



**SATRON®**

# LUMINA™ VEF Optical Effluent Transmitter

[www.satron.com](http://www.satron.com)

#LookCloser

The VE family of sensors measures process parameters by transmitting strobes of light into the wastewater and measuring the absorption characteristics. These measurement values are calibrated by sampling and laboratory analysis of process.

SATRON VEF is an optical Total Solids sensor that is suitable for all wastewater in range of 0...1 000ppm in applications located in wide range of waste water treatment applications. The Satron VEF provides an accurate and reliable TSS measurement without need for regular maintenance and is equipped with a retraction mechanism that allows probe change during the process run.



## 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 + 60 °C  
Shipping and storage: -40 to +80 °C.

### Output

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

### Supply voltage and permissible load

Sensor: 24VDC  
Device enclosures 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

PTFE/AISI316 braided hose

### 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

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

B1: With G1" connecting thread  
H1: fixed mounting tube

Protection class:  
See Selection chart.

Protection class:  
See Selection chart.

Weight  
Remote sensor (R): 2.9 kg  
Device enclosure (K) 6,2 kg

### PRODUCT CERTIFICATIONS

#### European Directive Information:

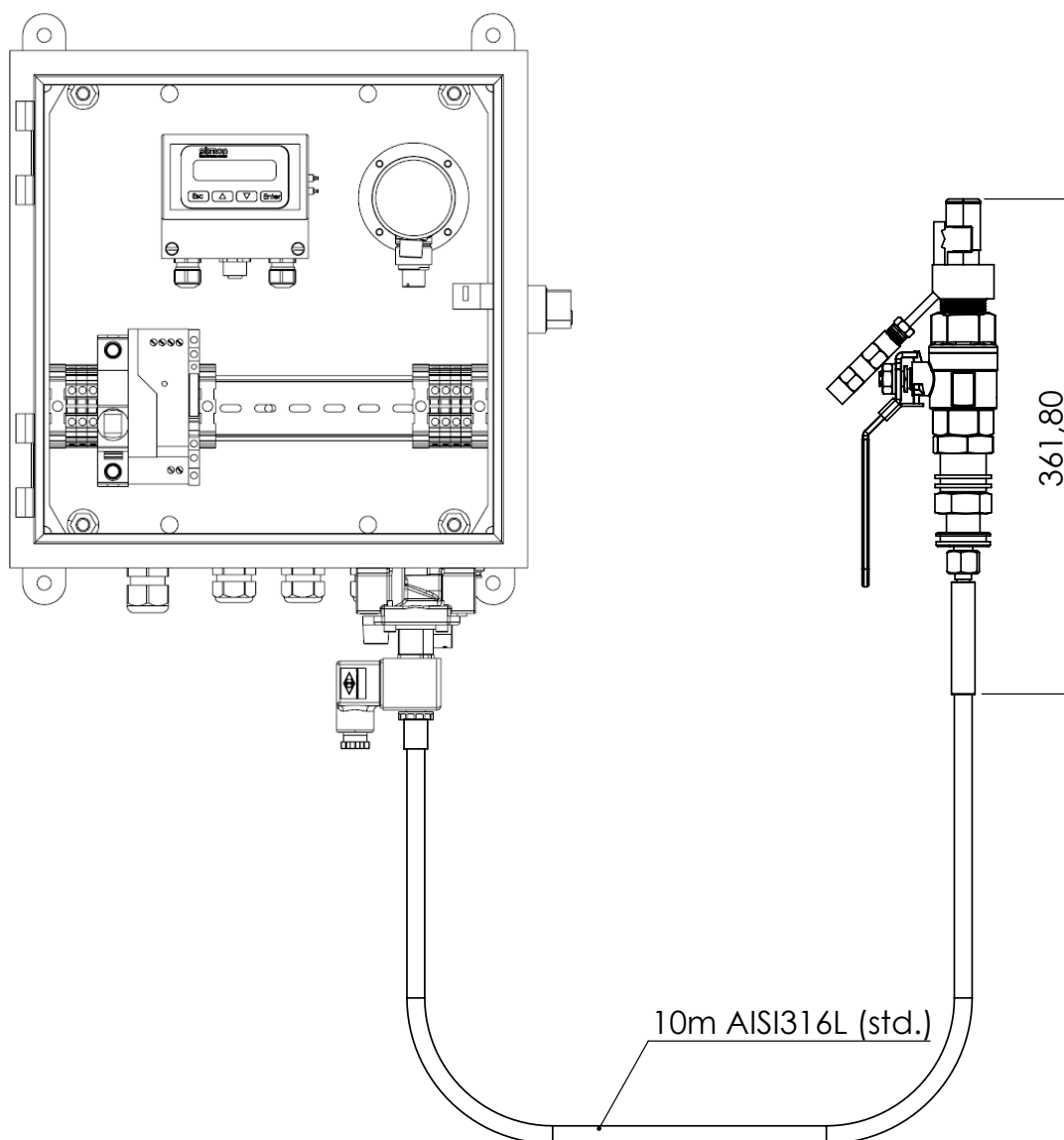
**Electro Magnetic Compatibility EMC directive (2014/30/EU) including latest amendments with the application of the harmonized standards:**  
EN 61326-1:2013

**Low Voltage Directive (2014/35/EU) including latest amendments with the application of harmonized standards:**  
EN 61010-1:2010

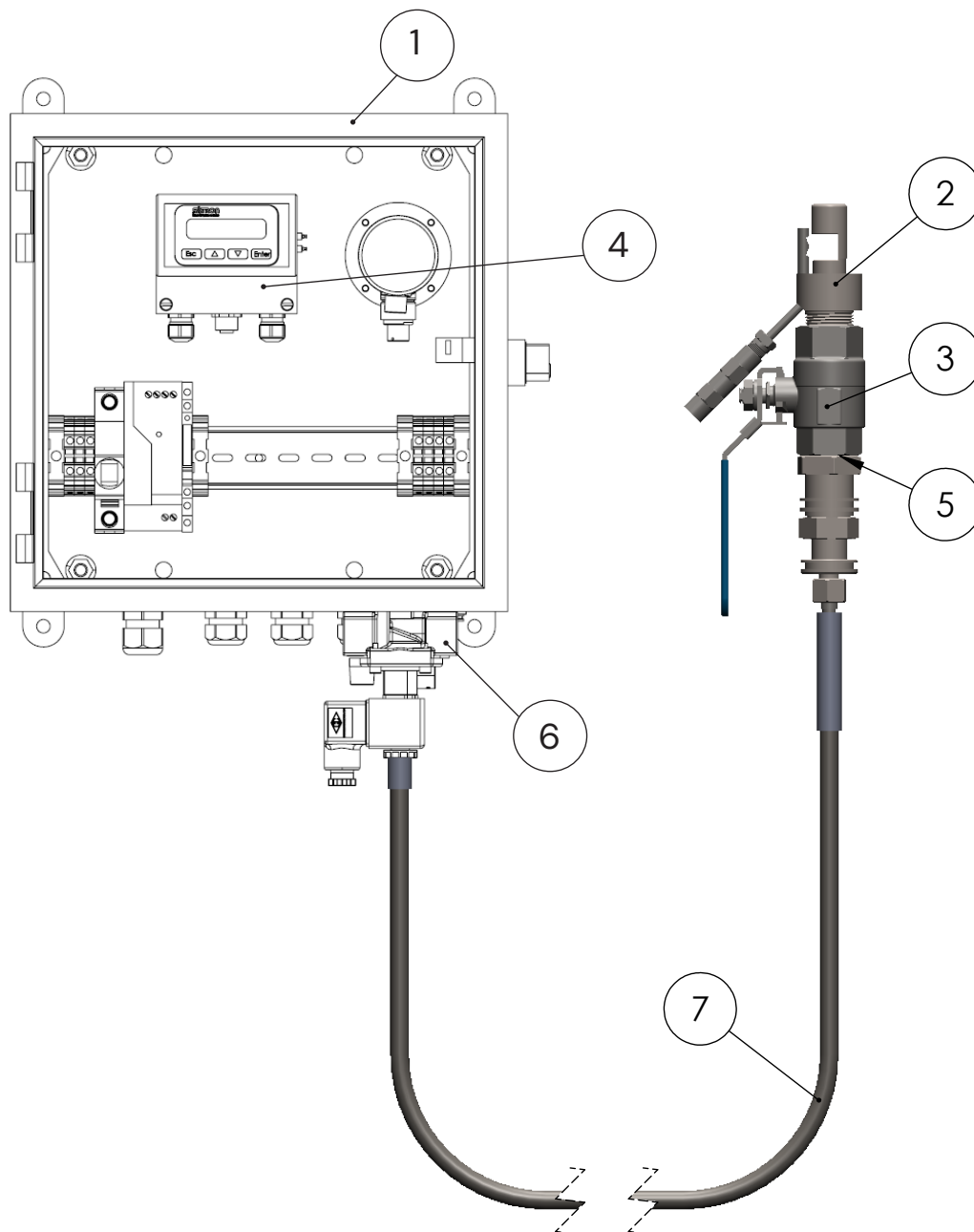
## Connection Box (KF)

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.

The Remote Display provides a local display of the measured values and serves also as a simple menu-driven calibration and troubleshooting interface. It includes two analog 4-20 mA outputs, 3 dry **contact binary inputs and 3 contact outputs.**



## SPARE-PARTS

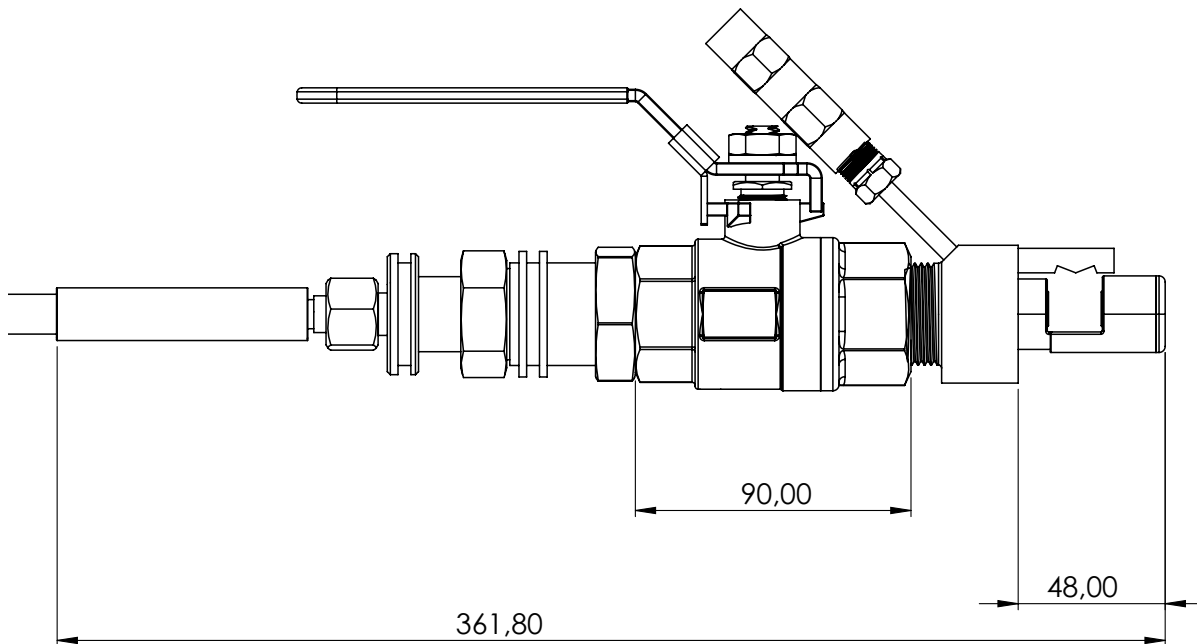


No	Part name
1.	Enclosure without sensor
2.	Flushing coupling for B1 / F
3.	AISI 316L Ball Valve
4.	Sensor with display
5.	ORING- EPDM
6.	Solenoid Valve
7.	VEF transmitter sensor probe

Order code
M1050194-RT
M1050102-VOF
82500003VOF
VEFNS221NRT2x7G1
80033426 34.2x2.62 EPDM
75000020
For sensor only change order code M to S, example: MVEFNS224NRT227B1 -> SVEFNS224NRT227B1

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

## DIMENSIONS



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

## SELECTION CHART

<b>Adjustability</b>	<b>Span, min</b>	<b>Measurement Range</b>		
VEF	0...10 ppm	0...1 000 ppm		
<b>Process temperature limits</b>		<b>N</b>	Normal version 0...+80 °C	
<b>Output</b>		<b>S</b>	4-20 mA DC	
<b>Material of wetted parts</b>	<b>Body</b>	<b>Lens</b>	<b>Seals</b>	
	2 AISI316L (EN 1.4404) 2 AISI316L (EN 1.4404)	2 Sapphire 2 Sapphire	4 PTFE+EPDM 3 PTFE+FFPM (Karlez®)	
<b>Housing type</b>		<b>N</b>	Housing with display	
<b>Probe type</b>		<b>R</b>	Remote measuring probe, IP68	
<b>Connection type</b>		<b>T</b>	M12, IP67	
<b>Cable material</b>		<b>2</b>	AISI316 braided PTFE hose	
<b>Cable length</b>		<b>1</b>	5 meter	
		<b>2</b>	10 meter (std.)	
		<b>3</b>	15 meter	
<b>Lightsource</b>		<b>7</b>	IR	
<b>Process Connections</b>		<b>B1</b>	G1A ball valve insertion. Probe diameter Ø 24mm	
		<b>H1</b>	Submersible Ø 24mm measuringhead	

Example code

VEF N S 224 N R T 2 2 7 B1

## Optional items - order separately

### Device enclosure

**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