

Life Is On

Schneider
Electric

Keep the power running safely at sea

Vigilohm Insulation Monitoring
For reliable electrical network
availability in Marine



schneider-electric.com/marine



What is at stake on a ship?

Ships are a very unique type of building. When at sea, due to the environmental conditions and the distance to external assistance, a ship's crew has no other choice but to work independently. In all situations – including both normal operations and also exceptional events – the crew must face and fix problems alone. Electrical shock, cable overheating or fire, explosion, loss of control of the navigation equipment: potential dangers are everywhere.

This is why an ungrounded IT electrical network is the rule on a ship: to maintain safety and continuity of service.

Increase Up Time

Because of the potential danger of electrical faults at sea, you need:

- Continuity of service
- To keep people and equipment safe
- Your staff to act quickly and efficiently in case of an insulation fault
- A simple effective solution designed to meet the unique needs of the marine industry

Reduce Risk

Insulation faults are frequent on ships due to a number of typical maritime conditions:

- Severe weather
- Lightning
- Humidity
- Vibrations and other stress on equipment
- Intense, concentrated heat in confined spaces

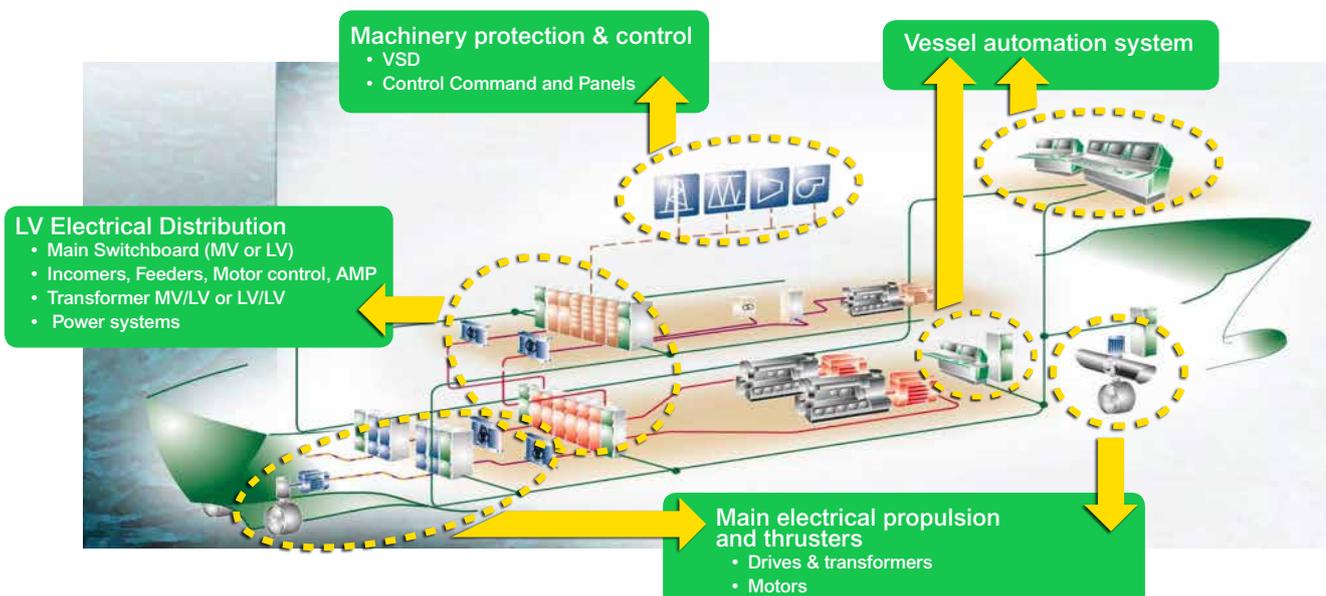
Ungrounded IT Network Values

An ungrounded IT electrical network is characterized by the absence of grounding at the level of the generator or transformer. By limiting the faulty current and its consequences, this configuration delivers significant advantages in most operational phases of an installation, as it is natively tolerant to the first insulation fault to ground.

In normal operations, the IT ungrounded network supplies the necessary power for which it has been designed.

In the case of an insulation fault between the network and ground, the ungrounded IT network configuration maintains safety and continuity of service: no electrical shock danger for operators when touching the faulty device, and no change on the process, as it is not stopped. However, it is important to have an Insulation Monitoring Device monitoring the network so that it will trigger an alarm when the insulation resistance drops below the set threshold. This warning is essential because it is the only signal indicating the installation is faulty and that the fault must be fixed.

In the case of a second fault on the same installation, a short circuit is generated between phases through the ground, the protections trip, and the process is stopped.



“My ship is a critical system - an interruption of power while at sea means endangering crew lives and potentially harming the environment.”

Optimize your IT networks.

The Vigilohm range of insulation monitoring devices (IMDs) provides you with simple, reliable insulation monitoring, communication and fault location solutions for your IT (ungrounded) networks. In IT, it is mandatory (IEC 60364-4-41) to use a Permanent Insulation Monitoring Device whenever there is more than one feeder. Insulation fault locators can be used in addition to insulation monitors to automatically indicate faulty feeders. This greatly facilitates maintenance work when locating and correcting insulation faults.



Vigilohm features help you do more

Operating principle

- Vigilohm Insulation Monitors and Fault Locators are based on a multi-frequency adaptive injection signal - they accurately monitor resistance and capacitance to ground on highly perturbed networks and provide predictable response time
- In case of insulation fault, an alarm triggers via contact relays, local message, Modbus communication

Classifications & Standards Compliance



- Classification Societies Requirements: DNV, Bureau Veritas, RMRS, ABS (refer to the Vigilohm catalogue for details per product)
- Insulation Monitoring Devices: IEC61557-8
- Fault Locators: IEC61557-9
- IM400 Series: UL 508, UL FS (Functional Safety) for a higher level of reliability

Key characteristics

- Fault detection and signaling
- Insulation resistance value display
- Earth leakage capacitance display
- Modbus communication
- Data log with time-stamped events
- Voltage adaptor compatible with networks up to 1200VDC or 1700VAC
- Fault locators signal the faulty feeder; natively support Modbus communication; provide insulation measurement per feeder and settable alarm thresholds (depending on product)
- Advanced transformer monitoring for medical rooms

System compliance

- Vigilohm has been successfully tested in operation with
- Variable speed drives*
 - All the key Altivar models
- Power Quality*
 - Capacitor banks and AccuSine active filter offer
- UPS*
 - Galaxy VM and Galaxy VX ranges

*Refer to the respective compliance documents for details

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Vigilohm: Part of Schneider Electric Marine Expertise

Whether cargo, carrier or container ships, tankers, military vessels, FPSO or cruise ships, Schneider Electric has deep experience and a long history of providing a comprehensive line of electrical distribution products for the marine industry.

From power panels, control systems, lighting, accommodations, restaurants and onboard medical facilities, there is a Vigilohm solution to accommodate either simple or complex networks.



From measuring and indicating to locating faults

The insulation devices of the Vigilohm range are designed to

- Measure the insulation level of the installation
- Indicate drops in the insulation level below a user-defined threshold
- Locate the faulty circuit

The Vigilohm range of Insulation Monitoring Devices by Schneider Electric for the Marine Industry:



Ships of all kinds need an effective, reliable solution for insulation monitoring that is simple to implement and effortless to use.

Vigilohm Insulation Monitoring by Schneider Electric is the solution for an easy, reliable and safe electrical supply.

IM9-OL

- Off-line loads (Ex: lift pump motors)
- Motor Monitoring: Ensure motor can start when needed, taking into account environmental stress and infrequent motor power up

IM9

- Small AC networks only

IM10, IM20

- Medium AC and DC networks
- Low-disturbance to medium-disturbance networks
- IM20: Native Modbus support
- Healthcare version available for medical rooms, compliant with marine certifications

IM400

- Large AC and DC networks
- Low-disturbance to high-disturbance networks
- Native Modbus support
- Load-Adapting Injected Signal: Control command and power circuit modes
- Compatible with Fault Locators
- Tropicalized version for harsh environments (conformal coated to withstand higher humidity, pests, dust, and higher temperature span)

IFL12 Fault Locators Range

- Automatic indication of the faulty feeder
- Native Modbus support
- Measurement of resistance and capacitance per feeder
- Tropicalized versions for harsh environments

IM400THR

- Medium Voltage insulation monitor

Refer to the Vigilohm catalogue for complete feature and specification information on each device in the range

Vigilohm solution for insulation monitoring

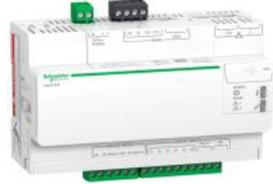
Monitoring and control



EcoStruxure Power Monitoring Expert
EcoStruxure Power SCADA Operation

Modbus TCP

Communication and simple monitoring



Com'X 510



Link 150

Modbus RS485

Insulation monitors



IM400



IM20



IM10



IM9
IM9OL

Insulation monitoring & fault locating solution

Insulation fault locators



IFL12C
IFL12MC



IFL12



XD301



XRM

Toroids



Closed toroids



Open toroids



Probe

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