

VitalyX Digital Lubrication Oil Monitoring

Datasheet

Bently Nevada Machinery Condition Monitoring

156MI380 Rev. A



Description

Bently Nevada's VitalyX is a real-time, fluid-condition monitoring system that assures equipment health. By monitoring several different lubricant properties, the VitalyX system provides the intelligence to maximize the useful life of lubricants, increasing equipment uptime, decreasing maintenance costs, and providing warnings that can prevent catastrophic equipment failures.

Beyond oil testing, VitalyX enables important and uninterrupted trend analysis to identify subtle changes in performance. The VitalyX dashboard provides customers a holistic view of the status of their assets. The dashboard also provides alarms and notifications based on customer-specific thresholds.

The VitalyX solution can be used in any application where lube-oil monitoring is required, such as engines, gearboxes, power generators, and other critical assets.

System Features

Features include:

- Sensors operate on RS 422 (FPS) or RS 485 (PS) and are powered through the cabling.
- Rugged stainless-steel data hub enclosure with IP65 rating
- Web configuration Interface

Specifications

P/N RS-OS-02 (Fluid Property Sensor)

P/N RS-OS-02 (Fluid Property Sensor)	
Dashboard Parameters	
Oil Life Cycle (Additive Depletion)	0% to 100%
Water Dilution	0% to 8%
Soot	0% to 5%
Fuel Dilution	0% to 5%
TBN	2 to 100 mg KOH/g
TAN	0.4 to 6 mg KOH/g
Oxidation	9 to 30 Abs/cm
Temperature	-40°C to 80°C (-40°F to 176°F)
Viscosity at 100°C	0.5 to 50 cSt
Installation Detail	
Power Supply for rating (nominal & peak)	12 Vdc, 160 mA, & 60 Vdc
Ambient Temperature (electronics)	0°C to +80°C (+32°F to +176°F)
Fluid Process Temperature	-40°C to +80°C (-40°F to +176°F)
Fluid Temperature	-40°C to +80°C (-40°F to +176°F)
Storage Temperature	-20°C to +120°C (-4°F to +248°F)
Operating Pressure (maximum)	150 psia

P/N RS-OS-02 (Fluid Property Sensor)	
Vibration	ISO 16750-3, MIL-STD-810G
Communication	Digital RS422 RS-422 protocol (8X) powered by 160 mA @12 Vdc
Dimensions (overall)	Length: 5.97 in. (15.2 cm) Diameter: 1.25 in. (3.17 cm)
Weight	0.4 lb (0.18 kg)
Mounting	Horizontal 45° angle
Viscosity	Viscosity independent
Sensor Bore Diameter	0.65 in. (1.65 cm)
Lubricant Interface	3/4"-16 UNF-2A For SAE ORB PORT
Flow Rate	Flow Rate Independent
Ingress Protect	IP65

P/N OS-03-PS (Particle Sensor)

P/N OS-03-PS (Particle Sensor)	
Properties	
Metallic Ferrous	40 to 1100 microns
Metallic Non-Ferrous	150 to 1100 microns
Ambient Temperature	-40°C to +85°C (-40°F to +185°F)
Fluid Temperature	-40°C to +85°C (-40°F to +185°F)
Flow Rate*	0.95 to 38 L/min
* The flow rate is determined by the particle velocity. Particles must be present to determine the flow rate.	

P/N OS-03-PS (Particle Sensor)	
Installation Detail	
Supply voltage (nominal & peak)	24 Vdc nominal, 300 mA & 30 Vdc
Input Current (nominal @12 Vdc)	250 mA
Operating Pressure (max)	250 psia
Fluid flow	0.95 to 38 L/min
Volumetric Flow Rate	0.25 to 10 GPM (0.95 to 38 LPM)
Ingress Protection	IP65
Communication	RS-485 Modbus, RS-232 Modbus, Pulse Output
Dimensions (overall)	Length: 7.26 in. (184 mm) Width: 3.00 in. (76.2 mm)
Weight	1.5 lb. (0.68 kg)
Mounting	Horizontal
Viscosity	Viscosity independent
Lubricant Interface	SAE J1926-1-8 3/4-16 Straight Thread Port
Sensor Bore Diameter	0.492 inch (1.24 cm)

P/N OS-01 (Data Hub)

Data Hubs can collect information from up to 8 Fluid-Property Sensors and up to 8 Particle Sensors (any mix). Data hubs provide power to the attached sensors. The number of particle sensors is subject to cable length deployment.

P/N OS-01 (Data Hub)	
Properties	
Ambient Temperature	0°C to +60°C (+32°F to +140°F)
Storage Temperature	-20°C to +70°C (68°F to 158°F)
Vibration	As specified by ISO 16750-3 and MIL-STD-810G
Weatherproof	IP65
Mounting	Vertical mounting preferred
Communication	Sensor communication protocols: RS422, RS485 / Output communication protocol: Ethernet Modbus TCP/IP RS-485 protocol powered by 2 A @24 Vdc for particle sensors
Power Supply (nominal, peak)	85 to 264 Vac @ 47-63Hz. Max 5 A

P/N OS-06-02 (Sensor Manifold)

P/N OS-06-01 (Sensor Manifold)	
Properties	
Dimensions (overall)	Length: 3 in. (7.62 cm) Height: 1.3 in. (3.30 cm) Width: 1.5 in. (3.81 cm)
Weight	0.4 lbs (0.18 kg)
Mounting	Independent
Material	AL 6061
Side Bore Diameter	3/4-16 straight thread port both sides

OS-05-YY-014 (485 Terminator)

OS-05-YY-014 (RS485 Terminator)	
Properties	
Connector Designation	M12 Male
Termination Resistance	120 Ω 1 W 5% (between pins 2 and 4)
Voltage Rating	60 V
Operating temperature	-40°C to +85°C (-40°F to +185°F)

OS-05-YY-013 (485 T-Adapter)

OS-05-YY-013 (RS485 T-Adapter)	
Properties	
Connector 1 Designation	M12 Male
Connector 2 Designation	M12 Female
Connector 3 Designation	M12 Female

OS-05-YY-013 (RS485 T-Adapter)	
Voltage Rating	60 V
Operating temperature	-25°C to + 90°C

OS-05-04-12 (FPS Cable Assembly)

OS-05-04-12 (FPS Cable Assembly)	
Properties	
Connector 1 Designation	M12 Male
Connector 2 Designation	M12 Female
Cable Designation	ToughCat7 S/FTP 4-pair ABS Approved
EMI Filter Designation	Snap On Ferrite Core 0.4" ID x 0.866" W x 0.866" H x 1.272" L Fair-Rite P/N 0446167251
Cable Color	Gray
Standard Lengths (ft)	300, 100, 50, 25, & 10
Cable Diameter	0.32 in.
Insulation Resistance	5000 MΩ min
Voltage Rating	500 V
Characteristic Impedance	100 Ω
DC Loop Resistance	138 Ω/km max
Minimum Bending Radius	2.6 in.
Operating Temperature	-40°C to +85°C (-40°F to +185°F)

OS-05-04-76 (PS Trunk Cable Assembly)

OS-05-04-76 (PS Trunk Cable Assembly)	
Properties	
Connector 1 Designation	M12 Male
Connector 2 Designation	M12 Female
Cable Designation	ToughCat7 S/FTP 4-pair ABS Approved
Cable Color:	Gray
Standard Lengths (ft)	300, 100, 50, 25, & 10
Cable Diameter	0.32 in.
Insulation Resistance	5000 MΩ min
Voltage Rating	500 V
Characteristic Impedance	100 Ω
DC Loop Resistance	138 Ω/km max
Minimum Bending Radius:	2.6 in.
Operating Temperature	-40°C to +85°C (-40°F to +185°F)

OS-05-04-78 (PS Drop Cable Assembly)

OS-05-04-78 (PS Drop Cable Assembly)	
Properties	
Connector 1 Designation	M12 Male
Connector 2 Designation	M16 Circular
Cable Designation	ToughCat7 S/FTP 4-pair ABS Approved
Cable Color:	Gray
Standard Lengths (ft)	10
Cable Diameter	0.32 in.
Insulation Resistance	5000 MΩ min
Voltage Rating	500 V
Characteristic Impedance	100 Ω
DC Loop Resistance	138 Ω/km max
Minimum Bending Radius:	2.6 in.
Operating Temperature	-40°C to +85°C (-40°F to +185°F)

Compliance and Certifications

EMC*

European Community Directive:

EMC Directive 2014/30/EU

Standards:

EN 55011;
EN 61000-3-2;
EN 61000-3-3;
EN 61326-1;
EN 60945

Electrical Safety*

European Community Directive:

LV Directive 2014/35/EU

Standards:

EN 61010-1;

Maritime Type*

* Approvals pending.

Graphs and Figures

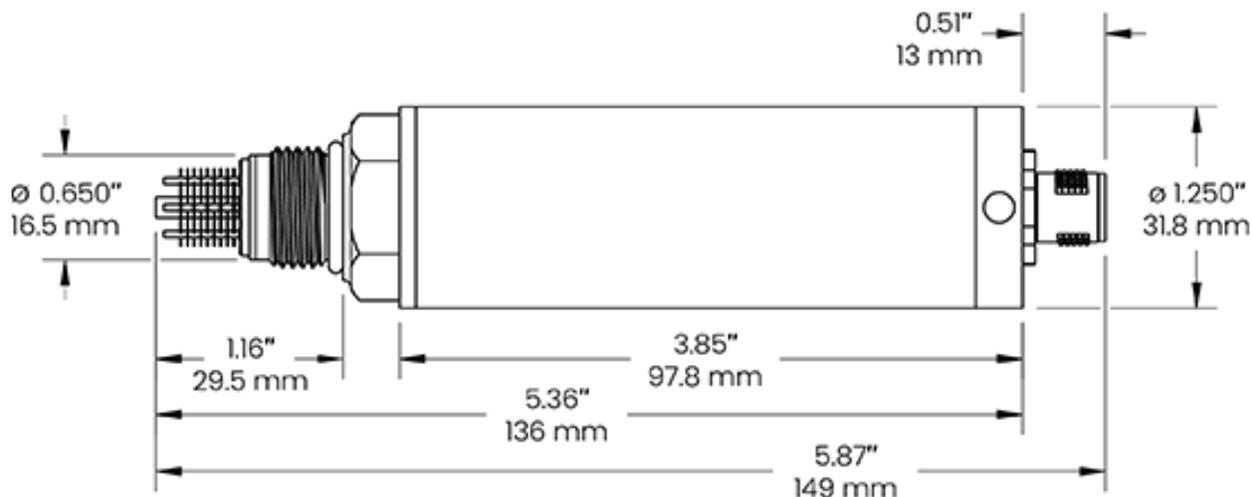


Figure 1: VitalyX Fluid Property Sensor (RS-OS-02)

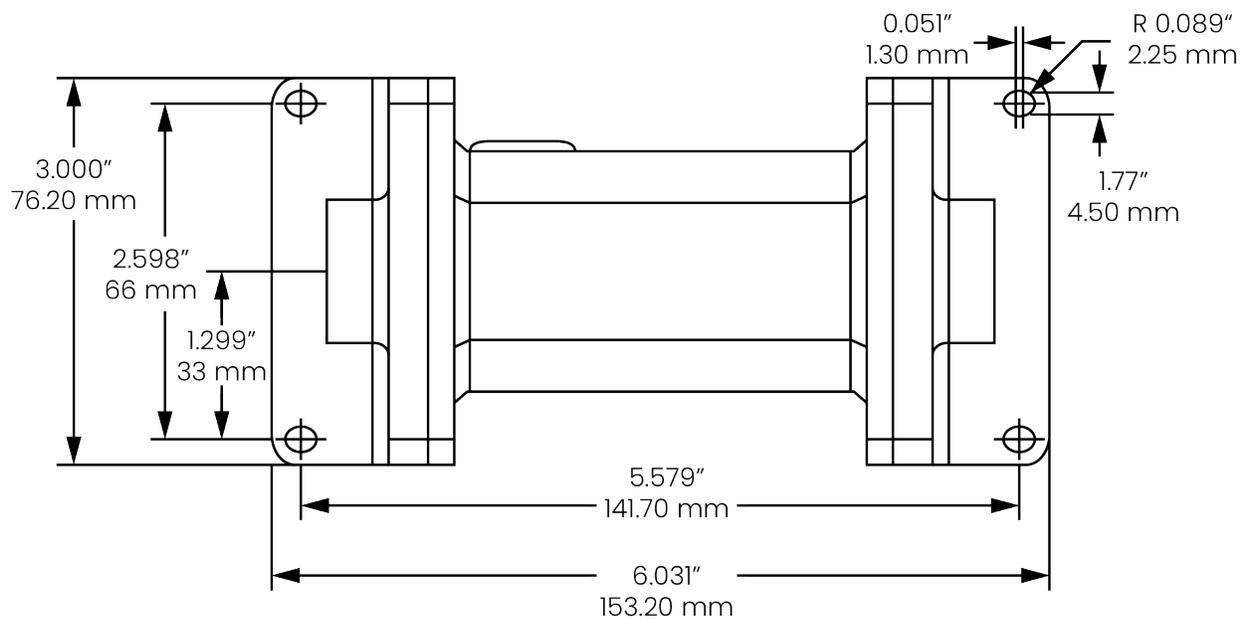


Figure 2: VitalyX Particle Sensor (OS-03-PS)

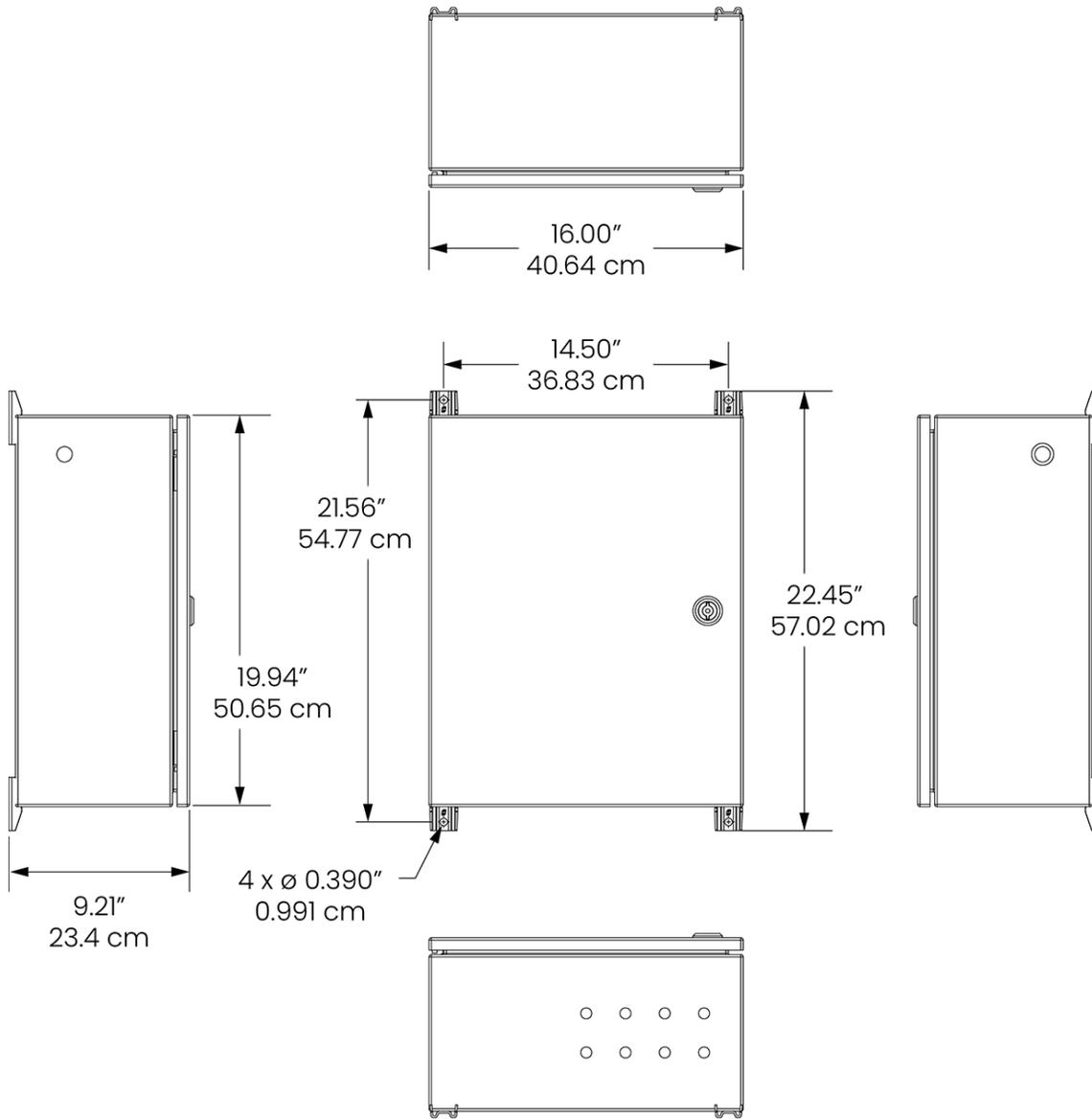


Figure 3: VitalyX Data Hub (OS-01)

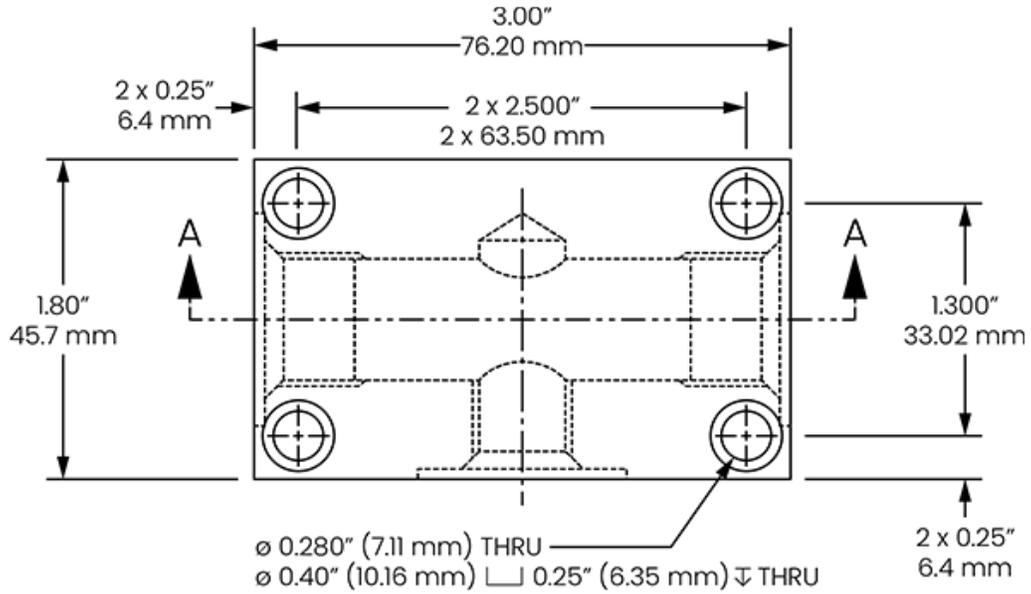


Figure 4: VitalyX Sensor Manifold (OS-06-01)



Figure 5: VitalyX 485 Terminator (OS-05-YY-014)

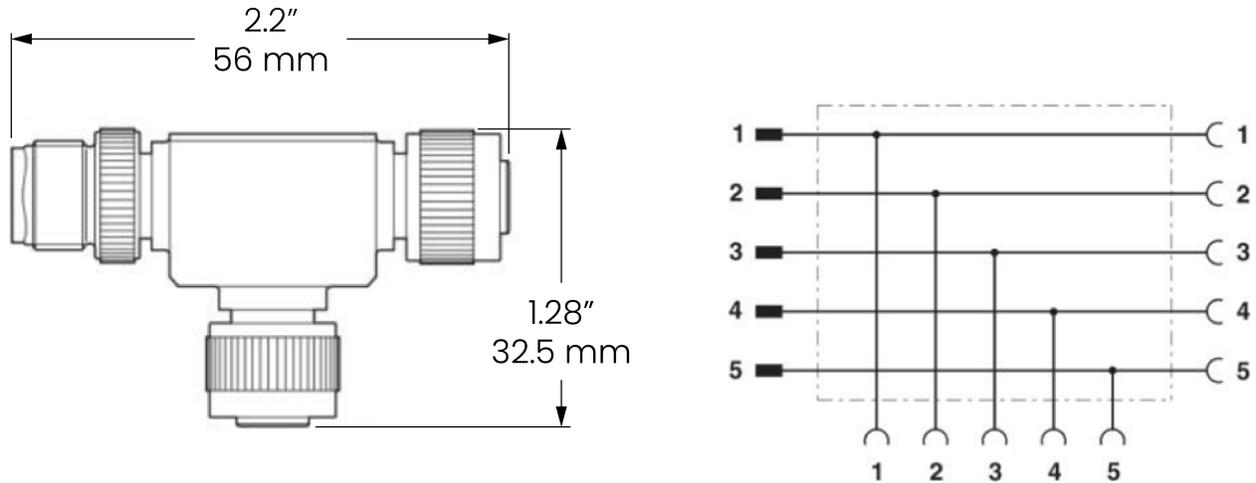


Figure 6: VitalyX 485 T-Adapter (OS-05-YY-013)

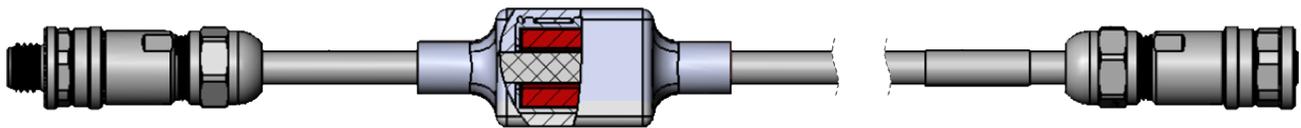


Figure 7: VitalyX FPS Cable Assembly (OS-05-04-12)

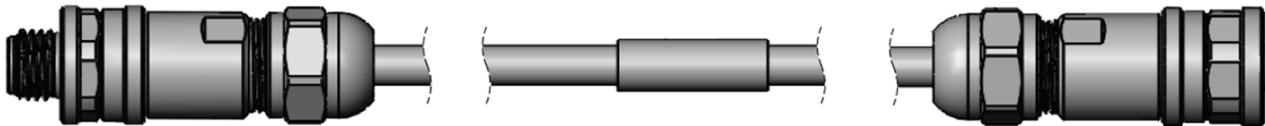


Figure 8: VitalyX PS Trunk Cable Assembly (OS-05-04-76)

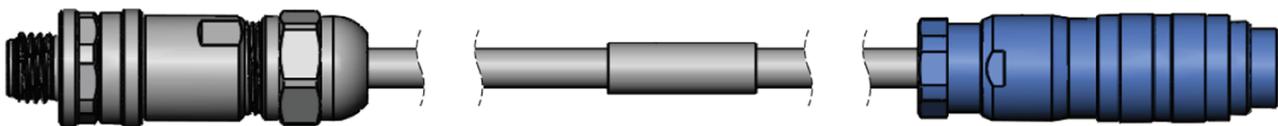


Figure 9: VitalyX PS Drop Cable Assembly (OS-05-04-78)

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