SATRON®

LUMINA™ VCK

Kappa Transmitter

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#LookCloser

SATRON VCK Optical Kappa Transmitter

BCs240
M3 rev 1
06.06.2025

The SATRON VCK is a multichannel optical transmitter that allows two measurements with one device, consistency + kappa/fiber length. It is suitable for total content and consistency measurement (fiber and filtrate) in majority of the bleach plant applications.

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 keyboard (display option)

Damping
Time constat is continuously adjustable 0.01 to 60 s. 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.
Coupling: AISI316L (EN 1.4404), Duplex (EN 1.4462), Hast.C276 (EN 2.4819) or Titanium Gr2

Pressure class
PN25

Connection hose between sensing element and housing
Codes **L** and **R**: PVC signal cable or hose protected with PTFE/AISI316 braiding

Device enclosure, code **K**:
EN 1.4301 (AISI304)

Calibration
Precalibrated 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

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
Maximum 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

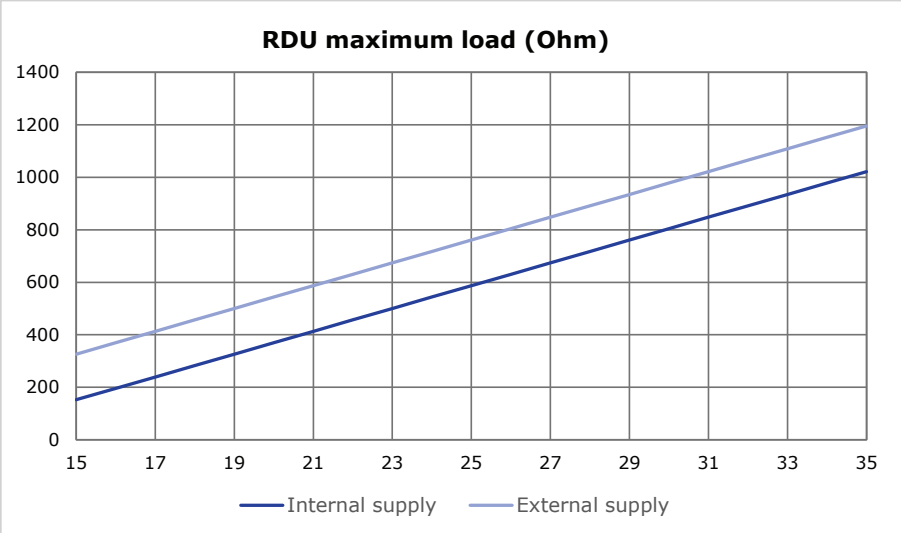
Maximum supply voltage	35 VDC
Range	3.5...23 mA
Factory setting	4...20 mA
Maximum isolation voltage	100 VDC

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



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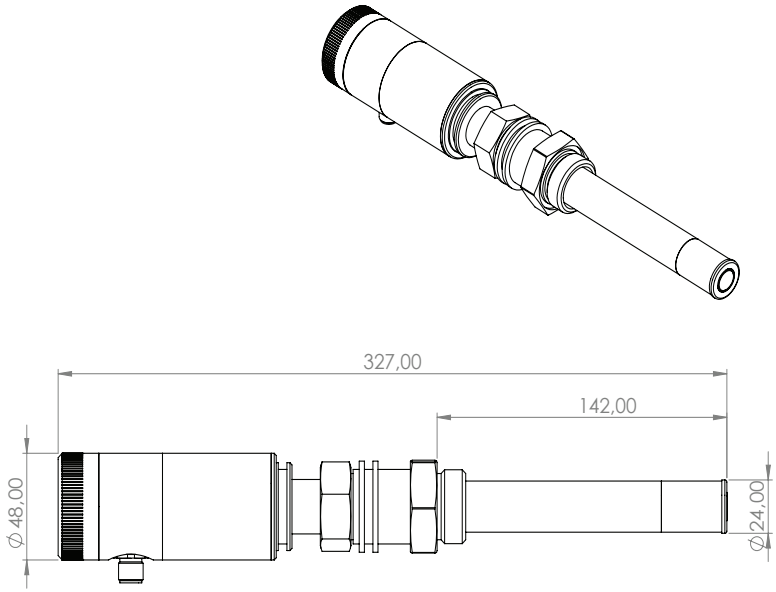
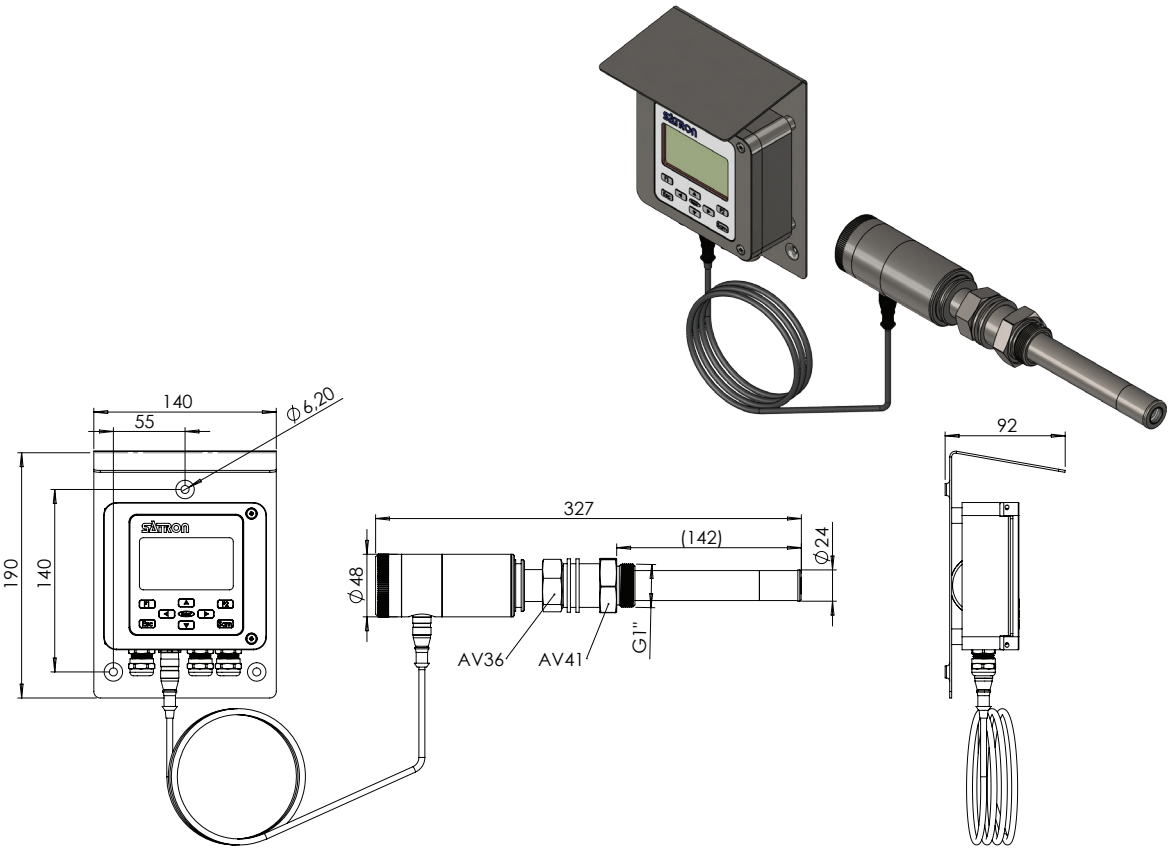
DIMENSIONS



Standard VCK sensor. All dimensions in the data sheet are in millimeters (mm).

Probe options

Standard measuring probe
(Selection code option 0)



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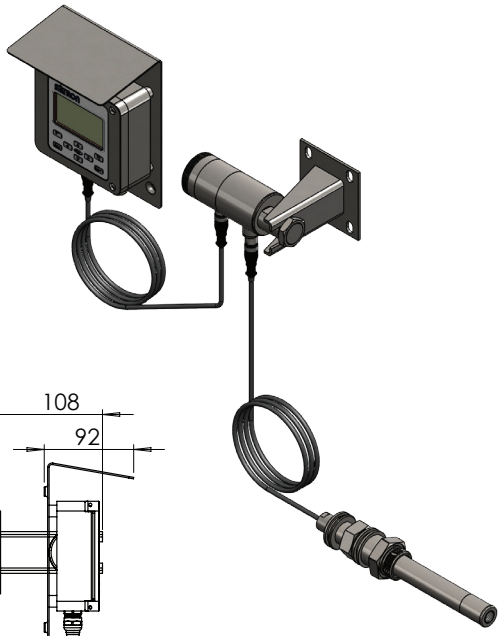
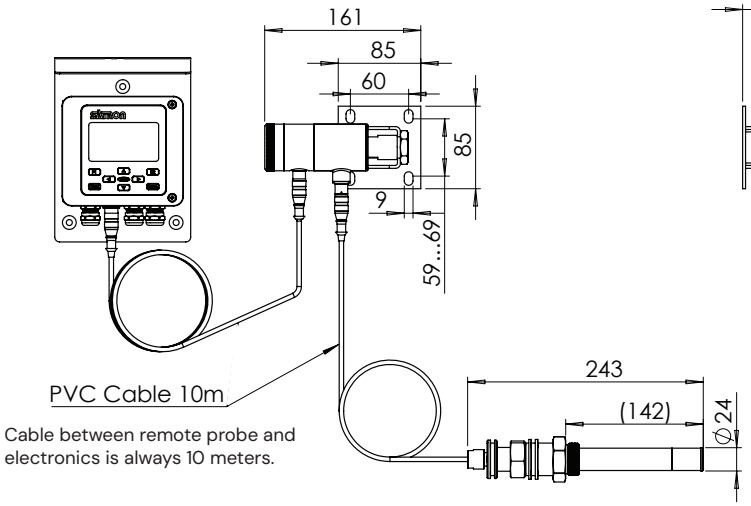
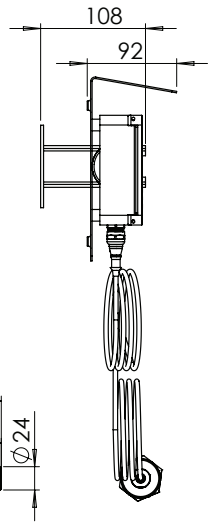
Remote measuring probe, IP68
(Selection code option R)

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

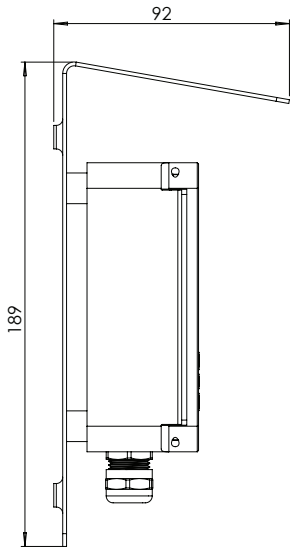


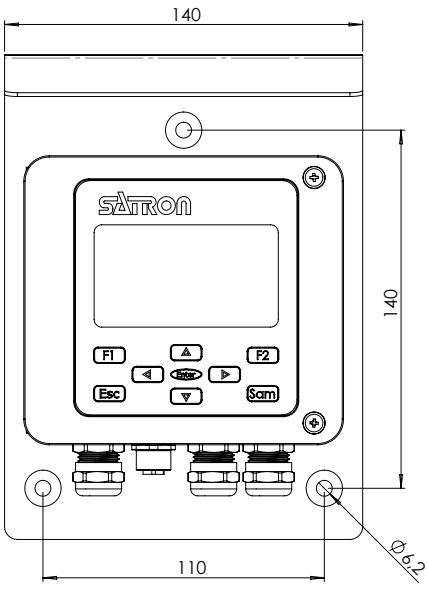


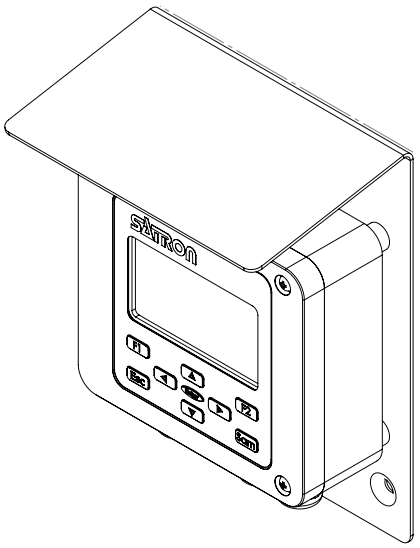


Remote Display Unit (RDU)

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.







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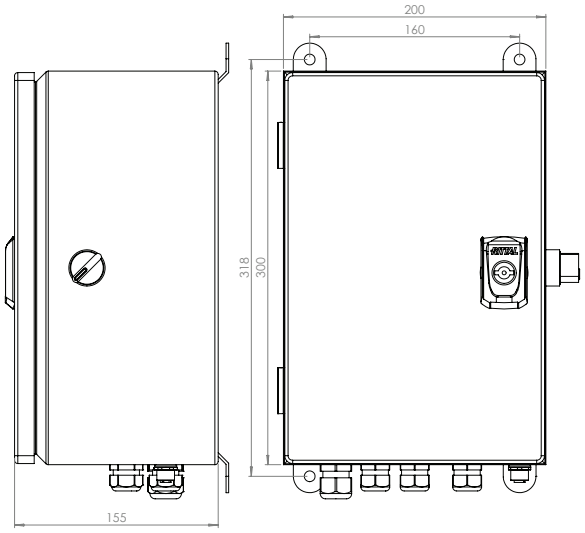
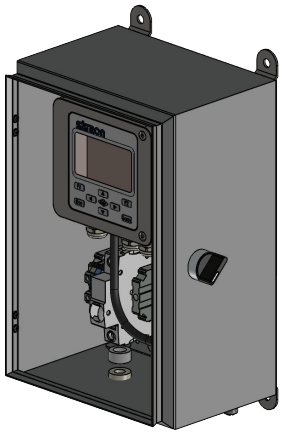
Device enclosure options

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

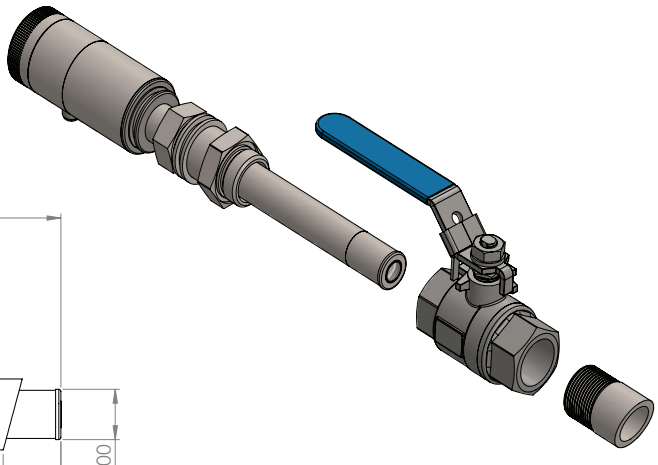


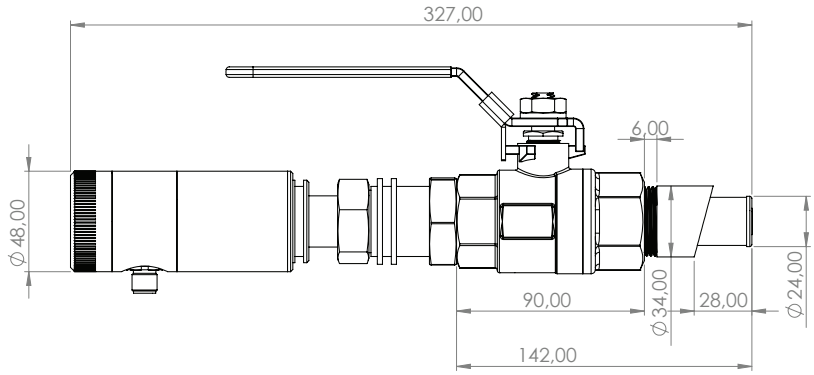
Connection Box (KF)
Remote electronics in the device enclosure with flushing valve. Flushing valve installed under the cabinet. External sample switch mounted on the right face of the cabinet. Power supply 115/230 V 50/60 Hz, code K. Compatible with housing type L and probe type R with display.
Product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



Flushing coupling for option KF
Product code: M1050102

Process connection





Standard model: VCK 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.

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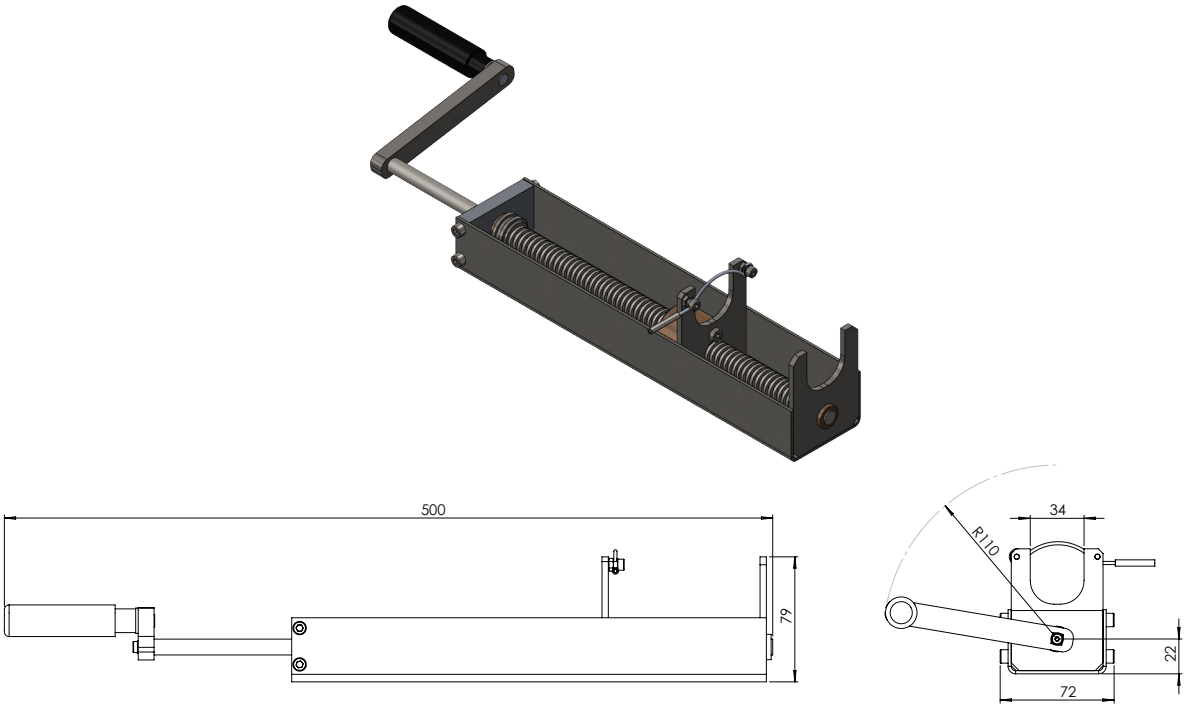
Installation and removal tool

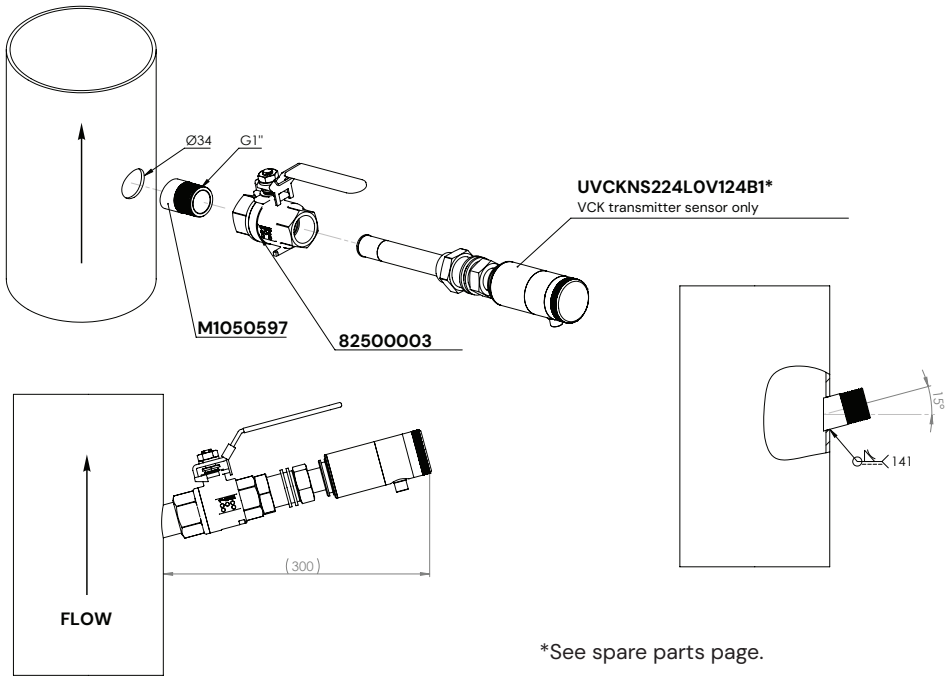
Adding safety when installing and removing the transmitter, specially in high pressure environments.
Product code for removal tool: M1050140



INSTALLATION

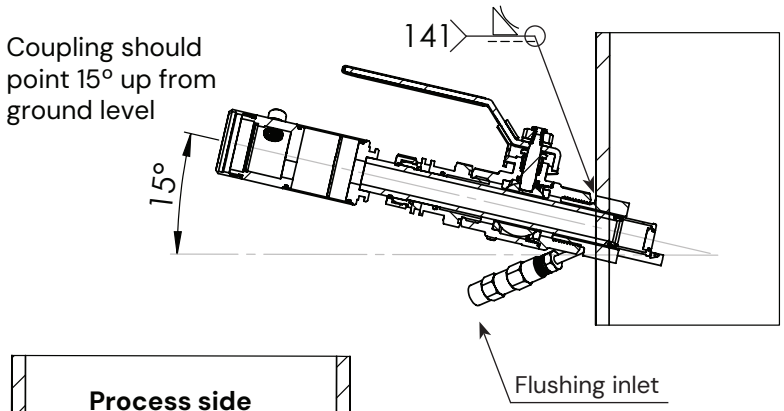
Installation of the standard coupling

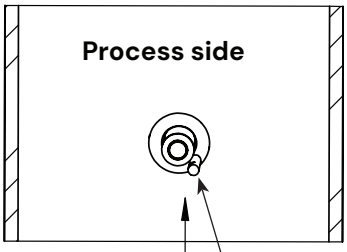
The location of the transmitter should be on the high-pressure discharge of the pump in the turbulent flow.
The optimal location is on a 45-degree angle off the center line of the discharge.
Transmitter should be installed against the follow.
Product code for standard coupling: M1050597.
Product code for ball valve: 82500003.



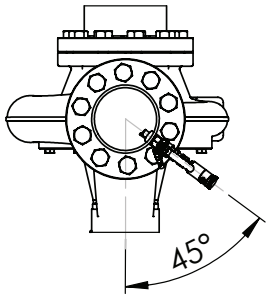
*See spare parts page.

Installation of the flushing coupling
Product code for flushing coupling: M1050102.
Product code for ball valve: 82500003.

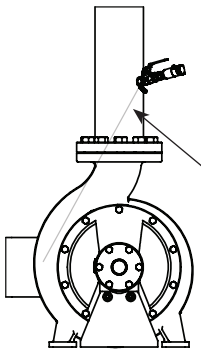




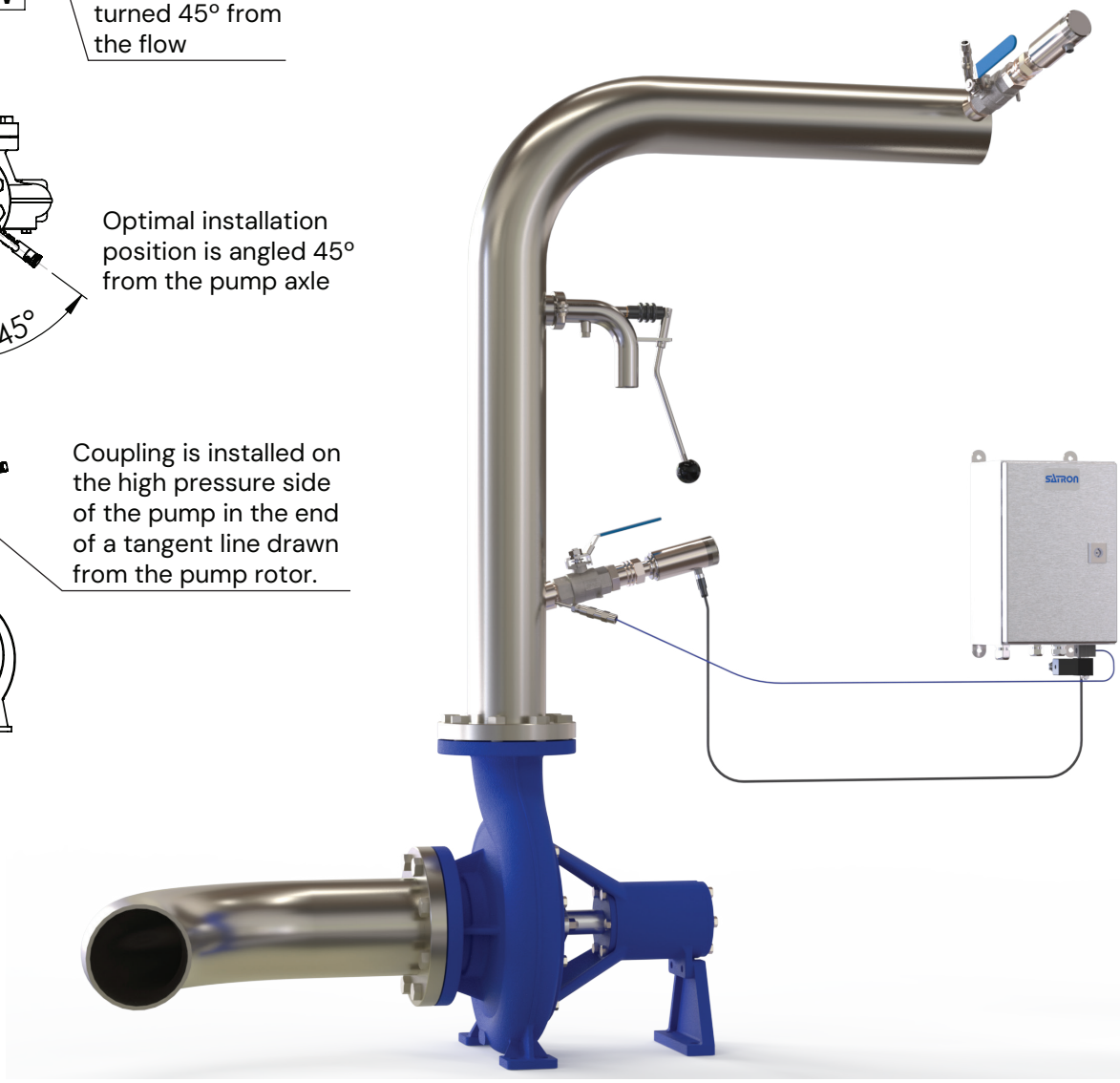
Flushing nozzle turned 45° from the flow



Optimal installation position is angled 45° from the pump axle



Coupling is installed on the high pressure side of the pump in the end of a tangent line drawn from the pump rotor.



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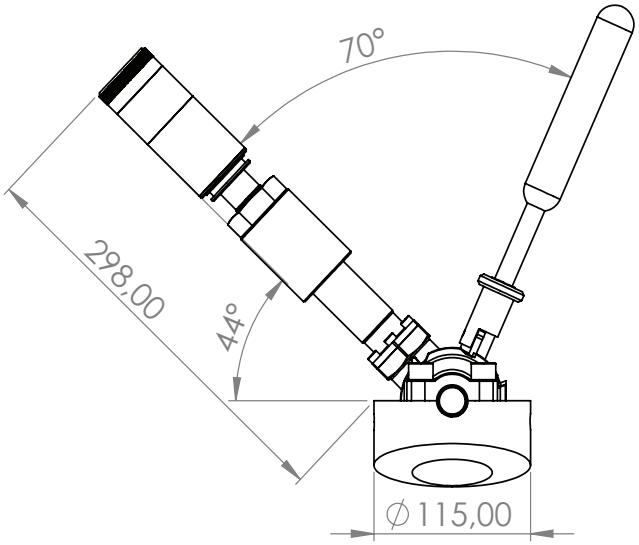
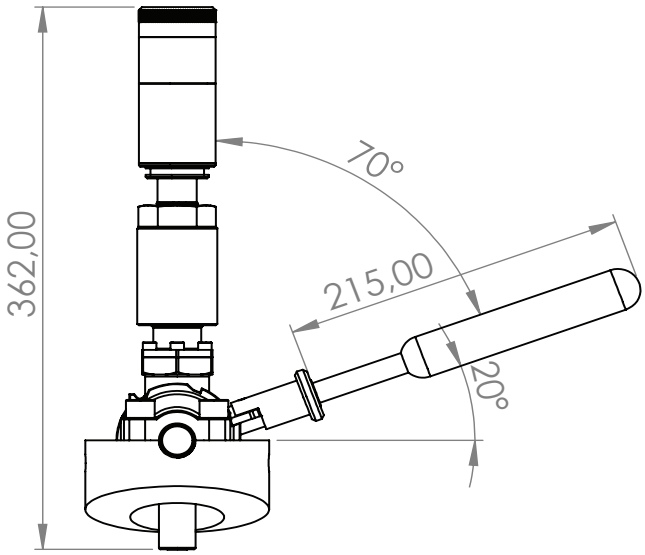
PASVE® Cs Compatible

VCK 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

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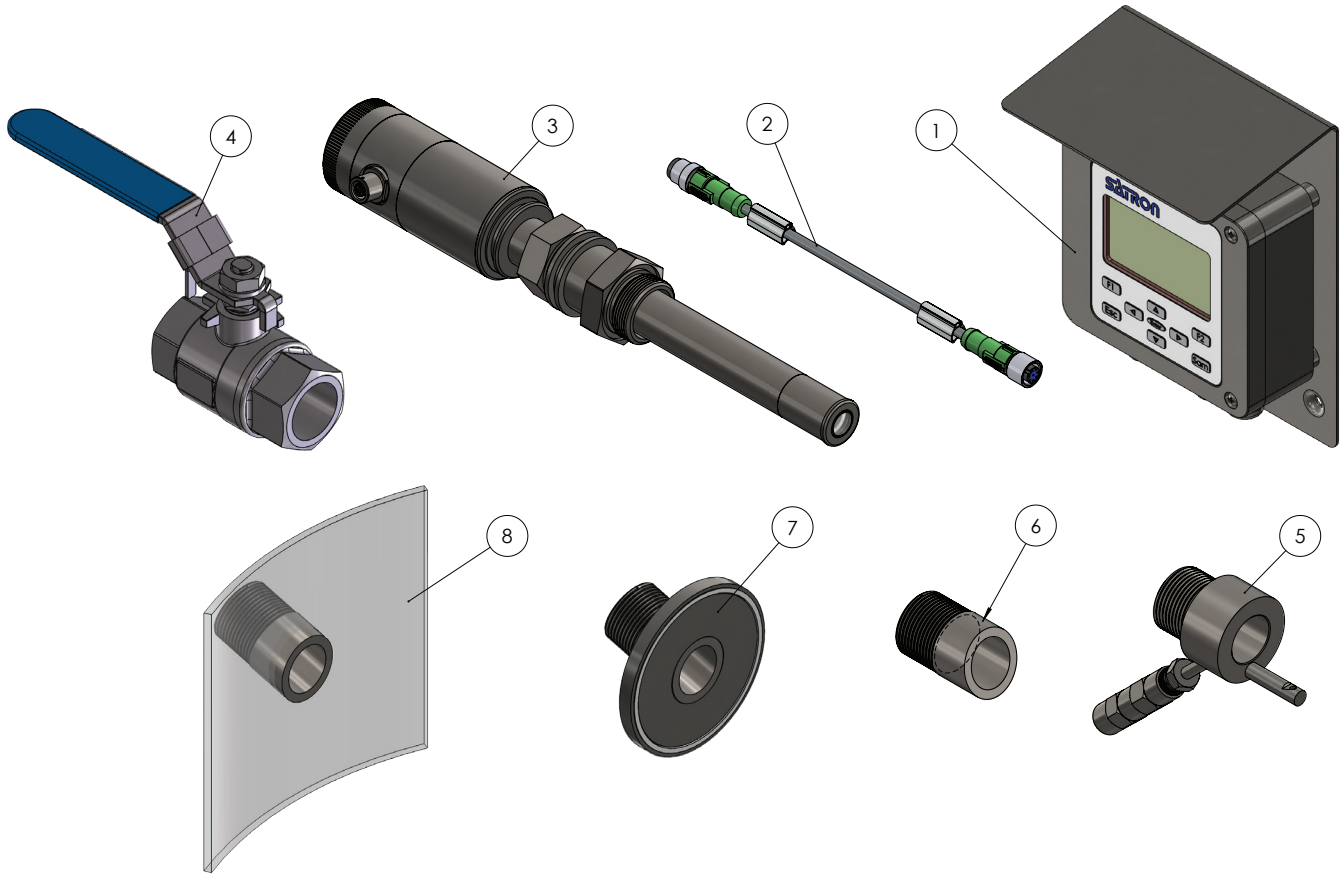
SPARE PARTS



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.	VCK transmitter sensor	UVCKNS224L0V124B1 [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 **E**VCKNS224L0V124B1 includes sensor, RDU and cable. For sensor only change order code to **U**VCKNS224L0V124B1.
[3)] Enables replacing blade consistency transmitters with Satron VC.

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SELECTION CHART

Adjustability	Span, min.	Total Consistency Range	Kappa Range
VCK	1% Cs	0...12% Cs	0 - 50 Kappa points

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
0 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

VCK	N	S	224	L	0	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

CE

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