



SATRON®

LUMINA™ VCF Freeness Transmitter

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#LookCloser

The **SATRON VCF** is a multichannel optical transmitter that measures freeness and total consistency suitable for managing furnish blending, refining, and screening in a broad range of the pulp & paper applications. Get fast and precise online updates of key fiber and papermaking furnish properties.

The VC family of transmitters measures process parameters by transmitting strobes of light into the pulp and measuring the back-scatter characteristics. Measurement values are calibrated by sampling and laboratory analysis of process.



TECHNICAL SPECIFICATIONS

Measuring range and span

See Selection Chart.

Measurement accuracy

Measurement accuracy is determined by the accuracy of the laboratory analysis results.

Zero and Span adjustment

Available, can be made by using key-board (display option)

Damping

Time constat is continuously adjustable 0.01 to 60s. Factory setting 0,5s.

Repeatability

0.01% Cs.

Temperature limits

Ambient: -30 to +80 °C
Process: 0 to +140 °C
Shipping and storage: -40 to +80 °C.

Output

1st mA loop:
2/3-wire (2W/3W), 4-20 mA
2nd mA loop:
2-wire, 4-20 mA

Supply voltage and permissible load

Sensor: 24VDC
Device enclosures option K:
115/230VAC

Humidity limits

0-100 % RH

CONSTRUCTION

Materials:

Sensing element: AISI316L (EN 1.4404) or Titanium Gr2.
Sapphire lens.
RDU, Cable gland: AISI304 (EN 1.4301)
Signal/data cable: PVC
Remote measuring probe cable: PVC
Coupling: AISI316L (EN 1.4404), Duplex (EN 1.4462), Hast.C276 (EN 2.4819) or Titanium Gr2.
Device enclosure, code K, KF:
AISI304 (EN 1.4301)

Pressure class

PN25

Calibration

Pre-calibrated at the factory for 0-7%Cs range. Final calibration against laboratory measurements with actual sample after installation is required.

Electrical connections

Remote electronics housing with display code L:
PG9 gland for cable;
Conductor cross section: max 2.5 mm²
Cable OD: 4...8 mm.

Device enclosures (with display), code K:
- PG13,5 inlet, 3 pcs
- M12 plug connector for the sensor signal.

I/O-connections

bout1-3
Relay, grounding contact
Maximum voltage 35 V
Maximum current 50 mA
Max leakage current 10 µA

bin1-3
NC (no connection) OFF
0...2 V ON

Minimum values for switch in use
Voltage 16 V
Current 4 mA
Leakage current 1 mA

Current output1

Range 3.5...23 mA
Maximum load 600 Ω
Factory setting 4...20 mA

Current output2

Internal power supply
Maximum load 400 Ω
Range 3.5...23 mA
Factory setting 4...20 mA
External power supply
Current output 2 is galvanically isolated
Max supply voltage 35 VDC
Range 3.5...23 mA
Factory setting 4...20 mA
Max isolation voltage 100 VDC

Process connections

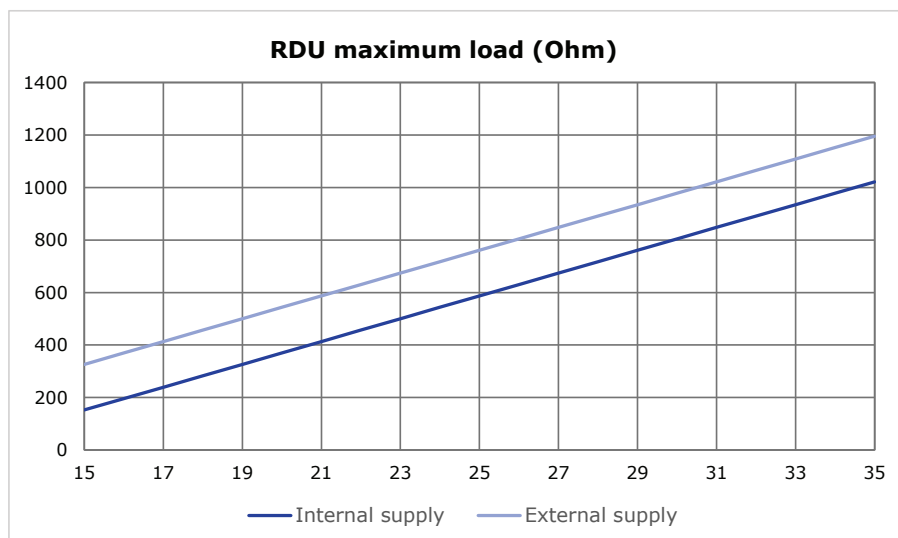
- With G1 connecting thread
- Through ball valve or PASVE®, see selection chart.

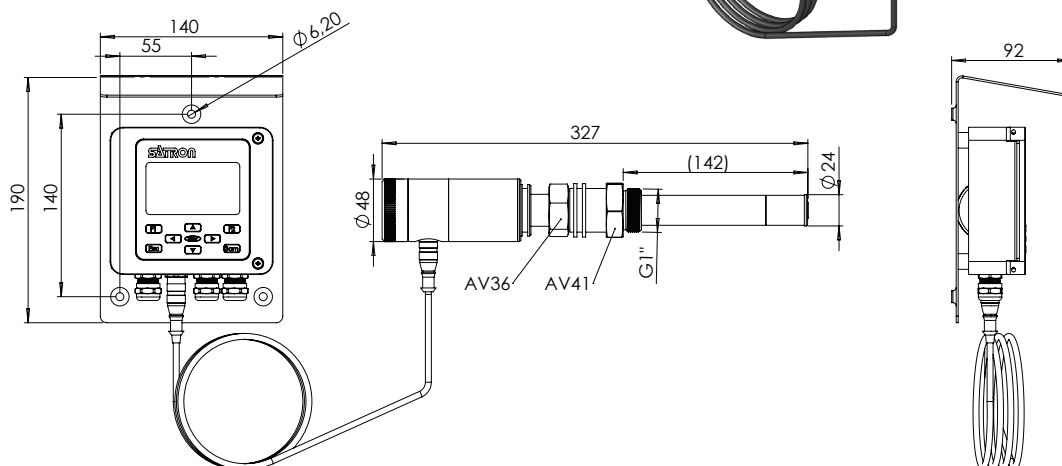
Protection class:

See Selection chart.

Weight

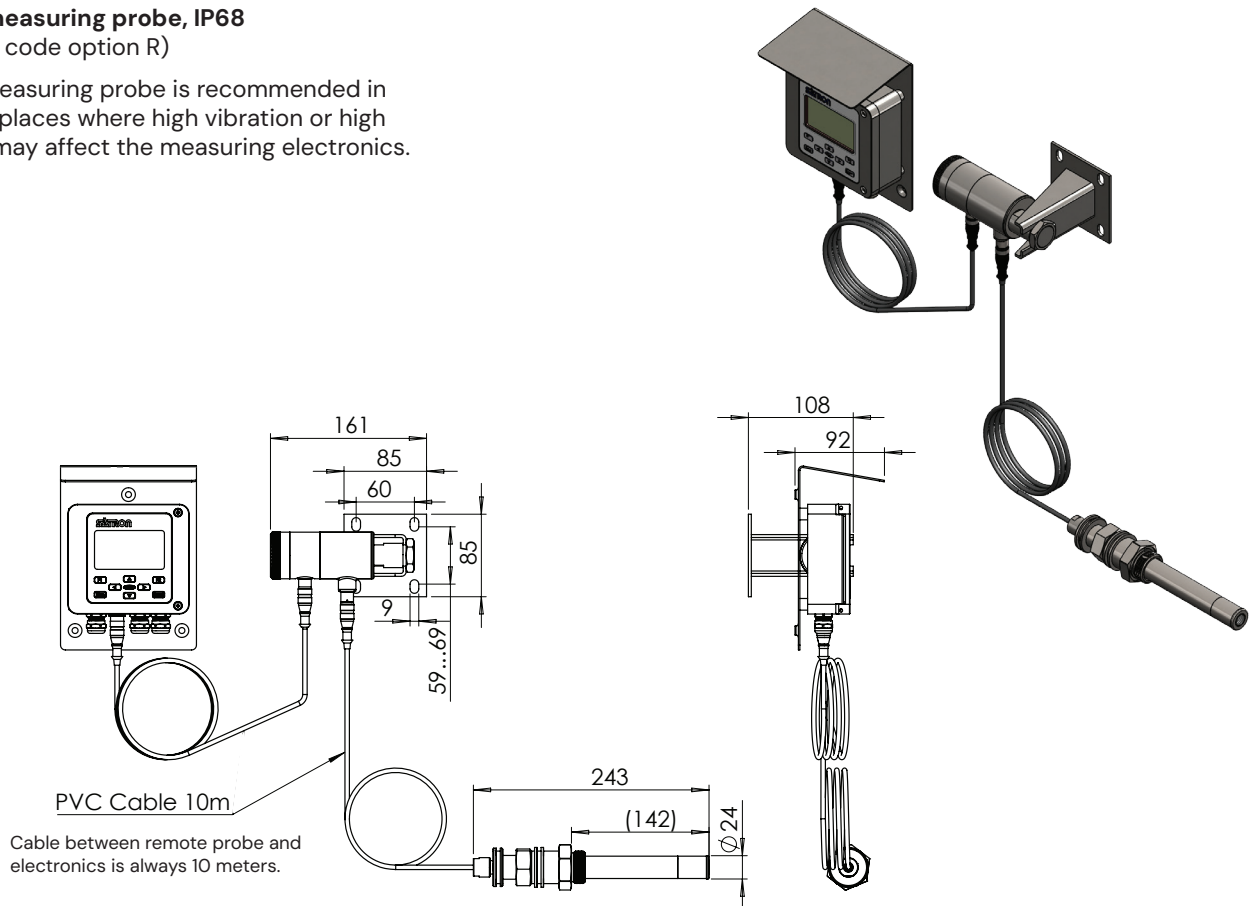
Housing with M12
Remote Housing (L): 2.9 kg
Remote sensor (R): 2.9 kg
Device enclosure (K): 6.2 kg





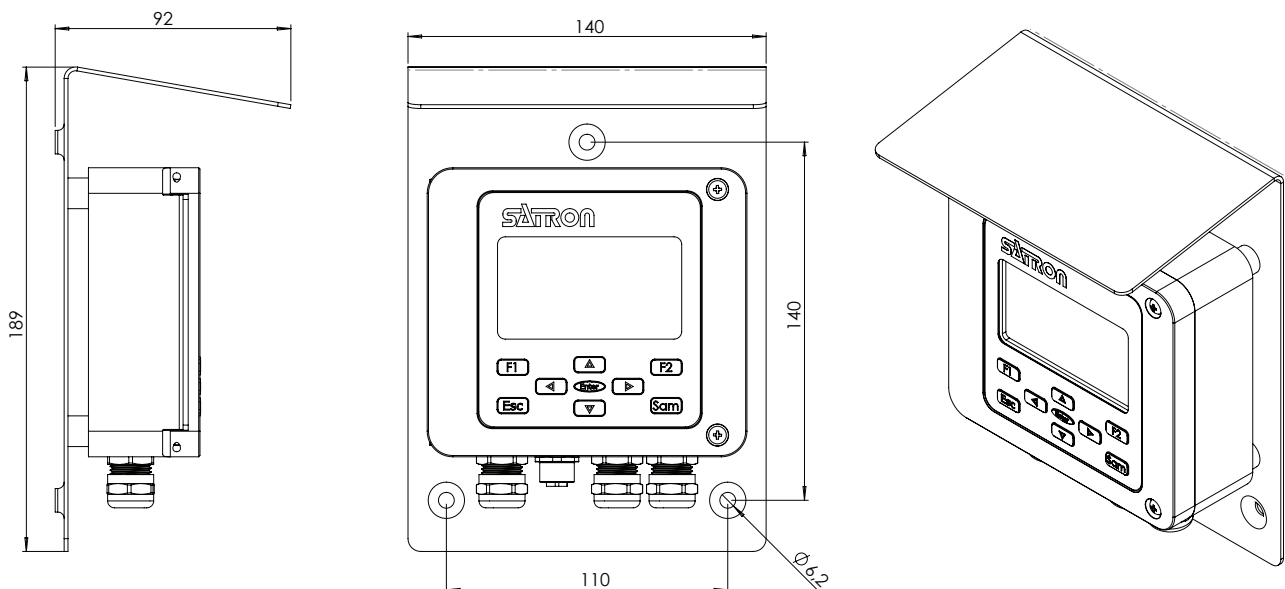
Remote measuring probe, IP68 (Selection code option R)

Remote measuring probe is recommended in mounting places where high vibration or high humidity may affect the measuring electronics.



Remote Display Unit (RDU)

The Remote Display Unit (RDU) provides a local display of the measured values and serves also as a simple menu-driven calibration and troubleshooting interface. The RDU includes two analog 4-20 mA outputs, three dry contact binary inputs and three contact outputs.



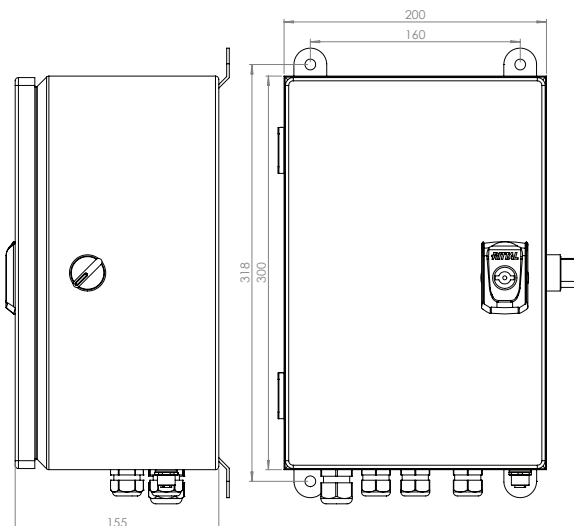
Device enclosure options

Connection Box (K)

Remote electronics in the device enclosure. External sample switch mounted on the right face of the cabinet. Power supply 115/230 V 50/60 Hz, code K. Compatible with housing type L and probe type R with display. Product code: M1325065

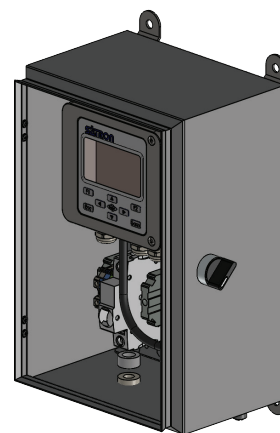
Connection Box (KF)

Remote electronics in the device enclosure with flushing valve. Flushing valve installed under the cabinet. External sample switch mounted on the right face of the cabinet. Power supply 115/230 V 50/60 Hz, code K. Compatible with housing type L and probe type R with display. Product code: M1050193

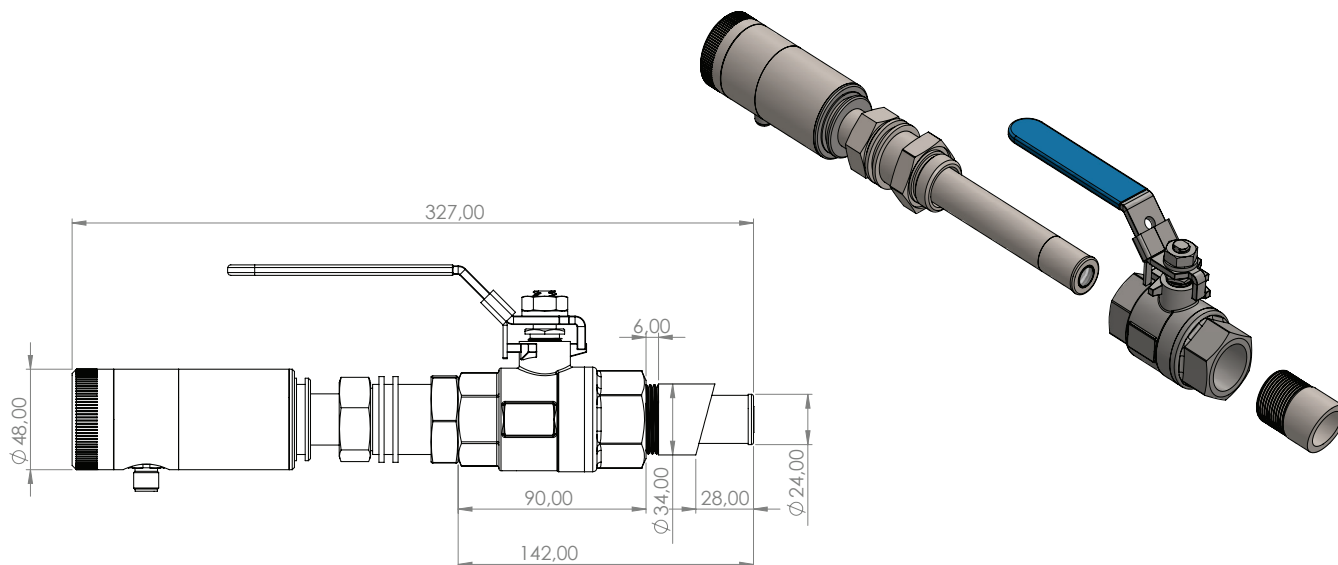


Flushing coupling for option KF

Product code: M1050102



Process connection

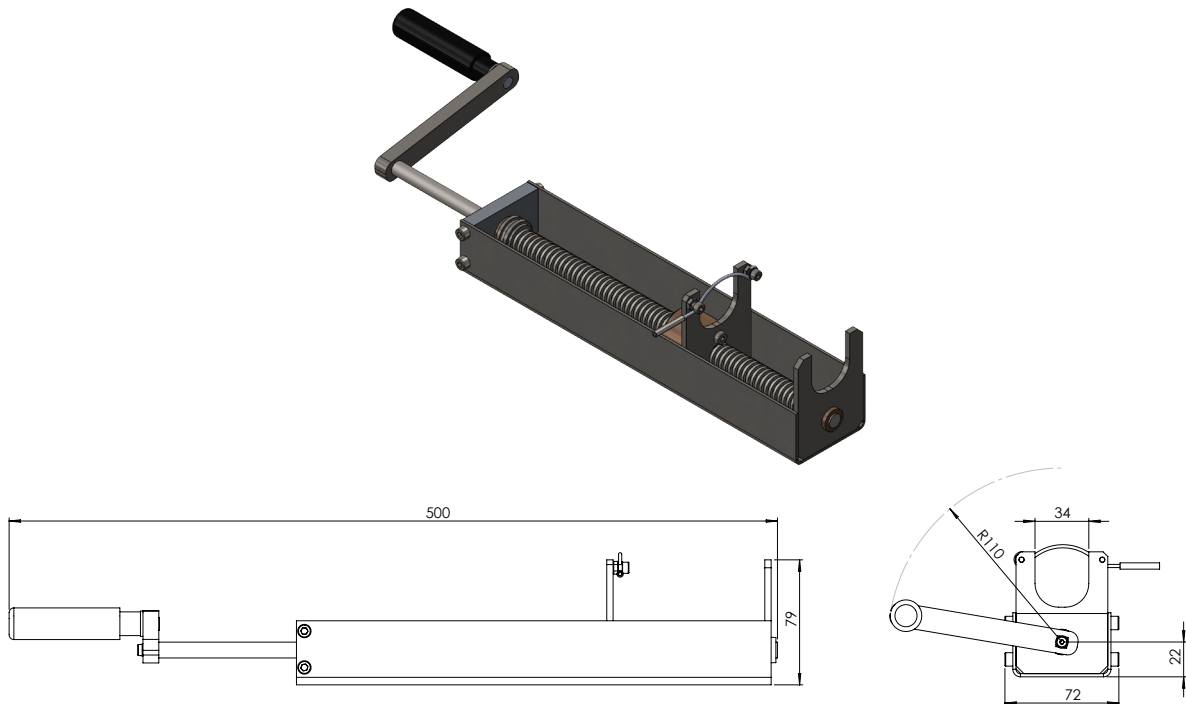


Standard model: VCF with process connection G1A ball valve insertion, G1 15° coupling. Wetted parts material AISI316L, PG9 connection. Dimensions in millimeters. Selection code option B1. Coupling and ball valve not included.

NOTE: The dimensions of the sensor and coupling were designed for pipes with a maximum thickness of 15mm. For pipes thicker than this limit, please contact us.

Installation and removal tool

Adding safety when installing and removing the transmitter, specially in high pressure environments.
Product code for removal tool: M1050140



INSTALLATION

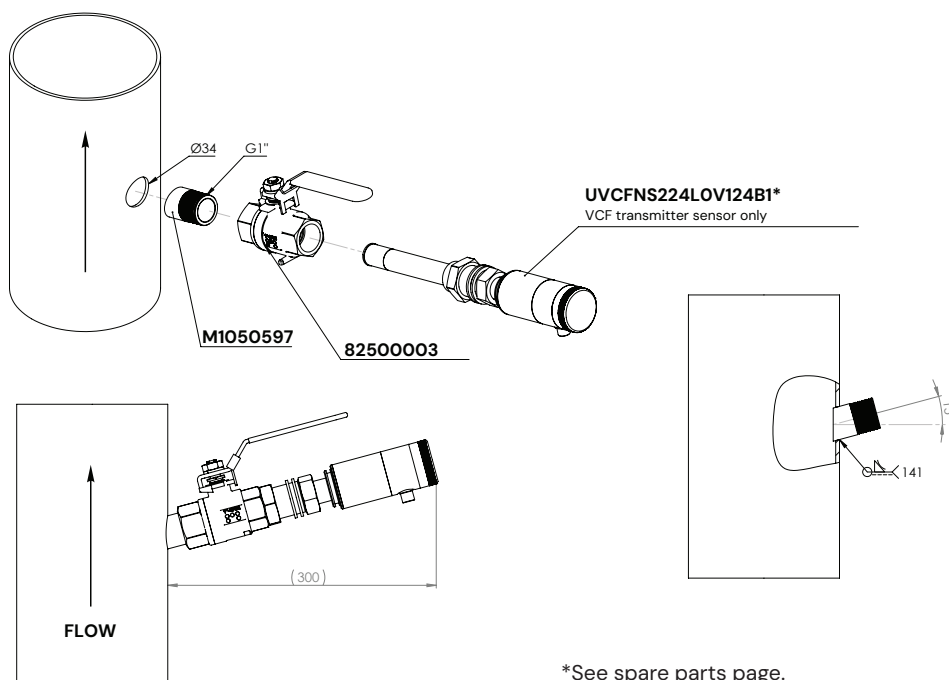
Installation of the standard coupling

The location of the transmitter should be on the high-pressure discharge of the pump in the turbulent flow.
The optimal location is on a 45-degree angle off the center line of the discharge.

Transmitter should be installed against the follow.

Product code for standard coupling: M1050597.

Product code for ball valve: 82500003.

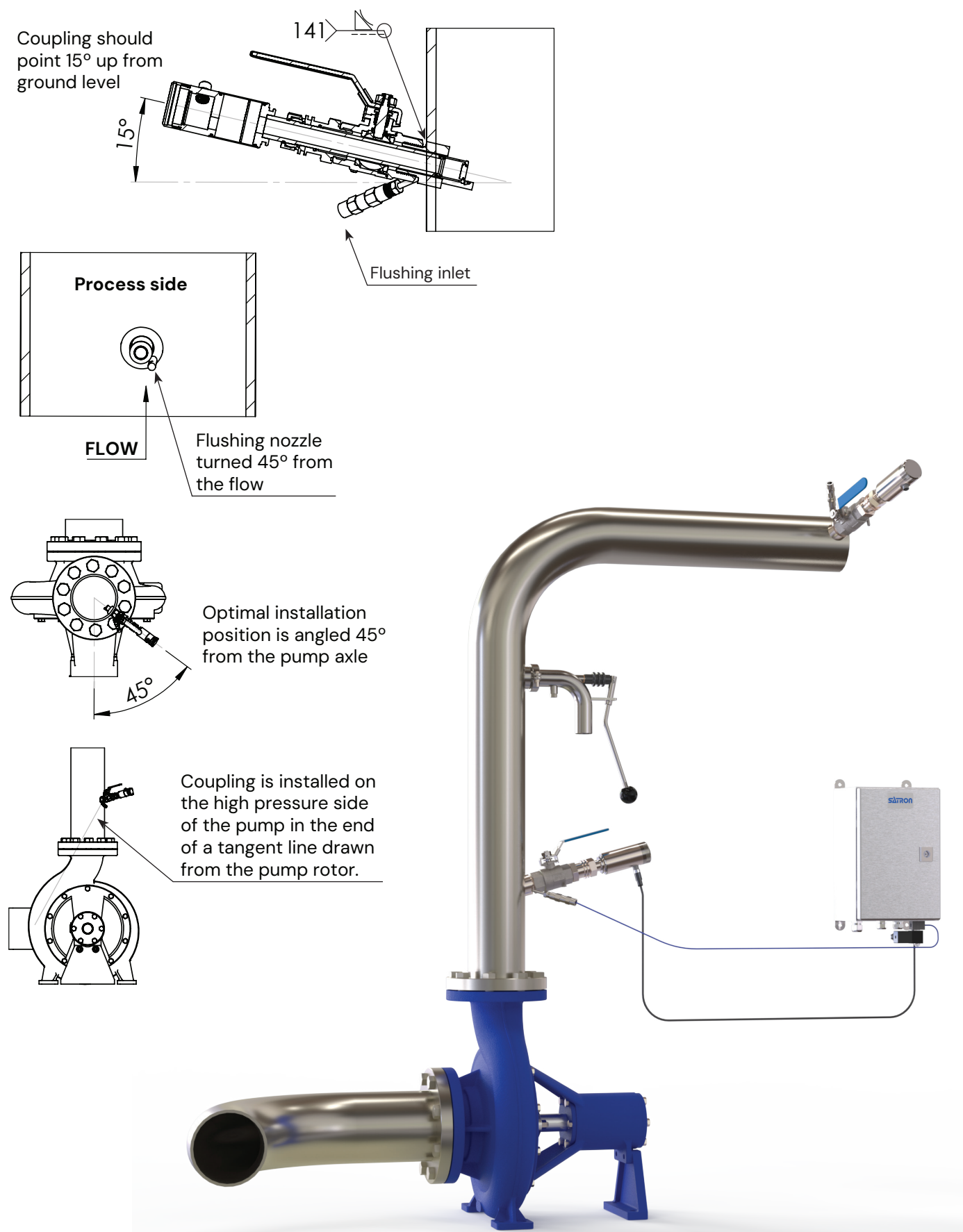


*See spare parts page.

Installation of the flushing coupling

Product code for flushing coupling: M1050102.

Product code for ball valve: 82500003.



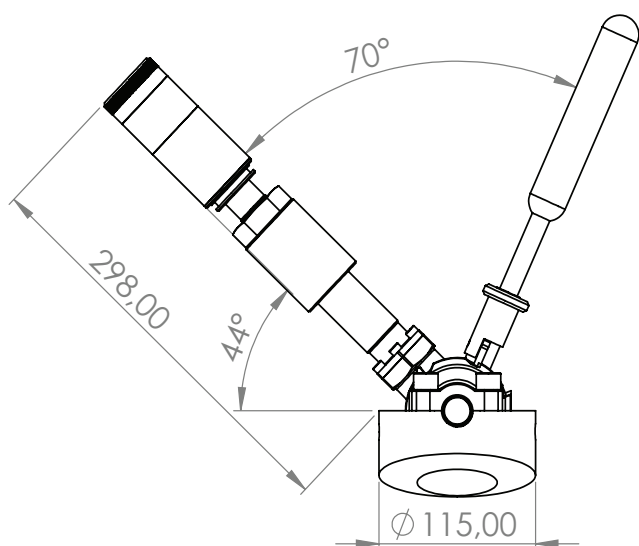
PASVE® Cs Compatible

VCF is compatible with the PASVE® Cs mounting and service valve to enable safe removal of the optical consistency transmitter from the process without stopping the process or without draining the tank. (Selection code option P1, valve sold separately)

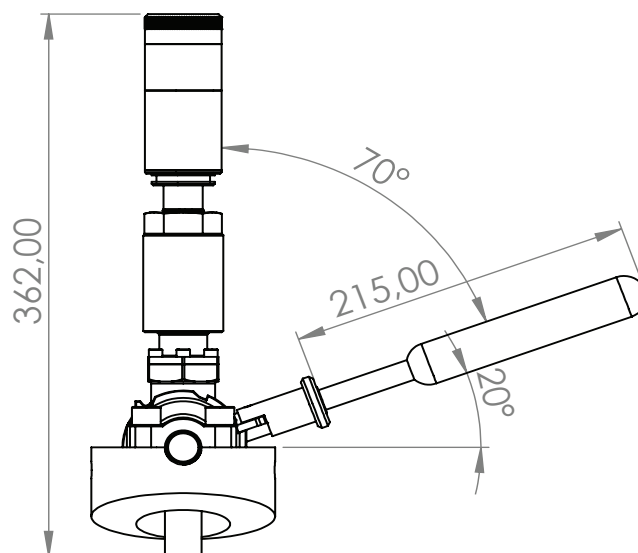


PASVE® Cs

Product code: MCSB240MD00Z4

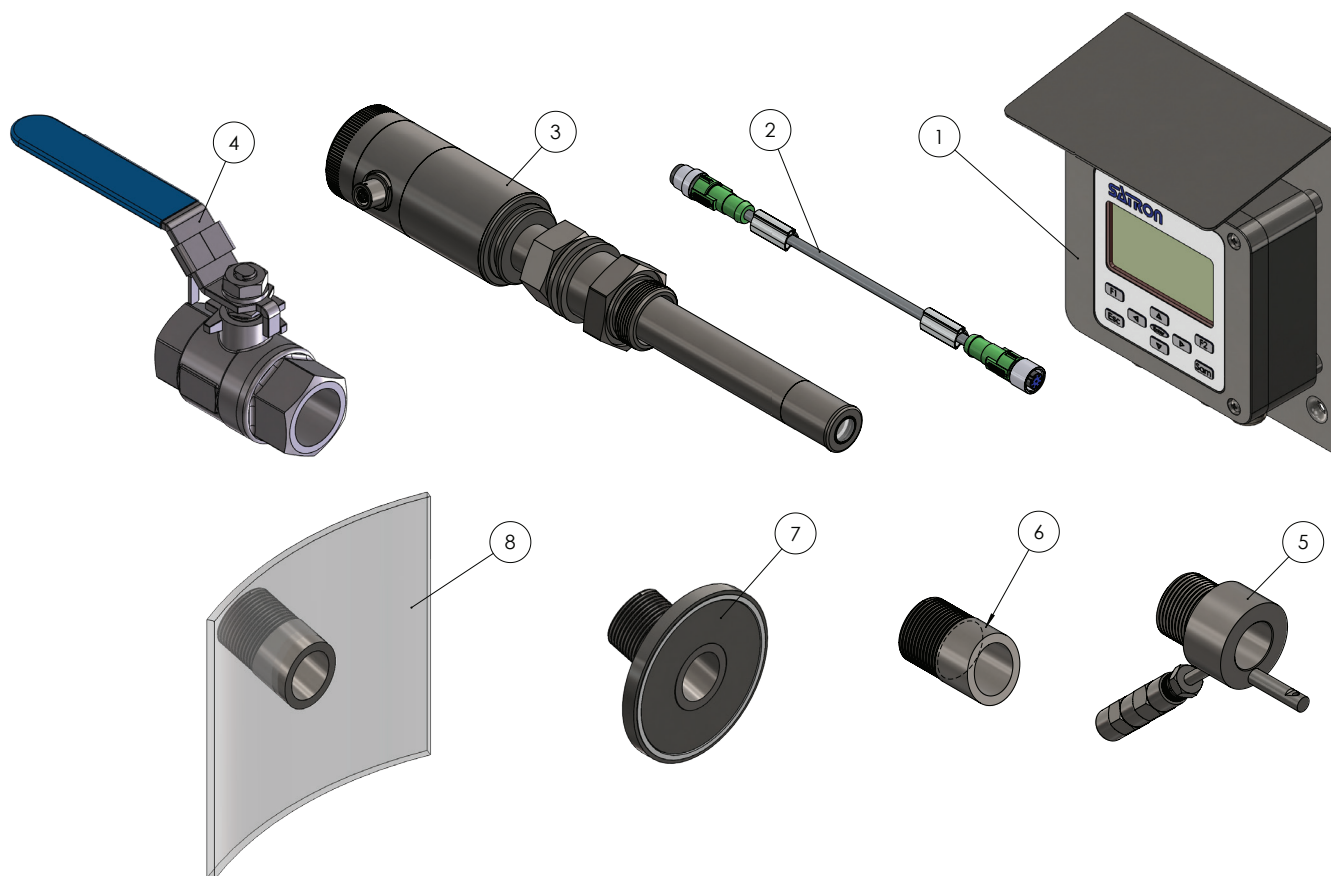


Service position:
Sensor removal & sensor cleaning



Measuring position

SPARE PARTS



No	Part name	Order code
1.	Remote Display Unit (RDU)	T1370009 ¹⁾
2.	L-Housing data cable (Standard 15 meters)	70000601 ¹⁾ (10m extension male-female cable 70000600)
3.	VCF transmitter sensor	UVCFNS224LOV124B1 ^{1,2)}
4.	Ball valve AISI 316L	82500003
5.	Flushing coupling G1 for process connection B1	M1050102
6.	G1 15° coupling for ball valve	M1050597
7.	Blade sensor adapter coupling SA DN65	M1050162 ³⁾
8.	G1 connector 15° titanium laminated	M1050184

¹⁾ Only compatible with M3 sensor and RDU. For older generation M1/M2, please contact Satron.

²⁾ Order code **EVCFNS224LOV124B1** includes sensor, RDU and cable. For sensor only change order code to **UVCFNS224LOV124B1**.

³⁾ Enables replacing blade consistency transmitters with Satron VC.

SELECTION CHART

Adjustability VCF	Span, min. 1% Cs	Total Consistency Range 0...12% Cs	Freeness Range 0-800 CSF
Process temperature limits		N Normal version 0...+140 °C	
Output		S 4-20 mA DC	
Material of wetted parts	Body	Lens	Seals
224	AISI316L (EN 1.4404)	Sapphire	PFA + EPDM (std.)
623	Titanium Gr2 (EN 3.7035)	Sapphire	PFA + FFPM
Housing type		L Remote electronics housing with display	
Probe type		O No remote probe R Remote measuring probe, IP68	
Connection type		V PG9, IP66	
Cable material		1 PVC (std.)	
Cable length		1 10 meters 2 15 meters (std.)	
Light source		4 Multiwavelength	
Process Connections			
B1 G1A ball valve insertion. Probe diameter Ø 24mm			
P1 PASVE® Cs compatible			

Example code

VCF N S 224 L O V 1 2 4 B1

Optional items – order separately

Device enclosure	
K	Remote electronic in the device enclosure. Power supply 115/230V, IP66.
KF	Remote electronic in the device enclosure with flushing valve. Power supply 115/230V, IP66.

Documentation

Material certificates	
MC1	Raw material certificate without appendices, in accordance with SFS-EN 10204-2.1 (DIN 50049-2.1) standard
MC2	Raw material certificate for wetted parts, in accordance with SFS-EN 10204-2.2 (DIN 50049-2.2) standard
MC3	Raw material certificate for wetted parts, in accordance with SFS-EN 10204-3.1 B (DIN 50049-3.1 B) standard

European Directive Information:
Electromagnetic Compatibility EMC directive (2014/30/EU) including latest amendments with the application of the harmonized standards: EN 61326-1:2021
Low Voltage Directive (2014/35/EU) including latest amendments with the application of harmonized standards: EN 61010-1:2011



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