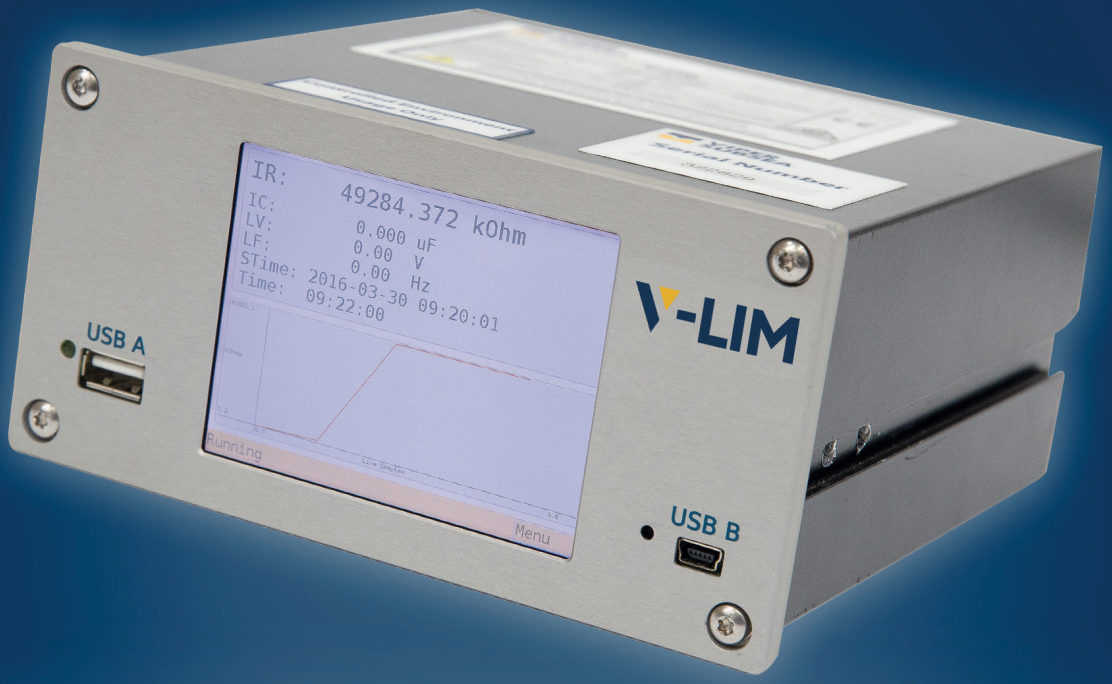
V-LIM



Technical Data Sheet

Electrical Line Integrity Monitoring Module

INTELLIGENCE INSTALLED

A precise and accurate electrical cable integrity monitor for ungrounded/floating electrical systems.

V-LIM

Long term operation and exposure to harsh environmental conditions causes insulation degradation in cables and other electrical equipment over time.

With its precise and accurate measurements of Insulation Resistance, Capacitance and other advanced electrical parameters, V-LIM not only provides a better picture of the health of the system over time, but also provides opportunities to identify problems before they arise. This allows proactive and more cost effective intervention to be undertaken based on risk and asset condition assessments rather than relying on reaction to failures after they have occurred.

The V-LIM unit employs Digital Signal Processing techniques which facilitate trending and characterisation of the system condition with reliable fault disclosure over a wide measurement range. V-LIM is fully compatible with power transmission, communications as well as combined communications on powerline systems and is easily integrated into existing or new infrastructure via its convenient panel mounting arrangement.

V-LIM has two independently adjustable alarms and relay contacts set to predefined user-configurable thresholds. When the V-LIM detects that the IR has fallen below the thresholds, the alarms activate, and the relays operate. V-LIM offers an overall system condition as a standalone unit which can be interrogated using the module's touch LCD panel, or downloaded easily via USB A or B.

Additionally, V-LIM is V-LIFE ready - an exclusive feature for subsea applications which can be activated to increase the system IR and availability without the need for costly intervention or risk of introducing new faults.

V-LIM forms part of Viper Innovation's V-IR product line offering a granular view of the subsea electrical network, its component and cable condition, as well as fault identification and location. V-IR uses the V-LIM along with subsea deployed V-SLIM modules to display the subsea network integrity on an interactive graphical user interface, reducing the reliance on vessel-based fault finding operations with divers or ROVs and supporting a move to condition and risk-based maintenance.

Key Features

- Two functionally identical variants for different supply voltages, V-LIM and V-LIM 24 V
- Two separately configurable alarms with associated relay contacts to take desired action
- Timestamped measurement data is logged to internal memory
- Touchscreen LCD and web interface displays
- Ethernet, RS485 and 4-20 mA interfaces
- Upload firmware and configuration settings from front panel USB interfaces via memory stick or service PC
- Download data log to memory stick or service PC
- Compatible with temporary application of external IR test unit without physical disconnection of V-LIM
- Multiple user security levels supported for secure access
- Facility to disconnect the V-LIM from the line monitored
- Cross talk immunity option. Enables multiple units to take accurate simultaneous measurement on adjacent cables. This option is also known as V-Net Sync
- Coupler Module connection capability for voltage >1 kV
- Built-in self-test

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Key Features

Additional functions include:

- V-LIFE cable remediation technology
- V-SLIM integration for V-IR network condition monitoring

Insulation Monitoring Standards:

- BS EN 61557-1, IEC 61557-1
- BS EN 61557-8, IEC 61557-8

Electrical

Supply Voltage:	**VA-223619** 110 V to 240 V AC 140 V to 335 V DC ± 10% tolerance	**VA-223619-24V** 24 V DC ± 20% tolerance
Supply Frequency:	**VA-223619** DC, 50/60 Hz ± 6% tolerance	**VA-223619-24V** DC
Power Consumption:	**VA-223619** 5 W typical 14 W maximum	**VA-223619-24V** 5 W typical 8 W maximum
Line Voltage:	Up to 1000 V DC / AC 47-410 Hz	
Line Capacitance (operating)**:**	Up to 500 µF	

Product Marks

U: 61010-1
CSA C22.2 No. 61010-1
E114248

Notice: Product complies with Part 15 of the FCC rules, subject to the following two conditions: 1. The device may not cause harmful interference. 2. This device must accept any interference received, including interference that may cause undesired operation.

Mechanical

Environmental:

Operating Temperature Range:	-20° C to +60° C (-4° F to 140° F)
Storage Temperature Range:	-40° C to +85° C (-40° F to 185° F)
Relative Humidity:	Up to 85% non-condensing
Pollution Degree:	BS EN 61010-1: Degree 2
Overvoltage Category:	BS EN 61010-1 CAT III (VA-223619) CAT I (VA-223619-24V)
Measurement Category:	BS EN 61010-2-030 CAT III
Additional Testing:	BS EN 60068-2-1 Test Ae BS EN 60068-2-2 Test Be BS EN 60068-2-78 Test Cab

Packaging:

Dimensions:	See diagram below
Weight:	0.8 kg

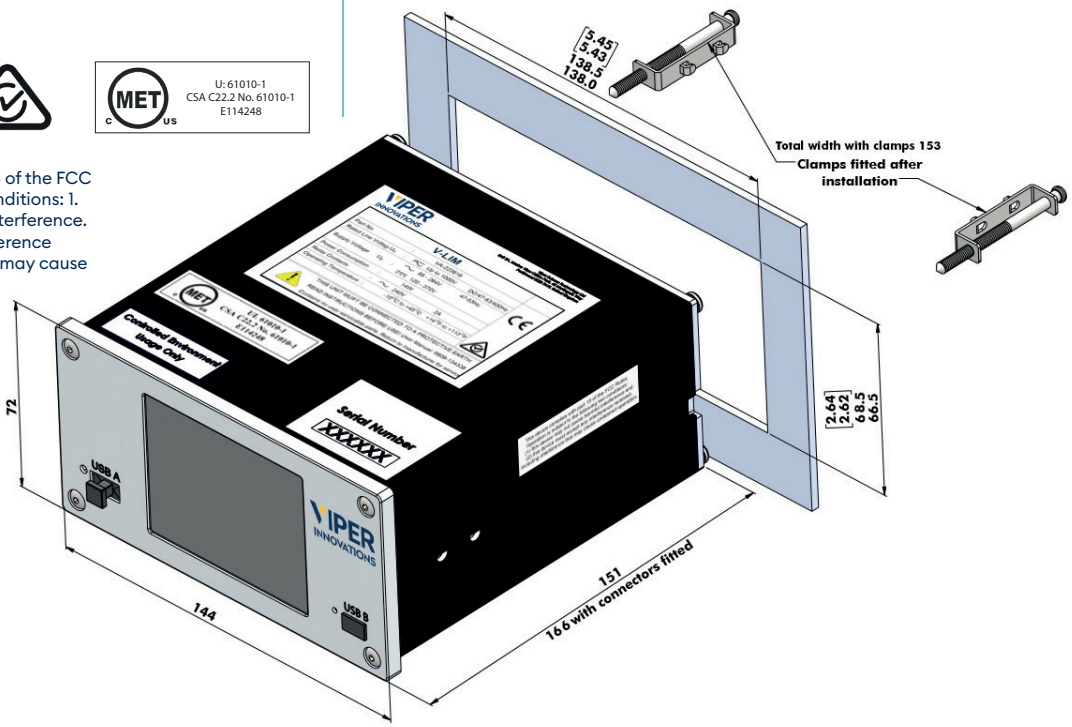
Design Life:
Minimum 15 years operation

Data storage

Circular FIFO buffer
Typical two year data storage without overwrite @ one reading per minute.

Mounting Arrangement

Dimensions in mm



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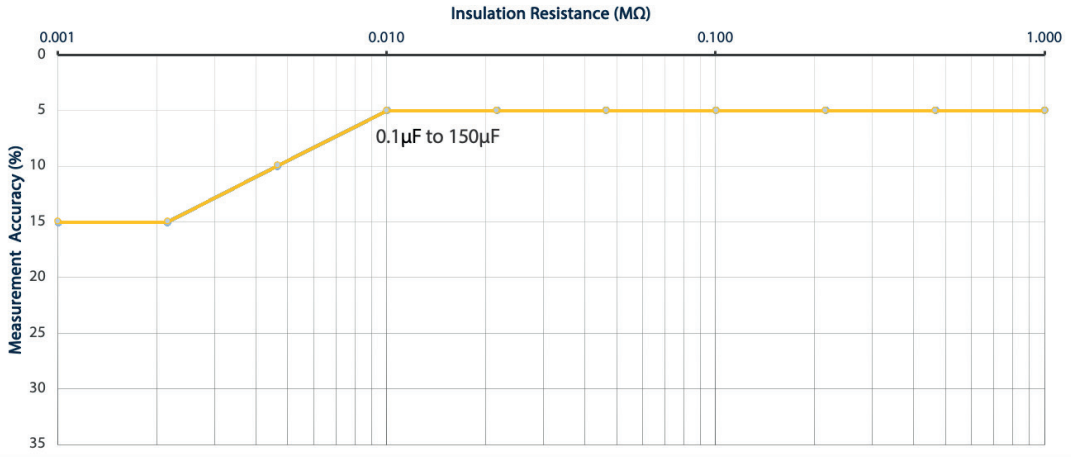
Measurement

Insulation Resistance (IR):

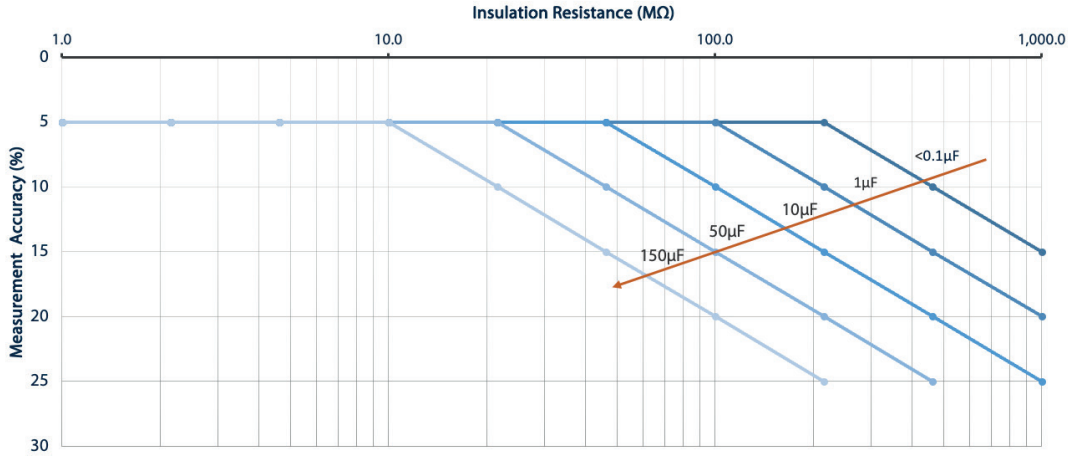
1 kΩ to 1 GΩ* @ see graphs below

* The maximum IR changes depending on the measurement profile selected. When V-LIFE is enabled, the IR range is between 10 kΩ and 500 MΩ.

V-LIM Insulation Resistance Accuracy (IR < 1MΩ)



V-LIM Insulation Resistance Accuracy (IR > 1MΩ)



Note: Measurement accuracies are specified in the form ± YY% ± 1 kΩ, where YY is the tolerance expressed as a percentage of measured value from the graph above on the Y axis.

Enhanced Measurements
(Requires split line current transformer VA-229986)
Line Current (True RMS): 0-20 A AC @ ± 5% ± 50 mA

Response Value (Alarms)[1]
1 kΩ to 10 MΩ

Insulation Capacitance
0.1 µF to 150 µF @ ± 25% ± 0.05 µF

Line Voltage (True RMS)
50 to 1000 V AC/DC @ ± 3% ± 5V

Line Frequency
DC, AC 47 – 410 Hz @ ± 1% ± 0.5 Hz

1 Based on IEC61557-8 reference conditions

Interfaces

Connection

- Pluggable screw terminal connectors
- RJ45 Ethernet
- RJ50 Remote Sensor [option for enhanced measurements]

Alarms

- 2 x Single pole volt-free changeover contacts compatible with signals up to 240 V AC, 2 A
- User configurable non-failsafe (default) and failsafe modes

Ethernet

- 10/100 Base-TX Auto negotiation
- DHCP / static (configurable) IP addressing
- Modbus TCP/IP, HTTP protocols supported

RS485

- 9600, 19200, 38400, 57600, 115200 bps
- Modbus RTU
- 120 Ω termination resistor may be connected via rear panel switches

USB

- USB 2.0 Type-A data download and configuration update via memory stick
- Mini USB Type-B laptop service port access.

Current Loop

12 V to 24 V DC input voltage required.
Multiple configurable Linear IR Ranges:

- 0 Ω (4 mA) - 1G Ω (20 mA)
- 0 Ω (4 mA) - 500 MΩ (20 mA)
- 0 Ω (4 mA) - 100 MΩ (20 mA)
- 0 Ω (4 mA) - 10 MΩ (20 mA)
- 0 Ω (20 mA) - 10 MΩ (4 mA) Inverted
- 0 Ω (4 mA) - 1 MΩ (20 mA)
- 0 Ω (20 mA) - 1 MΩ (4 mA) Inverted
- 0 Ω (4 mA) - 100 kΩ (20 mA)

Two configurable non-linear IR ranges for Legacy systems.

Digital Switch Input

- 2 x volt-free digital switch inputs
- Configurable trigger modes (NO/NC) and 5 different functions

LCD

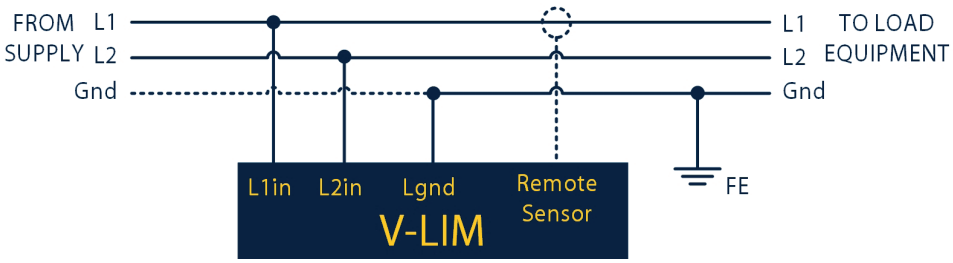
- 640 x 480 touch screen

Order Codes

VA-223619	V-LIM (V-LIFE capable)
VA-223619-24V	V-LIM 24V (V-LIFE capable)
VA-229986	Split Line Current Transformer (optional)

Full list of installation accessories is available upon request.

Standard Line Connection



Description

The V-LIM is connected to each line conductor (L1 and L2) and associated ground. Measurement of optional parameter (Line Current) can be achieved through installation of a split line current transformer connected to the remote sensor port.

Refer to the V-LIM Installation and Operating Manual for more detailed information.

Measurements available

- Insulation Resistance
- Insulation Capacitance
- Line Voltage
- Line Frequency
- Line Current (Optional)

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Get in touch with one of our experts today and learn what V-LIM can do for you.

enquiries@viperinnovations.com

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