



# Satron VCT

## Optical Consistency Transmitter

**SATRON**  
instruments

# SATRON VCT Optical Consistency Transmitter

BCs220  
07.04.2021  
Rev 11

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

SATRON VCT is an optical total consistency transmitter that is suitable for all pulps, in consistency range of 0...12%cs in applications located in wide range of paper machine and pulp mill applications. The Satron VC provides an accurate and reliable consistency measurement without need for regular maintenance and is equipped with a retraction mechanism that allows probe change during the process run.



## PRODUCT CERTIFICATIONS

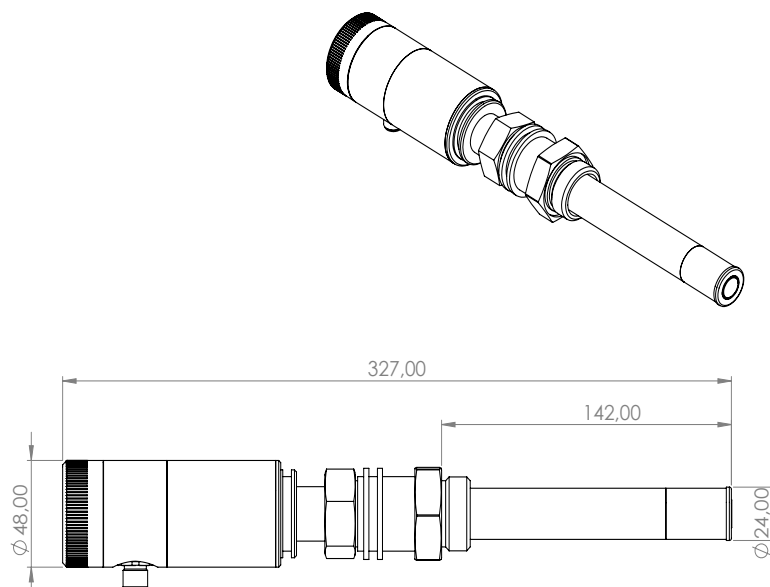
### European Directive Information:

**Electro Magnetic Compatibility EMC directive (2014/30/EU) including latest amendments with the application of the harmonized standards:**

EN 61326-1:2013

**Low Voltage Directive (2014/35/EU) including latest amendments with the application of harmonized standards:**

EN 61010-1:2010

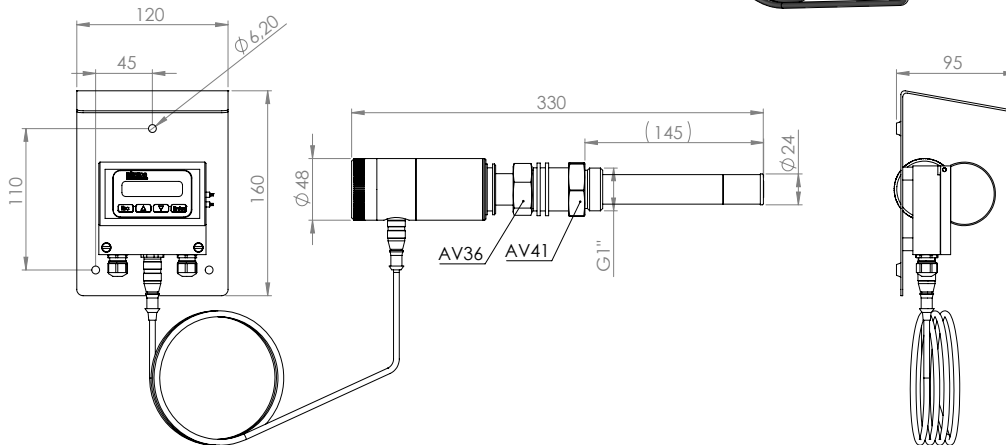
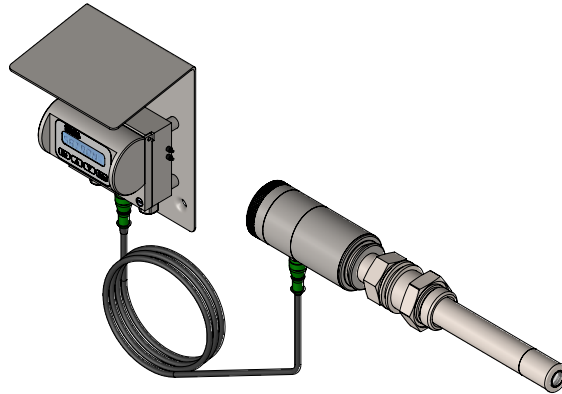


**Standard VCT sensor.** Dimensions at the picture are in millimeters.

## Probe options

### Standard measuring probe

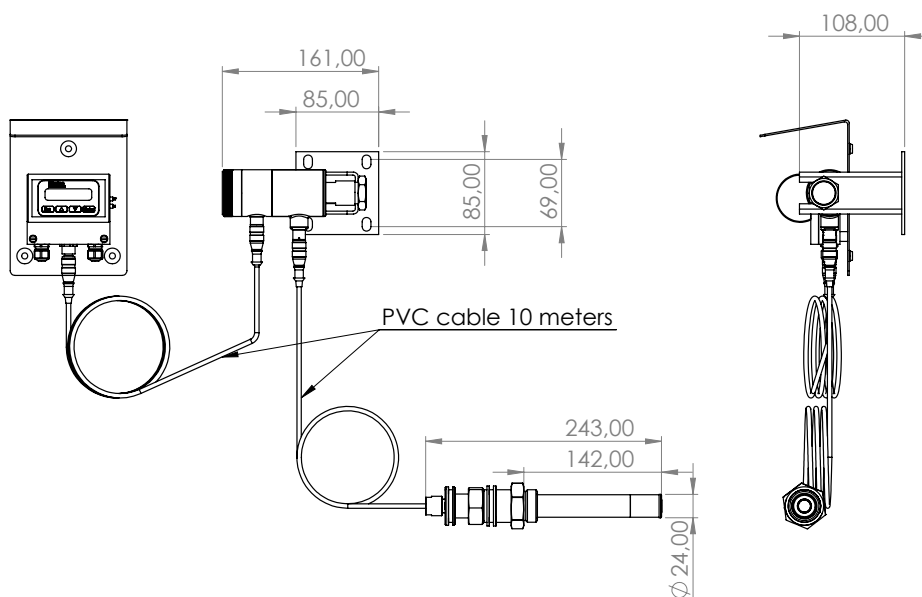
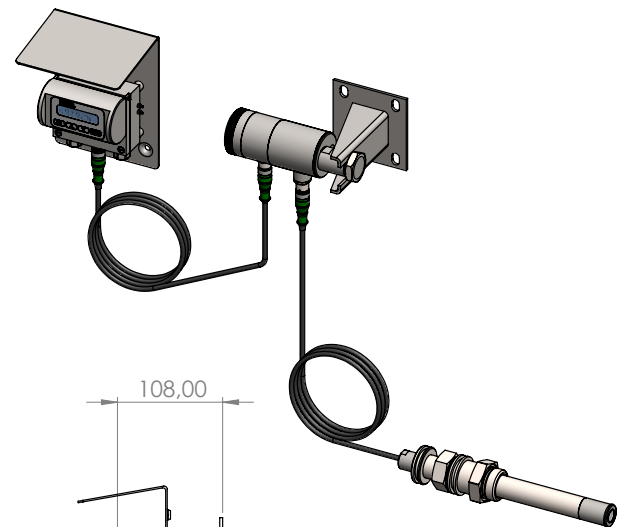
(Selection code option 0)\*



### Remote measuring probe, IP68

(Selection code option R)\*

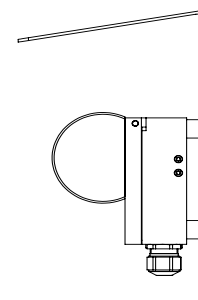
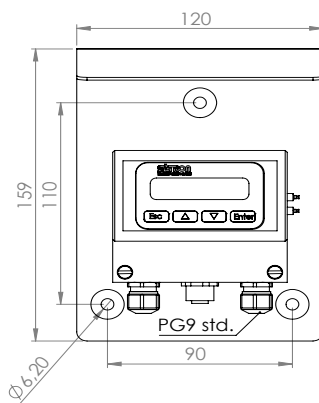
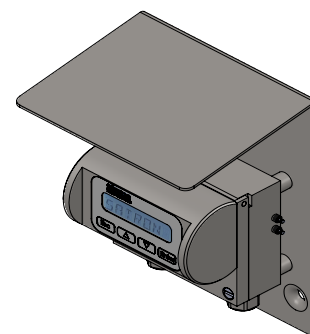
Remote measuring probe is recommended in mounting places that may effect to measuring electronics by vibration or high humidity.



\*see selection chart on last page

## Remote Display Unit

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, 3 dry contact binary inputs and 3 contact outputs.

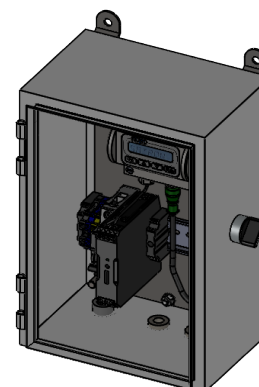


## Device enclosure options

### Connection Box (K)

Remote electronic 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. Housing type L and probe type R with display.

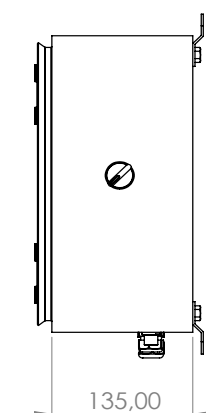
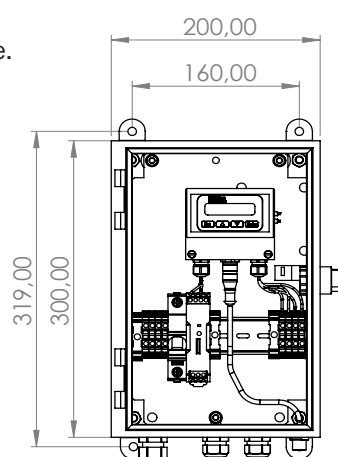
**Production code:** M1325065



### Connection Box (KF)

Remote electronic 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. Housing type L and probe type R with display.

**Production code:** M1050193

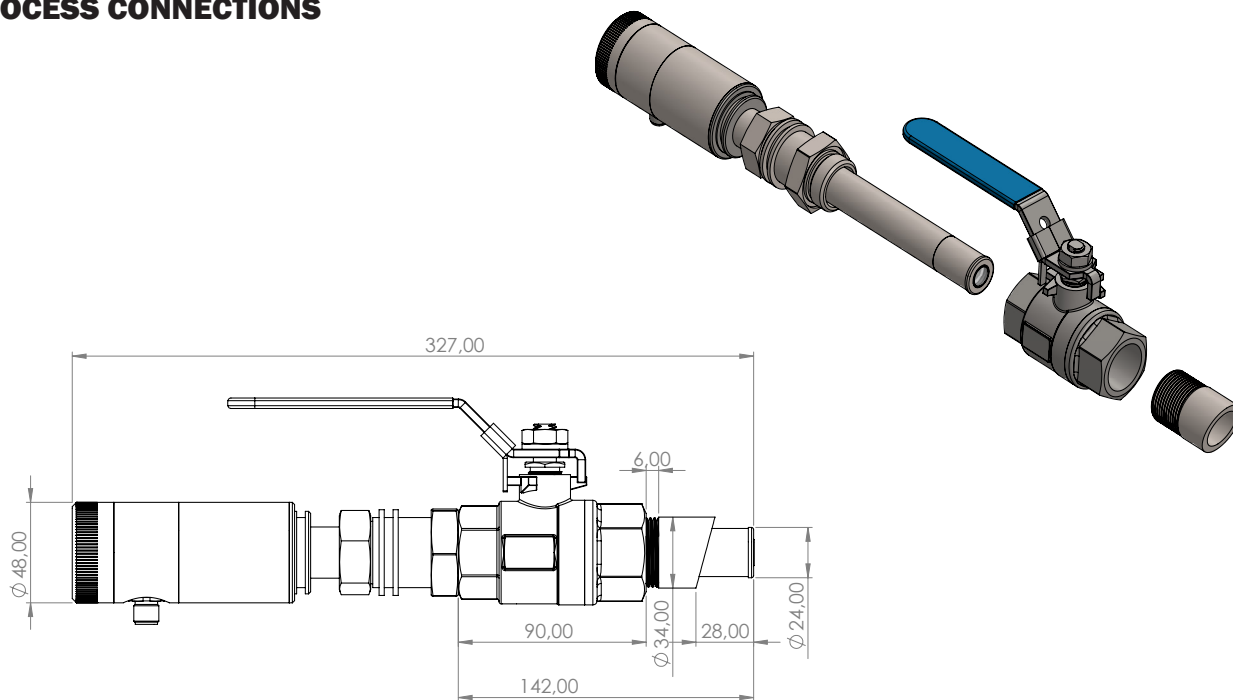


### Flushing coupling for option KF

**Production code:** M1050102

# SATRON VCT Optical Consistency Transmitter

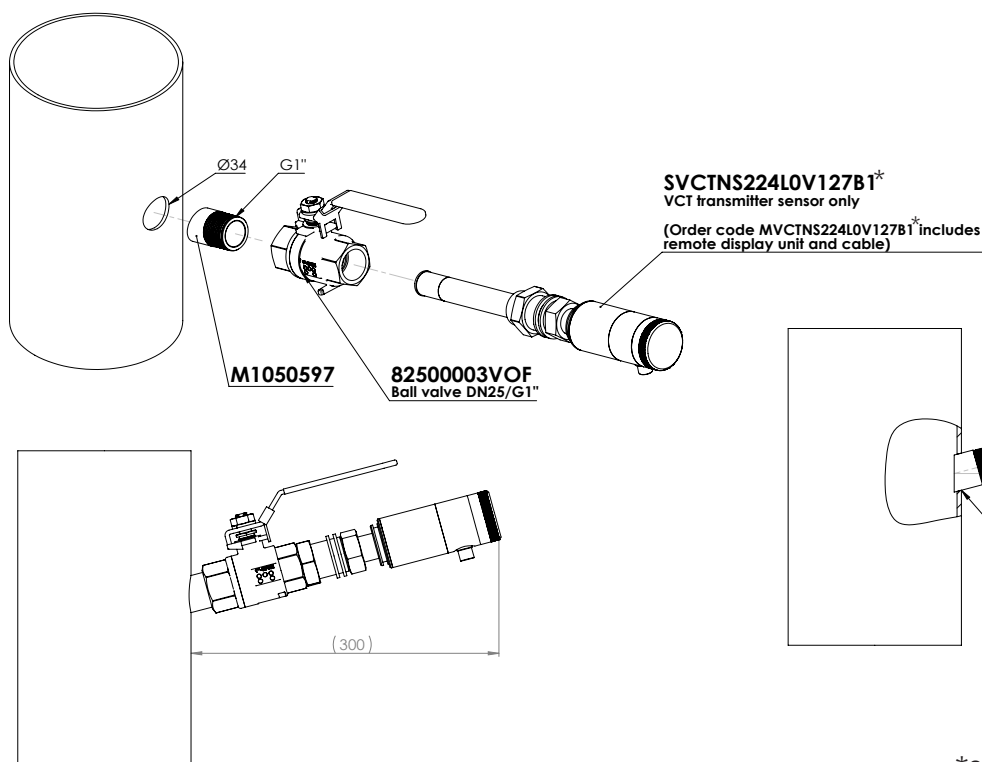
## PROCESS CONNECTIONS



**Standard model:** VCT with process connection G1A ball valve insertion, G1 15° coupling, wetted parts material AISI316L, PG9 connection. Dimensions at the picture are in millimeters. Selection code option B1.

### Installation

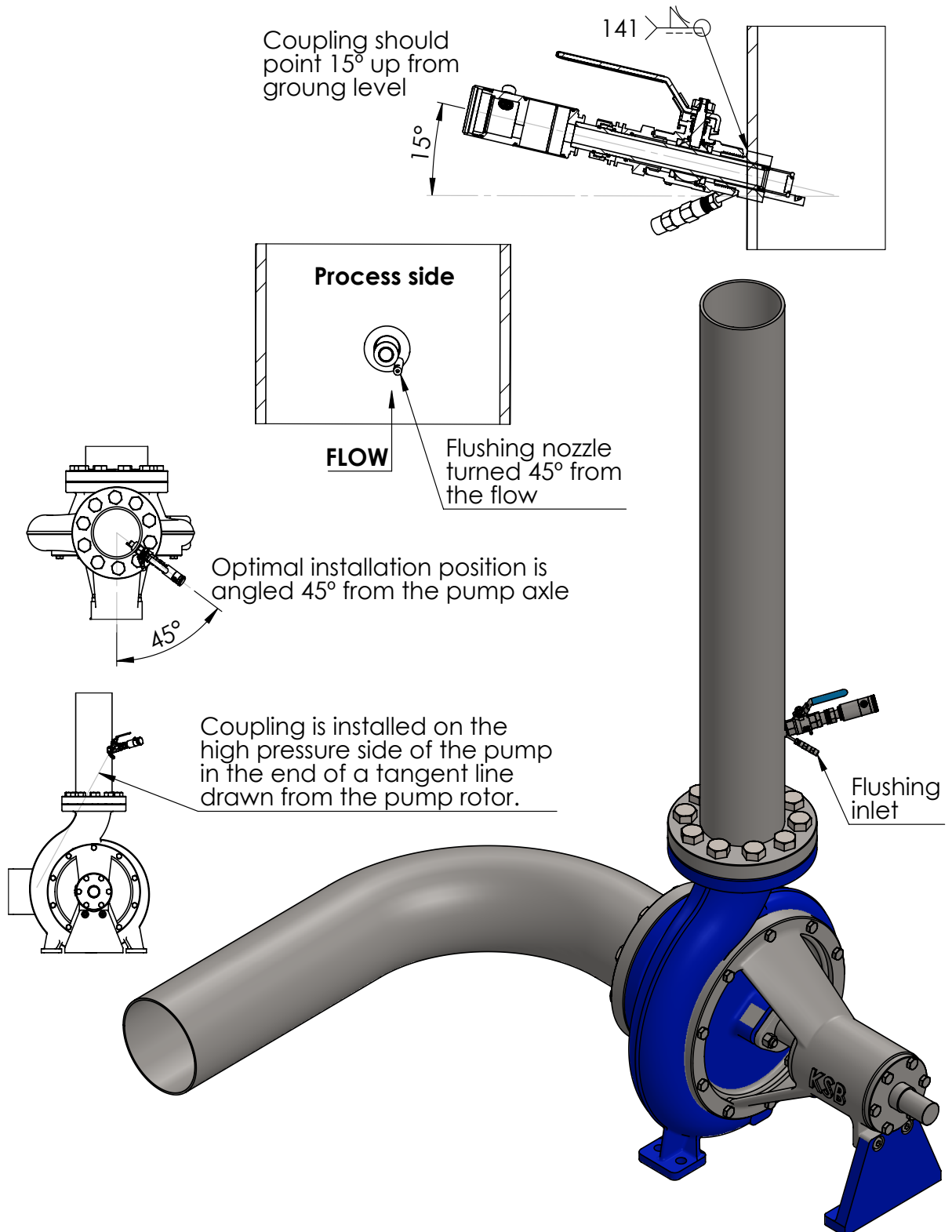
The location of the transmitter should be on the high-pressure discharge of the pump in the turbulent flow. The optimal location is on a 45-degree angle off the centerline of the discharge



\*see selection chart on last page

## Installation of the flushing coupling

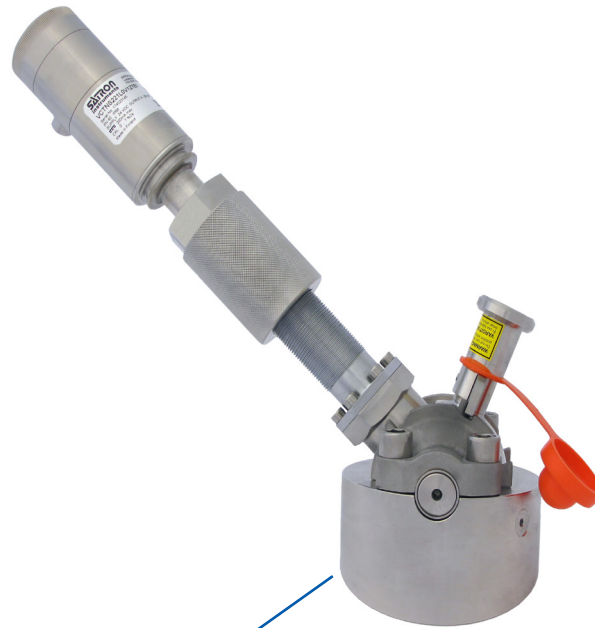
Production code for flushing coupling: M1050597



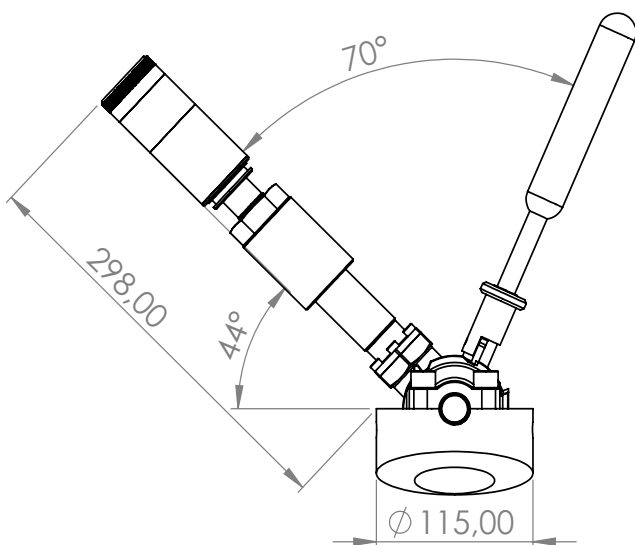
# SATRON VCT Optical Consistency Transmitter

## PASVE® Cs compatibility

VCT 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)

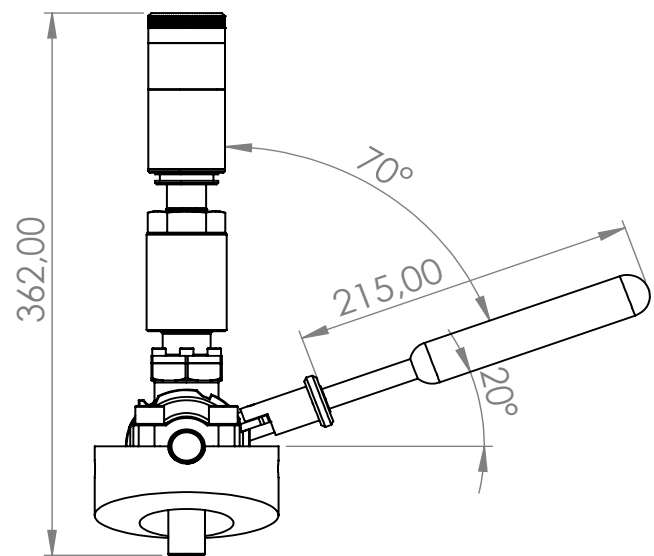


**PASVE® Cs**  
Order code: MCSB240MD00Z4



### Service position:

Sensor removal  
Sensor cleaning



### Measuring position



## 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

Zero elevation: Calibrated span is freely selectable on the specified range depending from the desired option. This can be made by using keyboard (display option)

### Damping

- Time constant is continuously adjustable 0.01 to 60 s.

### Temperature limits

Ambient: -30 to +80 °C

Process: 0 to + 140 °C

Shipping and storage: -40 to +80 °C.

### Output

3-wire (3W), 4-20 mA

### Supply voltage and permissible load

Sensor: 24VDC

Device enclosures option K:

115/230VAC

### Humidity limits

0-100 % RH

### EMC directive

2014/30/EC - EN 61326-1:2013

### CONSTRUCTION

#### Materials:

Sensing element 1): AISI316L (EN 1.4404), Duplex (EN. 1.4462), Hast. C276 (EN 2.4819), or Titanium Gr2. Sapphire Coupling 1): 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

For customer-specified range with minimum damping. (If range is not specified, transmitter is calibrated for maximum range.)

### Electrical connections

Remote electronics housing with display code **L**: Pg9 gland for cable; Conductor cross section solid:

max 2.5 mm<sup>2</sup>

Conductor cross section flexible:

max 1.5 mm<sup>2</sup>

Device enclosures (with display), code

#### **K**:

- PG13,5 inlet, 3 pcs

- The sensor signal M12 plug connector.

### 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

Current output 2 has same ground as binary IO

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

### Protection class:

See Selection chart.

### Weight

Housing with M12

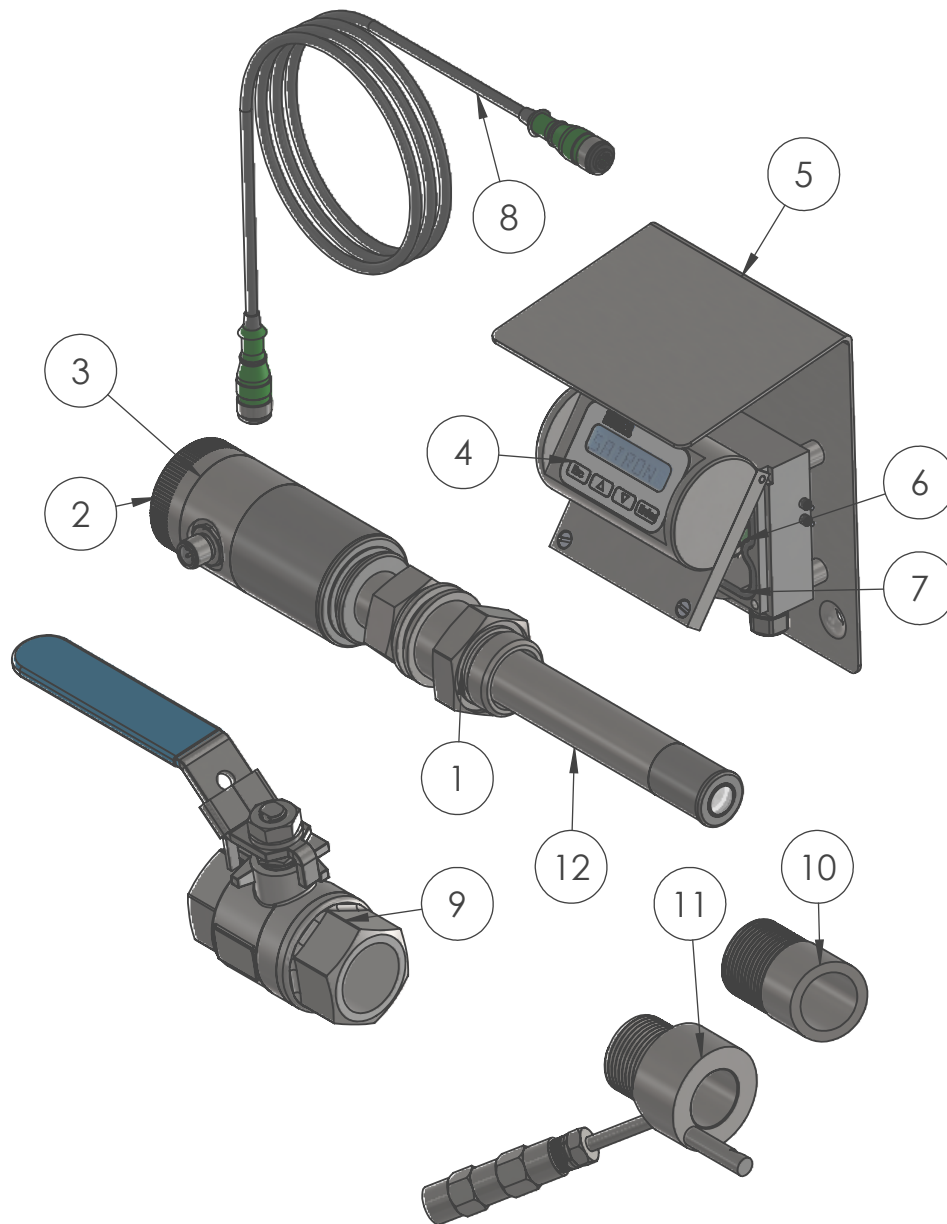
Remote Housing (**L**): 2.9 kg

Remote sensor (**R**): 2.9 kg

Device enclosure (**K**) 6,2 kg



## SPARE-PARTS



No	Part name	Order code
1.	O-ring EPDM	80036203
2.	O-ring	80013800
3.	AISI 316 cover	T1300256
4.	Sticker	T1325215
5.	Remote Display Unit RDU	T1325016
6.	Fuse for L-Housing	74212000
7.	Seal for L-Housing display	80017226
8.	L-Housing data cable (Standard 15 meters)	70000451
9.	AISI 316L ball valve	82500003
10.	G1 15° coupling for ball valve	M1050597
11.	Flushing coupling G1 for process connection B1	M1050102
12.	VCT transmitter sensor	For sensor only change order code M to S, example: MVCTNS224LOV127B1 -> SVCTNS224LOV127B1

# SATRON VCT Optical Consistency Transmitter

BCs220  
07.04.2021  
Rev 11

## SELECTION CHART

<b>Adjustability</b> VCT	<b>Span, min</b> 1% Cs	<b>Consistency Range</b> 0...12% Cs			
<b>Process temperature limits</b>	<b>N</b> Normal version 0...+140 °C				
<b>Output</b>	<b>S</b> 4-20 mA DC				
<b>Material of wetted parts</b>	<b>Body</b>	<b>2</b> AISI316L (EN 1.4404)	<b>Lens</b>	<b>2</b> Sapphire	
		<b>6</b> Titanium Gr2 (EN 3.7035)	<b>Seals</b>	<b>2</b> PTFE+FPM (Viton®) <b>3</b> PTFE+FFPM (Kalrez®) <b>4</b> PTFE+EPDM (std.)	
<b>Housing type</b>	<b>L</b> Remote electronics housing with display				
<b>Probe type</b>	<b>0</b> No remote probe				
	<b>R</b> Remote measuring probe, IP68				
<b>Connection type</b>	<b>V</b> PG9, IP66				
<b>Cable Material</b>	<b>1</b> PVC (std.)				
<b>Cable length</b>	<b>0</b> No, L or R selected				
	<b>1</b> 10 meter				
	<b>2</b> 15 meter (std.)				
<b>Light source</b>	<b>7</b> IR		<b>9</b> High IR		
<b>Process connections</b>	<b>B1</b> G1A ball valve insertion. Extension diameter Ø 24mm				
	<b>P1</b> PASVE® Cs compatible				

M              /  /

Example code of basic transmitter VCT NS224LOV127B1

M

### Optional items and features, specify only if necessary:

#### 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.

#### 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

Example code of transmitter with remote electronics and material certificate VCT N S 224LOV127B1 K MC3

/  /

Hastelloy® is a registered trademark of Haynes International  
Kalrez® is a registered trademark of Dupont Polymers Inc.  
Viton® is a registered trademark of The Chemours Company FC, LLC.  
PASVE® is a registered trademark of Satron Instruments Inc.