

# SATRON VC Optical Consistency Transmitter

BCs220  
rev. 1  
31.01.2013

SATRON INSTRUMENTS VC is an optical consistency transmitter. It is suitable for all pulps consisting of a single grade, in consistency range of 0...7%Cs located mainly within the mechanical pulp processes (SWG, TMP, PWG and CTMP). Typical applications are measurements to screens, outlet from latency removal chest, screen rejects and many others. The Satron VC can provide an accurate and reliable consistency measurement without need for regular maintenance.



## TECHNICAL SPECIFICATIONS

### Measuring range and span

See Selection Chart.

### 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) or HART@275/375 communicator.

### Damping

- Time constant is continuously adjustable 0.01 to 60 s.

### Repeatability

- 0.01% Cs.

### Temperature limits

Ambient: -30 to +80 °C  
Process: -30 to + 100 °C / + 200 °C  
Shipping and storage: -40 to +80 °C.

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

### Supply voltage and permissible load

24 VDC, -10 %, + 15 %

### Humidity limits 0-100 % RH

### EMC directive 2004/108/EC

- EN 61326-1:2005

## CONSTRUCTION

### Materials:

Sensing element <sup>1)</sup>: AISI316L (EN 1.4404), Duplex (EN. 1.4462), Hast. C276 (EN 2.4819), or Titanium Gr2.  
Safir glass  
Coupling <sup>1)</sup>: AISI316L (EN 1.4404), Duplex (EN 1.4462), Hast.C276 (EN 2.4819) or Titanium Gr2

### Pressure class:

- PN25

### Housing with display,

codes **H0T** & **N0T**:  
Housing: AISI303/316, Seals: Nitrile-rubber and Viton®,  
Nameplates: Polyester

### Housing with M12 connector, code

**H0T**: Housing: AISI303/316, Seals: Viton® and NBR.

### Housing with PLUG DIN 43650 connector, code

**H0S**: Housing: AISI303/316, Seals: Viton® and NBR.

PLUG connector: PA6-GF30 jacket, Silicone rubber seal, AISI316 retaining screw.

### Connection hose between sensing element and housing

Codes **L** and **R** :  
PUR signal cable or hose protected with PTFE/AISI316 braiding

### Calibration

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

### Electrical connections

Housing with PLUG connector, code

#### **H0S**:

Connector type DIN 43650 model AF; Pg9 gland for cable; wire cross-section 0.5 to 1.5 mm<sup>2</sup>.

Housing with M12 connector, code **H0T**:  
M12 plug connector

Housing with display, code **N0S**:  
Connector type DIN 43650 model AF; Pg9 gland for cable; wire cross-section 0.5 to 1.5 mm<sup>2</sup>.

Housing with display, code **N0T**:  
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 load, See picture below  
Maximum isolation voltage 100 VDC

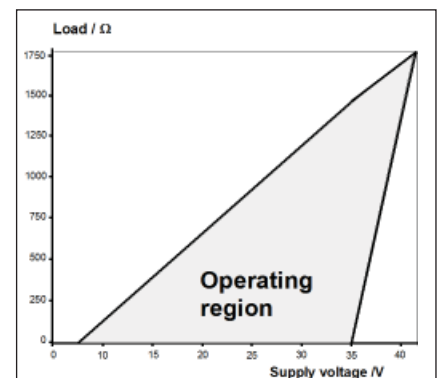
### Process connections

- With G1 connecting thread

**Protection class:** See Selection chart.

### Weight

Housing with PLUG DIN43650 connector (**H0T**): 0.9 kg  
Housing with M12 connector (**H0S**): 0.9 kg  
Housing with display (**N0S & N0T**): 1.3 kg  
Remote Housing (**L**): 2.5 kg  
Remote sensor (**R**): 2.5 kg



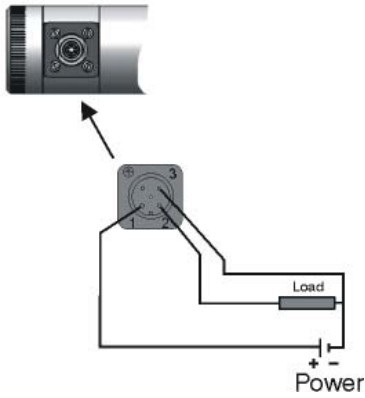
Min. load using HART®-communication 250 W

$R_{max} = \frac{\text{Supply voltage} - 5 V}{I_{max}}$

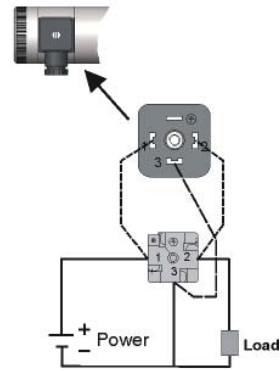
$I_{max} = 20,5 \text{ mA}$   
 $I_{max} = 22,5 \text{ mA}$   
(when the alarm current 22,5 mA is on)

Current output 2  
External power supply

<sup>1)</sup> Parts in contact with process medium



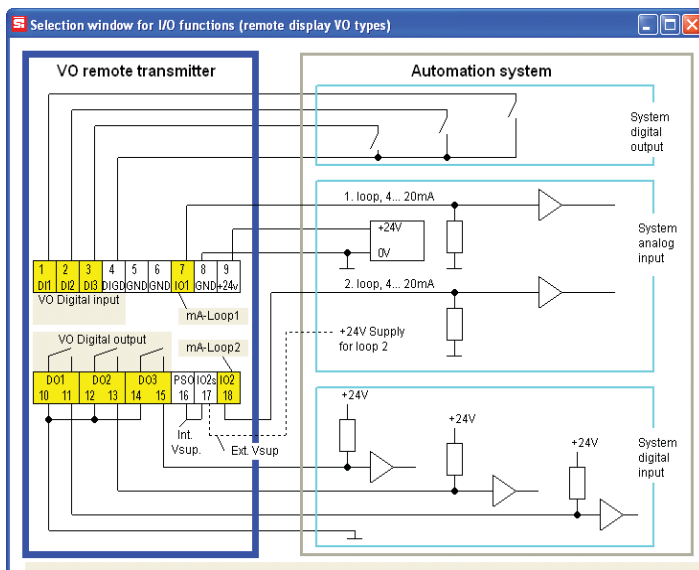
**Wiring**  
Housing with M12-connector, code HT



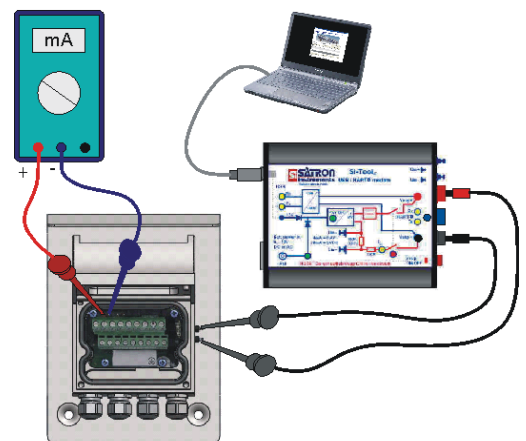
**Wiring**  
Housing with PLUG DIN43650-connector, code HS

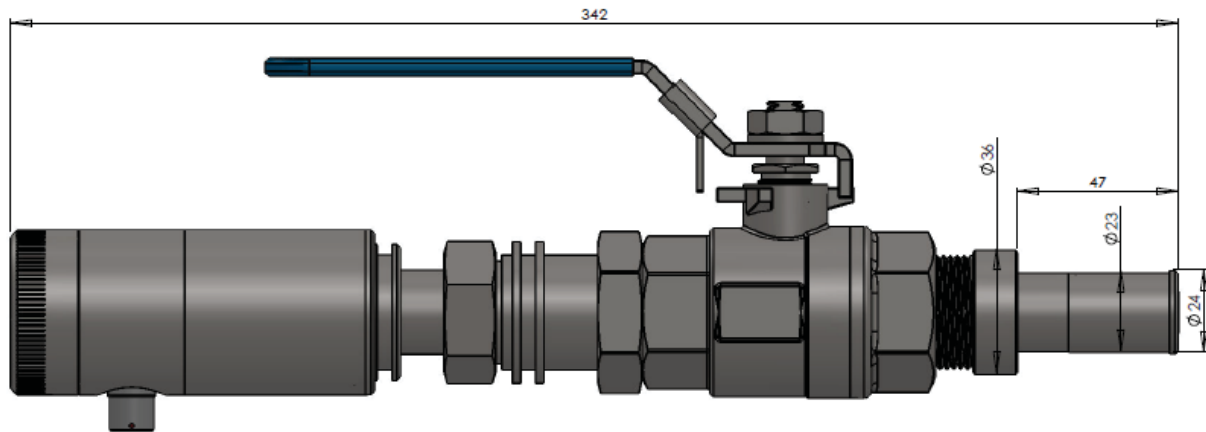


**Wiring**  
Housing with PLUG DIN43650- and M12-connector, test connector box, code HT & HS

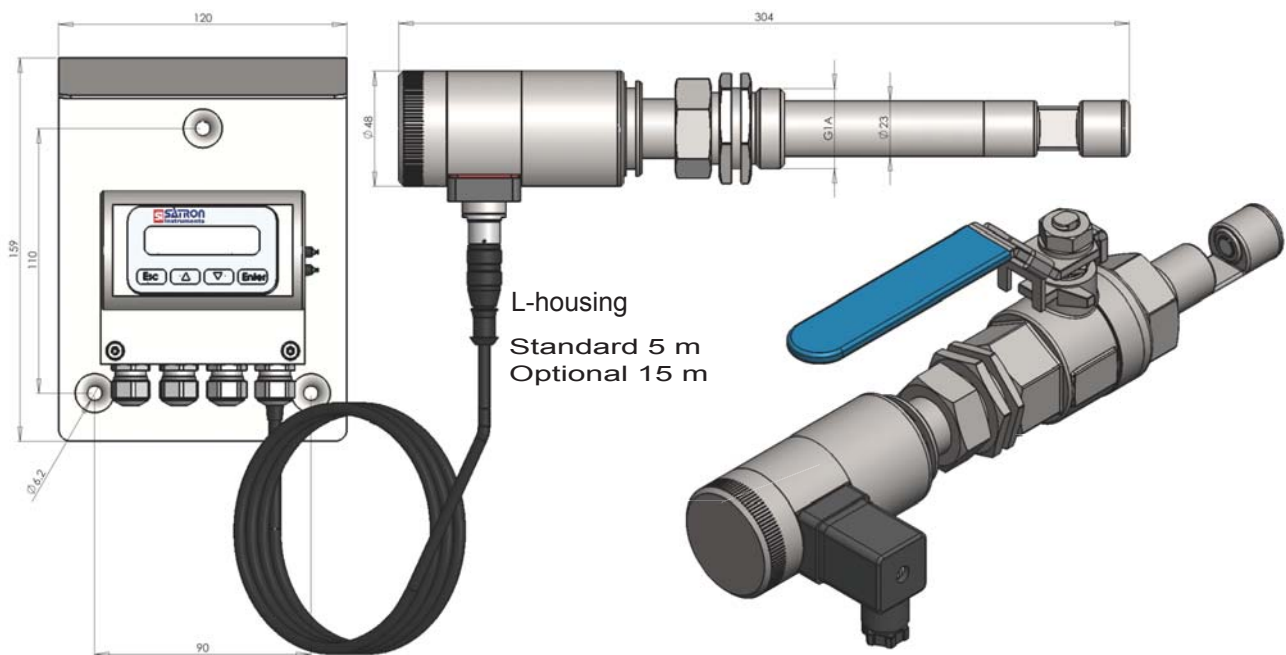


**Wiring**  
Remote electronics housing with display, code L





Dimensions Satron VCT



Dimensions Satron VCF

## Selection Chart

<b>Adjustability</b>	<b>Span, min</b>	<b>Consistency Range</b>		
VCT	1% Cs	0...7% Cs		
VCF	0,5% Cs	0...0,5 Cs / 0,5...3% Cs		
<b>Process temperature limits</b>		<b>N</b>	Normal version -30...+100 °C	
		<b>H</b>	High temperature -30...+200 °C	
<b>Output</b>		<b>S</b>	4-20mA DC/HART®	
<b>Material of wetted parts</b>	<b>Body</b>	<b>Lens</b>	<b>Seal</b>	
	<b>2</b>	AISI316L (EN 1.4404)	<b>2</b> Sapphire glass	<b>1</b> EPDM
	<b>3</b>	Hast. C 276 (EN 2.4819)		<b>2</b> FPM (Viton®)
	<b>6</b>	Titanium Gr2 (EN 3.7035)		<b>3</b> FFPM (Kalrez®)
	<b>8</b>	Duplex (EN 1.4462)		
<b>Housing type</b>		<b>N</b>	Housing with display and pushbuttons (only with remote probe "R")	
		<b>H</b>	Housing with, no display, (only one mA output)	
		<b>L</b>	Remote electronics housing with display	
<b>Probe type</b>		<b>0</b>	No remote probe	
		<b>R</b>	Remote measuring probe (not available with L housing), IP68	
<b>Connection type</b>		<b>S</b>	DIN43650 with PG9, IP66	
		<b>T</b>	M12, IP67	
		<b>U</b>	M12 & USB (only with N housing), IP67	
		<b>V</b>	PG9 (always with L housing), IP66	
<b>Cable Material</b>		<b>0</b>	No, L or R selected	
		<b>1</b>	PUR cable.	
		<b>2</b>	AISI316L braided PTFE hose.	
		<b>3</b>	Steel reinforced PUR hose.	
		<b>4</b>	PVC cable	
<b>Cable length</b>		<b>0</b>	No L or R option selected	
		<b>1</b>	5 meter	
		<b>2</b>	15 meter	
<b>Light source</b>		<b>7</b> 880nm		
<b>Process connections</b>		<b>B1</b> G1A ball valve insertion. Extension diameter ø 24mm		



### Documentation

Calibration certificate **AE** English

Installation and operating instructions **IE** English **IF** Finnish **FR** French

### Material certificates

**0** No material certificate

**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

*We reserve the right for technical modifications without prior notice.*

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Hastelloy is the registered trademark of Haynes International.

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