SATRON®

LUMINA™ VET
Optical Effluent Transmitter

www.satron.com

#LookCloser

SATRON VET Optical Effluent Sensor

BCs290
M3 rev 1
23.07.2025

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

SATRON VET is a single or two channel optical total solids (TS) and chemical oxygen demand (COD) sensor that is suitable for all wastewater in range of 0...200 000ppm in applications located in a wide range of wastewater treatment applications. The Satron VET provides an accurate and reliable TS measurement without need for regular maintenance and is equipped with a retraction mechanism that allowes probe change during the process run. COD measurement is calibrated with process specific sample data after the site laboratory analysis. Flexible installation options can be provided. Please consult Satron for sensor specification for your application.

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 60s. Factory setting 0,5s.

Repeatability
0.01% Cs.

Temperature limits
Ambient: -30 to +80 °C
Process: 0 to + 80 °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
Precalibrated at the factory for 0...10 000 mg/L 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

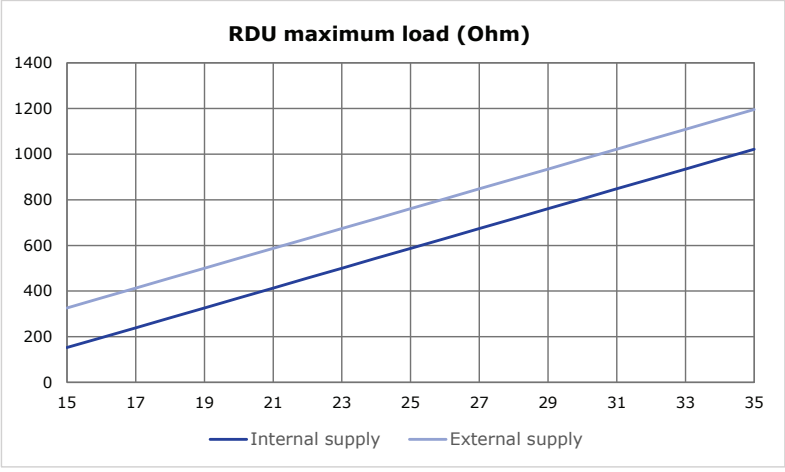
Max supply voltage	35 VDC
Range	3.5...23 mA
Factory setting	4...20 mA
Max isolation voltage	100 VDC

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

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

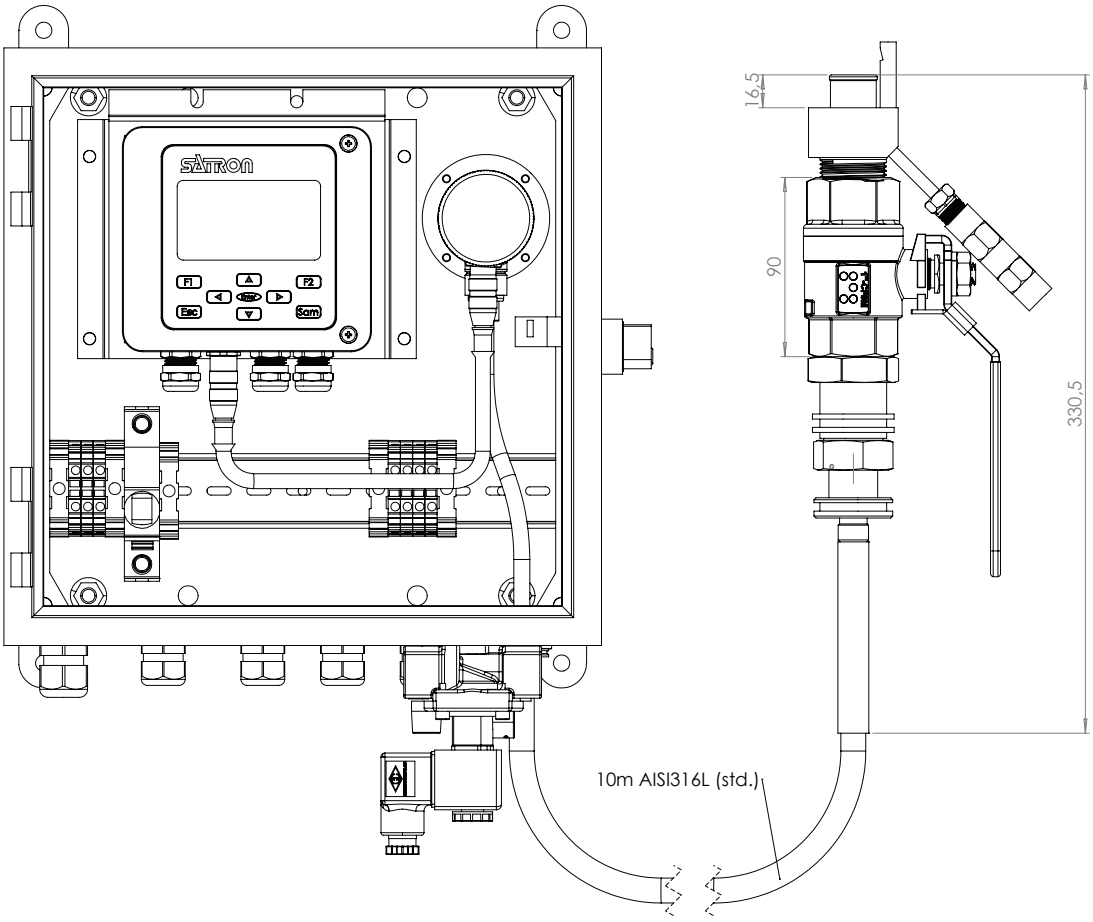


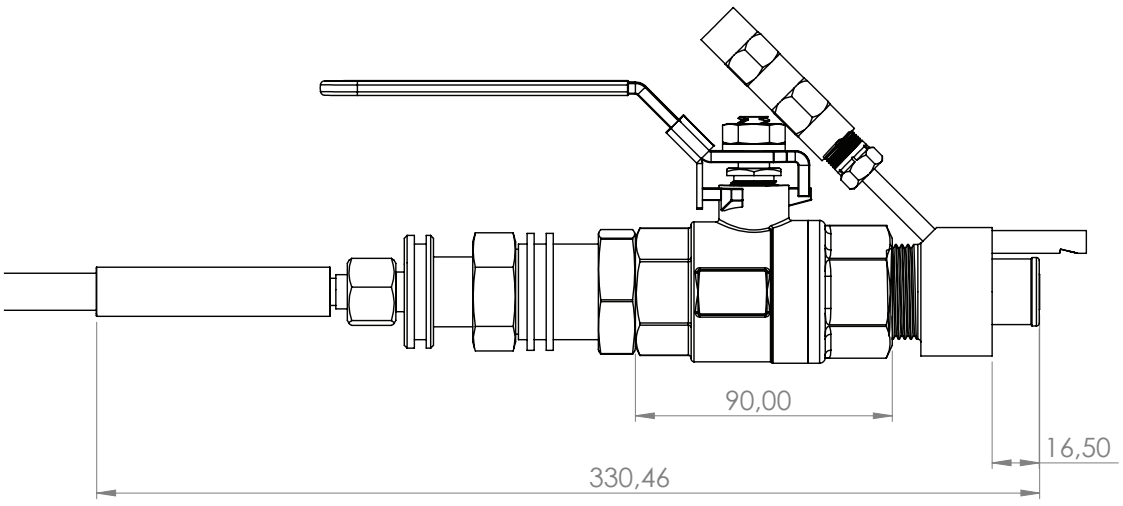
Satron Instruments Inc., Muuraintie 3, FI-33960 Pirkkala, Finland
Tel. +358 207 464 800, sales@satron.com, www.satron.com

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.

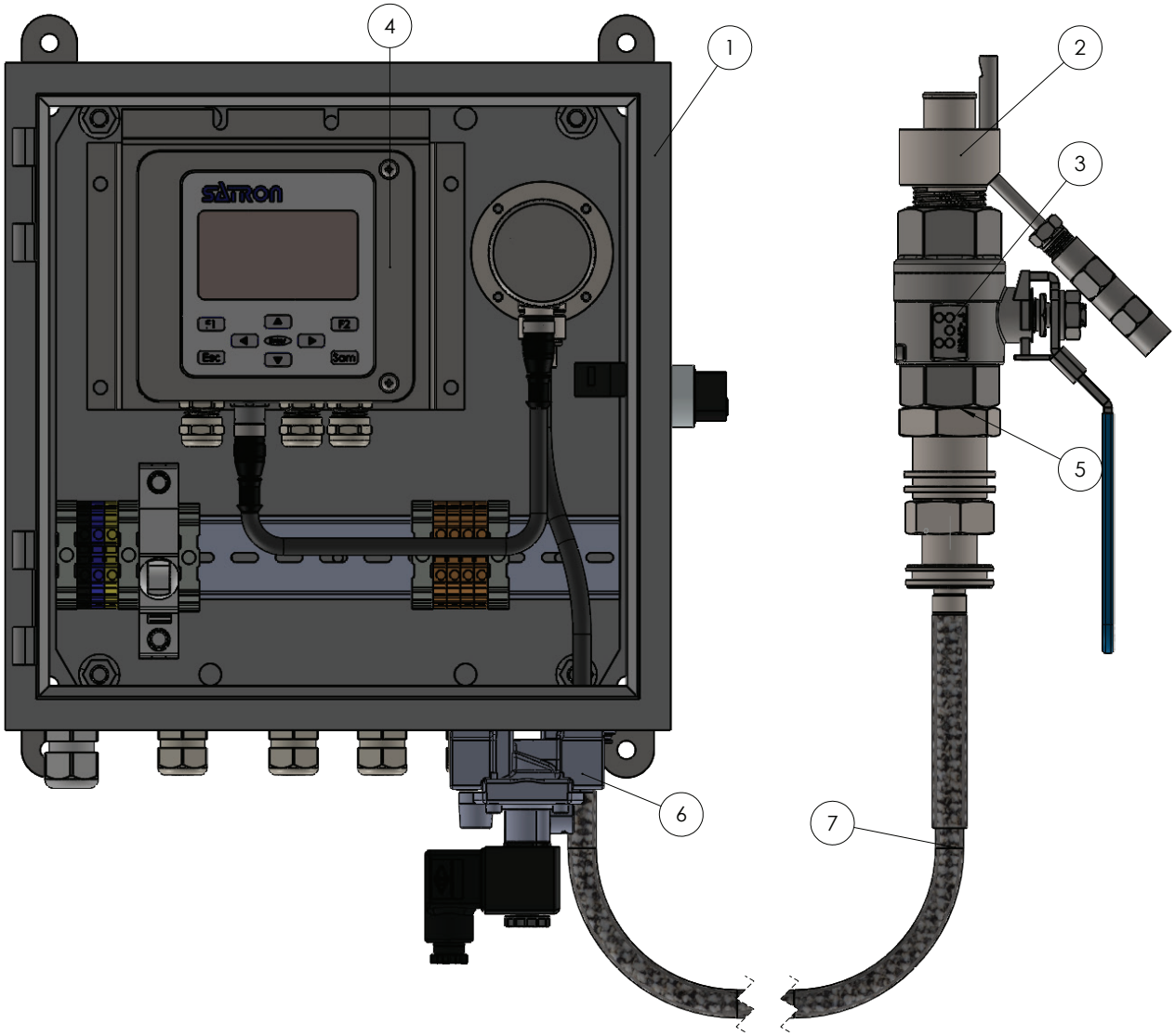
The Remote Display provides a local display of the measured values and serves also as a simple menu-driven calibration and troubleshooting interface. It includes two analog 4-20 mA outputs, 3 dry contact binary inputs and 3 contact outputs.





Standard VET sensor. Dimensions of the picture are in millimeters.

SPARE-PARTS



No	Part name	Order code
1.	Enclosure without sensor	M1050194-RT
2.	Flushing coupling for B1	M1050102
3.	Ball Valve	82500003
4.	Sensor with display	EVETNS224NRT227B1
5.	ORING- EPDM	80033426
6.	Solenoide Valve	75000020
7.	VET transmitter sensor	For sensor only change order code E to U, example: EVETNS224NRT227B1 -> UVETNS224NRT227B1

SATRON VET Optical Effluent Sensor

SELECTION CHART

Adjustability	Span, min	Measurement Range
VET	0...100 ppm (mg/L)	0...200 000 ppm (mg/L)

Process temperature limits — **N** Normal version 0...+80 °C

Output — **S** 4-20 mA DC

Material of wetted parts

	Body	Lens	Seals
224	AISI316L (EN 1.4404)	Sapphire	PFA+EPDM
623	Titanium Gr2 (EN 3.7035)	Sapphire	PFA+FFPM

Housing type — **N** Housing with display

Probe type — **R** Remote measuring probe, IP69

Connection type — **T** M12, IP67

Cable material — **2** AISI316 braided PTFE hose

Cable length

1	5 meters
2	10 meters (std.)
3	15 meters

Lightsource

1	Dual wavelength
4	Multi wavelength
7	Single wavelength

Process connections

B1	G1A ball valve insertion. Probe diameter Ø 24mm
G1	G1A thread + oring. PASVE ® Compatible
H1	Submersible Ø 24mm measuringhead

Device enclosure

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

Example code

VET	N	S	224	N	R	T	2	2	7	B1	KF

Optional items - order separately

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

Satron Instruments Inc., Muuraintie 3, FI-33960 Pirkkala, Finland
Tel. +358 207 464 800, sales@satron.com, www.satron.com