corrosion resistance	Highly corrosive or acid environments should be avoided
<b>Electrical</b>	
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.

- |                 |  |  |
|-----------------|--|--|
| > 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/16.4' . with 5 pin M12 on one side      | Shielded cable, unstripped wires at the other side                             |
| > VPA.5000.010  | Cable 10m/32.8' . 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/16.4' .                        | 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.0002.1003 | VPFlowScope M Auditor Start Kit                  | Items included:  |

- 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 mm/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/16.4' ., with 4 pin M12 on one side and RJ45 connector on other side
- Explorer® transport case

