

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

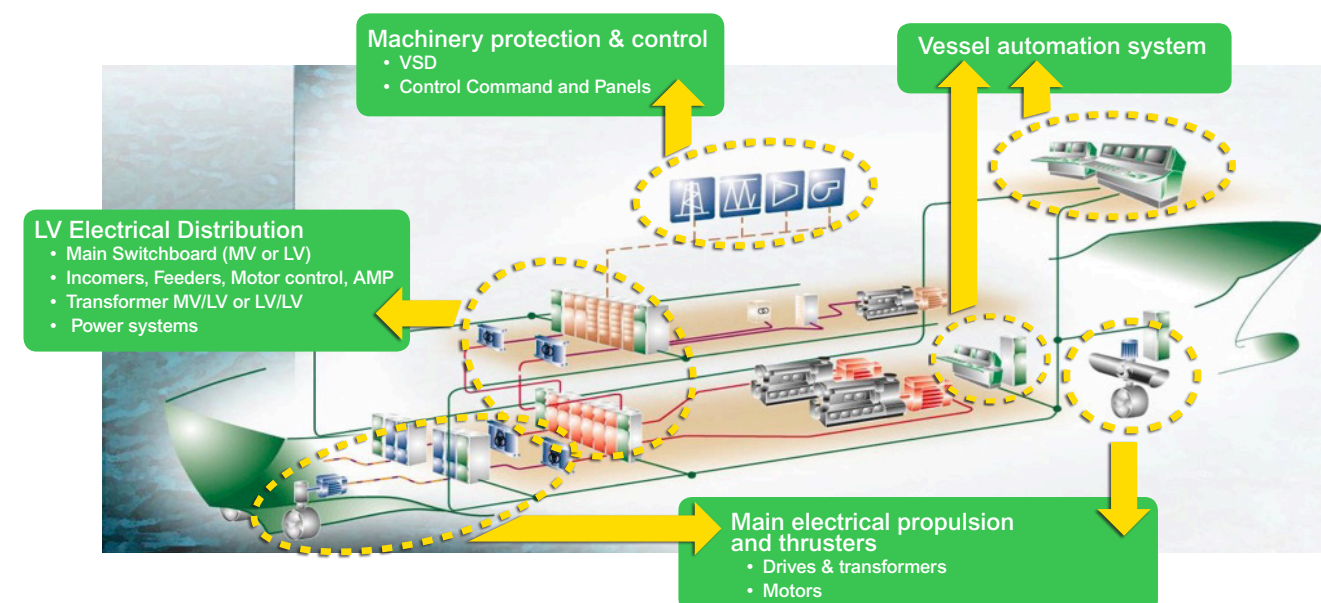
Ungrounded IT Network Values

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.

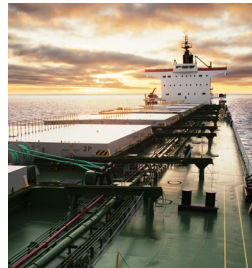


“My ship is a critical system - an interruption of power while at sea means endangering crew lives and potentially harming the environment.”

Optimize your IT networks.

The Vigilohm range of insulation monitoring devices (IMDs) provides you with a simple, reliable insulation monitoring, communication and fault location solution 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.



Vigilohm features help you do more

Operating principle

- Injects low frequency component or DC component on the network to measure its insulation (resistance and capacitance)
- In case of an insulation fault, triggers an alarm through contact relays, local message and 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
- Compliance with insulation Fault Locators
- 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



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:

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

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
- IM400C Best in Harsh Environments: conformal coating for higher humidity rates, dust, and higher temperature span

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

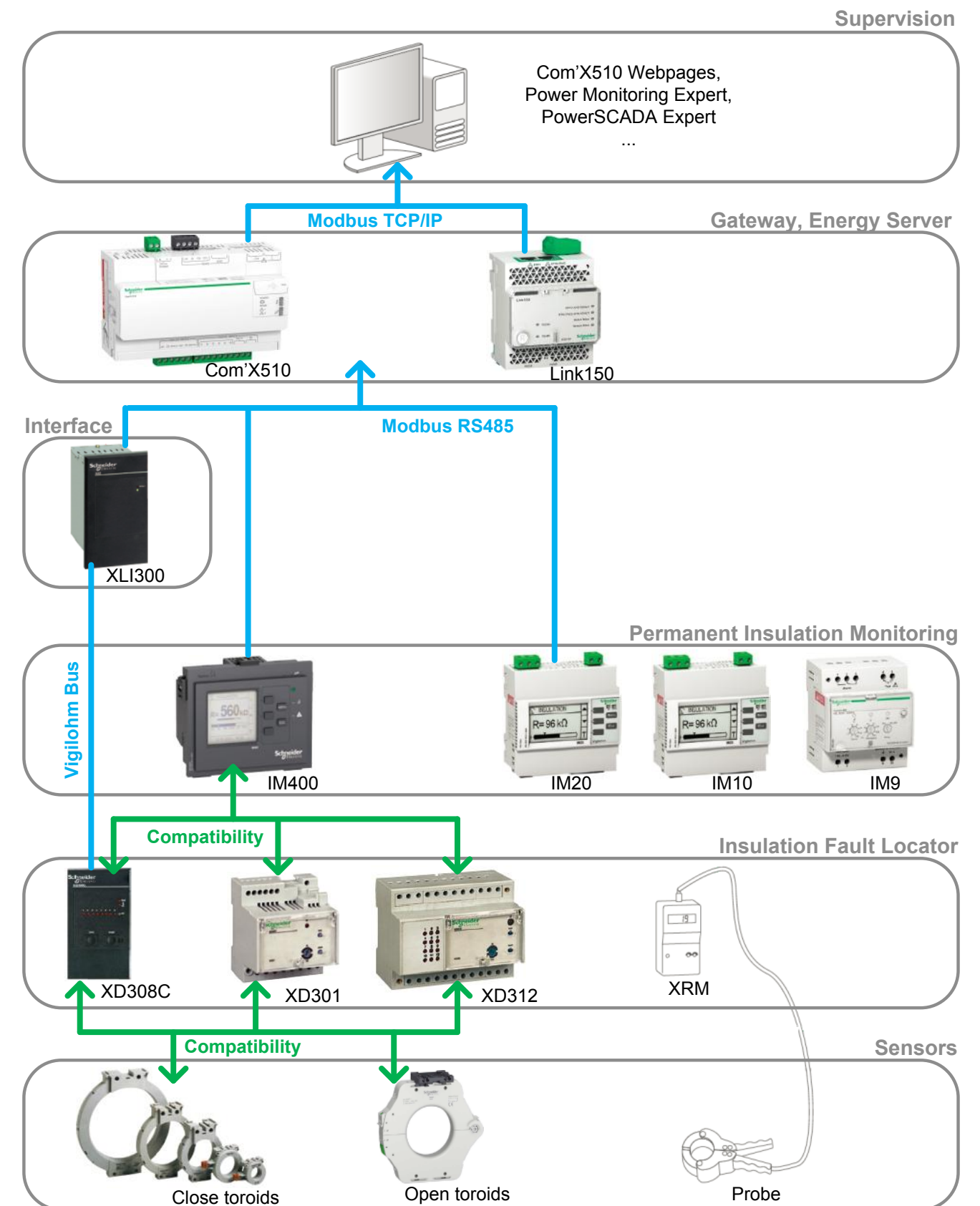


Ships of all kinds need an effective, reliable solution for insulation monitoring that is simple to implement and effortless to use.

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



Architecture of Vigilohm Range



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