

Product announcement



Stainless steel - DN25, DN32, DN40 & DN40 Plus

Tested leaktightness: Tested with air and water

24/7 operation: designed to be reliable and durable



Vortex flow sensors

Stainless steel // TriClamp

Vortex flow sensors // VVX // TriClamp



VVX25
stainless steel



100 %

- Final water flow test
- Adjustment of output signal and calibration at
→ Traceable measurement performance
- Recording of the test data
→ Test protocols available for customers
- Traceability via serial number

On the test bench: 100% Final water flow test



Combination sensor

- Combination of flow and temperature measurement
- Flow measurement with no moving parts
- Fast responding temperature measurement

µController

- Customisation through approx. 60 software parameters
- Software filter (optional)
→ exact flow measurement even with vibrations

encapsulated piezoceramic sensor element



Reliable

- Piezoceramic sensor element completely encapsulated
 - no direct medium contact
 - dirt-resistant and fail-safe
- Robust metal body
- CE Marking
- OEM product developed and produced in Germany

Test reports for customers

- SIKA test labs - many qualification tests
 - Temperature shock
 - Contamination
 - and many other tests
- Sample devices can be supplied with works test certificate

General information on the principle of operation

Alternate vortices rotating in opposite directions are generated behind a bluff body immersed in a flow. The vortices detach from the edges of the bluff body and form a Kármán vortex street in the fluid stream. The distance between the single vortices is constant. The frequency of the vortices flowing past a sensor depends on the flow rate and is proportional to the flow. The sensor detects these vortices which are then converted to an electrical frequency signal.

- Minimal flow obstruction → low pressure drop
- Independent of the conductivity of the medium
- High long-term stability / no zero drift

Product announcement

Technical data

Technical Data	VVX25	VVX32	VVX40	VVX40 Plus
Process connection	Tri-Clamp 2"	Tri-Clamp 2"	Tri-Clamp 2½"	Tri-Clamp 2½"
Inner diameter [mm]	Ø 25	Ø 32	Ø 40	Ø 40
Medium	Water and aqueous solutions			
Pressure rating	PN 16			
Degree of protection EN 60529 with attached cable socket	IP65 and IP67			
Flow measuring				
Flow range*	6...145 l/min 360...8,700 l/h	12...250 l/min 720...15,000 l/h	22...400 l/min 1,320...24,000 l/h	30...550 l/min 1,800...33,000 l/h
Accuracy* → at < 50 % of range → at > 50 % of range	±1 % of range ±2 % of reading			
Repeatability	±0.5 % or ±1 %, see temperature ranges ambient			
Temperature measuring				
Measuring range	0...90 °C			
Accuracy	±1 k			
Response time → t ₅₀ → t ₉₀	approx. 1 s approx. 3 s			
Temperature ranges				
Medium	-20...90 °C (non-freezing), 105 °C @ max.90 % Qmax and 60 °C ambient			
Ambient	-22...70 °C (-30 °C with medium min. +3.5 °C for max. 24 h over the product life)			
Storage	-30...70 °C			
Electrical data				
Electrical connection	4- or 5-pin plug connector M12 x 1			
Power supply → NPN → Push Pull → 4...20 mA or 0...10 V	5 V DC (±5 %) 12...24 V DC (±10 %) 12...24 V DC (±10 %)			
Current consumption	< 15 mA			
Approvals				
	Pending			
	Variants according to certificate IEC 60335-2-40 DIN EN 60335-2-40			

* Test conditions:
→ Test medium water
→ Media temperature 20...30 °C
→ Defined inlet and outlet pipes (see operating manual)

Output signals

Three different versions available:

- Frequency output (1)
- Analogue 0...10 V or 4...20 mA and frequency output (1 + 2)
- Frequency output with IO-Link (1 + 3)

Frequency output 1	VVX25	VVX32	VVX40	VVX40 Plus
Output signal flow for power supply → 12...24 V DC → 5 V DC	Frequency signal, square wave, pulse duty ratio 50:50, signal current max. 20 mA Push Pull NPN open collector			
Pulse rate [1/l]	200	100	50	50

Analogue output 2	VVX25	VVX32	VVX40	VVX40 Plus
Output signal flow	0...10 V or 4...20 mA			
Scaling [l/min]	0...145	0...250	0...400	0...550
Voltage rate [V / l/min] → 0...10 V	0.06897	0.04000	0.02500	0.01818
Current rate [mA / l/min] → 4...20 mA	0.110345	0.06400	0.04000	0.029091

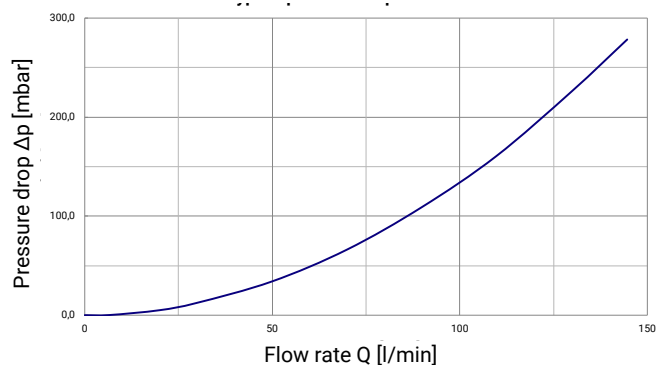
IO-Link 3	VVX25	VVX32	VVX40	VVX40 Plus
IO-Link specification	Version 1.1			
IO-Link Device ID:	2			
Transmission type	COM2 (38.4 kBaud)			
Ready for operation	2 seconds after supply voltage is applied			
Min. cycle time	103 ms			
SIO mode:	Yes			
Profiles:	Device Identification, Device Diagnosis			
SDCI standard:	IEC 61131-9			
Required master port:	Class A			
Process data analog:	3			
Download IODD device description	https://www.sika.net or https://ioddfinder.io-link.com			

IO-Link functions

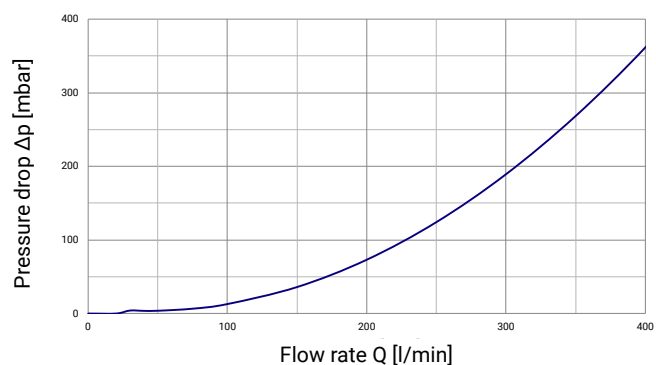
IO-Link functions	
Process data	Flow rate Temperature Device status Device OK Test sequence active Flow rate out of specification Temperature out of specification Average flow rate Cumulative volume max. flow rate min. and max. temperature
Other functions	Parameterisation of the flow and volume units Parameterisation of the pulse rate of the frequency output Setting an offset for the frequency output - "Lifesignal" (e.g. 4 Hz without flow) Creep suppression - shifting the start of the measuring range Test sequence - Simulates flow rate and temperature Reset to factory settings

Typical pressure drop

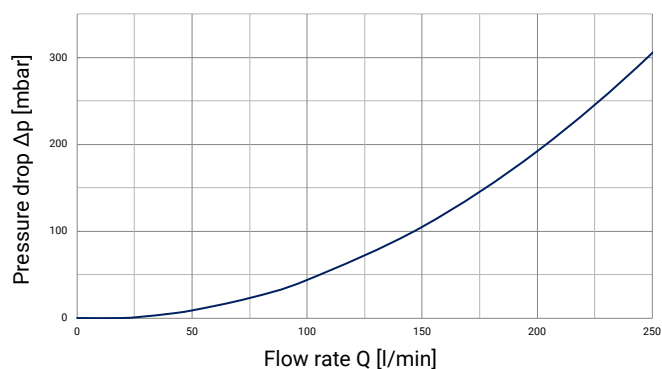
Typical pressure drop VVX25



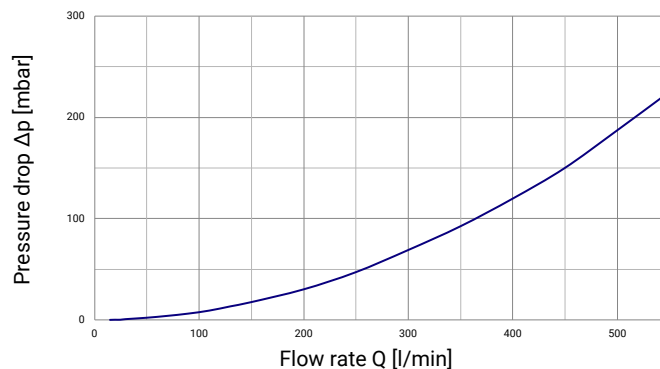
Typical pressure drop VVX40



Typical pressure drop VVX32

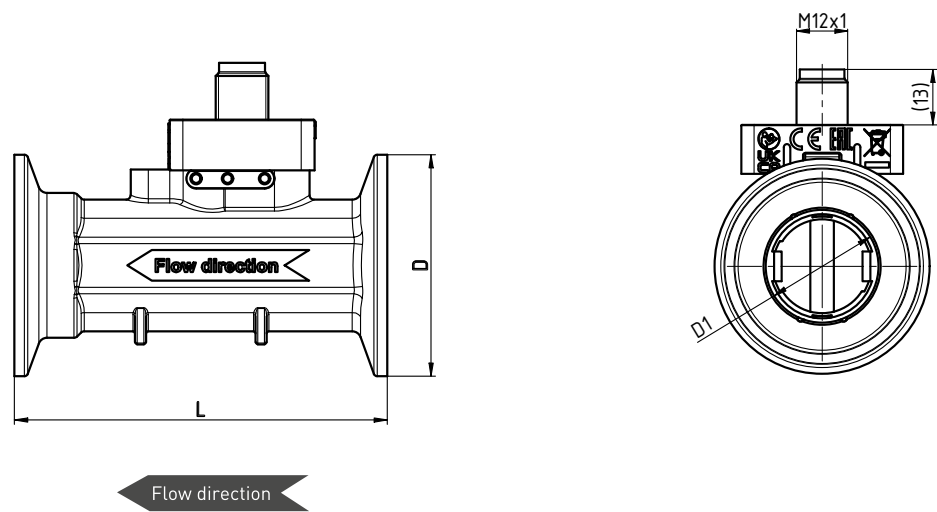


Typical pressure drop VVX40 Plus



Technical drawing

VVX



Dimensions

Dimensions [mm]	D1	D	L
VVX25	25	50.5	85
VVX32	32	50.5	90
VVX40	40	64.0	100
VVX40 Plus	40	64.0	100

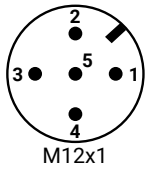
Materials

Materials in contact with fluid	
VVX25, VVX32, VVX40, VVX40 Plus	
Body / tube	Stainless steel 1.4404
Sensor	PFA
O-rings	EPDM
Immersion sleeve	Stainless steel 1.4571
Bluff body	PPS GF40

Wiring

Pin assignment

The pin assignment depends on the chosen configuration of the device.



Possible pin assignments:

Pin 1: $+U_B$

Pin 2: $U_{Flow} \cdot I_{Flow}$

Pin 3: **GND**

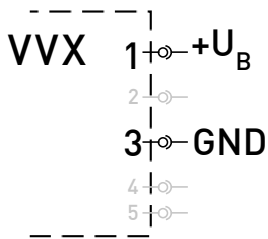
Pin 4: IO-Link • Frequenzy • Alarm*¹

Pin 5: not connected • Without

*¹ The alarm output is only possible with the corresponding firmware and has been determined during the order.

Wire the connecting cable according to your device version and the pin assignments shown on the type plate.

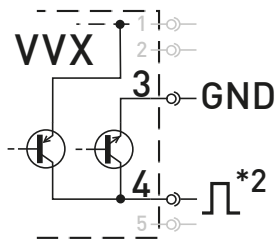
Supply voltage



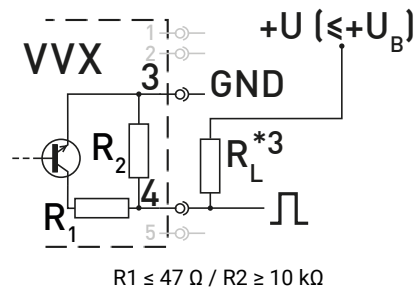
VVX with frequency output

Flow

Push-Pull*¹



NPN Open Collector



*¹: Not at 5 V.

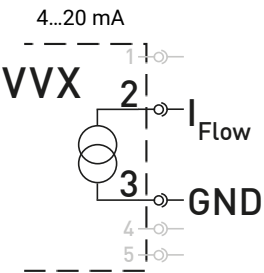
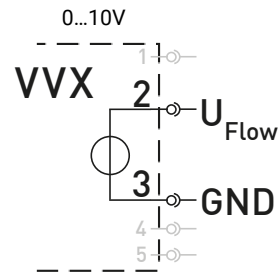
*²: Do not wire the push-pull switch outputs of multiple VVX devices in parallel.

*³: Recommended pull-up / pull-down resistance $R_L \sim 5 \text{ k}\Omega$.

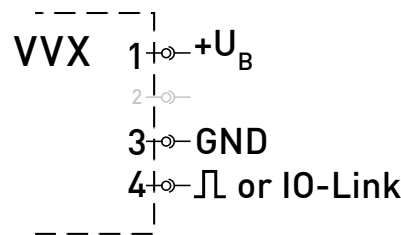
Wiring

VVX with voltage 0...10 V or current output 4...20 mA

Flow



VVX with IO-Link

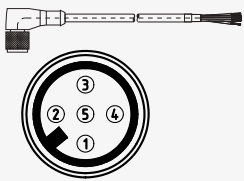


Article numbers

Version frequency output NPN open collector

Order code			
Type			
VVX25	VVXBP		NB0000242U
VVX32	VVXDD		NB0000241T
VVX40	VVXEE		NP0000242T
VVX40 Plus	VVXEW		NP0000242T
Version			
Standard version		S	
Version with ETL-Approval		E	
Example order number		VVXBP S	NB0000242U

Order code	
Service - Test in the test bench	Order number
Works calibration certificate for sample devices	VVXWPS01

Order code				
Type	Accessories	Length [m]	Length [ft]	Order number
VVX32 VVX40		1 1.5 2 3 5 10		XVVX493 XVVX494 XVVX482 XVVX492 XVVX481 XVVX495 XVVX493UL XVVX494UL XVVX482UL XVVX492UL XVVX481UL XVVX495UL
	UL approval		3	
	UL approval		4.9	
	UL approval		6.5	
	UL approval		10	
	UL approval		16	
	UL approval		33	