

**CLASS LEADING PRODUCTS
PROVEN TO MEET THE MOST
DEMANDING INDUSTRY
SPECIFICATION, DELIVERED
ON TIME, EVERY TIME**

**DETAILING
THE V-LIM[®] ELECTRICAL
INTEGRITY MONITORING UNIT
V-LIFE[®] & V-IR[®] ENABLED**





THE V-LIM UNIT IS A SELF-CONTAINED, MICROPROCESSOR CONTROLLED PRECISION DEVICE DESIGNED SPECIFICALLY TO MONITOR THE INTEGRITY OF ELECTRICAL CABLES ON UNGROUNDED/FLOATING AC OR DC SYSTEMS, UP TO 1000V

Utilising innovative DSP techniques the V-LIM unit offers wide Insulation Resistance (IR) and Insulation Capacitance (IC) measurement ranges which facilitate characterisation and IR/IC trending of cables.

The V-LIM unit is a panel mounted device which may be integrated into equipment as a new fit or as a retrofit into an existing installation. The measurement technique used is fully compatible with powerline communications.

Key Features

- Wide Insulation Resistance measurement range
- Wide Insulation Capacitance measurement range
- Monitors floating earth systems up to 1000 volts AC/DC
- Line Voltage and Frequency measurement
- All measurement parameters stored in internal memory
- Minimum of 2 years internal memory storage capacity
- High resolution LCD touch panel display with menu access and graphical IR data trend
- USB front panel interfaces for configuration upload and data log download
- Ethernet, RS485 Modbus and 4-20mA interfaces provisioned
- Web interface provides control and monitoring facility
- Multiple user security levels supported for secure access
- No proprietary software required for basic interrogation or configuration of unit.
- In-situ "External IR Test" mode facilitates line measurement by third party devices
- Two failsafe or non-failsafe user configurable Alarm thresholds and associated volt free contacts
- Field configurable measurement technique dependent on system parameters
- Automatic self-test
- Facilitates characterisation of electrical cables
- Incorporation of V-LIFE cable lifetime extender technology through in-field service upgrade



Applications

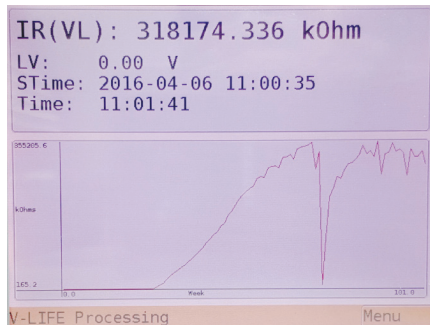
- Suitable for greenfield and brownfield applications
- V-IR solution ready for subsea electrical fault location
- Simplified upgrade of legacy equipment



ADVANCED FEATURES AND SERVICES

V-LIFE technology for remediating the effects of sea water ingress causing low IR on electrical distribution networks

V-LIFE technology is integrated within the V-LIM for cable lifetime extension. The V-LIM can be upgraded whilst in service to facilitate the use of this technology. The V-LIM and V-LIFE technology work in conjunction to improve cable IR.



System Electrical Failure Prediction

The measurement of multiple umbilical parameters aids in umbilical characterisation by trending changes through its lifetime. All data is logged by the V-LIM with sufficient capacity to store the data over many years. This data can then be used to analyse the rate of deterioration of the cable insulation in the system and further to estimate when the insulation resistance is likely to result in system failure (Electrical analysis is required to determine system limits).

V-IR solution for Subsea Electrical Fault Location

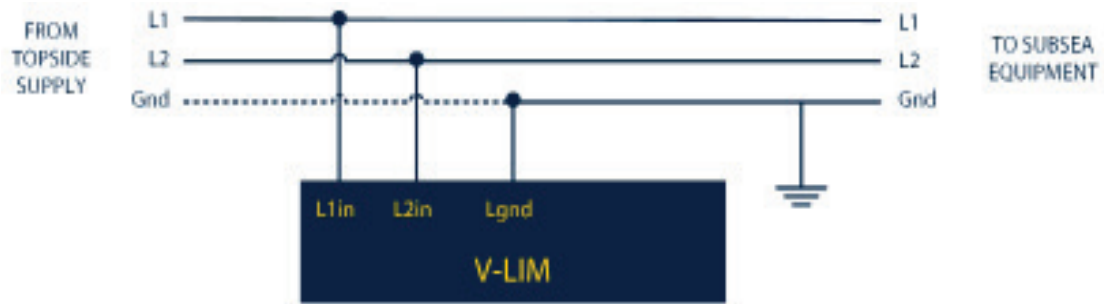
The V-LIM can be used as part of the V-IR solution (V-SLIM® product, V-WAND® product and V-NET® protocol). The V-LIM data, when used in conjunction with other V-IR system devices the V-LIM data can produce an integrity map of the subsea electrical system to facilitate location of faults to specific cable sections.

This can also be interpreted to indicate if the failure has occurred in the bulk insulation of the umbilical conductors or as a result of a failure in the umbilical termination.



LINE CONNECTION OPTIONS

Connection Method 1: Single Phase Connection



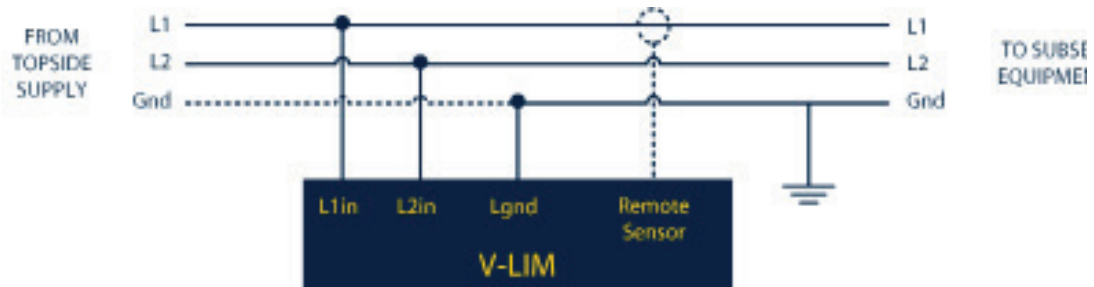
Description:

The V-LIM is connected to each line conductor (L1 and L2) and associated ground.

Measurements available:

- Insulation Resistance
- Insulation Capacitance
- Line Voltage
- Line Frequency
- L1/L2 Ratio

Connection Method 2: Enhanced Single Phase Connection [future option]



Description:

The V-LIM is connected to each line conductor (L1 and L2) and associated ground.

Measurement of additional parameters can be achieved through installation of a remote sensor.

Measurements available:

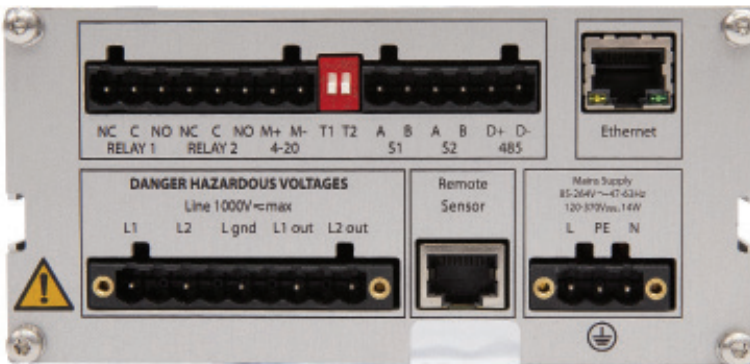
- As per Connection Method 1, plus
- Line Current
- Power Factor
- Real RMS Power

INTERFACES

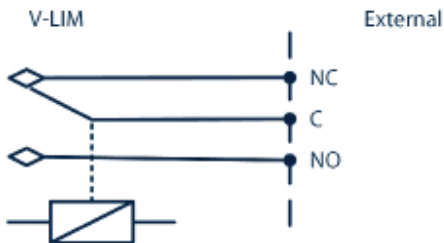
Front Panel



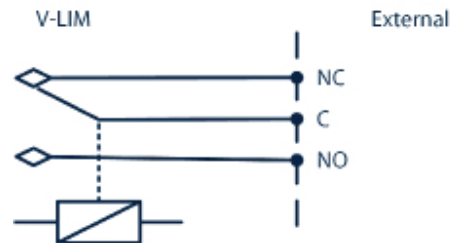
Rear Panel



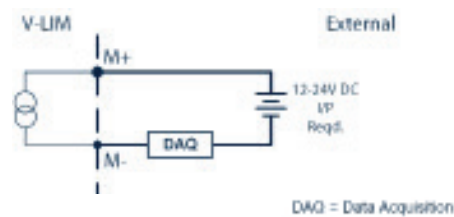
Relay 1



Relay 2



Current Loop



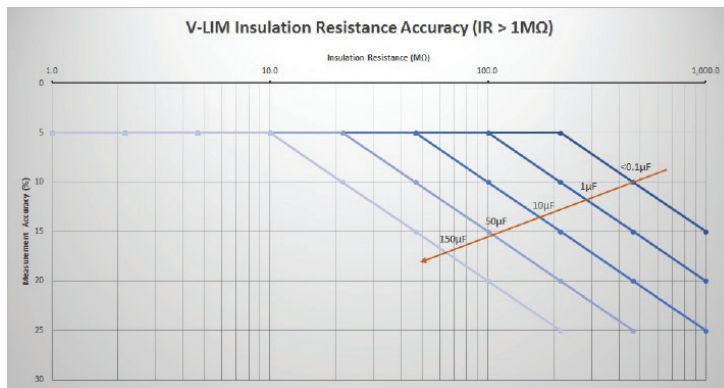
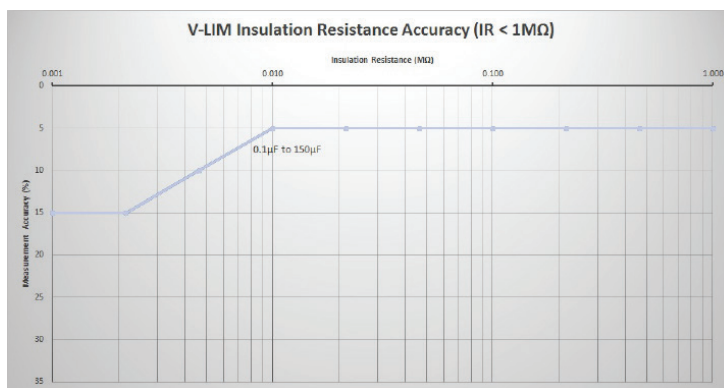


PRODUCT SPECIFICATIONS

Measurement

Insulation Resistance:

1kΩ to 1GΩ @ profile dependent ± 1kΩ



Response Value (Alarms):

1kΩ to 10MΩ*

Insulation Capacitance:

0.1µF to 150µF @ ±25% ± 0.05µF

Line Voltage (True RMS):

50 to 1000V AC/DC @ ±3% ± 5V

Line Frequency:

DC, AC 47 – 410Hz @ ±1% ± 0.5Hz

Electrical

Supply Voltage:

100V to 250V AC 50/60Hz
120V to 375V DC

Line Voltage:

Up to 1000V DC/ AC 47-410Hz

Power Consumption:

3W typ.
14W max.

Interfaces

Connection:

Pluggable screw terminal connectors
RJ45 Ethernet
RJ50 Remote Sensor [future option]

Alarms:

2 x Single pole volt-free changeover contacts
240V AC, 2A
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 bits per second
Modbus RTU
120Ω termination resistor, may be connected via rear panel switches

Current Loop:

12V to 24V DC I/P voltage required
4mA (0Ω) to 20mA (max IR – configurable)
O/P current, linear scaling
Configurable IR Ranges of 0-1MΩ, 0-10MΩ, 0-100MΩ, 0-1GΩ
20mA (0Ω) to 4mA (10MΩ) O/P current, non-linear scaling

LCD:

640 x 480 touch screen

USB:

USB Type A data download & config update via memory stick
Mini USB Type B laptop service port access

Note:

Measurement accuracies are in format @XX% ±Y, where XX is the tolerance expressed as a percentage of measured value, and Y is the additional fixed error

* based on IEC61557-8 reference conditions



PRODUCT SPECIFICATIONS

Data Storage

Circular FIFO buffer
Typ. 2 year data storage without overwrite
@ 1 reading per minute

Mechanical

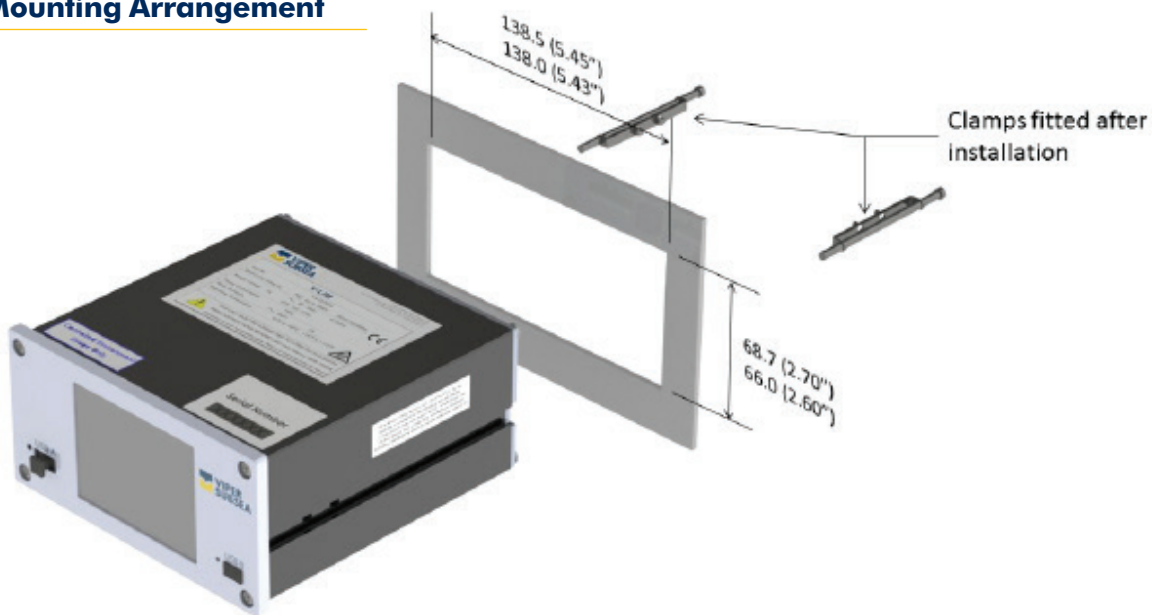
Environmental:

Operating Temperature Range	+10°C to +45°C (50°F to 113°F)
Storage Temperature Range	-10°C to +60°C (14°F to 140°F)
Relative Humidity	Up to 70% non-condensing
Pollution Degree	BS EN 61010-1:2010 Degree 2

Unit Dimensions:

W 144mm x H 72mm x D 140mm (5.6" x 2.8" x 5.5")

Mounting Arrangement





APPROVALS AND STANDARDS

Product Marks



Notice
This device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

ACCESSORIES

Please contact Viper Innovations for further information on V-LIM accessories.

Contact

Viper Innovations Ltd.
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45 Martingale Way
Portishead
BRISTOL
BS20 7AW
U.K.

Email: sales@viperinnovations.com

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