



Vigilohm

Insulation Monitoring
for Ungrounded Networks

Catalog 2025



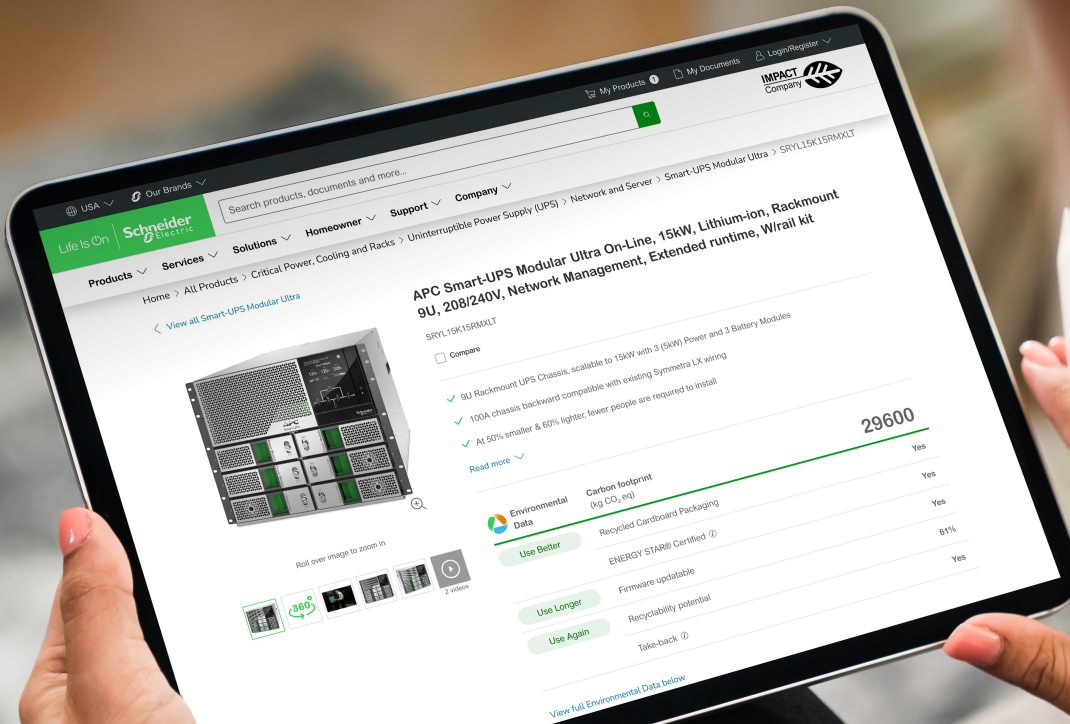
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Life Is On

Schneider
Electric



Environmental Data Program

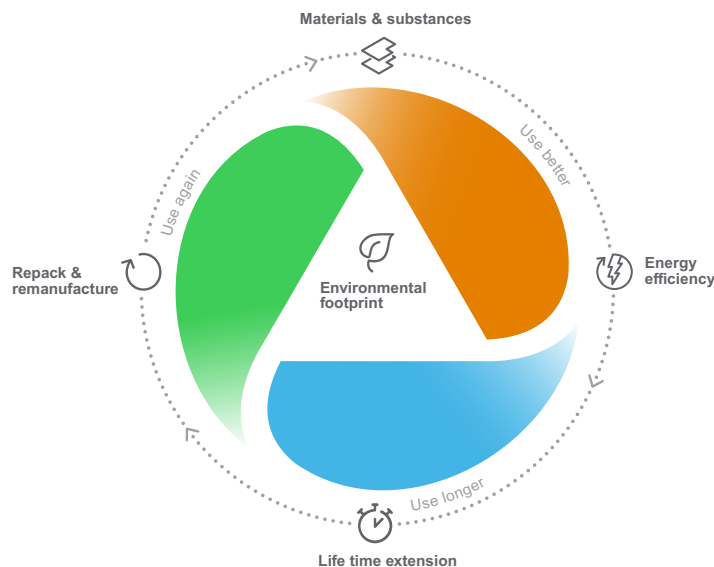


Next-level transparency for better-informed product choices

The Environmental Data Program is a framework for how we measure, categorize, and compare the environmental attributes and footprint of our products.

Using a rigorous, fact-based methodology, the program provides environmental data from across the product lifecycle.

Five data categories across the product lifecycle



Use Better: How sustainable a product is, including environmental footprint, materials and substances, packaging, and energy efficiency.

Use Longer: How a product's life time can be effectively extended in terms of reparability and updatability.

Use Again: How a product can be reused, from dismantling and remanufacturing to recyclability and manufacturer take back.

With this transparent, verified data, customers and partners are empowered to make conscious environmental choices and accurately evaluate and report on sustainability performance.

All our hardware offers have an associated environmental data available on se.com product pages.



Learn more about the **Environmental Data Program**

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Overview

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Ensuring Continuity of Service in the Event of an Insulation Fault

Any electrical installation must ensure both the safety of people and the protection of its assets. Over time, loads and conductors may experience insulation degradation to earth, leading to potential safety risks. One way to protect the installation and people is to install protection devices that will cut power to all or part of the installation in case of an insulation fault.

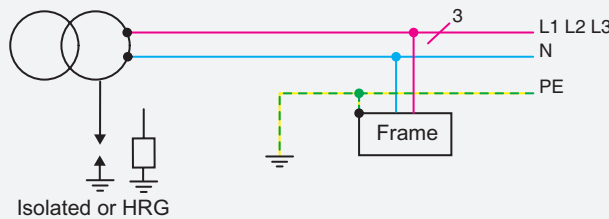
The consequences of this loss of power can be significant:

- Total or partial stoppage of critical processes including people safety processes.
- Total or partial loss of production and stocks.
- Increased operational costs and delays.

Continuity of service is thus an essential operational and safety requirement for many power network applications.

One way to ensure the protection of an installation and maintain service continuity is to isolate all or part of it from earth. This is what is called an IT earthing network or ungrounded network.

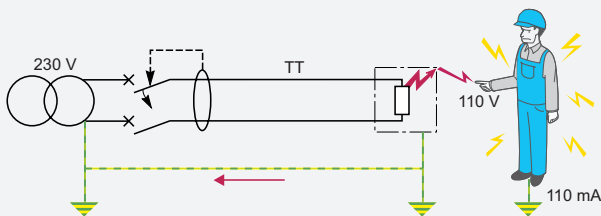
This is done simply by disconnecting the neutral of the transformer secondary windings from earth or connecting it through a high resistance (HRG).



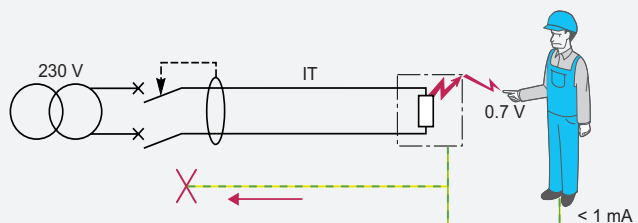
As such, in the event of an insulation fault, current cannot loop via the transformer's neutral resulting in:

- No dangerous contact voltage when touching metal parts.
- Very low fault currents.

Consequently, protective devices are not triggered, power is maintained, and therefore, an IT earthing system provides the best continuity of service.



TT or TN earthing systems: people protection vs residual currents thanks to RCD but power is cut.



IT earthing system: no RCD tripping as there is no current loop back to transformer.



The IT Earthing System: What do the Standards Say?

IEC standard committees have defined the specifications of the IT earthing system, also called ungrounded system.

The IT earthing system is described in several standards:

- EC 60364-4-41 Electrical installation in buildings
 - Protection for safety
 - Protection against electric shock
- IEC 60364-7-710 Requirements for special installations or locations – Medical locations.
- IEC 61557-8 Insulation monitoring devices for IT earthing systems.
- IEC 61557-9 Equipment for insulation fault location in IT earthing systems.

Two key conditions are detailed:

- The touch voltage remains under 50 Vac or 120 Vdc.
- An Insulation Monitoring Device (IMD) must be installed to monitor the ungrounded network and trigger an audible and/or visual alarm to inform on the insulation fault so that it can be repaired.

Vigilohm offer can help you comply with these international IEC standards requirements.

How much does your production stoppage cost you?

- Isolate your critical processes with a limited investment in a transformer and IMDs.
- Compare this versus the cost of your potential production stoppage.
- Limit production stoppages by scheduling preventive maintenance thanks to the monitoring of your IT earthing system.
- Increase your equipment life as the IT earthing system limits the stress induced by the fault current.

Accompanying You Since the 1960s

Proven Expertise in IT Earthing System

Vigilohm has accompanied customers in the industry, healthcare, infrastructure, marine, and more since the very infancy of IT earthing systems definition by IEC standards. That is, since the 1960s.

Vigilohm has participated to ensure that all those production sites or critical processes remain powered despite insulation faults.

Today, it is not uncommon to find three to four generations of Vigilohm systems on a customer site.

Vigilohm is also a complete solution borne out of all these years of experience and customer interaction. Vigilohm provides a range of Insulation Fault Locators (IFL12) which automatically and simultaneously detect which one(s) out of 12 feeders have insulation fault(s).

Though not mandatory in IEC standards, we strongly recommend installing fault locators for medium-sized networks onwards. Lack of time and competencies, and the complexity of certain installations can make fault localization a long and draining process, and put at risk your continuity of service.

As a final step, Vigilohm also includes fault localization mobile kits to manually check at the sub-feeder and load level. All this ensures that the fault is quickly found and the continuity of service is not put at risk.

Vigilohm will also help you better understand your installation and its evolution over time by relaying historical measurements through Modbus RS485 to your supervision system in an open architecture and by providing certain values such as capacitance to understand the causes behind resistance drops.

Finally, we have also made sure that Vigilohm is a best-in-class solution in terms of installation with no cabling between the insulation monitoring device and the fault locators, enabling full scalability of your installation.

Please read on to see how Vigilohm can support your installation!



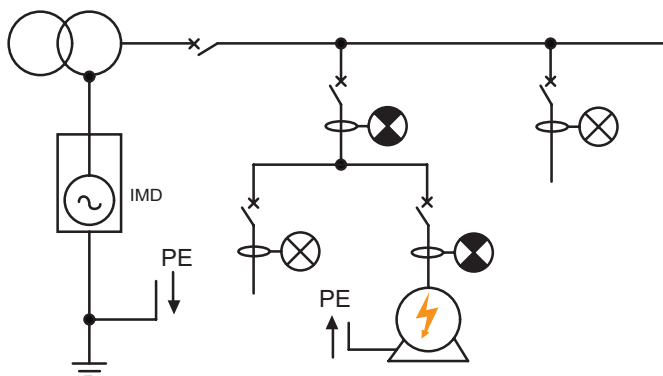
XD300C



XD308C



XD312



The Insulation Monitor Device detects and signals an insulation fault based on the alarm threshold. It activates an alarm relay that can be connected to a sound or light device. It can also send the alarm via communication.

Overview

Vigilohm, a Complete Solution

Monitoring the Insulation of a Complete Solution

According to IEC standards, an Insulation Monitoring Device (IMD) is mandatory to monitor ungrounded networks for insulation faults. The IMD will permanently monitor the network by injecting DC or low-frequency AC voltage between the network and earth. The resulting current that flows through the IMD is then measured, allowing the calculation of the corresponding insulation value. This principle allows the detection of balanced insulation faults too.

Vigilohm offers a complete range of IMDs depending on the size of your network and the complexity of your loads. Vigilohm offers a range of Insulation Monitoring Devices (IMDs) to permanently monitor the entire network for insulation faults and trigger alarms. These IMDs are mandatory as per IEC60364-4-41 for any IT earthing systems and have been designed to cover all types of installations:

- Short or long networks
- LV (Low Voltage) or MV (Medium Voltage)
- Simple or highly capacitive loads
- Dedicated to specific applications such as:
 - Healthcare
 - Marine
 - Photovoltaic

Typically, Vigilohm IMDs are:

- Available in both DIN rail and flush-mounted installation formats.
- Connected to neutral or to one phase and to the ground.
- Generally powered directly by the network they monitor.
- Complemented by Voltage Adaptors to fit different networks' nominal voltage.

Vigilohm IMDs' main parameter to configure is the alarm threshold above which the alarm will be reported by the relay output.

Depending on the variant, a Vigilohm IMD can:

- Measure insulation resistance over a wide range of values.
- Adapt to high capacitance networks.
- Display the insulation resistance value in real time.
- Display the leakage capacitance value in real time.
- Facilitate fault localization thanks to IFL12 fault locators.
- Store time-stamped alarms.
- Communicate with a supervisor thanks to native Modbus RS485.



IM9



IM20



IM400

Native Modbus RS485

Native support of Modbus RS485 for Vigilohm IMDs and IFLs without the need for additional modules. Gateways such as PAS600 or PAS800 can be used to connect in Modbus TCP IP.

Overview

Vigilohm, a Complete Solution

Locating the Insulation Fault

If an insulation fault happens in the ungrounded network, it shall be located and corrected before a second fault and any disruption to the site occur.

Finding the fault can be done by sequentially opening the circuit breakers. However, this would cause a temporary interruption of power to the feeders and go against the benefits of ungrounded networks.

To avoid this, the use of insulation fault locators is beneficial since it allows the automatic location of the fault while keeping the continuity of service of the site.

On networks that include several feeders or complex loads, the use of fault locators becomes more and more relevant as they save time and operational expenses.

Vigilohm range includes a series of fixed Insulation Fault Locators called IFL12 detecting up to 12 feeders simultaneously.

These are very easy to install, requiring no cabling with the IMD and providing utmost installation flexibility and scalability. In case of renovation, existing current transformers could also be re-used.

Depending on the variant, IFL12 locators can:

- Locally alert with a LED which of 12 feeders is faulty.
- Display the resistance measurement per feeder.
- Display the capacitance measurement per feeder.
- Configure the monitoring of each of the 12 feeders individually.
- Set specific alarm threshold per feeder.
- Communicate by Modbus RS485 natively with supervisor.

The ability of IFL12 to monitor each feeder individually is very useful, as each feeder can have different characteristics from another (cable length, types of loads, etc.).



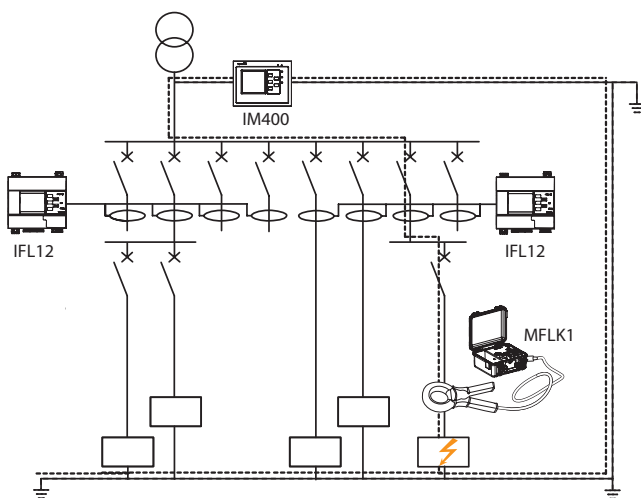
IFL12



IFL12MC



IFL12H



Did you know?

- IFL12 fault locators receive a low frequency signal injected by the IM400 IMD.
- No cables are necessary between IM400 and IFL12.
- IFL12s measure the current by being associated with current sensors to locate the faulty feeder(s) out of 12.
- Finally, a mobile kit allows to find the faulty sub-feeder or load.

Vigilohm, a Solution that Adapts to your Installation Size and Characteristics

Device Selection Made Easy with Vigilohm

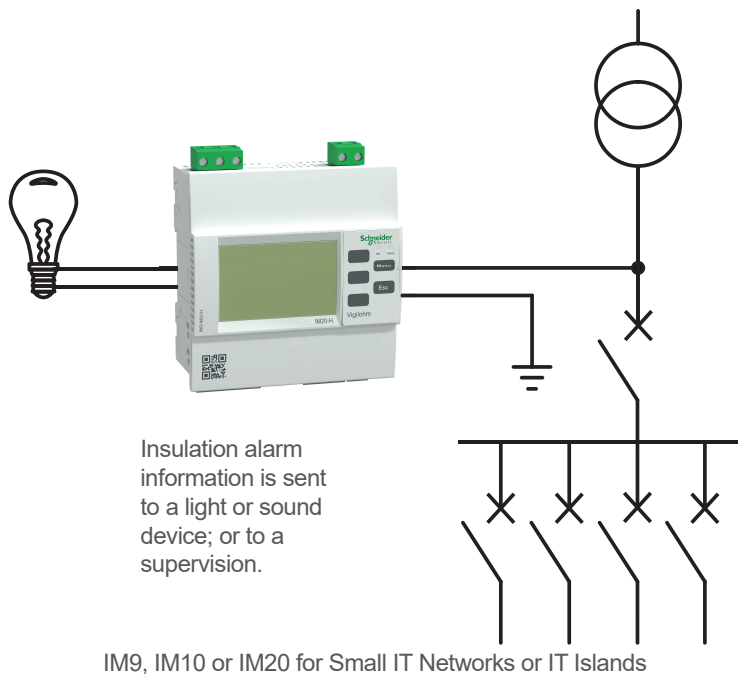
At Schneider Electric, we have been designing Insulation Monitoring Devices (IMDs) for more than 60 years. With this strong experience and understanding of ungrounded networks' specific constraints, we provide a range of solutions tailored to your needs while keeping a limited number of references for ease of selection.

Small IT networks or IT islands with no need for automatic insulation fault location:

A transformer is used to isolate and create the IT network (its neutral is not connected to ground). For small low voltage IT networks or islands, Vigilohm IM9, IM10, or IM20 IMDs are typically selected to permanently monitor insulation:

- Use IM9 for purely AC networks (no DC) with very few loads.
- Use IM10 or IM20 for AC and/or DC networks with few loads.
- Use IM9-OL for offline loads applications.
- Use IM10 or IM20 to display Resistance value in real time.
- Use IM20 to display Capacitance value in real time.
- Not compatible with IFL 12 automatic fault locators.
- Use IM20 for Modbus RS485 communication.

Note: Vigilohm proposes a dedicated range for Healthcare class 2 facilities complying with IEC 60364-7-710: IM10-H, IM15H, and IM20-H.



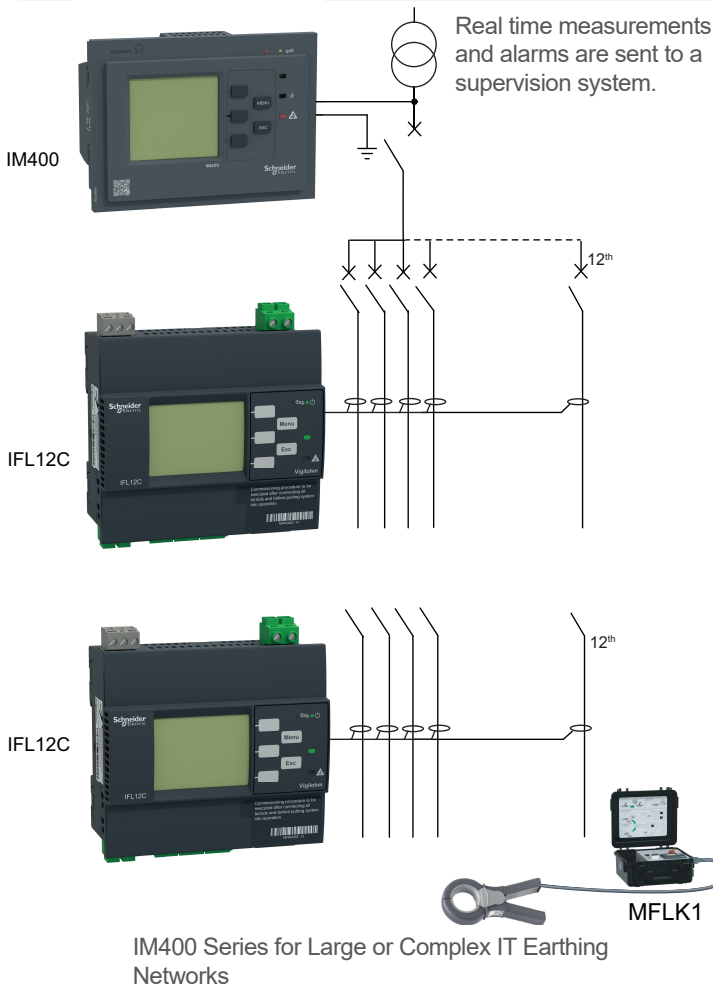
Vigilohm, a Solution that Adapts to your Installation Size and Characteristics

IT networks Requiring Automatic Insulation Fault Location

Whether your network is large or has complex loads with capacitance issues, having insulation fault locators is a necessity. Deploying IFL12 fault locators will help you find and clear insulation faults much more quickly, ensuring the continuity of service of your installation and minimizing operational costs, time, and resources to locate the faults.

For these installations, select an IMD from the IM400 range to complement IFL 12 fault locators. You can choose IM400 and IFL12 respectively depending on a few criteria such as your network characteristics, the power supply, and the information you want to monitor and how you want it relayed.

- The IM400 IMD permanently monitors network insulation (global value of resistance to ground and leakage capacitance), and will send an alarm in case of an insulation fault.
- The IFL12 Insulation Fault Locators report which is the faulty feeder(s) out of 12.
- In addition, the manual fault location kit (MFLK1) can be used to locate the exact cause of the insulation fault at the load level.
- Installation is made easy as no wired connection between the IM400 and IFL12 is needed.
- Scalability is ensured as the number of IFL 12 is not limited.
- Depending on the version, IM400 and IFL12C support Modbus RS485 communication to send information to a supervision system, greatly facilitating the prevention and resolution of insulation fault situations.
- IM400 is also available for medium voltage networks (IM400THR or IM400LTHR).












IFL12s benefit OPEX

- Fast fault identification.
- No power interruption required.
- Easy installation and retrofitting.
- Modbus RS485 supervision support.

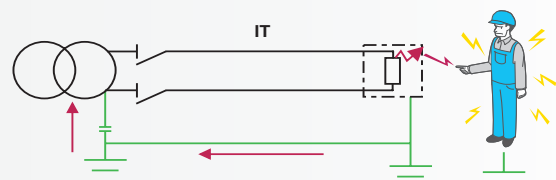


Overview Selection Guide






| IMD Selection Guide | Off-Line Motor | Small AC System | Small & Medium AC / DC System | | Large AC/DC System | Medium Voltage | Hospital | | |
|--|---|---|---|---|---|--|---|---|---|
| | IM9-OL | IM9 | IM10 | IM20 | IM400 | IM400THR | IM10-H | IM15H | IM20-H |
| |  |  |  |  |  |  |  |  |  |
| Application | | | | | | | | | |
| Standard applications | | ○ | ○ | ○ | ○ | | | | |
| Healthcare | | | | | | | ○ | ○ | ○ |
| Harsh environment and photovoltaic | | | | | IM400C | | | | |
| Off-Line Motor (TT, TN, IT) | ○ | | | | | | | | |
| Medium Voltage | | | | | | ○ | | | |
| IT Network Disturbance Level | | | | | | | | | |
| No disturbance | | ○ | ○ | ○ | ○ | ○ | | | |
| Low level of disturbance | | | ○ | ○ | ○ | ○ | | | |
| High level of disturbance | | | | | ○ | ○ | | | |
| Power Supply | | | | | | | | | |
| 24-48V DC | | | | | IM400L | IM400LTHR | | | |
| 110-440V AC/DC | ○ | ○ | ○ | ○ | ○ | ○ | | 110-230V AC 125-250V DC | |
| Fault Location | | | | | | | | | |
| Manual fault locator | | | | | ○ | | | | |
| Automatic fault locator | | | | | ○ | | | ○ | |
| Information and Communication | | | | | | | | | |
| Preventive insulation alarm output relay | ○ | | | | ○ | ○ | | | |
| Insulation alarm output relay | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Modbus RS485 | | | | ○ | ○ | ○ | | | ○ |
| Historical data | | | | ○ | ○ | ○ | | | ○ |
| IT transformer overcurrent and overheat | | | | | | | | ○ | ○ |

Know the leakage of your network

Leakage capacitance is typically due to the length of cables or the type of loads (EMC filters). It can induce a faulty current in case of a first insulation fault and potentially cause an IT network to behave like a TT network. Vigilohm displays capacitance to let you understand Resistance drops due to your load's activity.



In case of first fault, a faulty current can flow through the leakage capacitance of the IT network.

| IFL Selection Guide | | | | | | | |
|--------------------------------------|---|---|---|---|--|---|---|
| | IFL12 | IFL12L | IFL12C | IFL12MC | IFL12LMC | IFL12MCT | IFL12H |
| |  |  |  |  |  |  |  |
| Application | | | | | | | |
| Standard applications | ● | ● | ● | ● | ● | | |
| Healthcare | | | | | | | ● |
| Harsh environment | | | | | | ● | |
| IT Network Disturbance Level | | | | | | | |
| No disturbance | ● | ● | ● | ● | ● | ● | |
| Low level of disturbance | ● | ● | ● | ● | ● | ● | |
| High level of disturbance | | | | ● | ● | ● | |
| Power Supply | | | | | | | |
| 24-48V DC | | ● | | | ● | | 110-230V AC 125-250V DC |
| 110-440V AC/DC | ● | | ● | ● | | ● | |
| Information and Communication | | | | | | | |
| Insulation alarm output relay | ● | ● | ● | ● | ● | ● | ● |
| Capacitance measurement | | | | ● | ● | ● | |
| Modbus RS485 | | | ● | ● | ● | ● | ● |
| Historical data | | | | ● | ● | ● | ● |

IFL12: Easy and scalable installation!

- Scalability is ensured as the number of IFL12s is not limited
- No cable connection is required between the IM400 and the IFL12s.
- IFL12s can be located by the IM400 or at any distance further down the network.
- No limits to the number of IFL12s that can be installed to monitor the network.
- Reuse existing toroids on an aging IT installation; no need to switch off and reinstall.



Applications

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A Dedicated Vigilohm Range for Healthcare

Critical medical premises such as hospital operating theatres, intensive care units, recovery rooms and other Group 2 healthcare rooms require utmost power continuity of service and power quality to ensure maximal patient safety.

A dedicated Vigilohm range has been designed to comply to the specific standards applicable in healthcare environment:

- IEC 60364-7-710: Requirements for special installations or locations: Medical locations.
- IEC 61557-8: Electrical safety in LV distribution systems up to 1000 Vac and 1500 Vdc – Equipment for testing, measuring or monitoring of protective measures – Part 8: Insulation monitoring devices for IT systems.

Annex A : Medical insulation monitoring devices (MED-IMD) – applicable to IM10-H, IM15H, IM20-H Insulation Monitoring Devices.

Annex B : Monitoring of overload current and over-temperature – applicable to IM15H, IM20-H Insulation Monitoring Devices.

- IEC 61557-9: Electrical safety in LV distribution systems up to 1000 Vac and 1500 Vdc – Equipment for testing, measuring or monitoring of protective measures – Part 9: Equipment for insulation fault location in IT systems.

Annex A : Equipment for insulation fault location in medical locations applicable to IFL12H Insulation Fault Locators.

Some key points required by these standards include:

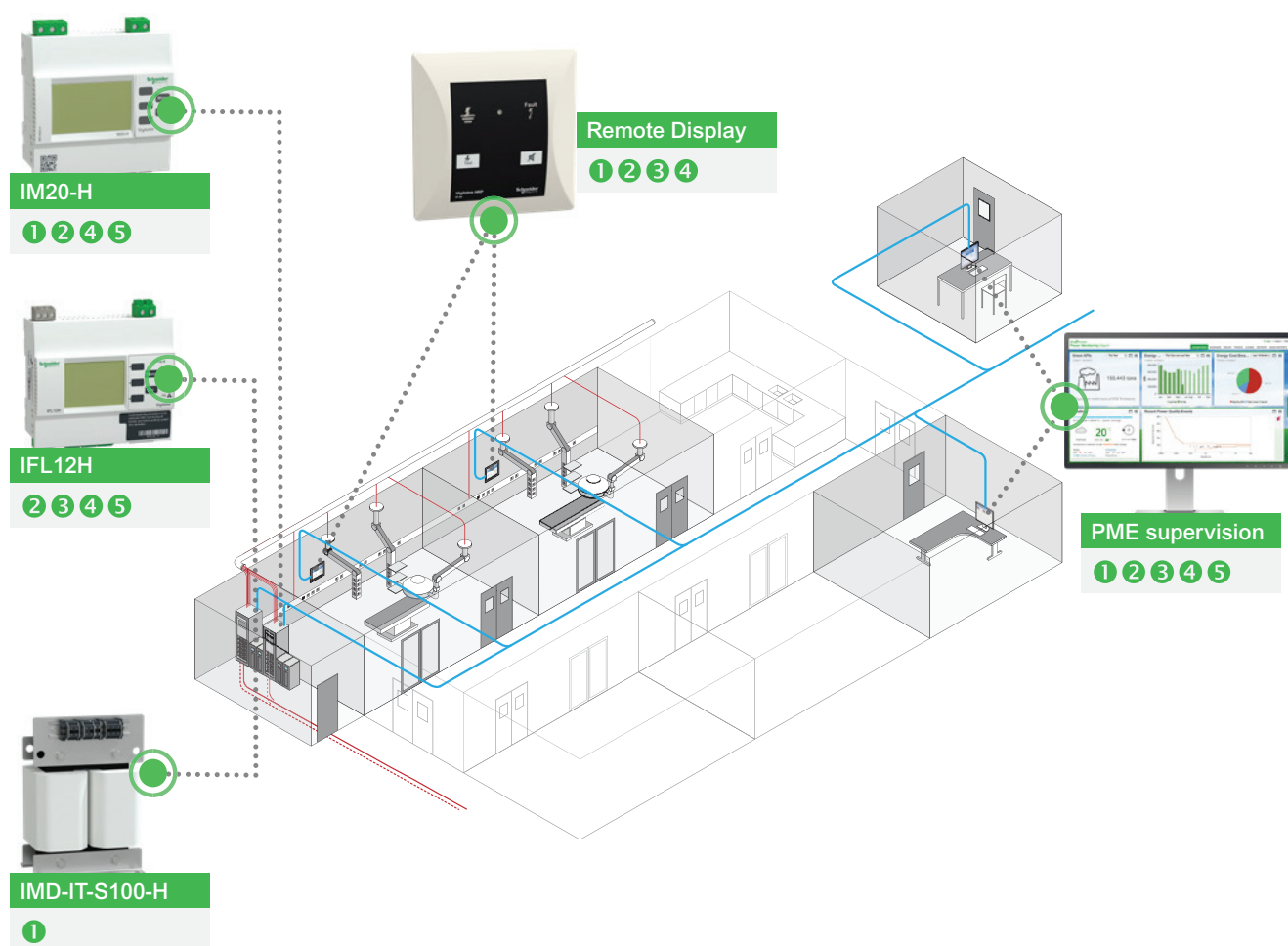
- In group 2 rooms for medical use, IT grounding should be used for the circuits powering medical electrical equipment and systems for survival and surgical applications. IT should also be implemented for equipment located in the environment of the patient.
- An audible and visual alarm must be triggered in case of an insulation fault to alert medical personnel in the room. Monitoring of overload and over-temperature for the medical IT transformer is required as per IEC 60557-7-15.
- The use of Insulation Fault Locators is recommended to locate an insulation fault.

Specific requirements apply to the Insulation Monitor Devices so they can be used in medical premises, including:

- Value of measuring voltage and current, and internal impedance.
- Ability to trigger an alarm if earth or injection connections are disconnected.
- Values of alarm threshold settable.

Applications

Healthcare



1

Monitor

IM10-H, IM15H or IM20-H permanently monitor the complete installation for insulation fault or transformer overload or overheat.

2

Alarm

The Remote Displays (HRP or OTD) will display and sound an alarm due to an insulation fault on the network. That alarm is also available on the IMDs or the supervision system (PME). Medical staff can acknowledge the alarm directly on the HRP or OTD display.

3

Locate

IFL12H will indicate which of up to 12 feeders is faulty to facilitate the fault location without switching power off.

4

Maintain

A maintenance team can be engaged to deal with the insulation fault located by the IFL12. The staff can also run the mandatory planned tests directly on the HRP or OTD.

5

Log & Analyze

The IMDs or the PME supervision system records resistance levels and events over time to anticipate possible faults and plan preventative maintenance.

Healthcare

Vigilohm for Healthcare Range Overview:

Insulation Monitoring Devices IM10-H, IM15H, IM20-H

Permanently monitors the insulation and signals an insulation fault, including (depending on the reference):

- IT transformer monitoring (overload, over-temperature).
- Modbus RS485 communication.
- Timestamped alarm log.



Insulation Fault Locators IFL12H

- Location of the faulty feeder.
- Settable alarm threshold per feeder.
- Customizable name per feeder.
- Modbus RS485 communication.
- Timestamped alarm log.

Toroids

- Compatible with IFL12H to measure the fault current.



Displays: HRP, OTD

As per IEC 60364-7-710 requirements, HRP (Hospital Remote Panel) or OTD (Operating Theater Display) displays are installed in Group 2 premises to inform the medical staff in real time about:

- The existence of an insulation fault within the medical room.
- The existence of an electrical fault due to a transformer overload or overheat.

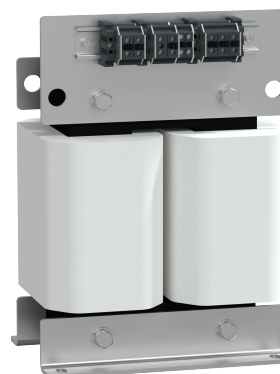
Both allow the regular insulation test required by the IEC 60364-7-710 standard to be performed. In addition, the OTD will locate the insulation fault and offer other advanced functions such as medical gas monitoring or UPS status.



Single-phase Isolated Transformer

Single-phase isolated LV/LV transformers allowing the creation of an IT earthing network for critical Group 2 premises as per IEC60364-7-710 and complying with IEC/EN61558-2-15:

- Available in 6.3, 8 and 10 kVA.
- Umax between phases is limited to 250 Vac 50 Hz.



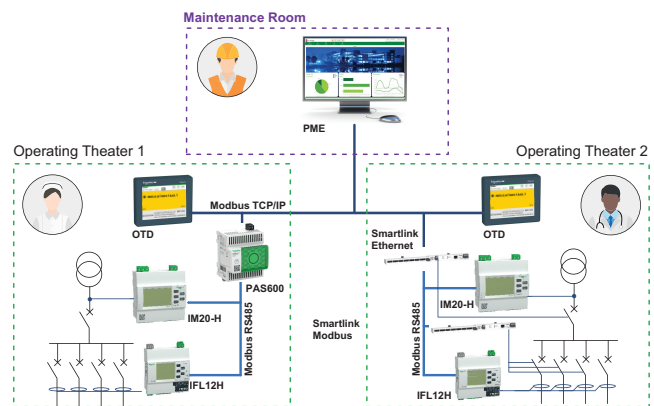
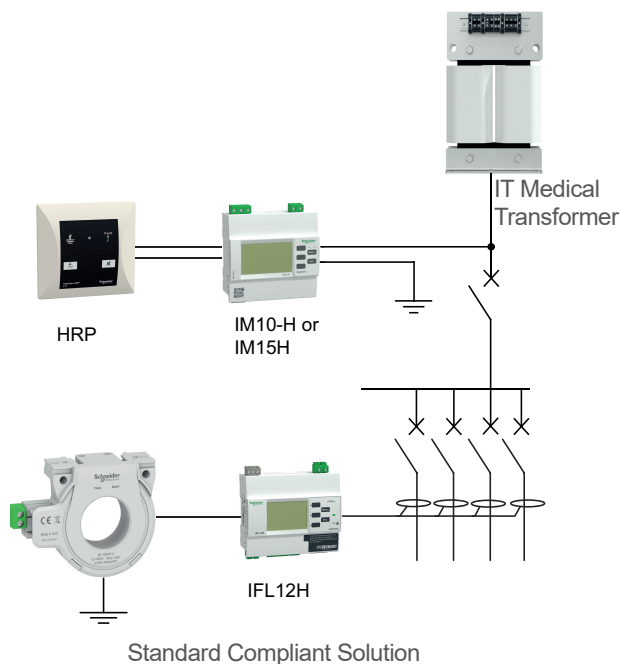
Applications

Healthcare

Vigilohm solutions to meet your needs

- Medical IT transformers create separate IT networks for each operating theater room.
- Vigilohm IM10-H or IM15H monitors the network insulation and the IT transformer.
- Local information: any insulation fault or electrical fault (due to transformer overload or overheat) is displayed to the medical staff through the HRP.
- The alarm buzzer can be stopped from the HRP.
- Insulation fault location will be facilitated by the IFL12H information.
- The regular insulation test, required by standards, can be easily initiated by the medical staff through the HRP.

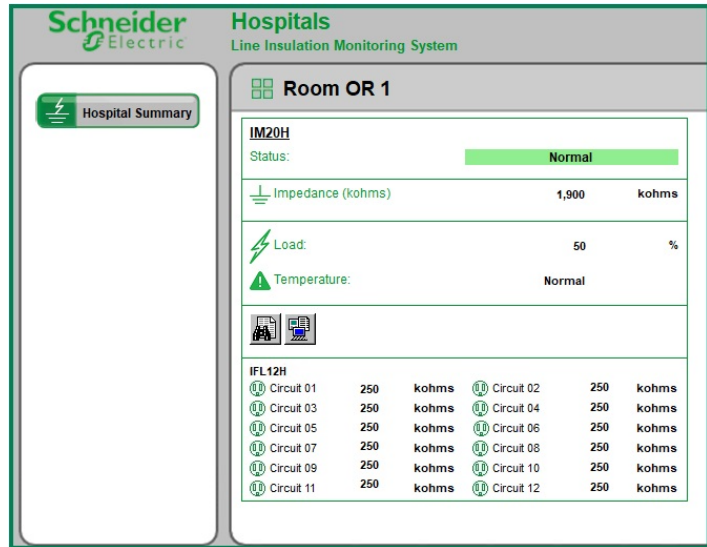
- Medical IT transformers create separate IT networks for each operating theater room.
- Vigilohm IM20-H monitors the network insulation and the IT transformer.
- Vigilohm IFL12H indicates the faulty feeder in case of an insulation fault.
- SmartLink (Ethernet and Modbus) monitors the trip of circuit breakers Any insulation fault (including its location) or electrical fault (due to transformer overload, overheat, or trip of a circuit breaker) is displayed to the medical staff through the OTD display.
- Alarm buzzer can be stopped from the OTD.
- The regular insulation test, required by standards, can be easily initiated by the medical staff through the OTD.
- Real-time data from IM20-H, IFL12H, and SmartLink is sent to a supervision system, alerting the electrical maintenance team in case of an issue. Benefit from Vigilohm integration in pre-engineered Isolated Power Solution.



Connected Products as Part of EcoStruXure™ Power

EcoStruXure Power delivers safe, highly available, and energy-efficient electrical distribution systems for low and medium voltage architectures. Our IoT-enabled power management solutions enhance connectivity, real-time operational reliability, and smart analytics for peace of mind and significant financial benefits to businesses of all sizes and maturity levels.

Vigilohm is an integral part of the EcoStruXure Power solutions for healthcare applications, as connected products that can be easily integrated into edge control such as EcoStruXure Power Monitoring Expert.

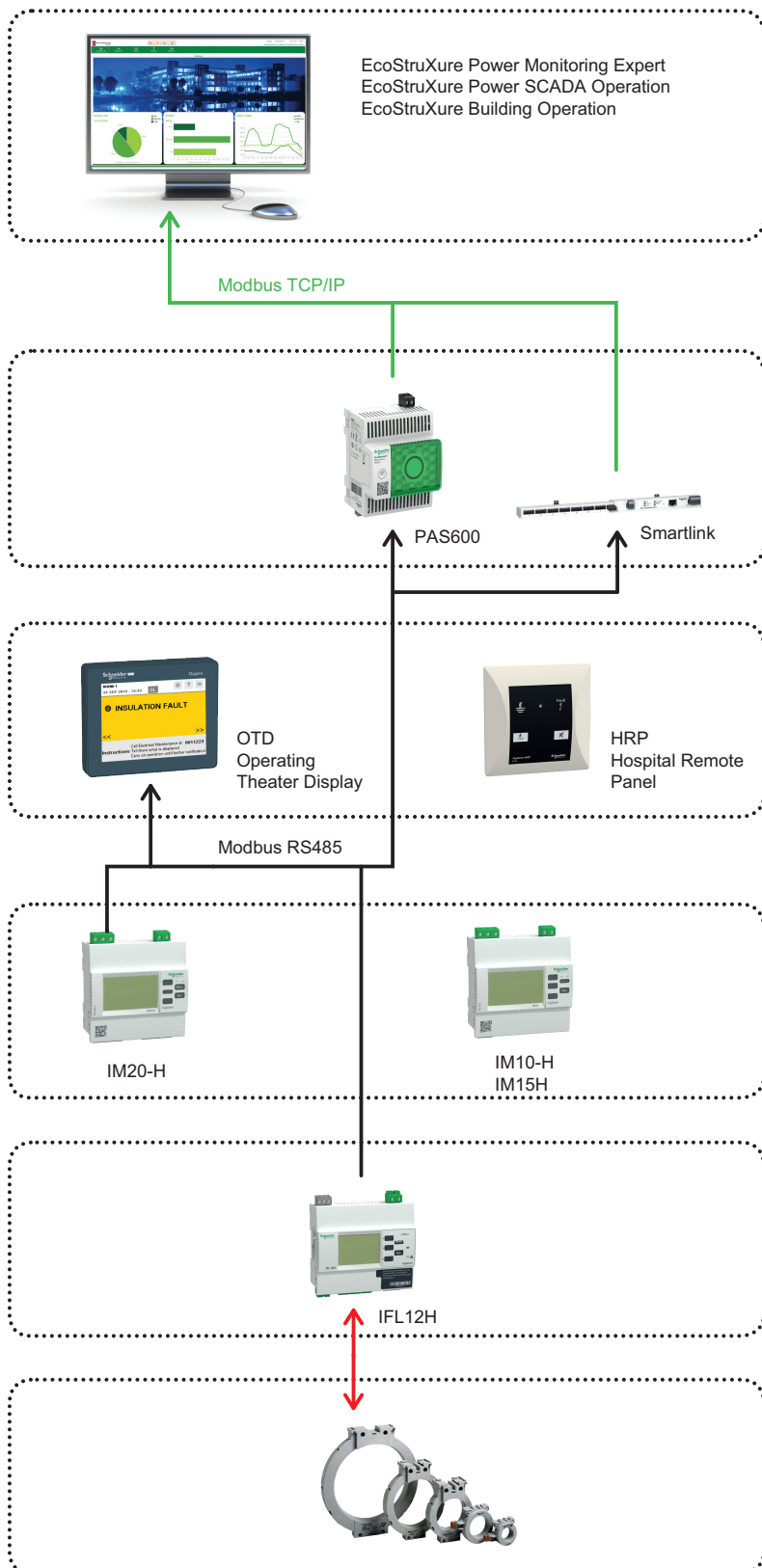


Customize your messages!

Information and alarm messages shown on the OTD can be customized to display specific instructions to the medical staff.

Range Overview

Dedicated offers for critical rooms compliant with IEC60364-7-710



Monitoring and Control

Power Monitoring & SCADA system

Communication

Gateway

Local Displays

HMI in the medical room

Insulation Monitoring Devices

Monitoring of the global network insulation

Insulation Fault Locators

Identification of the faulty

Toroids

Used along with the Fault Locators



What is at Stake?

IT earthing systems are commonly found in industrial sites for critical processes that shouldn't be stopped unexpectedly and whose restarts would be costly and time-consuming. Industrial sites such as cement, steel, glass, paper, aluminum, or chemical factories, car manufacturing, food processing, etc., commonly use such IT earthing networks for their critical processes (furnace, mill, electrolysis vat...).

Other earthing systems (TN, TT) would typically cause the protection devices to trip in case of a fault and thus cut power to important processes and equipment. Such power cuts will lead to expensive financial losses with production stops and restarts, wasted stocks, urgent maintenance operations requiring permanent on-site staff, and may disable some safety processes. These other earthing systems, by letting a faulty current flow to earth, can also cause a fire or explosion risk in certain environments such as petrochemical or storage silos.

The use of an IMD in an IT earthing system will thus meet these requirements.

What are the Constraints from the Installation?

Industrial sites have several constraints to take into consideration.

- They include disturbing loads such as variable speed drives or disturbing processes generating harmonics.
- They may be aging, having an insulation level that deteriorates over time.
- Their IT networks may be quite large with many feeders.
- Production needs to keep running, and maintenance interruptions need to be kept to a minimum, often with limited on-site technical teams to correct insulation faults.

Vigilohm Solution

From the simplest solution with IM10 to the most advanced with IM400 and IFL fault locators, the Vigilohm range can meet the requirements. Vigilohm products have been tested with variable speed drives.

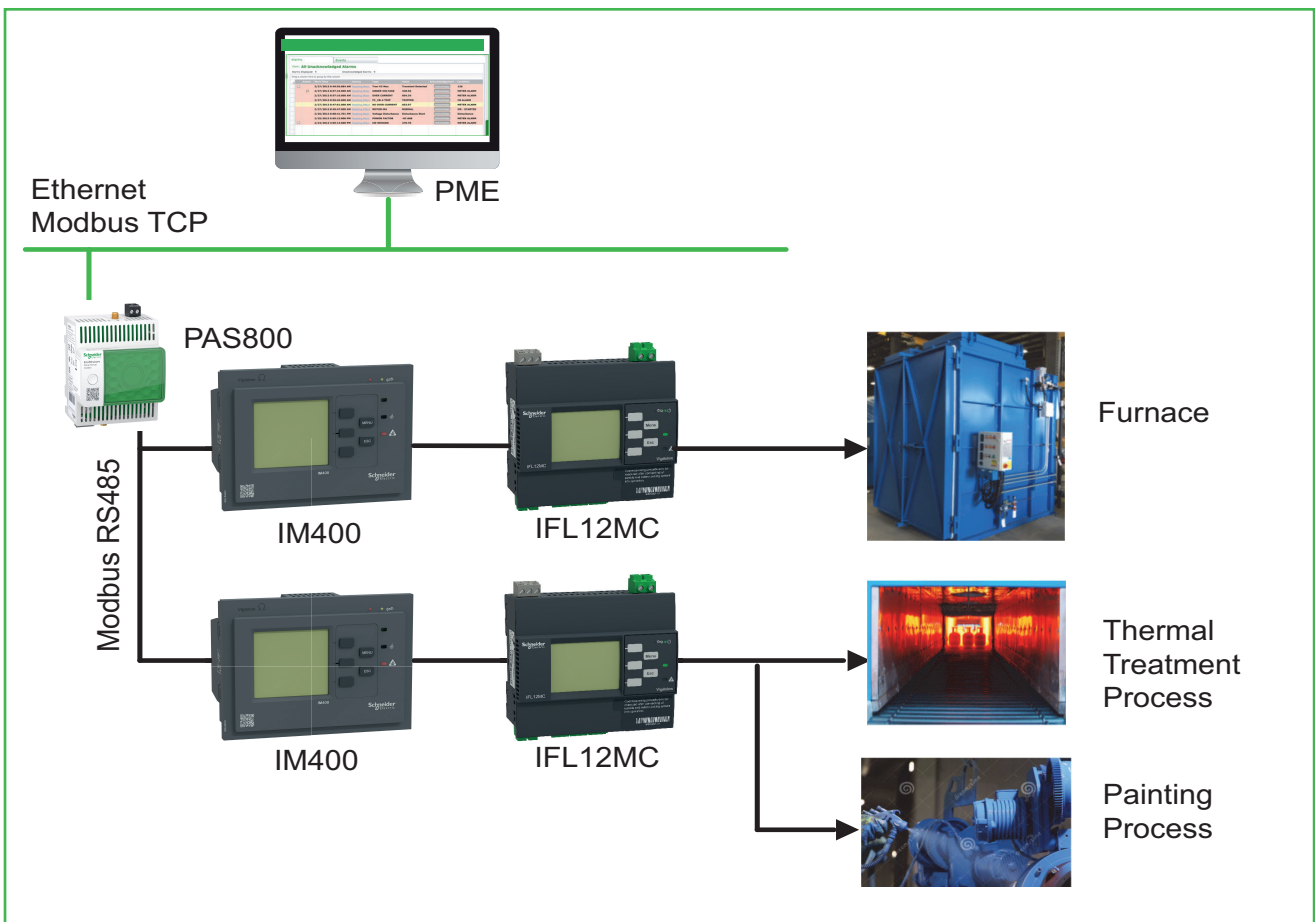
- Fast response time and recording of intermittent insulation faults allow correlation of faults with the start of a specific load or process.
- Modbus RS485 communicating IM400 and IFL12 facilitate the on-site maintenance with a supervision system.
- A conformally coated version is available for industrial sites with harsh environments.
- IM9-OL can be used to monitor the insulation of off-line motors (whatever the earthing system) to ensure that they start the day they are needed.

Case Study: Manufacturer of Construction Equipment

Manufacturing processes of the machines are critical and cannot be stopped unexpectedly, as this would generate significant financial losses. An ungrounded network, monitored by VigiloHM IM400, was thus selected to keep the processes running even in the case of an insulation fault.

VigiloHM IFL12MC fault locators were chosen to ease the fault correction. Their capacity to provide insulation measurements and individual alarm thresholds per feeder, allowing fine-tuning of the insulation monitoring according to each process's characteristics, was also a key criterion. Insulation monitoring and alarming are centralized in a supervision system.

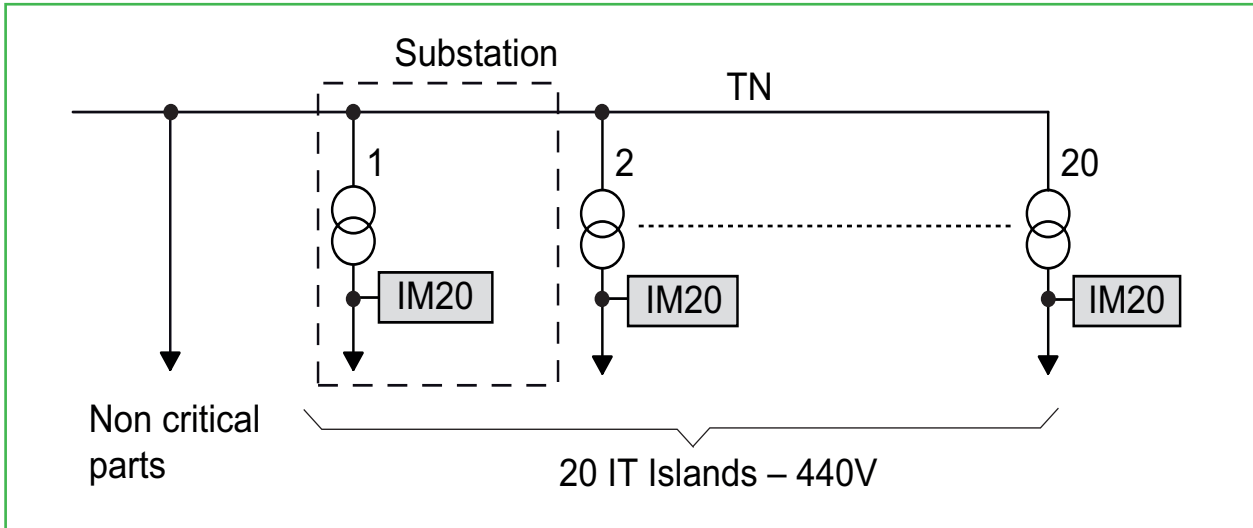
Any abnormal insulation decrease is detected and results in maintenance actions. Timestamped alarms allow correlation of the fault with the start of a process or a machine, and facilitate post-incident analysis.



Case Study: Manufacturer of PVC Floor

This customer uses ungrounded networks to optimize maintenance scheduling. The IT earthing system was chosen, not in relation to a continuous process, but to simplify maintenance. In a TN earthing system, a fault would trip a circuit breaker, and the maintenance team would have to intervene immediately. This would involve a qualified technician being permanently available. In an IT earthing system, a fault that occurs during the night or over a weekend is inconsequential, so the maintenance team can wait to deal with it during work hours.

The site has approximately 20 IT islands that mainly supply variable-speed drives. The overall power is 17 MW.



Each IT network is isolated from the TN network by a transformer and monitored by Vigilohm IM20. The alarm relay is used to inform the maintenance team of a fault through a light indicator. Since the processes are not critical here, no insulation fault locator is used, and fault location is done by sequential opening of the circuit breakers. The IM20 is used for its good compatibility with variable-speed drives.

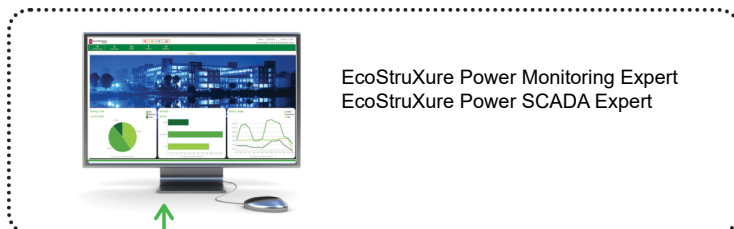
Ensure process continuity

- Processes continue running even in the event of an insulation fault.
- IFL12 locators reduce maintenance time by identifying the faulty feeder.
- Compliance of the solution with variable speed drives.

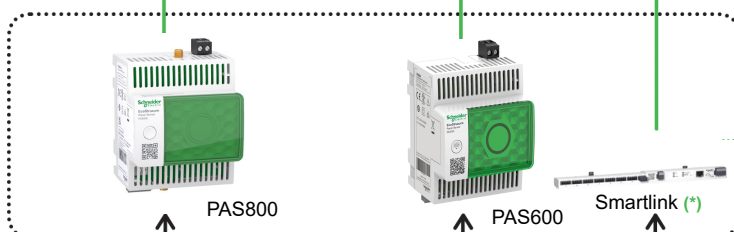
Range Overview

A complete solution to meet your needs

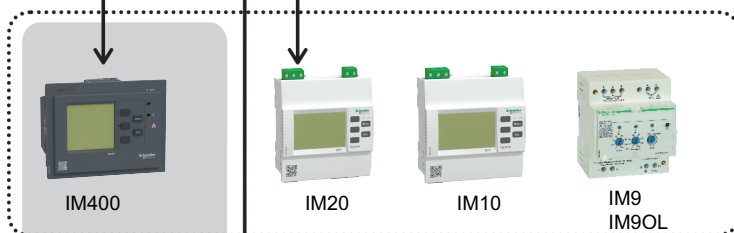
Monitoring and Control
Power Monitoring and SCADA system



Communication and Simple Monitoring
Gateway, Data logger and Web Server



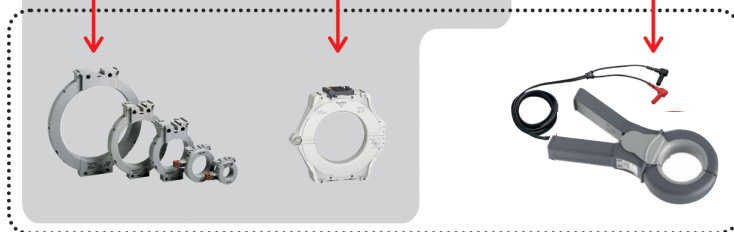
Insulation Monitoring Devices
Monitoring of the global network insulation



Insulation Fault Locators
Identification of the faulty feeder



Toroids
Used along with the Fault Locators



(*) Alarm relay position can be sent to a supervisor via a SmartLink.



What is at Stake?

When at sea, due to the environmental conditions and the distance to external assistance, a ship's crew has no choice but to work independently. In all situations – including both normal operations and exceptional events – the crew must face and fix problems alone. Potential risks include electrical shock, cable overheating or fire, explosion, and loss of control of the navigation equipment.

To mitigate these risks, IT networks are commonly used in marine installations to ensure the continuity of service, limit the risk of fire and explosion, and ensure the safety of people and equipment. All types of ships are concerned: cargo, carrier or container ships, tankers, military vessels, FPSOs, cruise ships, and military ships...

Standards in Marine

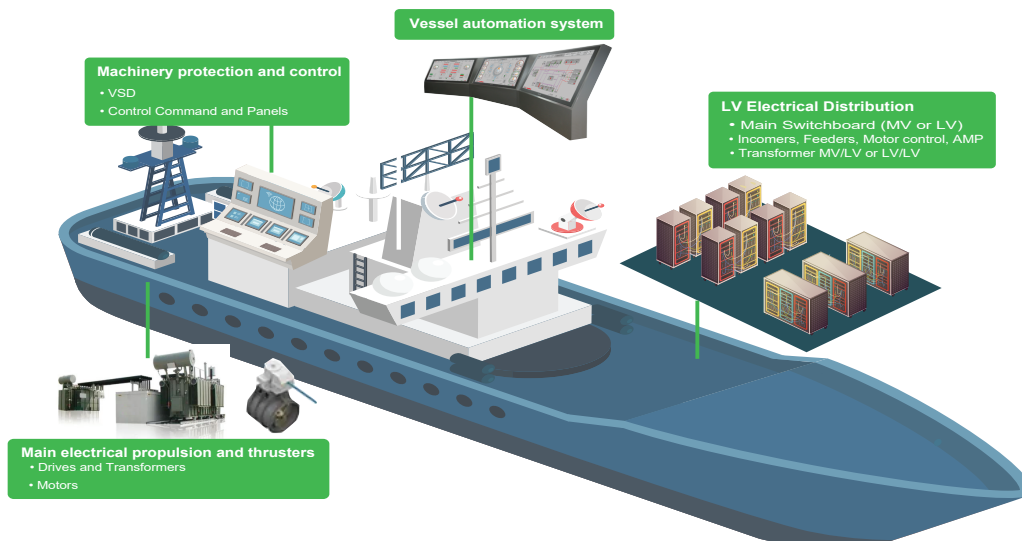
Ships' design requires approval from Classification Societies. The IACS (International Association of Classification Societies) includes, among others: Bureau Veritas, Lloyd's Register of British and Foreign Shipping, Germanischer Lloyd, DNV, ABS, and RS...

Standards in Marine

Ships' design requires the approval from Classification Societies. The IACS (International Association of Classification Societies) includes, among others, Bureau Veritas, Lloyd's Register of British and Foreign Shipping, Germanischer Lloyd, DNV, ABS, and RS...

Vigilohm products comply with Classification Societies' requirements.

Classification Societies



Applications

Marine

Vigilohm Solution

Vigilohm provides a complete range of products compatible with marine applications.

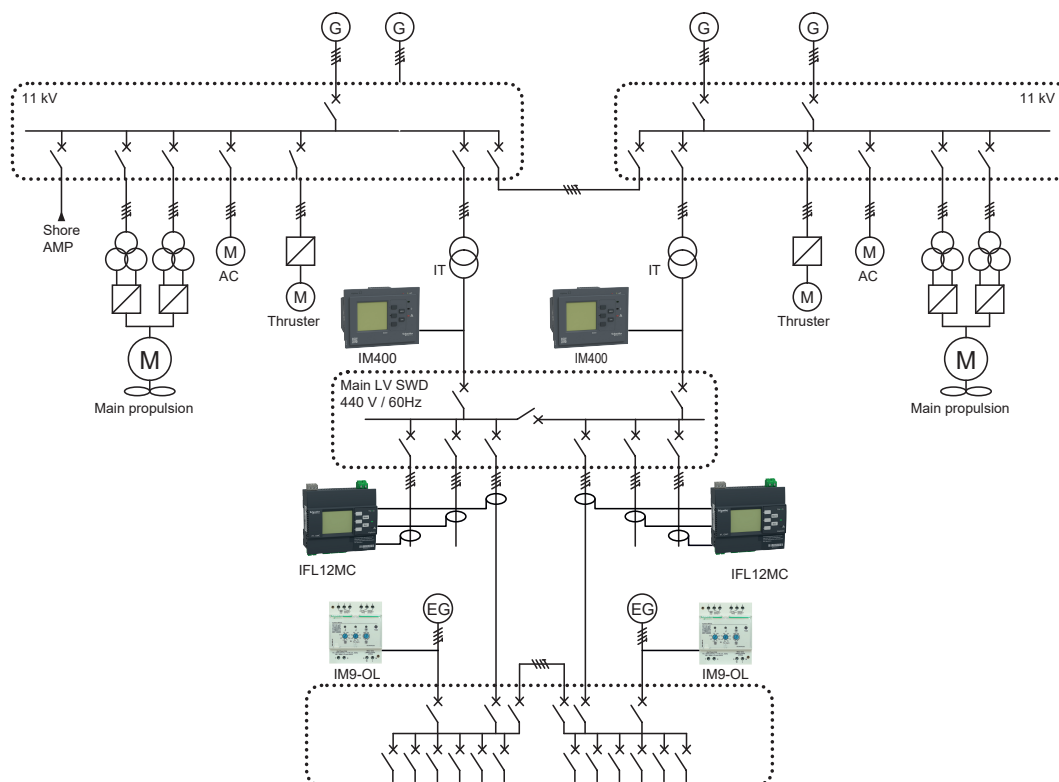
- Small IT networks on ships with only a few feeders will be monitored by IM10 or IM20 IMDs where no automatic fault locators are needed.
- Larger networks, with numerous feeders, can be monitored with IM400 together with automatic fault locators of the IFL12 range.
- Some vessels include a medical zone and operating theaters that can be monitored by IM10-H, IM15H, IM20-H, and fault locator IFL12H dedicated to Group 2 premises as per IEC60364-7-710.
- If products need to be placed in harsh environments, the conformally coated products IM400C and IFL12MCT can be selected.
- For medium voltage IT networks, one can select IM400THR or IM400LTHR.
- The insulation monitoring of off-line devices (lift, pump, motors) can be assured with IM9-OL.
- The communicating products of the Vigilohm range (IM20, IM400, IFL12C, IFL12MC) will relay insulation alarms to the ship supervision system through Modbus RS485 communication.
- Vigilohm products comply with DNV, Bureau Veritas, RMRS, and ABS classification societies' requirements (refer to product datasheets for details).
- IM400 complies with UL508 and UL FS (Functional Safety), demonstrating its reliability.



To know more
Vigilohm brochure:
**Keep the power
running safely at
sea.**

Case Study: Cruise Ship

- The solution consists of IM400, IMDs and IFL12MC locators for advanced insulation monitoring of the ship's critical processes.
- A Power Monitoring Expert (PME) supervision system collects all insulation measurements and alarms through Modbus communication.
- IM9-OL is used for monitoring off-line generators.



Insulation Monitoring of Off-Line Equipment



What is at Stake?

Failure to start some motors or generators can have serious consequences. Equipment failing to start can be due to insulation problems that appear when the equipment is de-energized.

Environmental conditions such as humidity, dust, and rust can have serious effects on a piece of equipment when it is not used for a long period. Humidity may accumulate in microscopic cracks in the insulation. This can result in a downgrade in the insulation level of the equipment. Eventually, when the equipment must be used and is energized again, the risk is that it will fail to start due to an insulation problem.

This concerns equipment on any type of earthing system (not only IT, but also TT and TN). This may impact people's safety or generate financial losses. In the event of a dead short, powering up a motor can result in a high fault current that can destroy the motor (if it is configured with TN grounding).

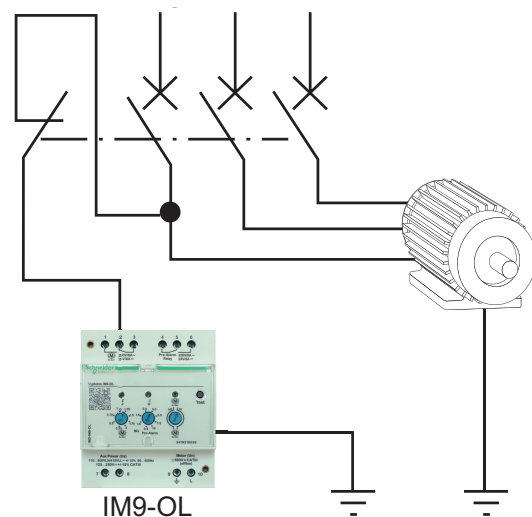
Local Regulations for Buildings Open to the Public

In some countries, local regulations (NFC 15-100 in France for example) make it mandatory in buildings opened to the public to monitor the insulation of safety equipment when they are not in use. Insulation faults must be signaled to ensure equipment will be operational when needed. Safety equipment includes smoke extractors and fire pumps.

Vigilohm Solution

IM9-OL is designed to monitor the insulation of off-line equipment:

- Compatible with any earthing system (IT, TT, or TN).
- Compatible with AC and DC networks, and with MV equipment using an appropriate timer relay.
- Pre-alarm threshold from 0.5 MΩ to 10 MΩ.
- Motor-no-start threshold from 0.25 MΩ to 2 MΩ.
- Rotary switch to enable motor start or not.

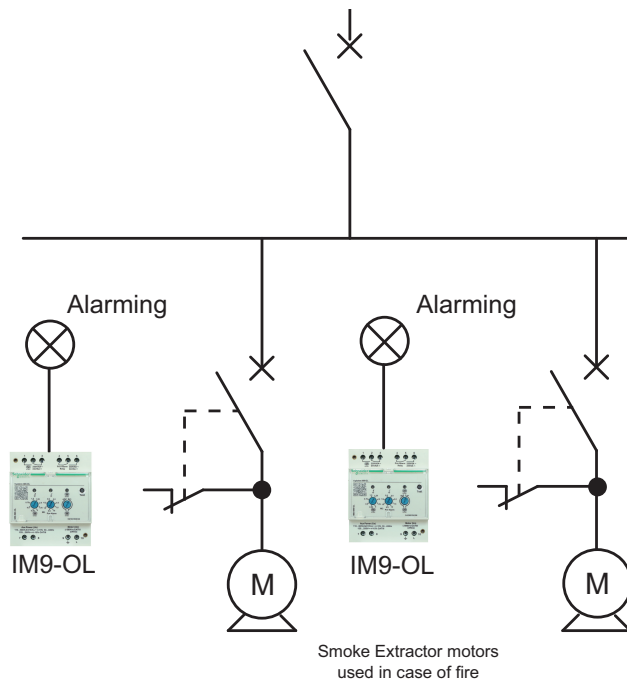


IM9-OL is Compatible with Any Grounding System: IT, TN, TT

Insulation Monitoring of Off-Line Equipment

Customer Case Study: Smoke Extractor in a Station

IM9-OL was selected to permanently monitor the insulation of smoke extractors in a train station while they are not used. The key benefit was to anticipate the detection and correction of faults to ensure that the smoke extractors will be operating when needed in case of fire. The IM9-OL alarm relay is used to report the alarm remotely. The IM9-OL contributes to the passengers' safety in the station.



Medium Voltage (up to 33kV) Ungrounded Networks



What is at Stake?

Ungrounded networks can be found in medium voltage networks (between 1.5 kV and 33 kV) where continuity of power is essential. Safety risks may also be a criterion for sites with a risk of explosion, as the fault current in case of an insulation fault shall be limited to the ungrounded network.

There are many applications including:

- Mining, minerals, and metals.
- Oil and gas sites with explosive atmospheres.
- Power generation, such as nuclear and gas power plants.
- Power lines (aerial, underground, or underwater).
- Marine and shore connections, with 6.6 kV supply for large ships when at seaport.
- Airport taxi lighting systems.

What are the Constraints of MV Installations?

The IMDs need to :

- Withstand the voltage level of these networks.
- Provide a settable k-ohm alarm threshold.
- Limit the ferro resonance phenomenon on the MV network.

Vigilohm Solution

Schneider Electric released the first MV insulation monitoring device over 50 years ago. We offer a full solution for the insulation monitoring of MV ungrounded networks from 1.5 kV to 33 kV, which includes:

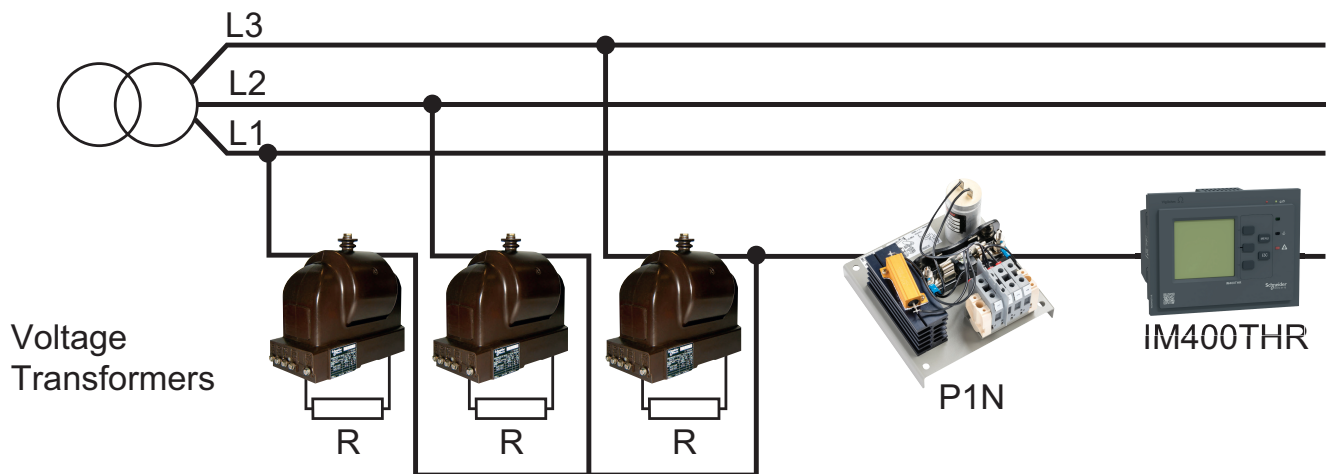
- IM400THR and IM400LTHR IMDs.
- MV voltage transformers.
- P1N Ground Adaptor.

Medium Voltage (up to 33kV) Ungrounded Networks

Customer Case Study : Chemical Manufacturing Site

This site includes ten sources of 5.5 kV. Some of the processes to produce chemical components take up to 27 days and cannot be interrupted, as the risk is to waste all raw material involved. The MV network is ungrounded and monitored by IM400THR.

Insulation faults, typically due to dust on aerial glass isolators, are detected by the IM400THR while maintaining continuity of service. IM400THR, whilst maintaining continuity of service.





What is at Stake?

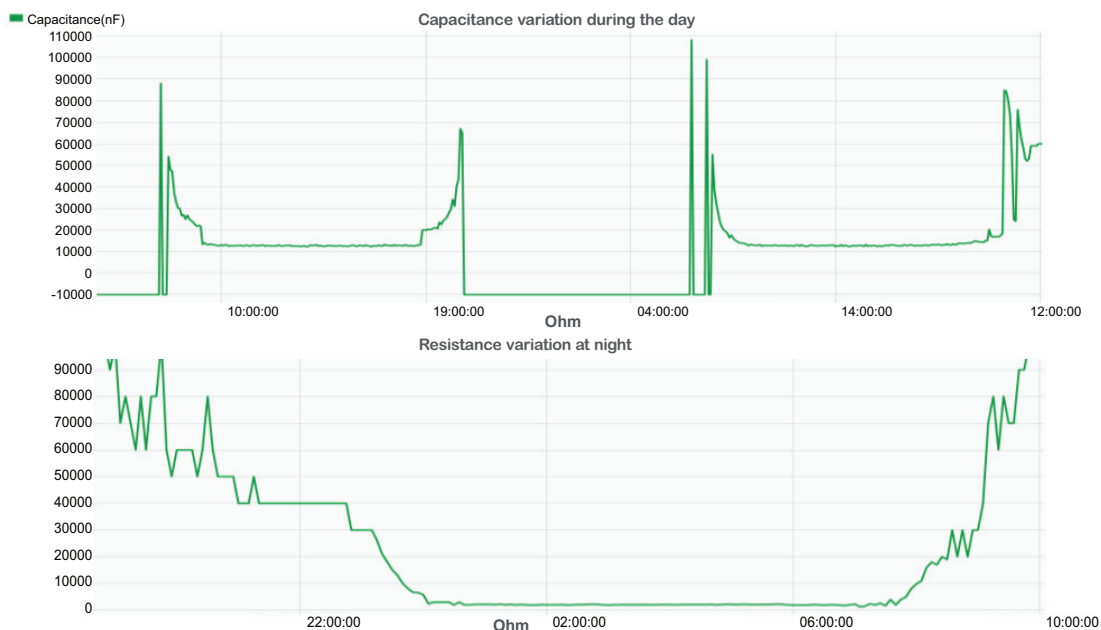
PV installations may present a risk of fire due to earth faults, which are usually caused by damage to conductor insulation. Several such undetected earth faults on the DC side and resulting fire cases have been well documented in recent years. Monitoring of the insulation is therefore critical, and an IMD is required at the inverter level in unearthed PV installations.

What are the Constraints of PV Installations?

Maintaining permanent productivity of the solar farm is essential, so any insulation monitoring solution in place should be optimized and cause minimal disruption while assuring safety on the site.

When selecting an IMD for a PV application, it is important to ensure that the IMD is:

- Compatible with the PV voltage on the DC side generated by the photovoltaic modules in large surface solar farms.
- Suited for networks with a high leakage capacitance (at least 2000 μF).
- Able to withstand harsh environmental conditions both in terms of temperature and humidity that fluctuate greatly between night and day.
- Compatible with high fluctuations of both resistance and capacitance during the course of the day in order to avoid nuisance alarms that may lead to the installation switching off.
- Able to communicate its data and alarms remotely to a supervision system as PV installations are usually remotely managed.



Applications

Photovoltaic

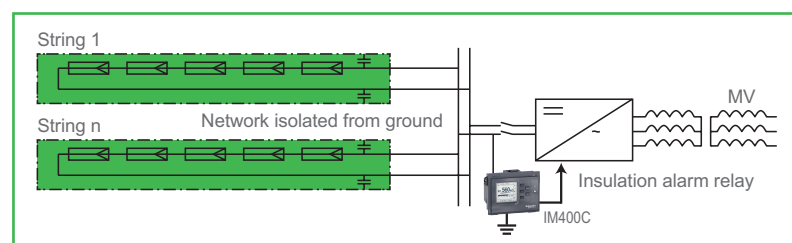
Vigilohm Solution

The Vigilohm IM400C IMD is particularly suited to PV installations:

- Very low frequency injected signal to reduce the influence of network leakage capacitance.
- Reliable and accurate measurement of insulation on both AC and DC sides.
- Specific PV mode setting.
- Alarm threshold can be set as low as 0.04 kΩms, reducing occurrences of alarms due to daily variation of insulation.
- Compatible with both DC and AC installations: if the inverter is not galvanically isolated, the insulation of the AC part is also monitored.
- Conformally coated products, proven compatibility with harsh environments.
- Native Modbus RS485 for connection to a supervision system.

IM400C is complemented by two voltage adaptors:

- IM400-1700C, conformally coated, for up to 1000 V dc installations with up to 2000 μF capacitance.
- IM400VA2, conformally coated, for up to 1500 V dc installations with up to 5500 μF capacitance.



To know more
Vigilohm brochure:
Keep the power running
safely in the sun

Case Study: Monitoring of a Solar Farm and Recording of Historical Insulation

Vigilohm IM400C was selected to enhance the customer's PV installation uptime. An unexpected interruption can cost approximately 8% of the photovoltaic yield per hour. There are penalties to pay if the target is not achieved, since the photovoltaic operating contracts specify a level of availability of the installation.

Using an ungrounded network with proper insulation monitoring helps improve solar farm availability and revenues.

To improve insulation monitoring and understand the typical patterns of insulation levels over day and night, continuous measurement and logging of network insulation and leakage capacitance to ground were implemented by connecting the Vigilohm IM400C to a supervision system. This historical information enabled the customer to schedule preventative maintenance operations.



Specifying Insulation
Monitoring Devices
for Utility-Scale Solar
Safety

Water and Waste Water



What is at Stake?

Ungrounded networks can be found in water production and distribution sites, as well as in wastewater treatment plants.

Limiting the number of occurrences of unplanned downtimes is key.

Unexpected interruptions may result in the discharge of untreated water into public waterways, creating a public health hazard and resulting in fines for the plant, or in odor nuisance for the neighborhood.

What are the Constraints from the Installation?

- Numerous variable speed drives and pollution with harmonics.
- Important number of feeders, and requirement to perform fault location without powering down the network.
- Emergency gensets should be monitored when they are offline, to prevent any risk of failure when they must be started.
- Harsh environment (salty environment, outdoor conditions).

Vigilohm Solution

Vigilohm range is well suited for water production and treatment installations:

- IFL12 fault locators facilitate fault identification while limiting OPEX.
- Vigilohm products have been tested with variable speed drives.
- Conformally coated products function in harsh environments.
- Fast response time and recording of intermittent insulation faults allow correlation of faults with the start of a specific load or process.
- Modbus RS485 communicating versions of IM400 and IFL12 facilitate on-site maintenance with a supervision system.
- Emergency gensets should be monitored when they are offline, to prevent any risk of failure when they must be started.

Applications

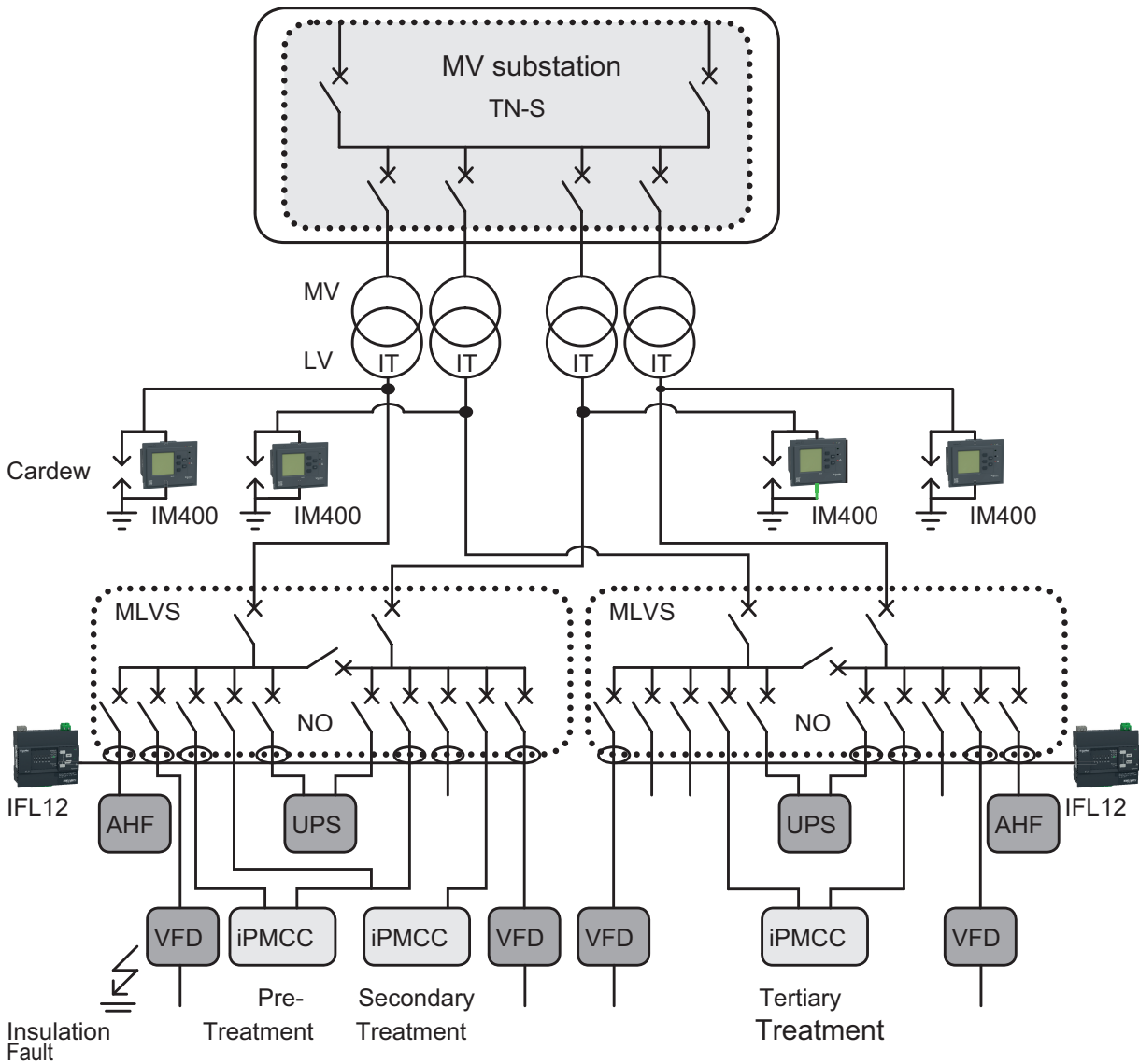
Water and Waste Water

Case Study: Waste Water Treatment Plant

A wastewater treatment plant had its critical processes installed in an ungrounded network for equipment such as pumps that can never be stopped. The network included several 250 kW drives. VigiloHM IM400 and IFL12 were selected as the insulation monitoring solution. IM400 would send an alarm in case of an insulation fault, and IFL12 would indicate the faulty feeder, keeping the continuity of service.

Key success criteria were:

- VigiloHM tested with variable speed drives.
- Fast response time and recording of intermittent insulation faults allow correlation of faults with the start of a specific load or process.
- Modbus RS485 communication for remote management and scheduling of maintenance.
- Conformally coated products.



Infrastructure and Transportation



Context

Transportation infrastructures such as rail, subway, bus charging stations, airports, and tunnels all have in common a need for electrical network availability, as well as the safety constraints specific to sites receiving the public. Ungrounded networks are thus typically installed for critical processes:

- Railways: signaling, escalators, lighting, smoke extractors.
- Subway: lighting.
- Airports: lighting, control tower, runway, luggage conveyors.
- Tunnels: lighting, smoke extractors.

What is at Stake?

Continuity of service is key, since an unexpected downtime of the network means the interruption of customer service, significant financial loss, and user dissatisfaction. Insulation faults can also cause safety issues if they lead to a malfunction of the lighting system, train or plane signaling, or smoke extraction systems.

What are the Constraints of Airports Installation?

- Electrical networks may be quite long (such as signaling networks in rail) and disturbed.
- Installations can be in AC or DC (for example, car charging stations, power supply for trolley buses).
- Electrical equipment may have to be installed in harsh or outdoor environments, having to withstand variations in temperature and humidity.
- The environment may be dusty, such as in subways or tunnels.

Vigilohm Solution

- IM400 with IFL locators: Use of insulation fault locators is typically beneficial on large networks.
- Insulation monitoring alarms can be retrieved in the supervision system of the site (IM400 with IFL12C or IFL12MC).
- Leakage capacitance is monitored.
- Conformally coated products for harsh environments (IM400C, IFL12MCT).
- IM9-OL for offline insulation monitoring.

Applications

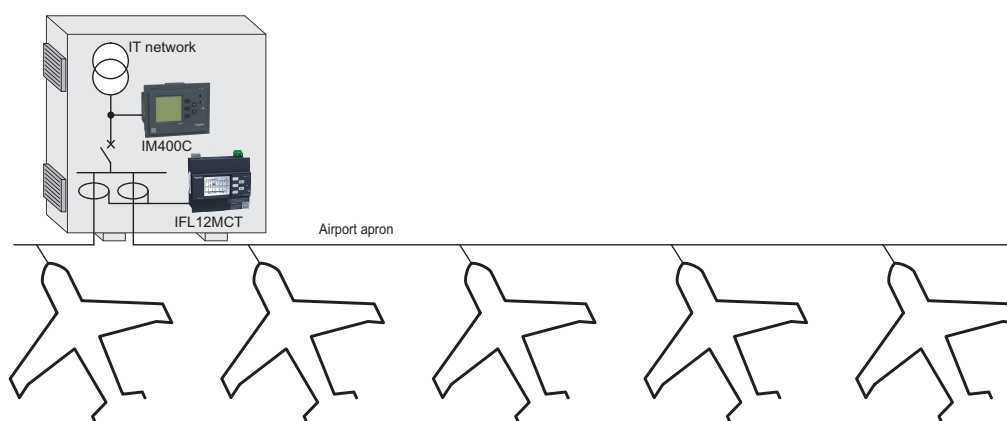
Infrastructure and Transportation

Case Study: Airport

As is commonly the case with airports, several processes of the airport were using ungrounded networks:

- Taxiway lighting.
- Control command room of the radar.
- Luggage conveyor.
- Airport apron, where aircraft are parked, unloaded, loaded, refueled.

The Vigilohm IM400 and IFL12MC were chosen for the airport to monitor and relay any insulation alarms or signs of degradation to the supervision system.



Insulation monitoring of the airport

Keep your processes running!

- Benefit from continuity of power despite an insulation fault.
- Quickly identify faults, thanks to IFL12s to avoid future loss of continuity.
- Benefit from Vigilohm's compatibility with Altivar Variable Speed Drives.

Utilities and Power Generation



What is at Stake?

Utilities and power generation sites are at the very core of power distribution networks. Their production should not be stopped by a mere insulation fault, and for this reason, IT earthing or ungrounded networks are typically used.

Ungrounded networks will thus be found in nuclear, hydro, or thermal power plants, both on the MV and LV sides. Typical applications include:

- Control and automation
- Inverters
- Backup power supply
- DC motors

What are the Constraints of Power Generation Installation?

Power generation and utilities sites require specific certifications and product qualifications. Devices may need to go through a series of performance tests, including EMC compatibility, temperature and humidity validation, seismic tests, etc.

Devices are often required to have a failsafe mode or a functional safety certification.

Vigilohm Solution

Vigilohm devices have been used in this segment for decades. Their reliability and robustness have been tested:

- Seismic tests have been passed.
- IM400 is SIL2 certified.
- IM400 and IFL12MC meet the requirement of having several settable alarm thresholds.
- IM400THR or IM400LTHR are used for MV networks insulation monitoring.

Utilities and Power Generation

Case Study: Insulation Monitoring of a 48VDC Control Circuit in a Power Plant

The customer required global insulation monitoring of their network, insulation measurements per feeder, and three levels of alarm thresholds. The solution was based on Vigilohm IM400 and IFL12MC:

- Two alarm thresholds were set at the IM400 level (alarm and pre-alarm).
- Individual alarm thresholds were set for each feeder at the IFL12MC fault locator level.
- The “Control” injection mode of the IM400 was set to limit the level of the injected signal and minimize disturbance to sensitive equipment on the network.

To know more:

SIL Safety Integrity Level certification

This certificate evaluates the level of operation safety of a device. SIL includes 4 levels: SIL1, SIL2, SIL3 and SIL4 (listed in order of increased safety level). Certification is delivered by an external laboratory, which tests the hardware and software reliability, even in case of an internal failure of the device.

Optimize maintenance and equipment life

The choice of an IT earthing system provides other benefits such as:

- Preventive maintenance by monitoring changes in insulation values.
- Increased equipment life since IT earthing system limits the stress endured by equipment during a fault.



What is at Stake?

Direct Current (DC) installations have been used for a long time and in many applications. DC installations are set in ungrounded networks when continuity of service is critical for the application. Indeed, with ungrounded networks, the occurrence of an insulation fault does not require the trip of protections.

Typical DC applications requiring high availability of power include:

- Nuclear and other power plants.
- Transportation such as tramway lines.
- DC motor.
- Oil and gas power distribution stations.
- Most DC control systems.
- Photovoltaic installations (see related page).
- EV charging stations.
- Telecom.

What are the Constraints of a DC Installation?

To be compatible with ungrounded DC installations, Insulation Monitor Devices (IMDs) must not operate by injecting a DC component on the network. Instead, the IMD should inject an alternative signal on the network.



To know more
Refer to the document "Circuit breakers for direct current applications up to 380 V DC: Choosing and implementing protective devices"

Applications

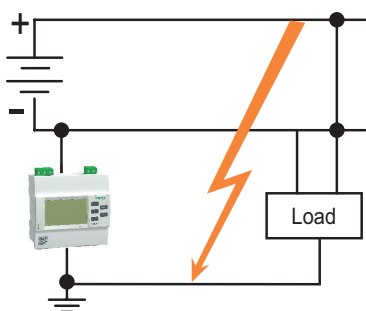
DC Networks

Vigilohm Solution

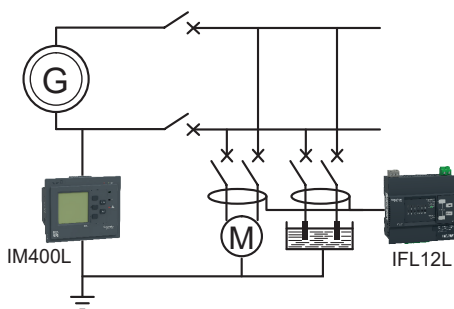
- IM10, IM20, and IM400 IMDs are compatible with DC networks as they inject a low-frequency AC component. IM9 is not suited for DC network monitoring as it injects a DC component.
- Insulation Fault Locators (IFL12 range) are also compatible with the monitoring of DC networks.
- The Vigilohm range also includes products with 24-48VDC power supply for ease of installation if the device shall be powered by the network it monitors: IM400L, IM400LTHR, IFL12L, IFL12LMC.

DC Installation Examples:

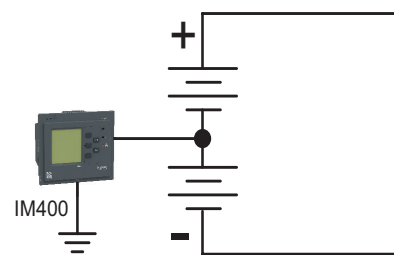
Insulation Monitor injection is wired to one polarity. Whenever the network includes charges or batteries, the injection signal flows over both polarities, allowing the detection of an insulation fault affecting any part of the network.



IM400L and IFL12L are powered by the network they monitor; removing the need of an external power supply.



Example of installation with IM400 injection connected at the central point of battery.





Product Datasheets



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Off-line Equipment Insulation Monitoring



Functions

- The IM9-OL monitors the insulation resistance of off-line equipment, such as motors, by injecting a DC signal between the equipment and the ground.
- It detects an insulation fault based on the set alarm and pre-alarm thresholds.
- Alarm and pre-alarm resistance thresholds can easily be set on the IM9-OL front face.
- The IM9-OL signals a fault locally using LEDs or remotely through two output relays.
- In case of a motor insulation alarm, the IM9-OL allows the user to decide whether to prevent a motor start or not, thanks to a rotary switch on the IM9-OL front face.

Applications

- AC networks up to 690V.
- IM9-OL monitors insulation of offline equipment, such as fire pumps, motors or generators. This insulation monitoring is mandatory in certain buildings and countries.
- IM9-OL is suitable for any grounding arrangement such as TT, TN or IT.



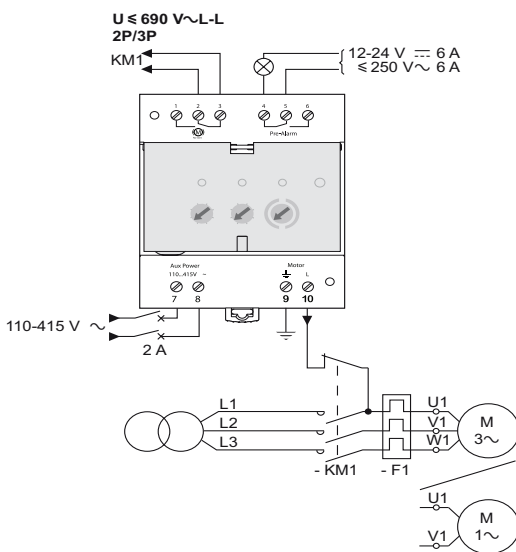
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UL 61010-1
IEC61326-2-4



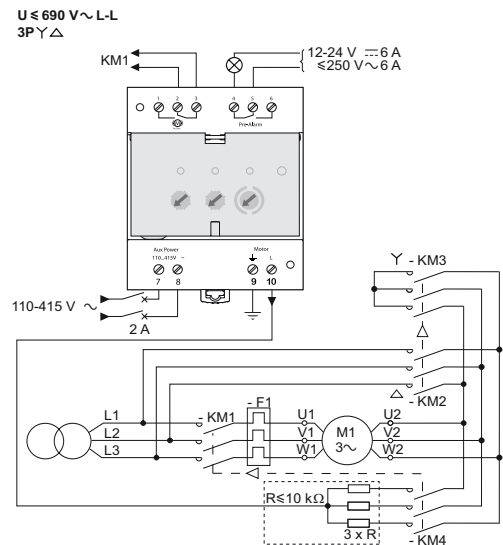
Scan here to know more about the product.

Examples of Architecture

Direct-on-line Starting Motor

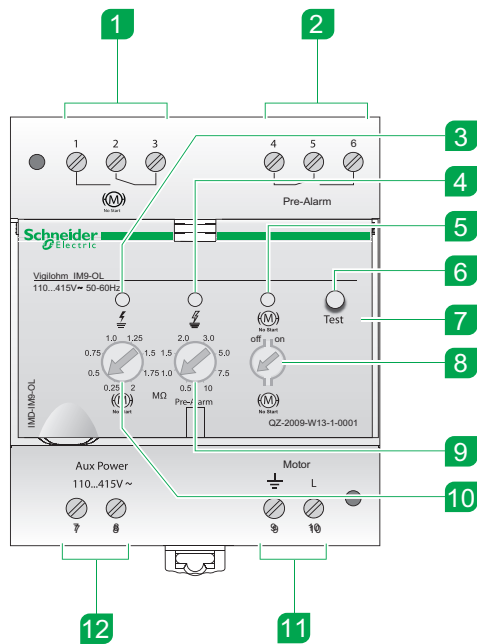


Star-delta Starting Motor



Off-line Equipment Insulation Monitoring

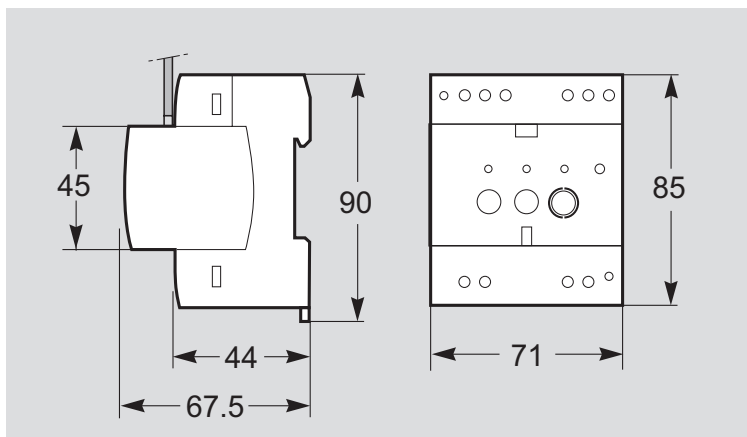
Physical Description



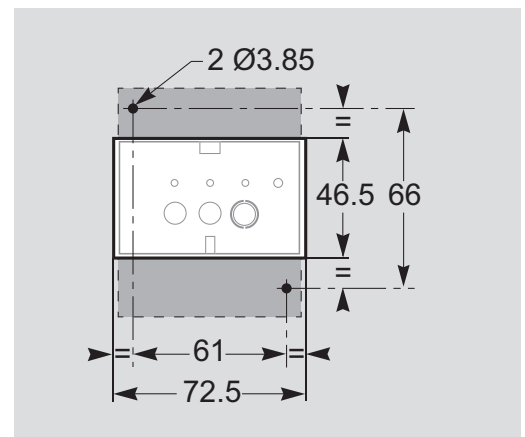
- 1 Motor no start relay (control of KM1)
- 2 Failsafe pre-alarm relay
- 3 Motor insulation fault LED
- 4 Pre-alarm LED
- 5 Motor no start LED
- 6 Test button
- 7 Transparent sealable cover
- 8 Motor no start selector
ON: «Motor no start» activated
OFF: «Motor no start» inhibited
- 9 Pre-alarm threshold setting
- 10 Motor no start threshold setting
- 11 Injection
- 12 Auxiliary power supply

Dimensions (mm)

Dimensions (mm)



Flush mounting (mm)



Off-line Equipment Insulation Monitoring

General Characteristics

| | | IM9-OL |
|--|--------------------------|--------------------------------|
| Commercial Reference | | IMD-IM9-OL |
| Network to Monitor | | |
| Network earthing system | | IT - TN - TT |
| Network length up to* | | Close by |
| Network loads/capacitance | | One load only |
| Network max. voltage | Connected to neutral | 690 Vac |
| | Connected to phase | - |
| Network max. line voltage | | - |
| Network type | | 1P+N 3P 3P+N |
| Network application | | Offline devices |
| Network frequency | | - |
| Characteristics and Performance | | |
| Power supply | Voltage | 110 - 415 Vac 125 - 250 Vdc |
| | Tolerance | +/-15% |
| | Frequency | 50 / 60 / 400 Hz or dc |
| | Max. consumption | 7 VA 3 W |
| | Recommended protection | 1 A |
| Self-test | Test procedure | Manual |
| | Test results provision | HMI |
| Operating modes | | None |
| Resistance measurement | Range | 250 kΩ to 10 MΩ |
| | Accuracy at 10 kΩ - 1 μF | < 15% |
| Capacitance measurement | Range | Not available |
| | Accuracy at 10 kΩ - 1 μF | - |
| Measurement filtering time | | < 2 sec |
| Transient fault capture | | - |
| Pre-alarm thresholds | | 500 kΩ - 10 MΩ |
| Alarm thresholds | | 250 kΩ - 2 MΩ |
| Alarm optional delay | | None |
| Alarm relay | Quantity | 2 |
| | Type of contact | Changeover |
| | Breaking capacity AC | 250 V / 6 A |
| | Breaking capacity DC | 12...24 V / 6 A |
| | Setting | Fail-safe or standard |
| Communication port | | None |
| Inhibition input | | None |

* According to network condition and loads.

Off-line Equipment Insulation Monitoring

General Characteristics

| | IM9-OL |
|---|---|
| Human Machine Interface | |
| LCD Display | None |
| Resistance value displayed | No |
| Capacitance value displayed | No |
| Display languages | None |
| Graphical display of R over 1h or 1 day | None |
| Time-stamped fault event log | None |
| Installation | |
| Protection index Front / Rear | IP40 / IP20 |
| Pollution degree | 2 |
| Operation temperature | -25°C to +55°C |
| Storage temperature | -40°C to +70°C |
| Tropicalization | No |
| Relative humidity | ≤92% |
| Maximum altitude | 3000 m |
| Climatic acc. IEC60721 | 1K22 / 2K11 / 3K23 |
| Mechanical acc. IEC60721 | 1M11 / 2M4 / 3M11 |
| Overvoltage category | III |
| Cut-out dimensions | 66 x 72.5 mm |
| Height | 90 mm |
| Width | 71 mm |
| Depth | 67.5 mm |
| Weight | 0.165 kg |
| IEC / UL compliance | EN/IEC61557-8 IEC61010-1 IEC61326-2-4 UL61010-1 |
| Marine certification | Yes |
| Auxiliaries and Accessories | |
| Insulation fault locators (IFL12) | Not compatible |
| Mobile fault locators (MFLK1) | Not compatible |
| Cardew overvoltage protection | 440V Cardew C (50171) 690V Cardew C (50172) 1000V Cardew C (50183) Cardew base plate (50169) |

Insulation Monitoring Devices



Functions

- IM9 monitors the insulation resistance of an IT network by injecting a DC signal between the network and the ground.
- IM9 detects an insulation fault according to the set alarm and pre-alarm thresholds.
- Alarm and pre-alarm resistance thresholds can easily be set on the IM9 front face.
- IM9 signals the fault locally (LEDs) or remotely via two output relays.
- IM9 is equipped with a test button to perform a self-test and ensure insulation resistance is still being monitored.
- The self-test can also be operated remotely via a relay to save time and resources.

Applications

IM9 is suitable for small IT networks (less than 5 km of cable) up to 600 V that have no disturbing loads and are pure AC with no DC component.

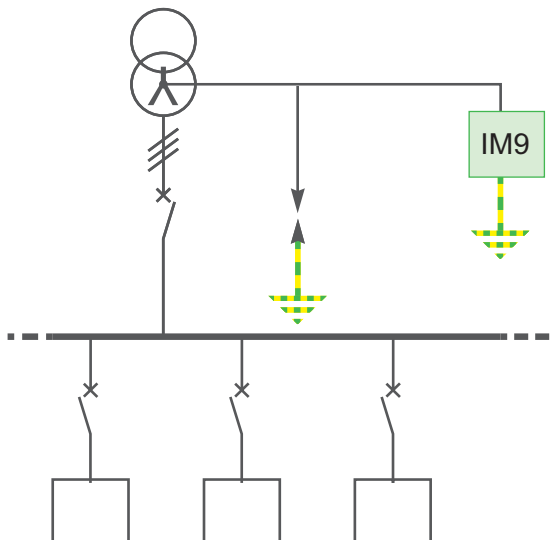


EN/IEC61557-8
IEC61010-1
UL 61010-1
IEC61326-2-4



Scan here to know more about the product.

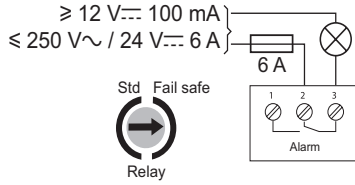
Example of Architecture



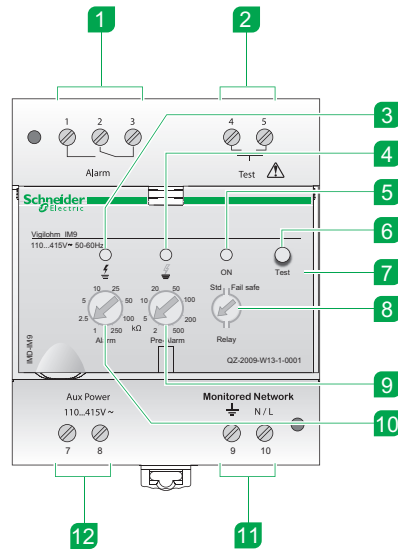
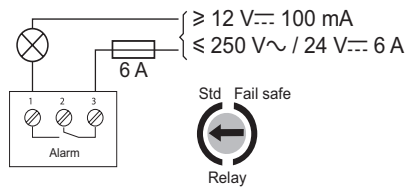
Vigilohm IM9 Insulation Monitoring Devices

Physical Description

Failsafe wiring



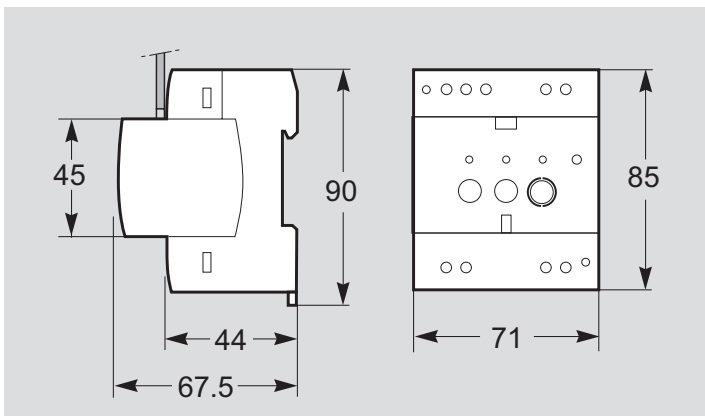
Standard wiring



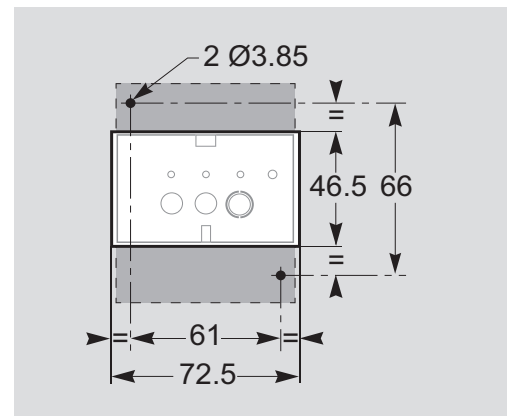
- 1 Alarm relay
- 2 Remote test
- 3 Alarm LED
- 4 Pre-alarm LED
- 5 Operating indicator light
- 6 Test button
- 7 Transparent sealable cover
- 8 Failsafe or standard alarm relay setting
- 9 Pre-alarm setting
- 10 Alarm setting
- 11 Injection
- 12 Auxiliary power supply

Dimensions (mm)

Dimensions (mm)



Flush mounting (mm)



Connection

| Single Phase Network | Three-phase network without accessible neutral | Three-phase network with accessible neutral, distributed or not |
|----------------------|--|---|
| | | |

Vigilohm IM9

Insulation Monitoring Devices

General Characteristics

| | | IM9 |
|--|--------------------------|--------------------------------|
| Commercial Reference | | IMD-IM9 |
| Network to Monitor | | |
| Network earthing system | | Ungrounded (IT) |
| Network length up to* | | Short (<5 km) |
| Network loads/capacitance | | Very few loads < 20 µF |
| Network max. voltage | Connected to neutral | 600 Vac |
| | Connected to phase | 480 Vac |
| Network max. line voltage | | - |
| Network type | | 1P+N 3P 3P+N |
| Network application | | Control circuits |
| Network frequency | | - |
| Characteristics and Performance | | |
| Power supply | Voltage | 110 - 415 Vac 125 - 250 Vdc |
| | Tolerance | +/-15% |
| | Frequency | 50 / 60 / 400 Hz or dc |
| | Max. consumption | 7 VA 3 W |
| | Recommended protection | 1 A |
| Self-test | Test procedure | Manual |
| | Test results provision | HMI / dry contact |
| Operating modes | | None |
| Resistance measurement | Range | 1 kΩ to 500 kΩ |
| | Accuracy at 10 kΩ - 1 µF | < 15% |
| Capacitance measurement | Range | Not available |
| | Accuracy at 10 kΩ - 1 µF | - |
| Measurement filtering time | | < 7 sec |
| Transient fault capture | | - |
| Pre-alarm thresholds | | 2 kΩ - 500 kΩ |
| Alarm thresholds | | 1 kΩ - 250 kΩ |
| Alarm optional delay | | None |
| Alarm relay | Quantity | 1 |
| | Type of contact | Changeover |
| | Breaking capacity AC | 250 V / 6 A |
| | Breaking capacity DC | 12...24 V / 6 A |
| Setting | | Fail-safe or standard |
| Communication port | | None |
| Inhibition input | | None |

* According to network condition and loads.

Insulation Monitoring Devices

General Characteristics

| | IM9 |
|---|---|
| Human Machine Interface | |
| LCD Display | None |
| Resistance value displayed | No |
| Capacitance value displayed | No |
| Display languages | None |
| Graphical display of R over 1h or 1 day | None |
| Time-stamped fault event log | None |
| Installation | |
| Protection index Front / Rear | IP40 / IP20 |
| Pollution degree | 2 |
| Operation temperature | -25°C to +55°C |
| Storage temperature | -40°C to +70°C |
| Tropicalization | No |
| Relative humidity | ≤92% |
| Maximum altitude | 3000 m |
| Climatic acc. IEC60721 | 1K22 / 2K11 / 3K23 |
| Mechanical acc. IEC60721 | 1M11 / 2M4 / 3M11 |
| Overvoltage category | III |
| Cut-out dimensions | 66 x 72.5 mm |
| Height | 90 mm |
| Width | 71 mm |
| Depth | 67.5 mm |
| Weight | 0.170 kg |
| IEC / UL compliance | EN/IEC61557-8 IEC61010-1 IEC61326-2-4 UL61010-1 |
| Marine certification | Yes |
| Auxiliaries and Accessories | |
| Insulation fault locators (IFL12) | Not compatible |
| Mobile fault locators (MFLK1) | Not compatible |
| Cardew overvoltage protection | 440V Cardew C (50171) 690V Cardew C (50172) 1000V Cardew C (50183) Cardew base plate (50169) |

Vigilohm IM10 / IM20

Insulation Monitoring Devices



Functions

IM10 and IM20 monitor the insulation resistance of an IT network by injecting an AC signal between the network and the ground.

- Permanently measure and display the network insulation resistance.
- Permanently measure and display the network earth leakage capacitance and impedance (IM20 only).
- Alarm and pre-alarm resistance thresholds can easily be set on the IM10/IM20 HMI.
- Alarm signalling is done through the IM10/IM20 display and output relay.
- Alarm signalling can also be done through the Modbus RS485 communication port (IM20 only).
- Automatic and manual self-test with local or remote status information.

Applications

- IM10 and IM20 are suitable for small to mid-sized IT networks up to 600V (without voltage adaptors).
- Typical segments: Industry, power generation, marine, railways, airports, oil and gas, mining, heating and cooling, lifts and so on.



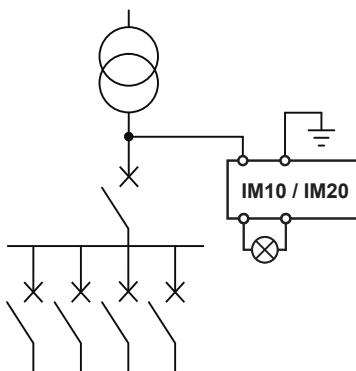
EN/IEC61557-8
IEC61010-1
UL 61010-1
IEC61326-2-4



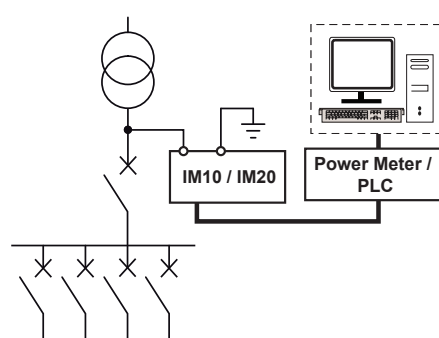
Scan here to know more about the product.

Examples of Architecture

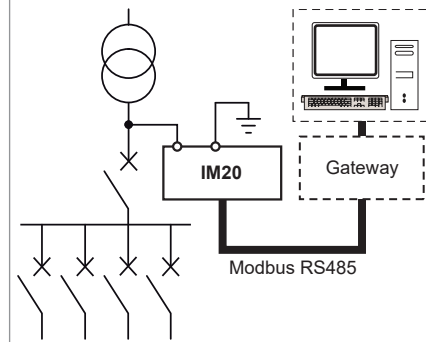
Local alarm



Local + Remote alarm via relay output

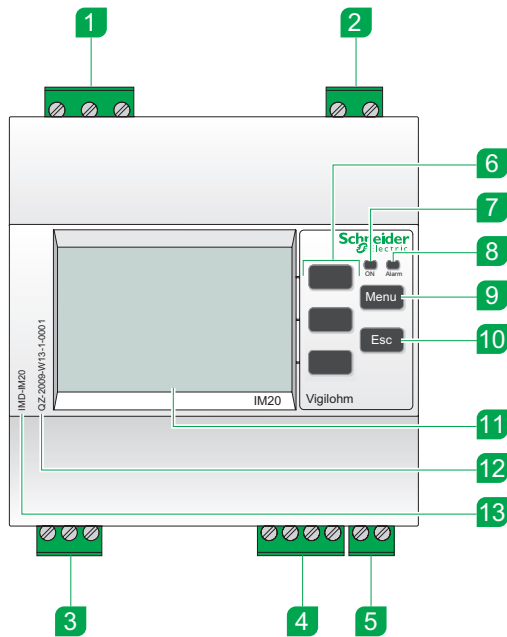


Local + Remote alarm via communication port



Vigilohm IM10 / IM20 Insulation Monitoring Devices

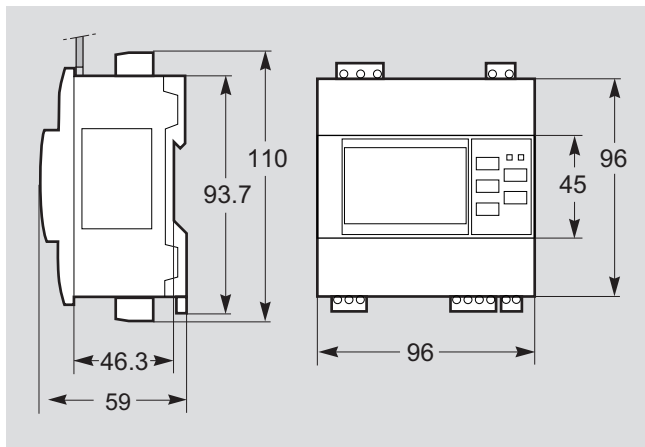
Physical Description



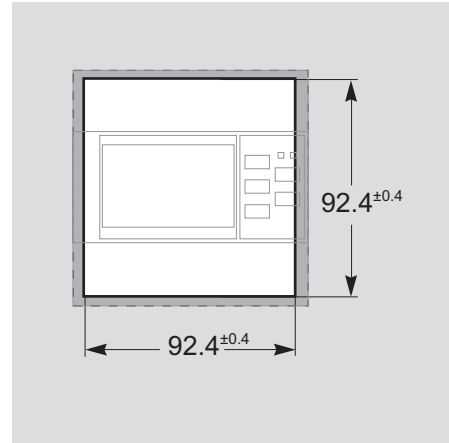
- 1 Injection terminal block
- 2 Auxiliary power supply terminal block
- 3 Alarm relay terminal block
- 4 Modbus port terminal block (IM20)
- 5 Injection inhibition input (IM20)
- 6 Contextual menu buttons
- 7 Operating indicator light
- 8 Insulation alarm indicator light
- 9 Menu button
- 10 ESC button to return to the previous menu or cancel a parameter entry
- 11 Display
- 12 Serial number
- 13 Product reference (IMD-IM10 or IMD-IM20)

Dimensions (mm)

Dimensions (mm)



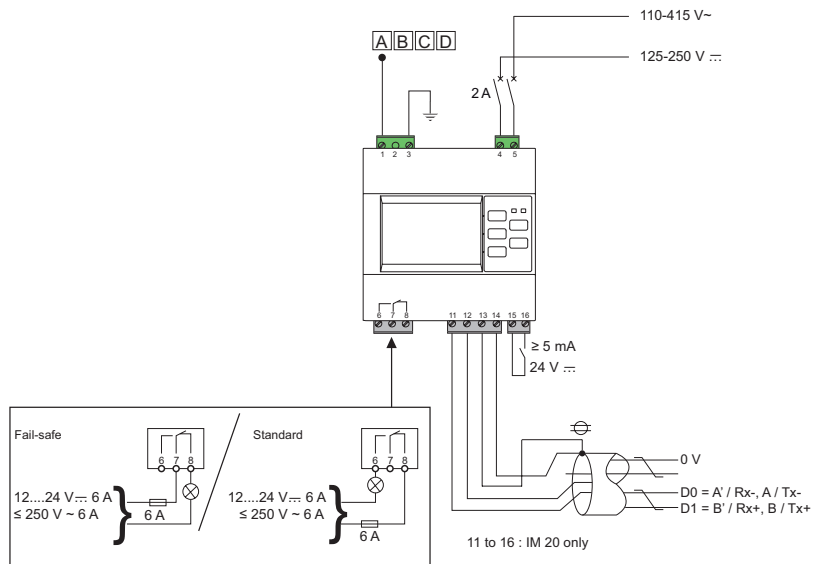
Flush mounting (mm)



Vigilohm IM10 / IM20 Insulation Monitoring Devices

Connection

| | Direct current | Single phase network | Three-phase network without accessible neutral | Three-phase network with accessible neutral, distributed or not |
|--------------------------|---|--|---|---|
| | <p>DC $U \leq 345 \text{ V} \sim \text{max}$</p> | <p>P+N $U \leq 480 \text{ V} \sim \text{max}$</p> | <p>3P $U \leq 480 \text{ V} \sim \text{L-L max}$</p> | <p>3P+N $U \leq 600 \text{ V} \sim \text{L-L max}$</p> |
| AC Connection to Line | - | - | $U_{LL} \leq 480 \text{ Vac}$ | - |
| AC Connection to Neutral | - | $U_{LN} \leq 480 \text{ Vac}$ | - | $U_{LL} \leq 600 \text{ Vac}$ |
| DC Connection to Line | $U < 345 \text{ Vdc}$ | - | - | - |



Insulation Monitoring Devices

General Characteristics

| | | IM10 | IM20 |
|--|---------------------------------------|--------------------------------|---------------------|
| Commercial Reference | | IMD-IM10 | IMD-IM20 |
| Network to Monitor | | | |
| Network earthing system | | Ungrounded (IT) | |
| Network length up to* | | Short to Medium (< 40 km) | |
| Network loads/capacitance | | Few loads < 70 μ F | |
| Network max. voltage | Connected to neutral | 600 Vac | |
| | Connected to phase | 480 Vac | |
| Network max. line voltage | | 345 Vdc | |
| Network type | | 1P+N 3P 3P+N | |
| Network application | | Control & Power circuits | |
| Network frequency | | 45-440 Hz | |
| Characteristics and Performance | | | |
| Power supply | Voltage | 110 - 415 Vac 125 - 250 Vdc | |
| | Tolerance | +/-15% | |
| | Frequency | 50 / 60 / 400 Hz or Dc | |
| | Max. consumption | 12 VA / 6 W | |
| | Recommended protection | 2 A | |
| Self-test | Test procedure | Manual/Automatic | |
| | Test results provision | HMI / Dry contact | HMI / Modbus |
| Operating modes | | None | |
| Resistance measurement | Range | 100 Ω to 10 M Ω | |
| | Accuracy at 10 k Ω - 1 μ F | < 5% | 5% |
| Capacitance measurement | Range | Not available | 100 nF - 70 μ F |
| | Accuracy at 10 k Ω - 1 μ F | - | 5% |
| Measurement filtering time | | 4 - 40 or 160 sec | |
| Transient fault capture | | Yes | |
| Pre-alarm thresholds | | 1 k Ω - 1 M Ω | |
| Alarm thresholds | | 500 Ω - 500 k Ω | |
| Alarm optional delay | | 0s - 7200s | |
| Alarm relay | Quantity | 1 | |
| | Type of contact | Changeover | |
| | Breaking capacity AC | 250 V / 6 A | |
| | Breaking capacity DC | 12...24 V / 6 A | |
| | Setting | Fail-safe or standard | |
| Communication port | | None | Modbus - RS485 |
| Inhibition input | | None | Available |

* According to network condition and loads.

Vigilohm IM10 / IM20

Insulation Monitoring Devices

General Characteristics

| | IM10 | IM20 |
|---|---|----------------|
| Human Machine Interface | | |
| LCD Display | Yes | |
| Resistance value displayed | Yes | |
| Capacitance value displayed | No | Yes |
| Display languages | En, Fr, Es, Pt, Zh, It, De, Ru | |
| Graphical display of R over 1h or 1 day | None | Yes |
| Time-stamped fault event log | None | Yes, 60 events |
| Installation | | |
| Protection index Front / Rear | IP52 / IP20 | |
| Pollution degree | 2 | |
| Operation temperature | -25°C to +55°C | |
| Storage temperature | -40°C to +70°C | |
| Tropicalization | No | |
| Relative humidity | ≤92% | |
| Maximum altitude | 3000 m | |
| Climatic acc. IEC60721 | 1K22 / 2K11 / 3K23 | |
| Mechanical acc. IEC60721 | 1M11 / 2M4 / 3M11 | |
| Overvoltage category | III | |
| Cut-out dimensions | 92.4 x 92.4 mm | |
| Height | 110 mm | |
| Width | 96 mm | |
| Depth | 59 mm | |
| Weight | 0.245 kg | |
| IEC / UL compliance | EN/IEC61557-8 IEC61010-1 IEC61326-2-4 UL61010-1 | |
| Marine certification | Yes | |
| Auxiliaries and Accessories | | |
| Insulation fault locators (IFL12) | Not compatible | |
| Mobile fault locators (MFLK1) | Not compatible | |
| Cardew overvoltage protection | 440V Cardew C (50171) 690V Cardew C (50172) 1000V Cardew C (50183) Cardew base plate (50169) | |

Insulation Monitoring Devices for Medical Premises

Functions



- IM10-H, IM15H, and IM20-H are dedicated to the monitoring of insulation resistance of an ungrounded / IT earthing network for Group 2 medical premises, as per IEC60364-7-710
- By injecting an AC signal between the network and the ground, the IM10-H measures and displays the insulation resistance of the network and detects an insulation fault according to the set alarm thresholds. The IM10-H triggers an alarm on insulation resistance via the output relay and the remote display (HRP or LRDH).
- The IM15H, in addition to the IM10-H features, monitors the IT transformer for overload and overheating. It generates an alarm via the output relay and remote display (HRP or LRDH) in case of overload or overheating.
- The IM20-H, in addition to the IM15H features, is equipped with a Modbus RS485 communication port to relay alarms or information to gateways and supervision systems.
- Once they trigger an alarm, the IM10-H, IM15H, and IM20-H are complemented by the IFL12H fault locator to facilitate fault location.



Applications

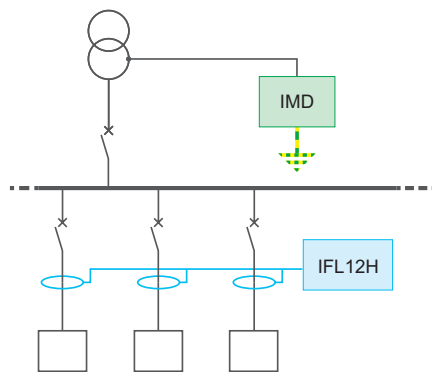
- Group 2 medical premises in an ungrounded IT earthing network, as per IEC60364-7-710.

EN/IEC61557-8
IEC61010-1
UL 61010-1
IEC61326-2-4



Scan here to know more about the product.

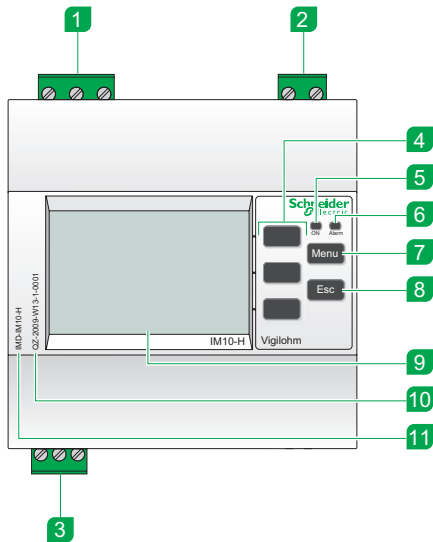
Examples of Architecture



Insulation Monitoring Devices for Medical Premises

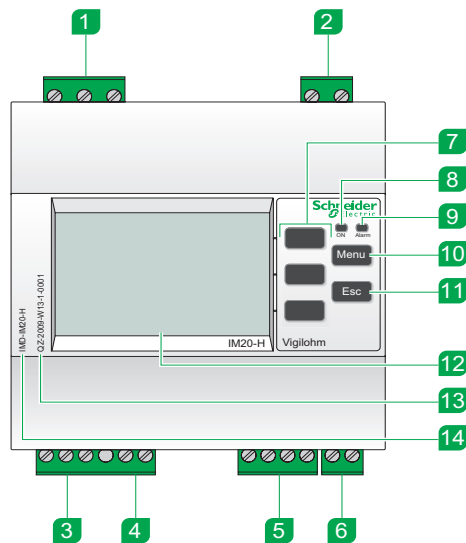
Physical Description

IM10-H



- 1 Injection terminal block
- 2 Auxiliary power supply terminal block
- 3 Insulation alarm relay terminal block
- 4 Contextual menu buttons
- 5 Operating indicator light
- 6 Insulation alarm indicator light
- 7 Menu button
- 8 ESC button to return to the previous menu or cancel a parameter entry
- 9 Display
- 10 Serial number
- 11 Product reference

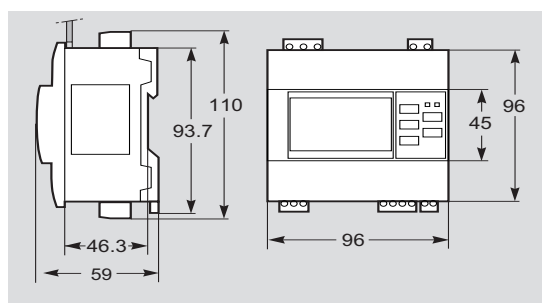
IM15H and IM20-H



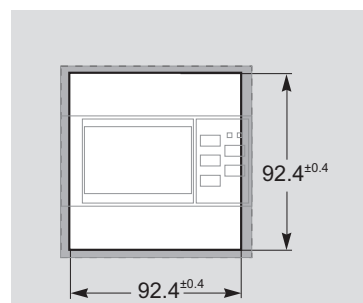
- 1 Injection terminal block
- 2 Auxiliary power supply terminal block
- 3 Insulation alarm and overheat/overload alarm relay
- 4 1 A or 5 A CT input for transformer's secondary current monitoring
- 5 Modbus communication terminal block (IM20-H)
- 6 Bimetal input for transformer's temperature monitoring
- 7 Contextual menu buttons
- 8 Operating indicator light
- 9 Insulation alarm indicator light
- 10 Menu button
- 11 ESC button to return to the previous menu or cancel a parameter entry
- 12 Display
- 13 Serial number
- 14 Product reference

Dimensions (mm)

Dimensions (mm)



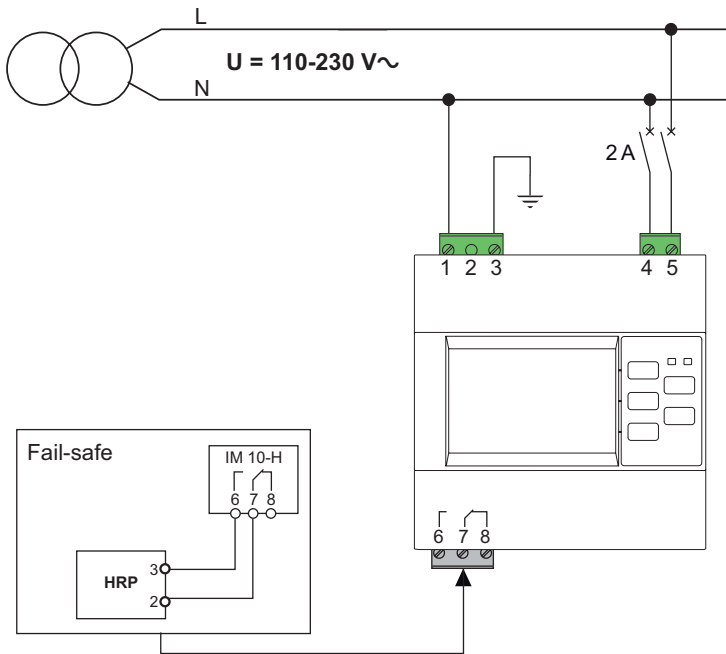
Flush mounting (mm)



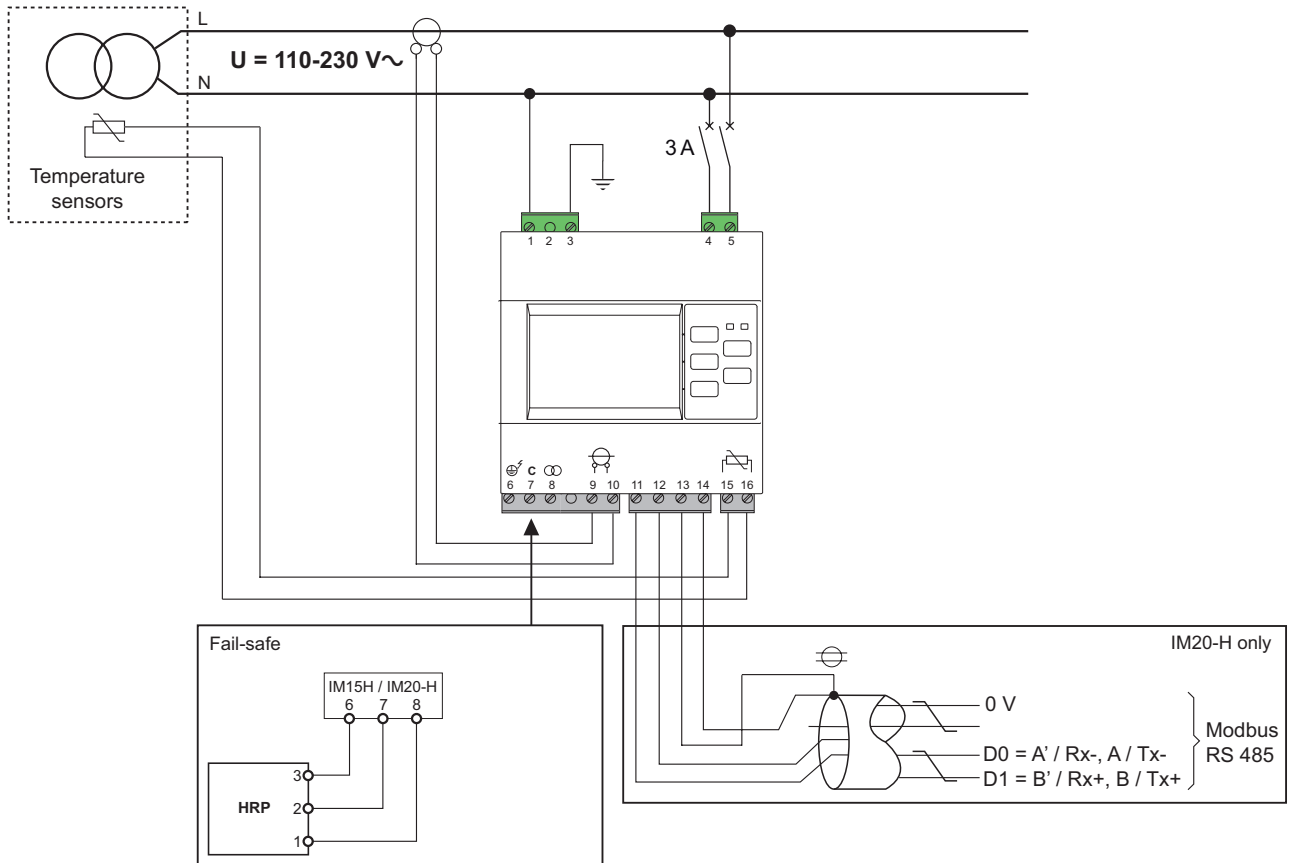
Insulation Monitoring Devices for Medical Premises

Connection

IM10-H



IM15H and IM20-H



Insulation Monitoring Devices for Medical Premises

General Characteristics

| | | IM10-H | IM15H | IM20-H |
|--|---------------------------------------|--------------------------------|--------------------------|----------------|
| Commercial Reference | | IMD-IM10-H | IMDIM15H | IMD-IM20-H |
| Network to Monitor | | | | |
| Network earthing system | | Ungrounded (IT) | | |
| Network length up to* | | Close by | Short (<5 km) | |
| Network loads/capacitance | | Few loads < 70 μ F | | |
| Network max. voltage | Connected to neutral | 230 Vac | | |
| | Connected to phase | - | | |
| Network max. line voltage | | 230 Vdc | | |
| Network type | | 1P+N | | |
| Network application | | Control circuits | | |
| Network frequency | | 50/60Hz | | |
| Characteristics and Performance | | | | |
| Power supply | Voltage | 110 - 230 Vac 125 - 250 Vdc | | |
| | Tolerance | +/-15% | | |
| | Frequency | 50 / 60 Hz | | |
| | Max. consumption | 12 VA | | |
| | Recommended protection | 3 A | | |
| Self-test | Test procedure | Manual/Automatic | | |
| | Test results provision | HMI / Dry contact | HMI / Modbus | |
| | Detection of toroid's connection | Not applicable | | |
| | Detection of IM400 injection current | Not applicable | | |
| Operating modes | | None | | |
| Resistance measurement | Range | 100 Ω to 10 M Ω | | |
| | Accuracy at 10 k Ω - 1 μ F | < 5% | | |
| Capacitance measurement | Range | Not available | | |
| | Accuracy at 10 k Ω - 1 μ F | - | | |
| Measurement filtering time | | <= 1sec | | |
| Transient fault capture | | - | | |
| IT transformer overheat alarm | | No | Yes | |
| IT transformer overheat alarm | | No | Yes | |
| Pre-alarm thresholds | | None | | |
| Alarm thresholds | | 500 Ω - 500 k Ω | | |
| Alarm optional delay | | Not applicable | | |
| Alarm relay | Quantity | 1 | 2 | |
| | Type of contact | Changeover | Static | |
| | Breaking capacity AC | 250 V / 6 A | - | |
| | Breaking capacity DC | 12...24 V / 6 A | 12...48 Vdc \leq 50 mA | |
| | Setting | Fail-safe or standard | | |
| Communication port | | None | | Modbus - RS485 |
| Inhibition input | | None | | |

* According to network condition and loads.

Insulation Monitoring Devices for Medical Premises

General Characteristics

| | IM10-H | IM15H | IM20-H |
|---|--------|---|---------------|
| Human Machine Interface | | | |
| LCD Display | | Yes | |
| Resistance value displayed | | Yes | |
| Capacitance value displayed | | No | |
| Display languages | | En, Fr, Es, Pt, Zh, It, De, Ru | |
| Graphical display of R over 1h or 1 day | No | | Yes |
| Time-stamped fault event log | No | | Yes |
| Installation | | | |
| Protection index Front / Rear | | IP52 / IP20 | |
| Pollution degree | | 2 | |
| Operation temperature | | -25°C to +55°C | |
| Storage temperature | | -40°C to +70°C | |
| Tropicalization | | No | |
| Relative humidity | | ≤92% | |
| Maximum altitude | | 3000 m | |
| Climatic acc. IEC60721 | | 1K22 / 2K11 / 3K23 | |
| Mechanical acc. IEC60721 | | 1M11 / 2M4 / 3M11 | |
| Overvoltage category | | III | |
| Cut-out dimensions | | 92.4 x 92.4 mm | |
| Height | | 110 mm | |
| Width | | 96 mm | |
| Depth | | 59 mm | |
| Weight | | 0.250 kg | |
| IEC / UL compliance | | EN/IEC61557-8 IEC 60364-7-710 IEC61010-1 IEC61326-2-4 UL61010-1 | |
| Marine certification | | Yes | |
| Auxiliaries and Accessories | | | |
| Insulation fault locators (IFL12) | | IFL12H | |
| Mobile fault locators (MFLK1) | | Not compatible | |
| Remote displays | HRP | | IMDLRDH / HRP |
| Cardew overvoltage protection | | Not compatible | |

Vigilohm IM400 / IM400L / IM400C

Insulation Monitoring Devices



Functions

- IM400, IM400L, and IM400C permanently monitor the insulation resistance of IT/ungrounded or High Resistance Grounded (HRG) networks by injecting a low-frequency AC signal between the network and earth.
- Measures and display the insulation resistance, capacitance (up to 5500 μF with IM400C), and impedance of the network.
- Detect an insulation fault according to the set alarm thresholds.
- Triggers a pre-alarm and alarm via the two relays, the Modbus port, and the display.
- Compatible with IFL12 Insulation Fault Locators and MFLK1 Mobile Fault Locator Kit to facilitate fault localization and reduce OPEX.
- Large screen, event log, and historical data.
- Native Modbus RS485 communication port to relay all information back to supervision systems.
- Conformally coated (IM400C).



Applications

IM400, IM400L, and IM400C are suitable for any IT earthing networks up to 830 Vac/480 Vdc (without voltage adaptors) that include:

- Control command networks, including sensitive loads such as PLCs, I/Os, sensors.
- Power circuits networks, including power loads and power electronics such as speed drives, inverters, rectifiers, etc.
- Photovoltaic utility scale sites, e.g., 4 MW per inverter (IM400C).
- Typical segments: Industry, power generation, marine, railways, airports, oil and gas, mining, water, heating and cooling, lifts - all requiring continuity of service even in case of earth insulation fault.

EN/IEC61557-8
IEC61010-1
UL 61010-1
IEC61326-2-4
SIL2 (IM400C)
ATEX (IM400C)
UL Functional Safety (IM400C)

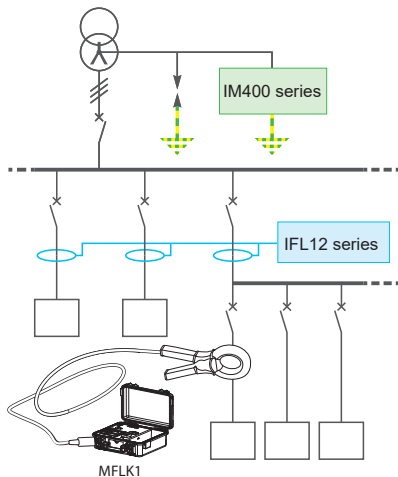


Scan here to know more about the product.

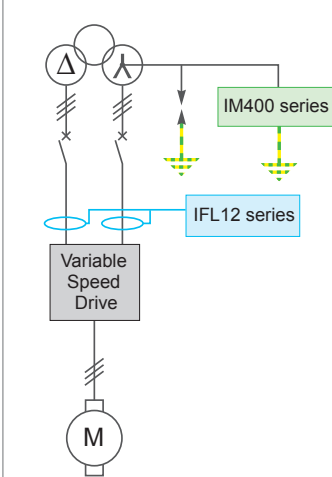


Examples of Architecture

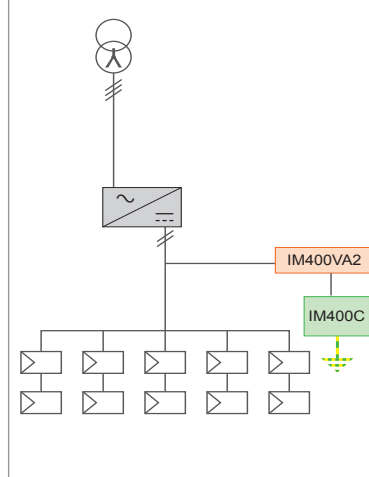
Control command mode



Power Circuit mode

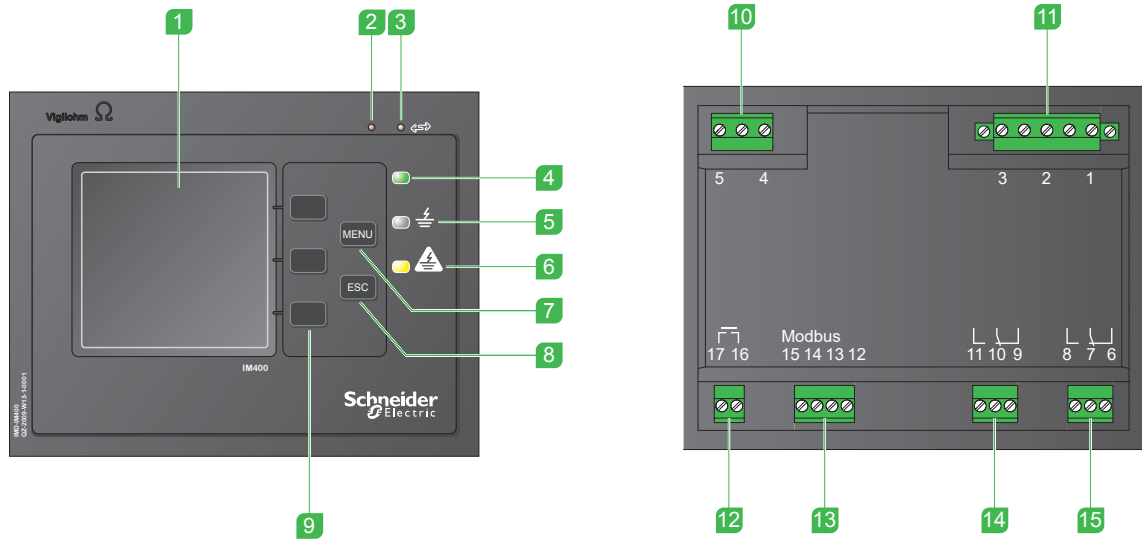


Photovoltaic mode



Vigilohm IM400 / IM400L / IM400C Insulation Monitoring Devices

Physical Description



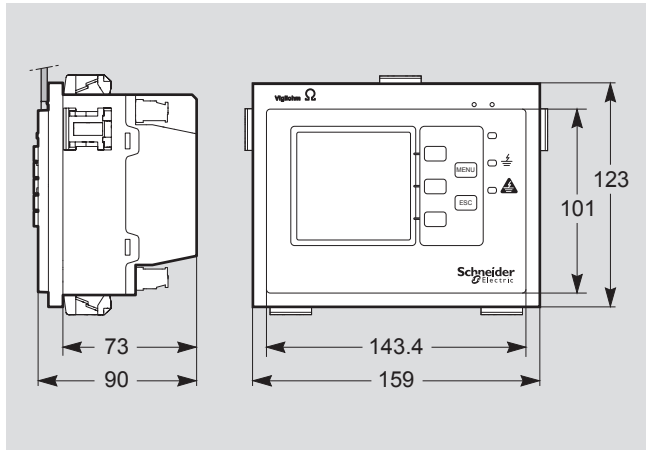
- 1 Display
- 2 Red indicator light for product status
- 3 Yellow indicator light for Modbus communication indication
- 4 Green indicator light for correct insulation indication
- 5 White indicator light for preventive insulation alarm
- 6 Yellow indicator light for insulation alarm
- 7 MENU button
- 8 ESC button for returning to previous menu or cancelling a parameter entry

- 9 Contextual menu buttons
- 10 Auxiliary power supply terminal
- 11 Injection terminal
- 12 Injection inhibition input terminal
- 13 Modbus RS-485 terminal
- 14 Preventive insulation alarm relay terminal
- 15 Insulation alarm relay terminal

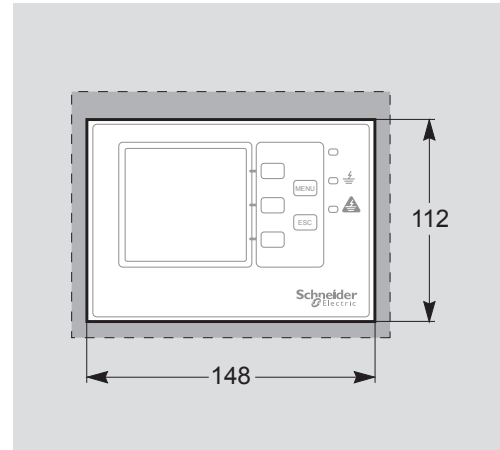
Vigilohm IIM400 / IM400L / IM400C Insulation Monitoring Devices

Dimensions (mm)

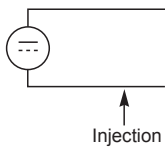
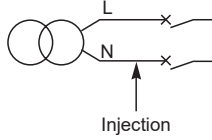
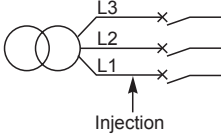
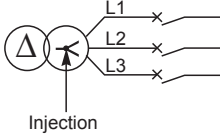
Dimensions (mm)



Flush mounting (mm)



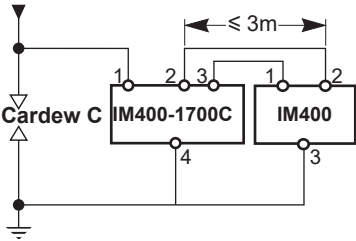
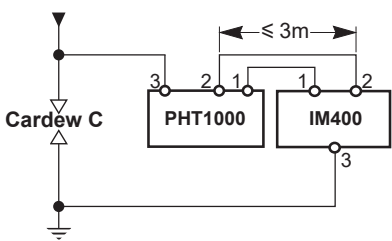
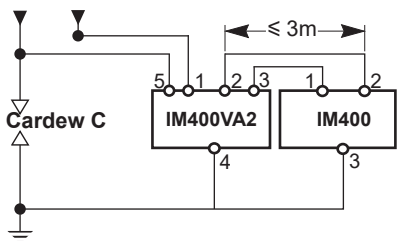
Connection

| | Direct current | Single phase network | Three-phase network without accessible neutral | Three-phase network with accessible neutral, distributed or not |
|--------------------------|---|---|--|---|
| |  |  |  |  |
| AC Connection to Line | - | - | $U_{LL} \leq 480 \text{ Vac}$ | - |
| AC Connection to Neutral | - | $U_{LN} \leq 480 \text{ Vdc}$ | - | $U_{LL} \leq 830 \text{ Vac}$ |
| DC Connection to Line | $U \leq 480 \text{ Vdc}$ | - | - | - |
| Fault Location | Yes | Yes | Yes | Yes |

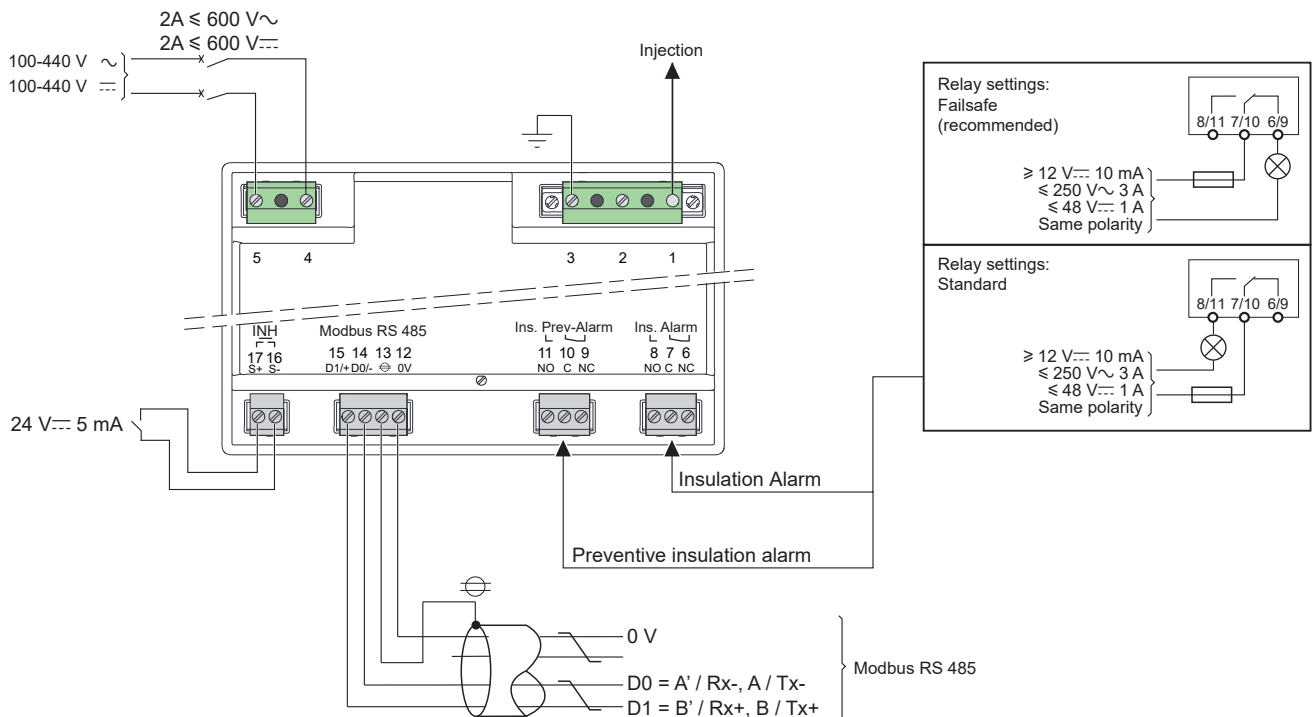
Vigilohm IM400 / IM400L / IM400C

Insulation Monitoring Devices

Compatibility between Insulation Monitoring Devices and Voltage Adaptors

| IM400-1700C | PHT1000 | IM400VA2 |
|---|--|---|
|  |  |  |
| IM400 / IM400L / IM400C | IM400 / IM400L / IM400C | IM400C |
| $U_{LL} < 1700$ Vac neutral injection | $U_{LL} < 1700$ Vac neutral injection | $U_{LL} < 1700$ Vac neutral injection |
| $U_{LL} < 1000$ VCA injection on one phase | $U_{LL} < 1000$ VCA injection on one phase | $U_{LL} < 1500$ VCA injection on two phases |
| $U < 1000$ Vdc, injection at (+) or (-) | $U < 1200$ Vdc, injection at (+) or (-) | $U < 1500$ Vdc, injection at (+) and (-) |
| Not compatible with fault location | Compatible with fault location | Not compatible with fault location |

Refer to the Voltage Adaptor pages for further information.



Vigilohm IM400 / IM400L / IM400C

Insulation Monitoring Devices

General Characteristics

| | | IM400 | IM400L | IM400C |
|--|---------------------------------------|--------------------------------|---|--------------------------------|
| Commercial Reference | | IMD-IM400 | IMDIM400L | IMD-IM400C |
| Network to Monitor | | | | |
| Network earthing system | | Ungrounded (IT) | | |
| Network length up to* | | Medium to Large (<500 km) | | |
| Network loads/capacitance | | Many loads < 500 μ F | Many loads < 500/5500 μ F | |
| Network max. voltage | Connected to neutral | < 830 Vac | | |
| | Connected to phase | 480 Vac | | |
| Network max. line voltage | | < 480 Vdc | | |
| Network type | | 1P+N 3P 3P+N | | |
| Network application | | Control & Power circuits | Control, Power circuits & Photovoltaic | |
| Network frequency | | 45-440 Hz | | |
| Characteristics and Performance | | | | |
| Power supply | Voltage | 100 - 440 Vac 100 - 440 Vdc | 24 - 48 Vdc | 100 - 440 Vac 100 - 440 Vdc |
| | Tolerance | +/-15% | | |
| | Frequency | 50 / 60 / 400 Hz or Dc | - | 50 / 60 / 400 Hz or Dc |
| | Max. consumption | 25 VA / 10 W | | |
| | Recommended protection | 2 A | | |
| Self-test | Test procedure | Manual/Automatic | | |
| | Test results provision | HMI / Modbus | | |
| Operating modes | | Control, Power | | |
| Resistance measurement | Range | 10 Ω to 10 M Ω | | |
| | Accuracy at 10 k Ω - 1 μ F | 1% | | |
| Capacitance measurement | Range | 10 nF - 500 μ F | 10 nF - 5500 μ F | |
| | Accuracy at 10 k Ω - 1 μ F | 5% | | |
| Measurement filtering time | | 4 - 40 or 400 sec | 4 - 40 or 400 sec (40 - 400s for PV mode) | |
| Transient fault capture | | Yes | | |
| Pre-alarm thresholds | | 1 k Ω - 1 M Ω | | |
| Alarm thresholds | | 40 Ω - 500 k Ω | | |
| Alarm optional delay | | 0s - 7200s | | |
| Alarm relay | Quantity | 2 | | |
| | Type of contact | Changeover | | |
| | Breaking capacity AC | 250 V / 6 A | | |
| | Breaking capacity DC | 48 V / 1 A, 3 mA min. | | |
| | Setting | Fail-safe or standard | | |
| Communication port | | Modbus - RS485 | | |
| Inhibition input | | Available | | |

* According to network condition and loads.

Vigilohm IM400 / IM400 L / IM400C

Insulation Monitoring Devices

General Characteristics

| | IM400 | IM400L | IM400C |
|---|----------|---|--------------------|
| Human Machine Interface | | | |
| LCD Display | | Yes | |
| Resistance value displayed | | Yes | |
| Capacitance value displayed | | Yes | |
| Display languages | | En, Fr, Es, Pt, Zh, It, De, Ru | |
| Graphical display of R over 1h or 1 day | | Yes | |
| Time-stamped fault event log | | Yes, 60 events | |
| Installation | | | |
| Protection index Front / Rear | | IP54 / IP20 | |
| Pollution degree | | 2 | |
| Operation temperature | | -25°C to +55°C | -25°C to +70°C |
| Storage temperature | | -40°C to +70°C | -40°C to +85°C |
| Tropicalization | | No | Yes |
| Relative humidity | | ≤92% | ≤95% |
| Maximum altitude | | 3000 m | |
| Climatic acc. IEC60721 | | 1K22 / 2K11 / 3K23 | 1K22 / 2K11 / 3K24 |
| Mechanical acc. IEC60721 | | 1M11 / 2M4 / 3M11 | 1M11 / 2M4 / 3M11 |
| Overvoltage category | | 300 V : III / 600 V : II | |
| Cut-out dimensions | | 112 x 148 mm | |
| Height | | 123 mm | |
| Width | | 159 mm | |
| Depth | | 90 mm | |
| Weight | 0.645 kg | 0.645 kg | 0.660 kg |
| IEC / UL compliance | | EN/IEC61557-8 IEC61010-1 IEC61326-2-4 UL61010-1 SIL2 | |
| Marine certification | | Yes | |
| Auxiliaries and Accessories | | | |
| Insulation fault locators (IFL12) | | IMDIFL12, 12L, 12C, 12MC, 12LMC, 12MCT | |
| Mobile fault locators (MFLK1) | | Compatible | |
| Cardew overvoltage protection | | 440V Cardew C (50171) 690V Cardew C (50172) 1000V Cardew C (50183) Cardew base plate (50169) | |

Vigilohm IM400THR / IM400LTHR Insulation Monitoring Device



Functions

- IM400THR and IM400LTHR permanently monitor the insulation resistance of medium voltage IT networks (AC) by injecting a DC signal between the network and earth.
- Detect an insulation fault according to the set alarm thresholds.
- Trigger a pre-alarm and alarm via the two relays, the Modbus port, and the display.
- Measure and display the insulation resistance of the network.
- Compatible with alternative current MV networks in association with the properly rated voltage transformer.
- Large screen, event log, and historical data.
- Native RS485 communication port to relay all information back to supervision systems.

Applications

- Suited for medium voltage IT networks and loads up to 36 kV.
- Typical segments include electrical distribution, industry, power generation, marine, airports, oil and gas, mining, and lifts — all requiring continuity of service even in the event of an earth insulation fault.



EN/IEC61557-8
IEC61010-1
UL 61010-1
IEC61326-2-4
NFC13200, Medium Voltage

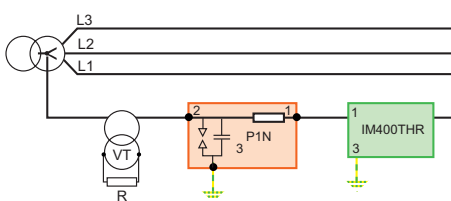


Scan here
to know more
about the product.

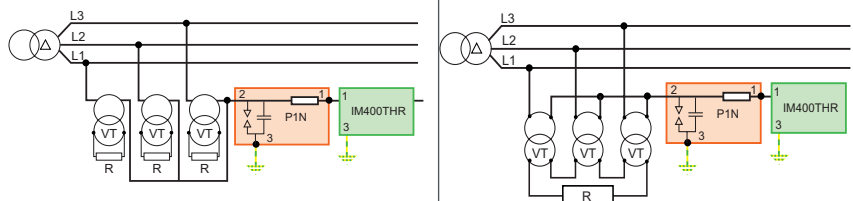


Examples of Architecture

Three-phase network with accessible neutral

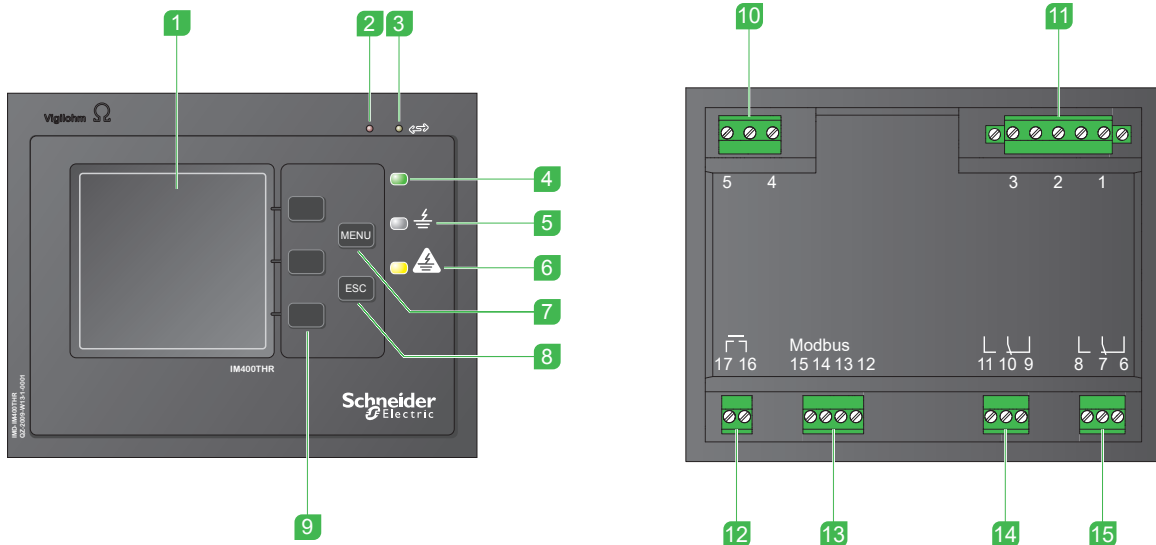


Three-phase network without accessible neutral



Vigilohm IM400THR / IM400LTHR Insulation Monitoring Device

Physical Description



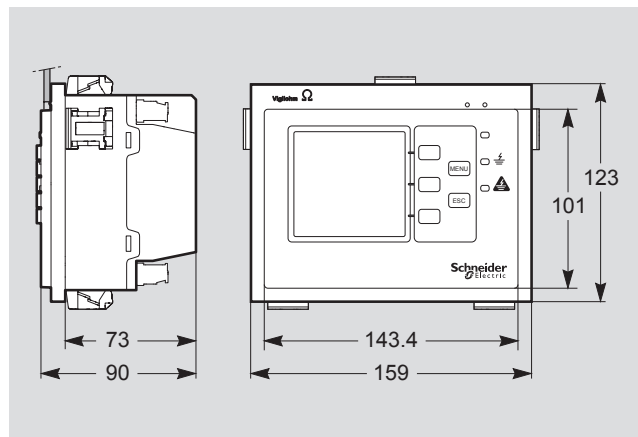
- 1 Display
- 2 Red indicator light for product status
- 3 Yellow indicator light for Modbus communication indication
- 4 Green indicator light for correct insulation indication
- 5 White indicator light for preventive insulation alarm
- 6 Yellow indicator light for insulation alarm
- 7 MENU button
- 8 ESC button for returning to previous menu or cancelling a parameter entry

- 9 Contextual menu buttons
- 10 Auxiliary power supply terminal
- 11 Injection terminal
- 12 Injection inhibition input terminal
- 13 Modbus RS-485 terminal
- 14 Preventive insulation alarm relay terminal
- 15 Insulation alarm relay terminal

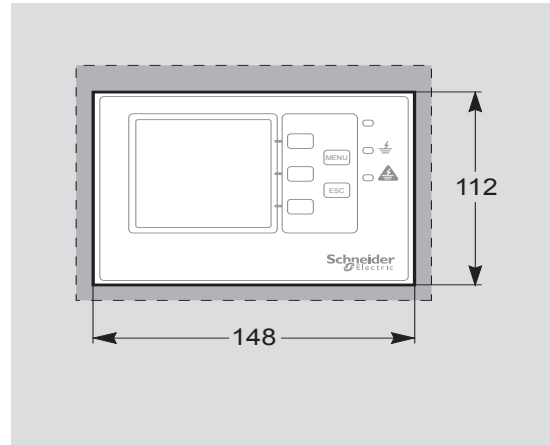
Vigilohm IM400THR / IM400LTHR Insulation Monitoring Device

Dimensions (mm)

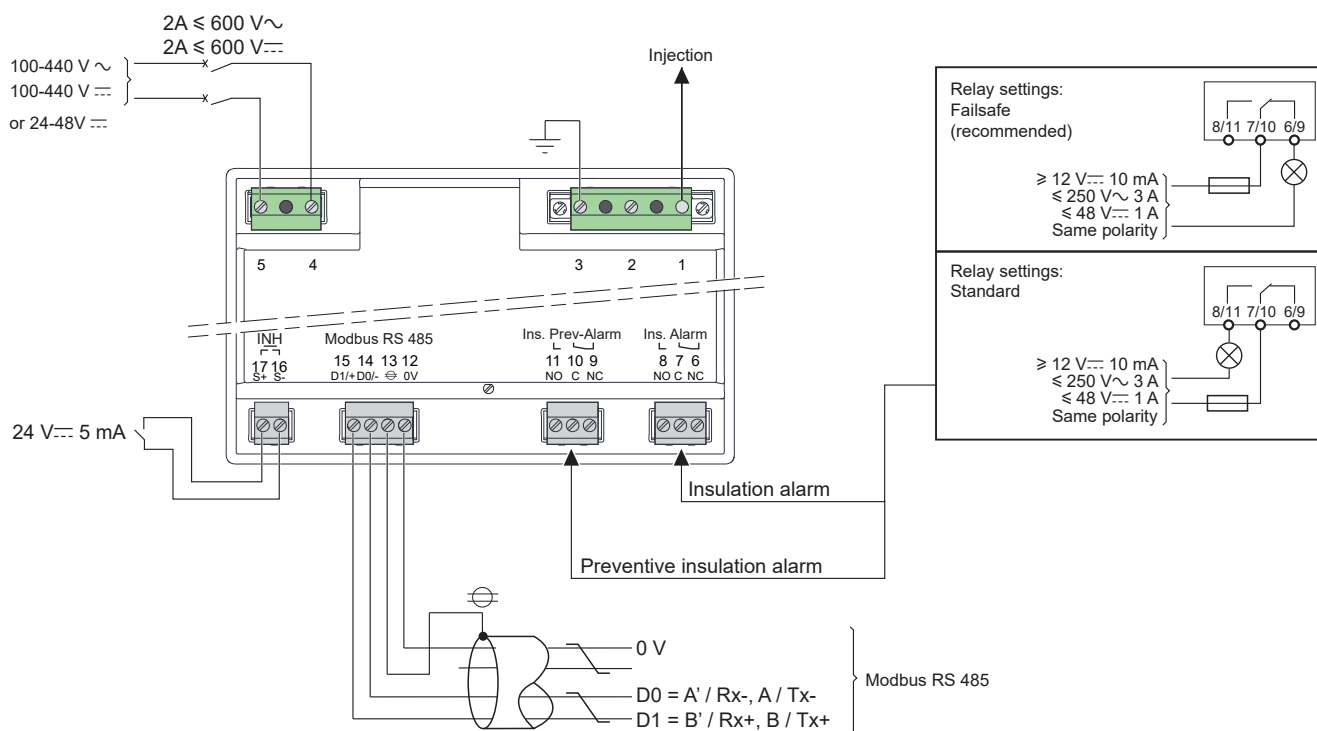
Dimensions (mm)



Flush mounting (mm)



Connection



Vigilohm IM400THR / IM400LTHR

Insulation Monitoring Device

General Characteristics

| | | IM400THR | IM400LTHR |
|--|--------------------------|---|---------------|
| Commercial Reference | | IMD-IM400THR | IMD-IM400LTHR |
| Network to Monitor | | | |
| Network earthing system | | Ungrounded (IT) | |
| Network length up to* | | Medium to Large (<500 km) | |
| Network loads/capacitance | | Many loads < 500 µF | |
| Network max. voltage | Connected to neutral | assigned voltage of voltage transformer | |
| | Connected to phase | assigned voltage of voltage transformer | |
| Network max. line voltage | | Not compatible | |
| Network type | | 1P+N 3P 3P+N | |
| Network application | | Control and Power circuits | |
| Network frequency | | 45-440 Hz | |
| Characteristics and Performance | | | |
| Power supply | Voltage | 100 - 440 Vac 100 - 440 Vdc | 24 - 48 Vdc |
| | Tolerance | +/-15% | |
| | Frequency | 50 / 60 / 400 Hz or dc | - |
| | Max. consumption | 25 VA / 10 W | |
| | Recommended protection | 2 A | |
| Self-test | Test procedure | Manual/Automatic | |
| | Test results provision | HMI / Modbus | |
| Operating modes | | THR | |
| Resistance measurement | Range | 10 Ω to 10 mΩ | |
| | Accuracy at 10 kΩ - 1 µF | 5% | |
| Capacitance measurement | Range | Not available | |
| | Accuracy at 10 kΩ - 1 µF | Not available | |
| Measurement filtering time | | 2, 20 or 40s | |
| Transient fault capture | | Yes | |
| Pre-alarm thresholds | | 1 kΩ - 1 MΩ | |
| Alarm thresholds | | 0.1k Ω to 500 kΩ | |
| Alarm optional delay | | 0s - 7200s | |
| Alarm relay | Quantity | 2 | |
| | Type of contact | Changeover | |
| | Breaking capacity AC | 250 V / 6 A | |
| | Breaking capacity DC | 48 V / 1 A, 3 mA min. | |
| | Setting | Fail-safe or standard | |
| Communication port | | Modbus - RS485 | |
| Inhibition input | | Available | |

* According to network condition and loads.

Vigilohm IM400THR / IM400LTHR

Insulation Monitoring Device

General Characteristics

| | IM400THR | IM400LTHR |
|---|--|-----------|
| Human Machine Interface | | |
| LCD Display | Yes | |
| Resistance value displayed | Yes | |
| Capacitance value displayed | Yes | |
| Display languages | En, Fr, Es, Pt, Zh, It, De, Ru | |
| Graphical display of R over 1h or 1 day | Yes | Yes |
| Time-stamped fault event log | Yes, 60 events | |
| Installation | | |
| Protection index Front / Rear | IP54 / IP20 | |
| Pollution degree | 2 | |
| Operation temperature | -25°C to +55°C | |
| Storage temperature | -40°C to +70°C | |
| Tropicalization | No | |
| Relative humidity | ≤92% | |
| Maximum altitude | 3000 m | |
| Climatic acc. IEC60721 | 1K22 / 2K11 / 3K23 | |
| Mechanical acc. IEC60721 | 1M11 / 2M4 / 3M11 | |
| Overvoltage category | 300V : III / 600V : II | |
| Cut-out dimensions | 112 x 148 mm | |
| Height | 123 mm | |
| Width | 159 mm | |
| Depth | 90 mm | |
| Weight | 0.645 kg | |
| IEC / UL compliance | EN/IEC61557-8 IEC61010-1 IEC61326-2-4 UL61010-1 | |
| Marine certification | Yes | |
| Auxiliaries and Accessories | | |
| Voltage transformers | Mandatory | |
| P1N ground adapter | Mandatory | |
| Insulation fault locators (IFL12) | Not compatible | |
| Mobile fault locators (MFLK1) | Not compatible | |
| Cardew overvoltage protection | Not compatible | |

Vigilohm IFL12 / IFL12L

Insulation Fault Locators



Functions

- Once a network alarm has been triggered by an insulation fault, the faulty feeder needs to be located.
- When associated with the IM400 series, the IFL12 series will simultaneously and automatically monitor up to 12 feeders and detect an insulation fault according to the alarm threshold.
- On medium-length networks or with disturbed loads, the IFL12 brings significant OPEX savings in terms of fault location or maintenance scheduling.

Main Features

- One common alarm threshold for all feeders (low, medium, or high).
- Fast response time: 5 seconds.
- Filtering for highly disturbed power systems.
- Intermittent insulation fault reporting.
- Insulation fault is displayed via 12 LEDs, one per feeder.
- Simple and user-friendly human-machine interface.
- Stand-alone device with no wire or logical connection to the IM400 insulation monitoring device, greatly simplifying installation.
- Compatible with a range of current transformers.
- Possibility to re-use existing current transformers in case of existing IT earthing installation, simplifying installation and reducing downtime.
- Unlimited number of IFL12 per IM400 for installation scalability.
- Fast dedicated commissioning procedure.



EN/IEC61557-9
IEC61010-1
UL 61010-1
IEC61326-2-4
IEC60364-4-41



Scan here
to know more
about the product.

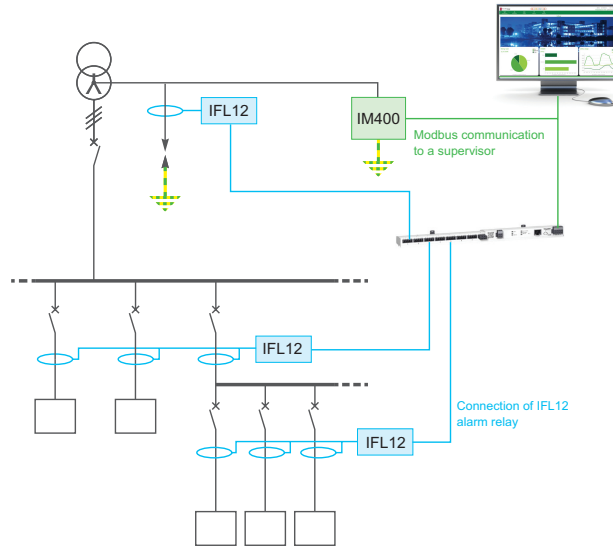


Applications

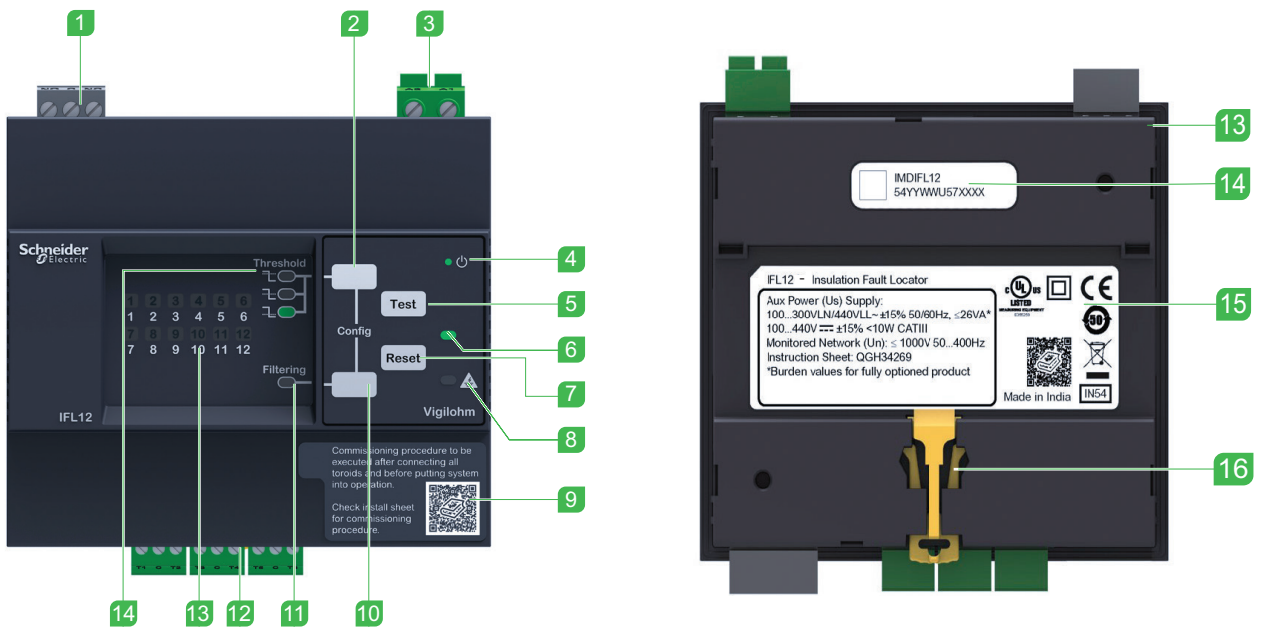
- Ungrounded networks requiring automatic insulation fault location.
- Power circuits networks, including power loads and power electronics such as speed drives, inverters, rectifiers, etc.
- Typical segments: industry, power generation, marine, railways, airport, oil and gas, mining, water, heating and cooling, lifts - all requiring continuity of service even in case of earth insulation fault.
- Mobile insulation fault locator kit (MFLK1) complementary to the IFL12 series.

Viglohm IFL12 / IFL12L Insulation Fault Locators

Example of Architecture



Physical Description

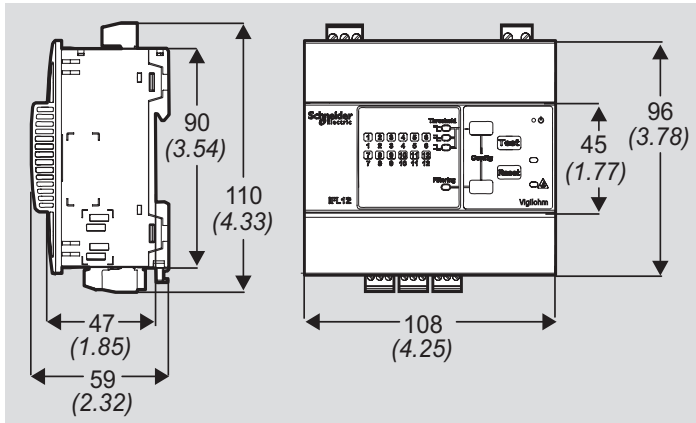


- 1 Alarm relay
- 2 Alarm threshold selection button
- 3 Auxiliary power supply
- 4 Product status LED
- 5 Test button
- 6 No alarm LED
- 7 Reset button
- 8 Alarm LED
- 9 Peel off label
- 10 Filtering enable/disable button
- 11 Filtering enable/disable LED
- 12 12 toroid connections
- 13 12 channel LEDs
- 14 Low / Medium / High threshold LEDs
- 15 Gasket
- 16 Label
- 17 DIN mounting clip

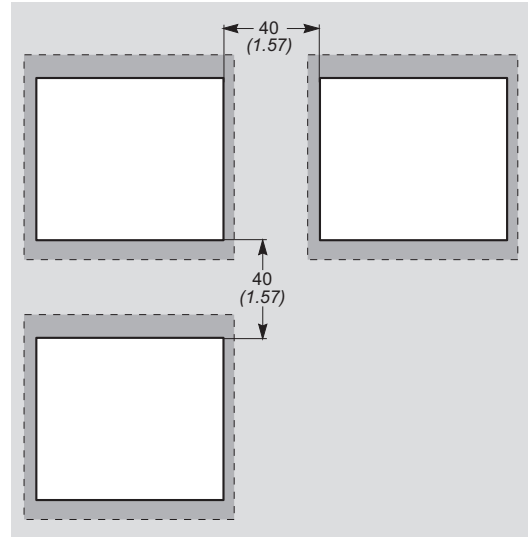
Vigilohm IFL12 / IFL12L Insulation Fault Locators

Dimensions (mm)

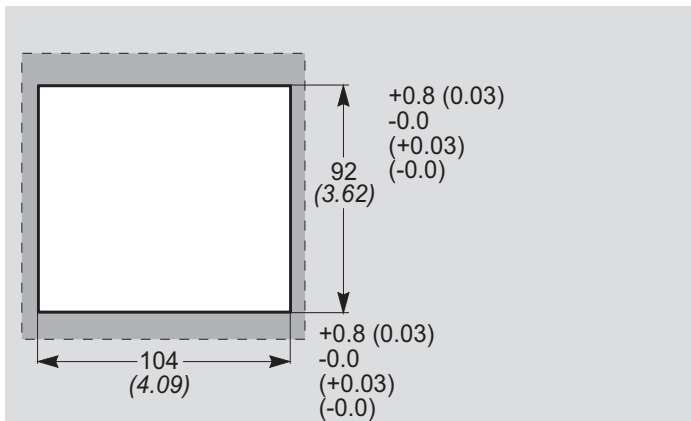
Dimensions (mm)



Minimum clearance between flush mounted devices mm / (inch)

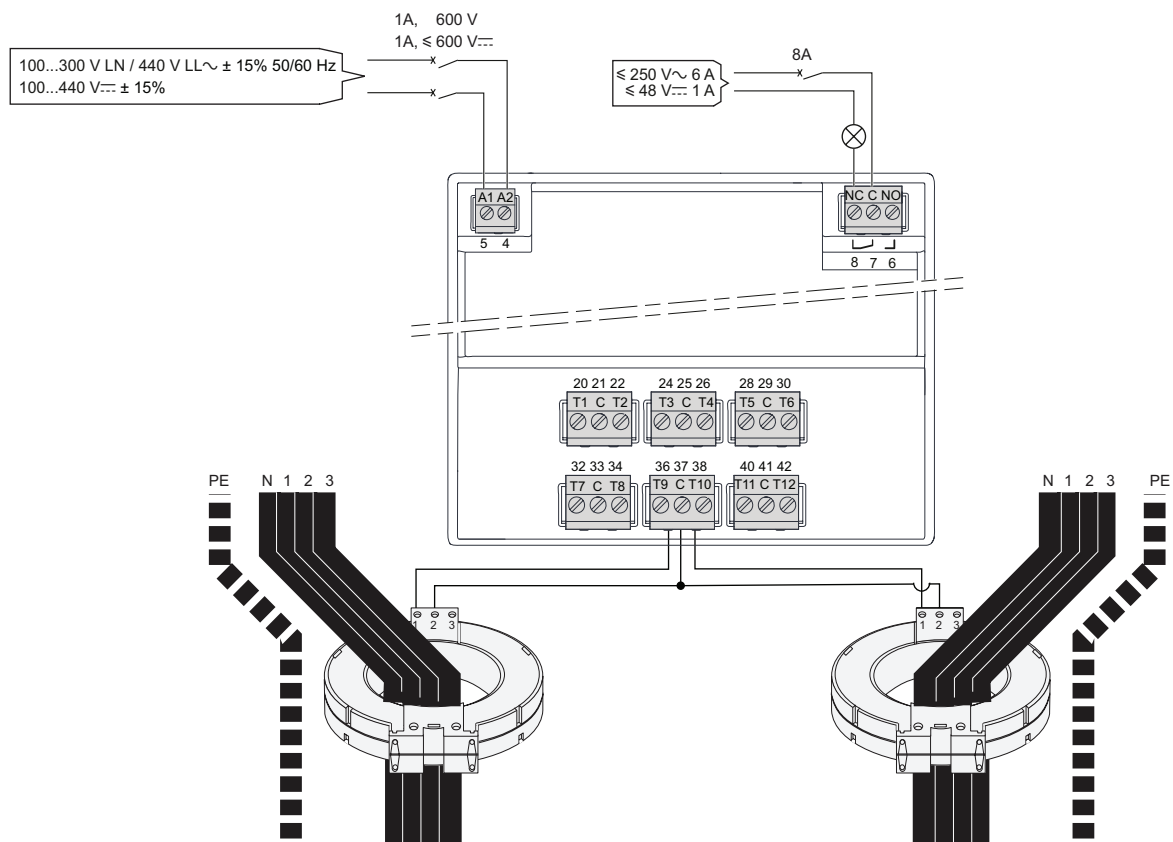


Cut-out for flush mount mm / (inch)



Vigilohm IFL12 / IFL12L Insulation Fault Locators

Connection



Note: Example of toroid connection to T9 and T10 is illustrated. Use similar connection for other toroid's.

| {T1, C, T2}, {T3, C, T4}, {T5, C, T6}, {T7, C, T8}, {T9, C, T10}, {T11, C, T12} | 1 conductor - 1.5 mm ² (16 AWG) 2 conductors - 0.75 mm ² (18 AWG) | 7mm (0.28 in) ± 1 mm (0.040 in) | ∅ 2.5 mm (7/64 in) | 0.22 - 0.25 Nm (1.9 - 2.2 in lb) |
|---|--|---------------------------------|--------------------|----------------------------------|
| A1, A2 | 0.2 - 2.5 mm ² (24 - 14 AWG) | 7mm (0.28 in) ± 1 mm (0.040 in) | ∅ 3 mm (1/8 in) | 0.5 - 0.6 Nm (4.4 - 5.3 in lb) |
| NC, C, NO | 0.2 - 2.5 mm ² (24 - 14 AWG) | 7mm (0.28 in) ± 1 mm (0.040 in) | ∅ 3 mm (1/8 in) | 0.5 - 0.6 Nm (4.4 - 5.3 in lb) |

Vigilohm IFL12 / IFL12L

Insulation Fault Locators

General Characteristics

| | | IFL12 | IFL12L |
|--|------------------------|---|------------------|
| Commercial Reference | | IMDIFL12 | IMDIFL12L |
| Application | | Standard | |
| Network to Monitor | | | |
| Network earthing system | | IT / HRG | |
| Network type | | 1PN, 3P, 3PN | |
| Network Voltage up to | | 1000 Vac | |
| | | 1000 Vdc | |
| Network capacitance up to | | 150 µF | |
| Network application | | Low disturbance | |
| Insulation Fault Locators | | | |
| Power supply | Voltage | 100...300 Vac LN / 440 V LL ± 15% (50/60 Hz) 80...120 Vac LN ± 15% (400 Hz) 100...440 Vdc ± 15% | 24-48 Vdc +/-15% |
| | Frequency | 50 - 60 - 400 Hz (80-120V LN) | - |
| | Max. consumption | < 20 VA < 6 W | < 4 W |
| | Recommended protection | 1 A | |
| Number of monitored feeders | | 12 | |
| Sequential or simultaneous feeder monitoring | | Simultaneous | |
| Feeder resistance measurement range | | 100 Ω to 250 kΩ | |
| Feeder capacitance measurement range | | Not available | |
| Fault alarm thresholds | | Low, Medium or High settings | |
| Measurement filtering time | | 5s or 40s | |
| Fault alarm delay setting | | N/A | |
| Transient insulation fault capture | | Yes, blinking LED | |
| Graphical display of R over 1h or 1 day | | Not available | |
| Time-stamped fault event log | | Not available | |
| Characteristics and Performance | | | |
| Self-test | | Manual / Automatic | |
| Detection of toroid's connection | | Manual / Automatic | |
| Detection of IM400 injection current | | Permanent | |
| Alarm relay | Quantity | 1 | |
| | Type of contact | Changeover | |
| | Breaking capacity AC | 250 Vac / 6 A | |
| | Breaking capacity DC | 48 Vdc / 1 A, 3 mA min. load | |
| | Setting | Standard | |
| Communication port | | None | |

Vigilohm IFL12 / IFL12L

Insulation Fault Locators

General Characteristics

| | IFL12 | IFL12L |
|-------------------------------------|--|--------|
| Human Machine Interface | LEDs + buttons | |
| Feeder resistance value displayed | - | |
| Feeder capacitance value displayed | - | |
| Display languages | - | |
| Installation | | |
| Cable or logical pairing with IM400 | Unnecessary | |
| Protection degree (Front/Rear) | IP54 / IP20 | |
| Overvoltage category | 300 V OVC3 / 600 V OVC2 | |
| Pollution degree (Front/Rear) | 2 | |
| Operation temperature | -25°C to +70°C | |
| Storage temperature | -40°C to +85°C | |
| Maximum altitude | 3000 m | |
| Climatic acc. IEC60721 | 1K22 / 2K11 / 3K24 | |
| Weight | 0.280 kg | |
| Mechanical acc. IEC60721 | 1M11 / 2M4 / 3M11 | |
| Relative humidity | ≤92% | |
| IEC / UL Compliance | EN/IEC 61557-9 EN/IEC 61557-15 IEC61010-1 IEC61326-2-4 UL61010-1 | |
| Marine certification | Yes | N/A |
| Compatibility | | |
| With current IMDs | IM400, IM400L, IM400C | |
| With older IMDs | XM200, XM300, XML3xx | |
| With IM400 operating modes | Power | |
| With toroid's | TA30, PA50, IA80 MA120, SA200, GA300 TOA80 and TOA120 | |
| With IFL12VA1T Voltage Adaptor | Not compatible | |
| With PHT1000 Voltage Adaptor* | Compatible | |
| Gateways and supervision | Not compatible | |

* From 480 to 1000 Vac if IFL12 and IM400 are connected through a common PHT1000.

Communicating Insulation Fault Locator



Functions

- Once a network alarm is triggered by an insulation fault, it becomes necessary to locate the faulty feeder.
- When used in conjunction with the IM400 series, the IFL12 series can automatically and simultaneously monitor up to 12 feeders, detecting insulation faults based on the configured alarm threshold.
- On medium-length networks or those with disturbed loads, the IFL12 offers significant OPEX savings by streamlining fault location and maintenance scheduling.
- If an insulation fault occurs on any feeder, the IFL12C triggers an alarm via its output contact relay and communicates the event through the Modbus RS485 interface.

Main Features

- One common alarm threshold for all feeders (Low, Medium, or High).
- Fast response time: 5s.
- Filtering for highly disturbed systems.
- Intermittent insulation fault reporting.
- Insulation fault is displayed on the LCD.
- Simple and user-friendly human-machine interface.
- Stand-alone device with no wire or logical connection to the IM400 insulation monitoring device, to greatly simplify any installation.
- Compatible with a range of current transformers.
- In case of existing IT earthing installation, possibility to reuse existing current transformers to simplify installation and reduce downtime.
- Unlimited number of IFL12 per IM400 for installation scalability.
- Fast, dedicated commissioning procedure.
- User-friendly LCD HMI in 8 languages.
- Communicates via Modbus RS485 to allow remote setting and reporting of alarms in the supervision system.
- Timestamped event log.



EN/IEC61557-9
IEC61010-1
UL 61010-1
IEC61326-2-4
IEC60364-4-41



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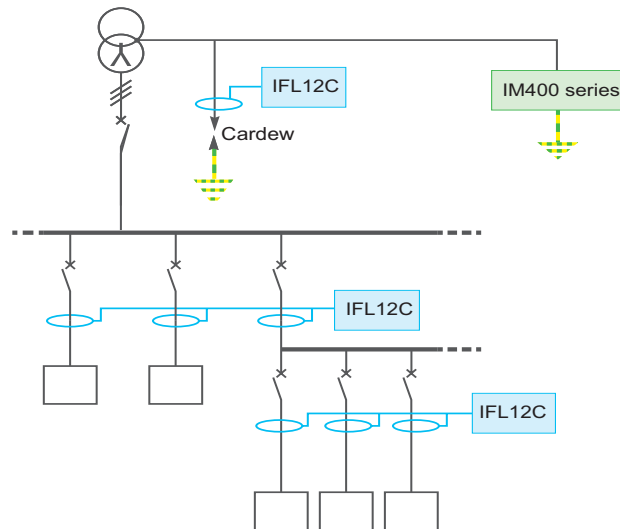


Applications

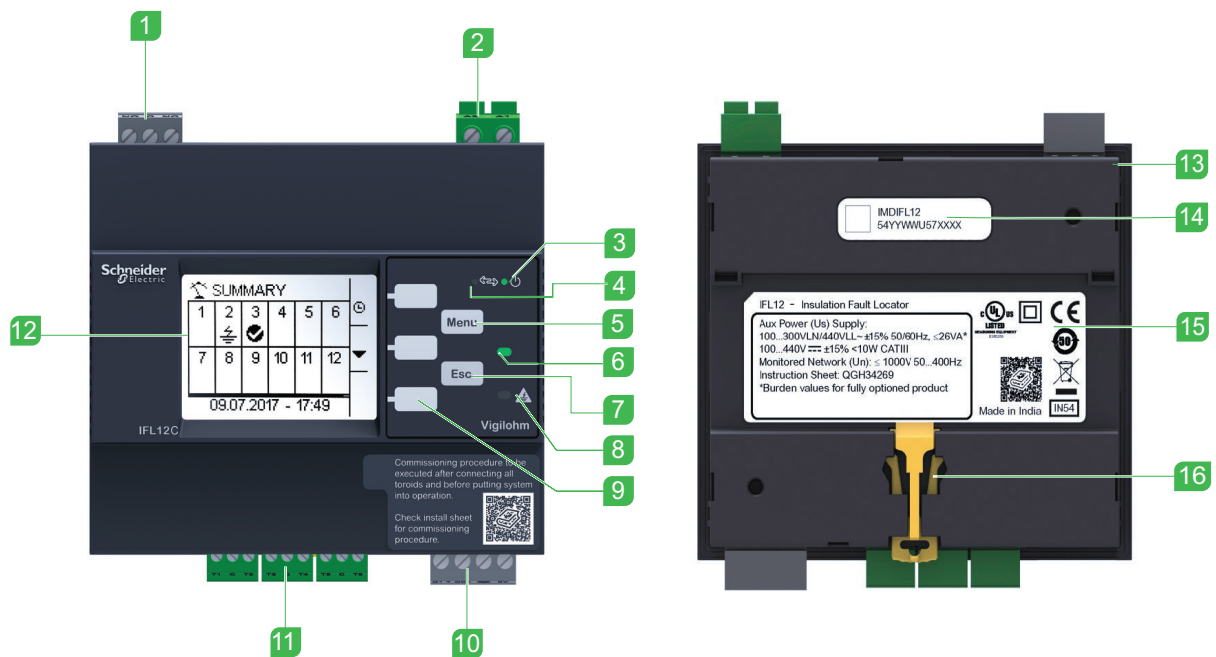
- Ungrounded networks requiring automatic insulation fault location.
- Power circuits networks, including power loads and power electronics such as speed drives, inverters, rectifiers, etc.
- Typical segments: electrical distribution, industry, power generation, marine, airports, oil and gas, mining, lifts - requiring continuity of service even in case of earth insulation fault.
- MFLK1 mobile insulation fault locator kit complementary to the IFL12C.

Communicating Insulation Fault Locator

Example of Architecture



Physical Description



- 1 Alarm relay
- 2 Auxiliary power supply
- 3 Product status LED
- 4 Communication LED
- 5 Menu button
- 6 No alarm LED
- 7 Esc button
- 8 Alarm LED

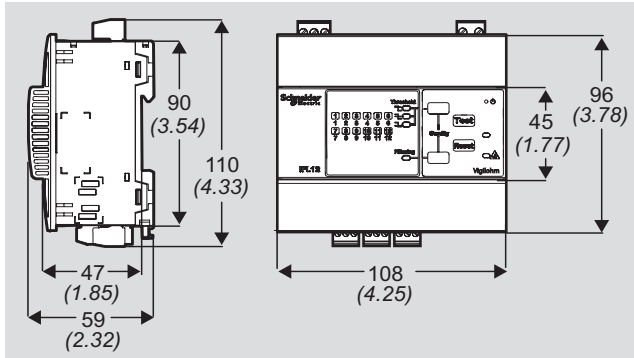
- 9 Contextual menu buttons
- 10 RS-485 communication
- 11 12 toroid connections
- 12 LCD screen
- 13 Gasket
- 14 Commercial reference and manufacturing data
- 15 Label
- 16 DIN mounting clip

Vigilohm IFL12C

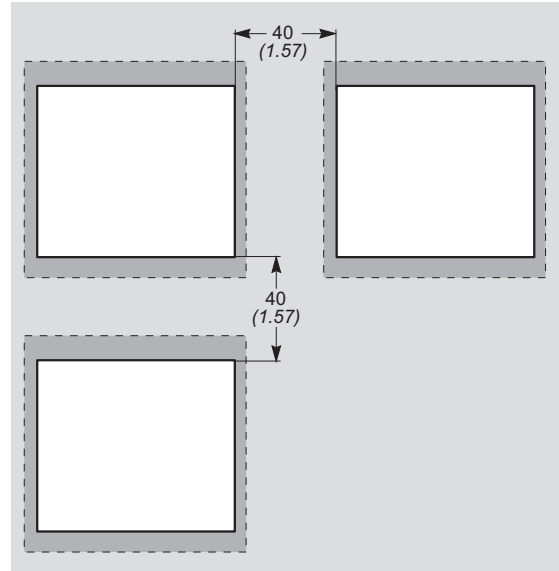
Communicating Insulation Fault Locator

Dimensions (mm)

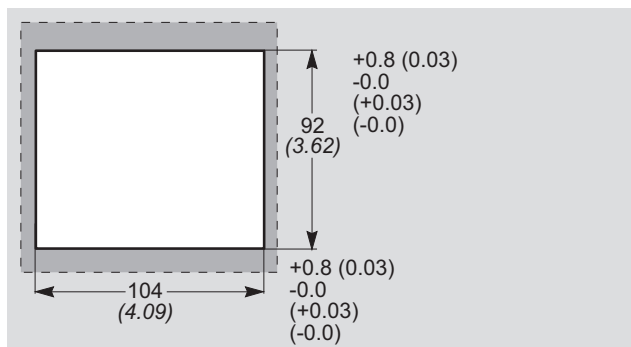
Dimensions (mm)



Minimum clearance between flush mounted devices mm / (inch)

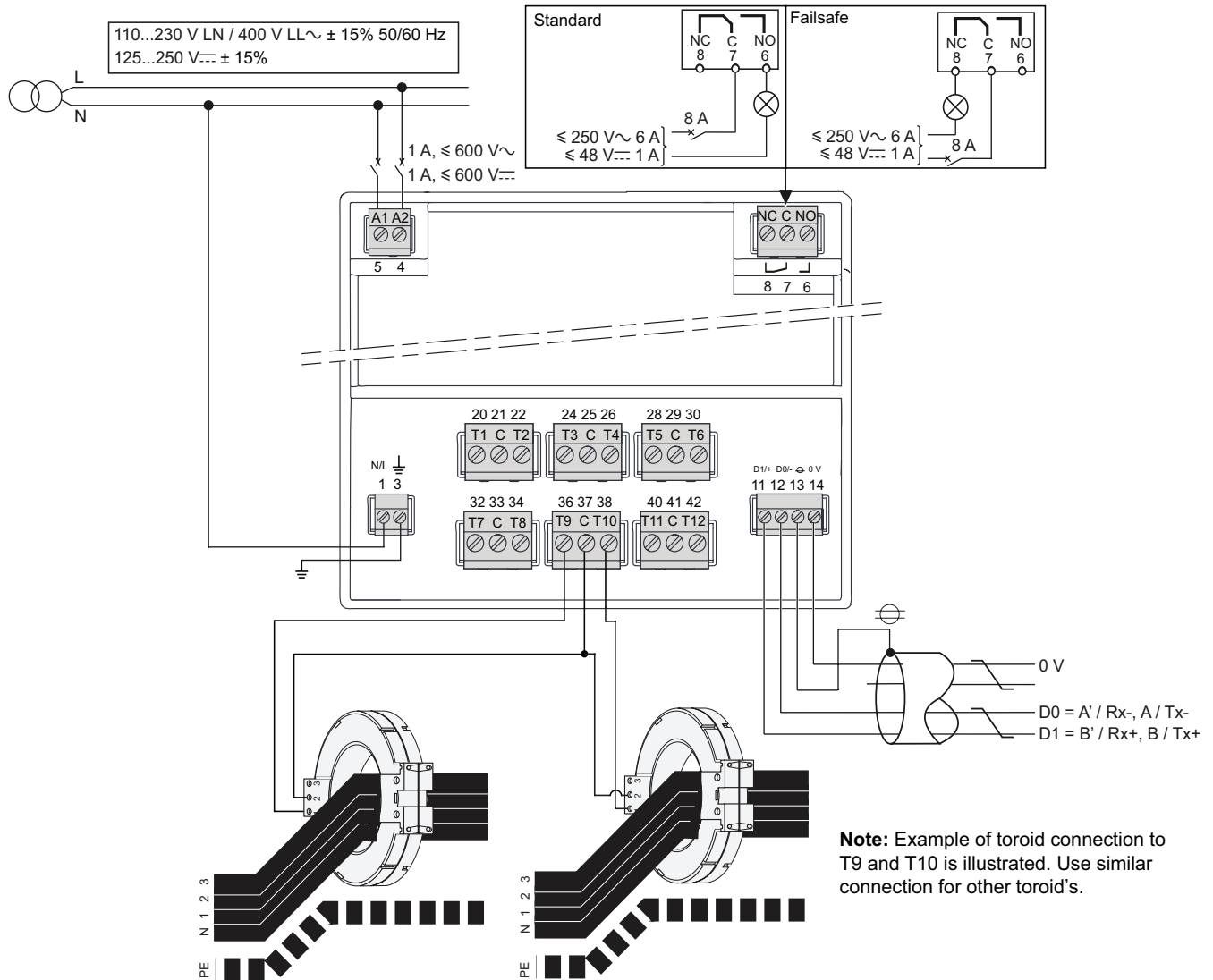


Cut-out for flush mount mm / (inch)



Communicating Insulation Fault Locator

Connection



| {T1, C, T2}, {T3, C, T4}, {T5, C, T6}, {T7, C, T8}, {T9, C, T10}, {T11, C, T12} | 1 conductor - 1.5 mm ² (16 AWG) 2 conductors - 0.75 mm ² (18 AWG) | 7mm (0.28 in) ± 1 mm (0.040 in) | ∅ 2.5 mm (7/64 in) | 0.22 - 0.25 Nm (1.9 - 2.2 in lb) |
|---|--|---------------------------------|--------------------|----------------------------------|
| A1, A2 | 0.2 - 2.5 mm ² (24 - 14 AWG) | 7mm (0.28 in) ± 1 mm (0.040 in) | ∅ 3 mm (1/8 in) | 0.5 - 0.6 Nm (4.4 - 5.3 in lb) |
| NC, C, NO | 0.2 - 2.5 mm ² (24 - 14 AWG) | 7mm (0.28 in) ± 1 mm (0.040 in) | ∅ 3 mm (1/8 in) | 0.5 - 0.6 Nm (4.4 - 5.3 in lb) |
| N/L, | 0.82 - 3.31 mm ² (18 - 12 AWG) | 7mm (0.28 in) ± 1 mm (0.040 in) | ∅ 3 mm (1/8 in) | 0.5 - 0.6 Nm (4.4 - 5.3 in lb) |
| +, -, ∅, C | 0.13 - 0.82 mm ² (26 - 18 AWG) | 7mm (0.28 in) ± 1 mm (0.040 in) | ∅ 3 mm (1/8 in) | 0.5 - 0.6 Nm (4.4 - 5.3 in lb) |

Communicating Insulation Fault Locator

General Characteristics

| | | IFL12C |
|--|------------------------|---|
| Commercial Reference | | IMDIFL12C |
| Application | | Standard |
| Network to Monitor | | |
| Network earthing system | | IT / HRG |
| Network type | | 1PN, 3P, 3PN |
| Network Voltage up to | | 1000 Vac |
| | | 1000 Vdc |
| Network capacitance up to | | 150µF |
| Network application | | - |
| Insulation Fault Locators | | |
| Power supply | Voltage | 100...300 Vac LN / 440 V LL ± 15% (50/60 Hz) 80...120 Vac LN ± 15% (400 Hz) 100...440 Vdc ± 15% |
| | Frequency | 50 - 60 - 400 Hz (80-120V LN) |
| | Max. consumption | < 26 VA < 10 W |
| | Recommended protection | 1 A |
| Number of monitored feeders | | 12 |
| Sequential or simultaneous feeder monitoring | | Simultaneous |
| Feeder resistance measurement range | | 100 Ω to 250 kΩ |
| Feeder capacitance measurement range | | Not available |
| Fault alarm thresholds | | Low, Medium or High settings |
| Measurement Filtering Time | | 5s or 40s |
| Fault alarm delay setting | | 0s - 7200s |
| Transient insulation fault capture | | yes, LCD Display |
| Graphical display of R over 1h or 1 day | | Not available |
| Time-stamped fault event log | | Not available |
| Characteristics and Performance | | |
| Self-test | | Manual / Automatic |
| Detection of toroid's connection | | Manual / Automatic |
| Detection of IM400 injection current | | Permanent |
| Alarm relay | Quantity | 1 |
| | Type of contact | Changeover |
| | Breaking capacity AC | 250 Vac / 6 A |
| | Breaking capacity DC | 48 Vdc / 1 A, 3 mA min. load |
| | Setting | Failsafe or Standard |
| Communication port | | None |

Communicating Insulation Fault Locator

General Characteristics

| | IFL12C |
|-------------------------------------|--|
| Human Machine Interface | LCD Display |
| Feeder resistance value displayed | Not compatible |
| Feeder capacitance value displayed | Not compatible |
| Display languages | En, Fr, Es, Pt, Zh, It, De, Ru |
| Installation | |
| Cable or logical pairing with IM400 | Unnecessary |
| Protection degree (Front/Rear) | IP54 / IP20 |
| Overvoltage category | 300 V OVC3 / 600 V OVC2 |
| Pollution degree (Front/Rear) | 2 |
| Operation temperature | -25°C to +70°C |
| Storage temperature | -40°C to +85°C |
| Maximum altitude | 3000 m |
| Climatic acc. IEC60721 | 1K22 / 2K11 / 3K24 |
| Weight | 0.305 kg |
| Mechanical acc. IEC60721 | 1M11 / 2M4 / 3M11 |
| Relative humidity | ≤92% |
| IEC / UL Compliance | EN/IEC 61557-9 EN/IEC 61557-15 IEC61010-1 IEC61326-2-4 UL61010-1 |
| Marine certification | Yes |
| Compatibility | |
| With current IMDs | IM400, IM400L, IM400C |
| With older IMDs | XM200, XM300, XML3xx |
| With IM400 operating modes | Power |
| With toroid's | TA30, PA50, IA80 MA120, SA200, GA300 TOA80 and TOA120 |
| With IFL12VA1T Voltage Adaptor | Compatible |
| With PHT1000 Voltage Adaptor* | Compatible |
| Gateways and supervision | PAS600, PAS800, PME |

* From 480 to 1000 Vac if IFL12 and IM400 are connected through a common PHT1000.

Advanced Insulation Fault Locators



Functions

- Once a network alarm has been triggered by an insulation fault, the faulty feeder needs to be located.
- When associated with the IM400 series, the IFL12 series will simultaneously and automatically monitor up to 12 feeders and detect an insulation fault according to the alarm threshold.
- On medium-length networks or with disturbed loads, the IFL12 brings significant OPEX savings in terms of fault location and maintenance scheduling.
- In case of an insulation fault on any feeder, the IFL12 triggers an alarm via the output contact relay and through the Modbus RS485 communication port.

Main Features

- Each feeder has its own alarm threshold.
- Fast response time: 5 seconds.
- Filtering for highly disturbed power systems.
- Intermittent insulation fault reporting.
- Measures and displays each feeder's insulation resistance from 100 Ω to 250 k Ω , and leakage capacitance from 0.1 μ F to 15 μ F.
- Stand-alone device with no wire or logical connection to the IM400 insulation monitoring device, greatly simplifying installation.
- Compatible with a range of current transformers.
- Possibility to re-use existing current transformers in case of existing IT earthing installation, simplifying installation and reducing downtime.
- Unlimited number of IFL12 per IM400 for installation scalability.
- Fast dedicated commissioning procedure.
- Large screen and interactive human-machine interface to ease operation and maintenance.
- User-friendly LCD HMI in 8 languages.
- Communication to supervision via Modbus RS485 port, allowing remote configuration and reporting of real-time data and alarms.
- Timestamped event log.
- Insulation and capacitance measurement trending log and curves for preventive maintenance.
- Historical logging for preventive maintenance.
- Tropicalized versions for harsh environments.

Applications

- Ungrounded/IT earthing networks requiring automatic insulation fault location.
- Power circuits networks, including power loads and power electronics such as speed drives, inverters, rectifiers, etc.
- Control command networks, including sensitive loads such as PLCs, I/Os, sensors.
- Typical segments: electrical distribution, industry, power generation, marine, airports, oil and gas, mining, lifts - requiring continuity of service even in case of earth insulation fault.
- MFLK1 mobile insulation fault locator kit complementary to the IFL12.



EN/IEC61557-9
IEC61010-1
UL 61010-1
IEC61326-2-4
IEC60364-4-41

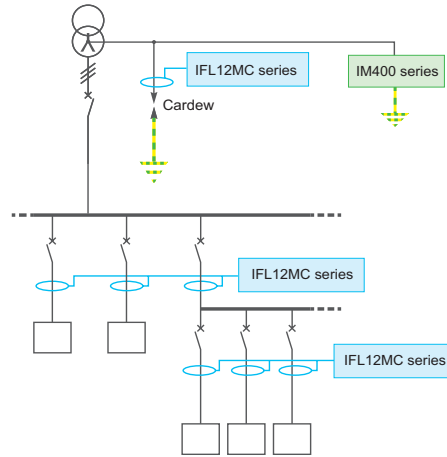


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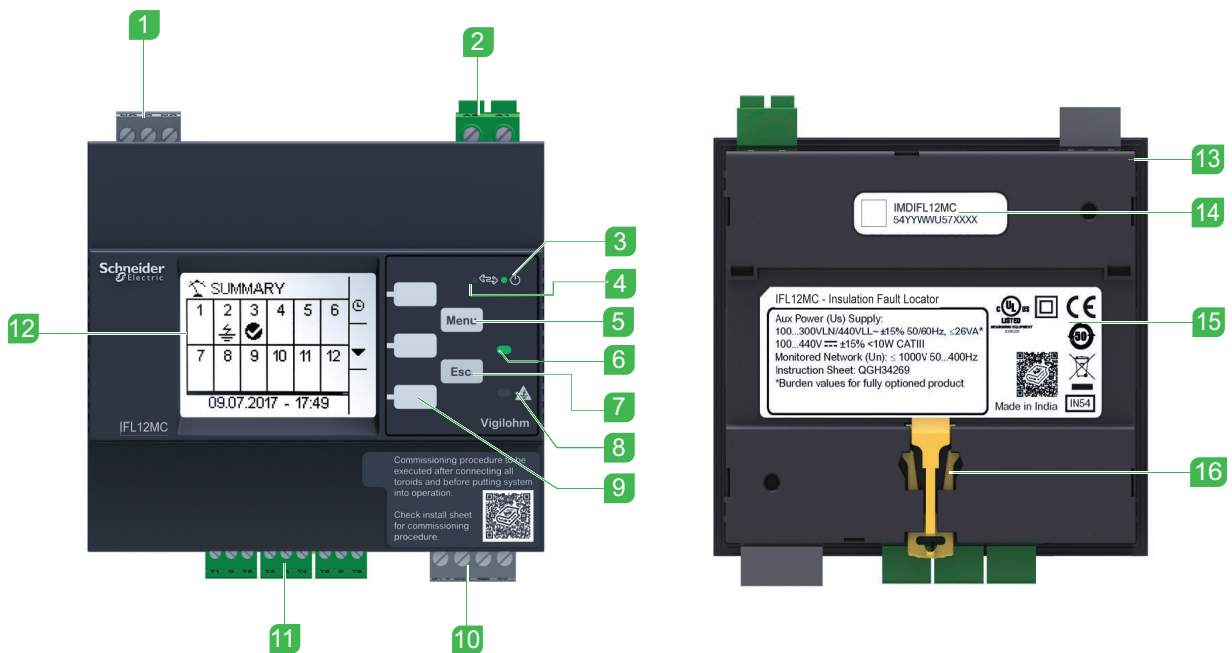


Vigilohm IFL12MC / LMC / MCT Advanced Insulation Fault Locators

Example of Architecture



Physical Description



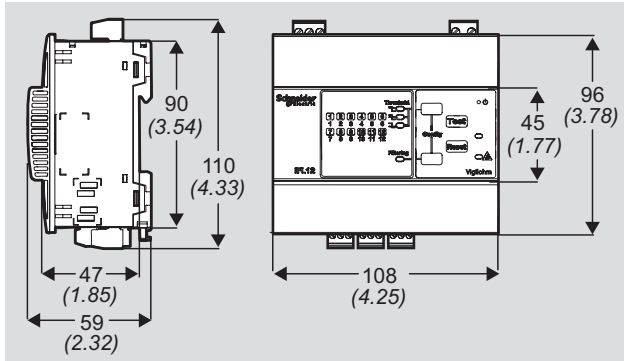
- 1 Alarm relay
- 2 Auxiliary power supply
- 3 Product status LED
- 4 Communication LED
- 5 Menu button
- 6 No alarm LED
- 7 Esc button
- 8 Alarm LED

- 9 Contextual menu buttons
- 10 RS-485 communication
- 11 12 toroid connections
- 12 LCD screen
- 13 Gasket
- 14 Commercial reference and manufacturing data
- 15 Label
- 16 DIN mounting clip

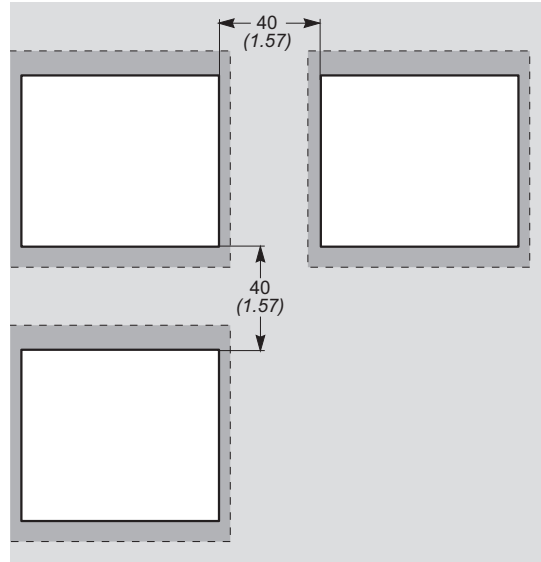
Vigilohm IFL12MC / LMC / MCT Advanced Insulation Fault Locators

Dimensions (mm)

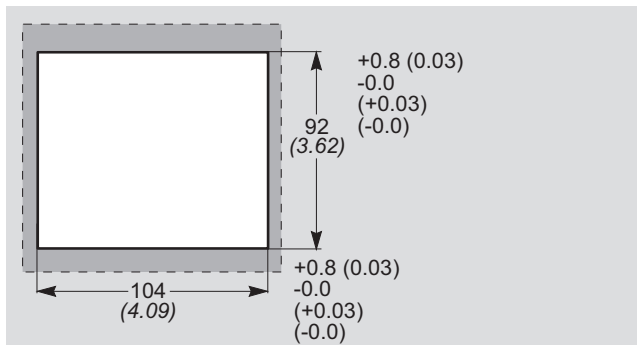
Dimensions (mm)



Minimum clearance between flush mounted devices mm / (inch)



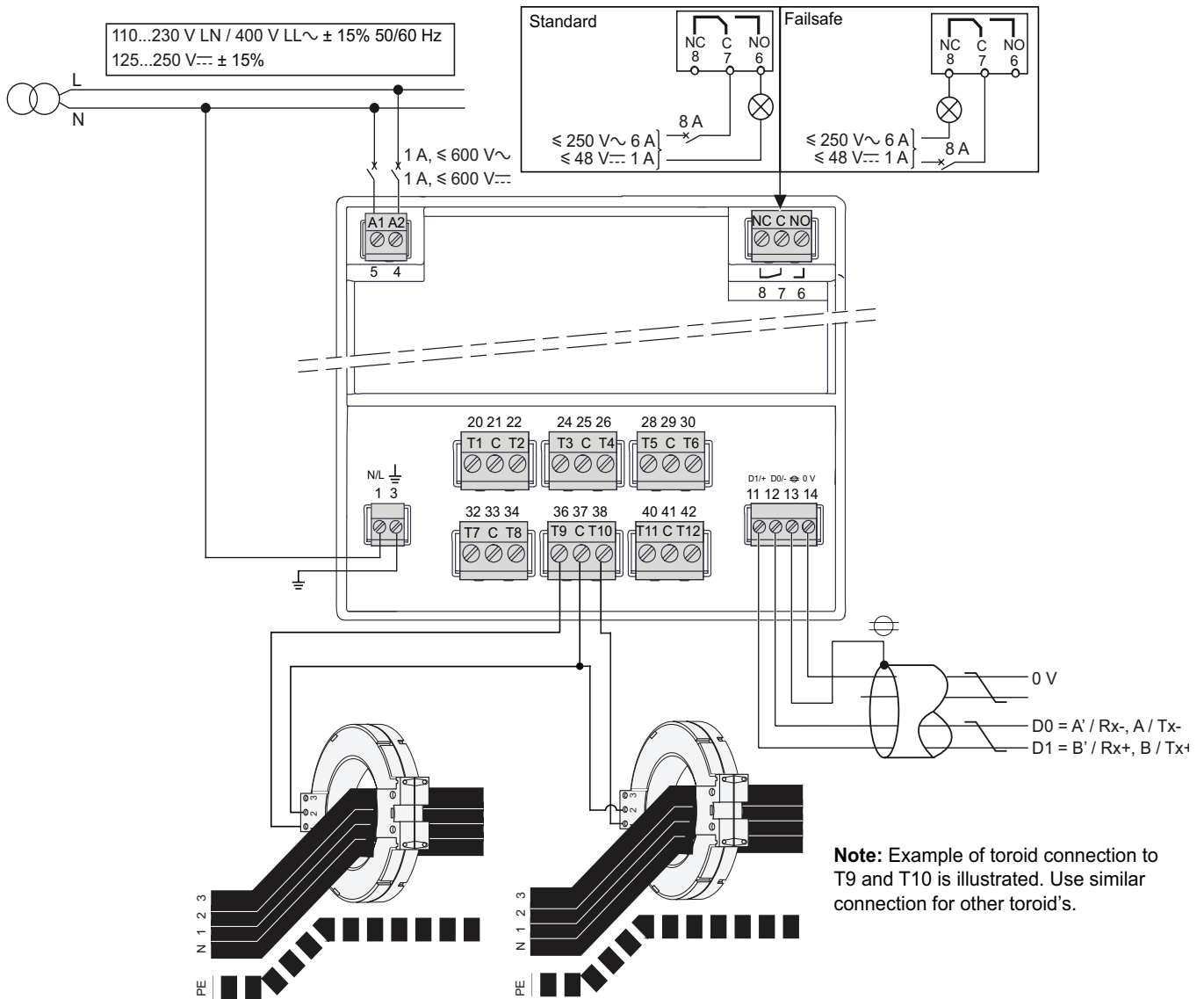
Cut-out for flush mount mm / (inch)

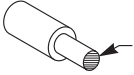
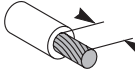
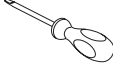




Vigilohm IFL12MC / LMC / MCT

Advanced Insulation Fault Locators

Connection



| |  |  |  |  |
|--|--|---|---|---|
| {T1, C, T2}, {T3, C, T4}, {T5, C, T6}, {T7, C, T8}, {T9, C, T10}, {T11, C, T12} | 1 conductor - 1.5 mm ² (16 AWG) 2 conductors - 0.75 mm ² (18 AWG) | 7mm (0.28 in) ± 1 mm (0.040 in) | ∅ 2.5 mm (7/64 in) | 0.22 - 0.25 Nm (1.9 - 2.2 in lb) |
| A1, A2 | 0.2 - 2.5 mm ² (24 - 14 AWG) | 7mm (0.28 in) ± 1 mm (0.040 in) | ∅ 3 mm (1/8 in) | 0.5 - 0.6 Nm (4.4 - 5.3 in lb) |
| NC, C, NO | 0.2 - 2.5 mm ² (24 - 14 AWG) | 7mm (0.28 in) ± 1 mm (0.040 in) | ∅ 3 mm (1/8 in) | 0.5 - 0.6 Nm (4.4 - 5.3 in lb) |
| N/L,  | 0.82 - 3.31 mm ² (18 - 12 AWG) | 7mm (0.28 in) ± 1 mm (0.040 in) | ∅ 3 mm (1/8 in) | 0.5 - 0.6 Nm (4.4 - 5.3 in lb) |
| +, -, ∅, C | 0.13 - 0.82 mm ² (26 - 18 AWG) | 7mm (0.28 in) ± 1 mm (0.040 in) | ∅ 3 mm (1/8 in) | 0.5 - 0.6 Nm (4.4 - 5.3 in lb) |

Vigilohm IFL12MC / LMC / MCT

Advanced Insulation Fault Locators

General Characteristics

| | | IFL12MC | IFL12LMC | IF12MCT |
|--|------------------------|---|------------------|--|
| Commercial Reference | | IMDIFL12MC | IMDIFL12LMC | IMDIFL12MCT |
| Application | | Standard | | Harsh environment |
| Network to Monitor | | | | |
| Network earthing system | | IT / HRG | | |
| Network type | | 1PN, 3P, 3PN | | |
| Network Voltage up to | | 830 Vac | | |
| | | 480 Vdc | | |
| Network capacitance up to | | 150 µF | | |
| Network application | | - | | |
| Insulation Fault Locators | | | | |
| Power supply | Voltage | 100...300 Vac LN / 440 V LL ± 15% (50/60 Hz) 80...120 Vac LN ± 15% (400 Hz) 100...440 Vdc ± 15% | 24-48 Vdc +/-15% | 100 ...300 Vac LN / 440 V LL ± 15% (50/60 Hz) 80...120 Vac LN ± 15% (400 Hz) 100...440 Vdc ± 15% |
| | Frequency | 50 - 60 - 400 Hz (80-120 V LN) | - | 50 - 60 - 400 Hz (80-120 V LN) |
| | Max. consumption | < 20 VA < 6 W | < 4 W | < 26 VA < 10 W |
| | Recommended protection | 1 A | | |
| Number of monitored feeders | | 12 | | |
| Sequential or simultaneous feeder monitoring | | Simultaneous | | |
| Feeder resistance measurement range | | 100 Ω to 250 kΩ | | |
| Feeder capacitance measurement range | | 0.1 to 15 µF | | |
| Fault alarm thresholds | | 200 Ω to 200 kΩ | | |
| Measurement filtering time | | 5s or 40s or 400s | | |
| Fault alarm delay setting | | 0s - 7200s | | |
| Transient insulation fault capture | | Yes, LCD Display | | |
| Graphical display of R over 1h or 1 day | | Yes | | |
| Time-stamped fault event log | | Yes | | |
| Characteristics and Performance | | | | |
| Self-test | | Manual / Automatic | | |
| Detection of toroid's connection | | Manual / Automatic | | |
| Detection of IM400 injection current | | Permanent | | |
| Alarm relay | Quantity | 1 | | |
| | Type of contact | Changeover | | |
| | Breaking capacity AC | 250 Vac / 6A | | |
| | Breaking capacity DC | 48 Vdc / 1 A, 3 mA min. load | | |
| Setting | | Failsafe or Standard | | |
| Communication port | | Modbus RS485 | | |

Advanced Insulation Fault Locators

General Characteristics

| | IFL12MC | IFL12LMC | IFL12MCT |
|-------------------------------------|----------------------------|--|----------------------------|
| Human Machine Interface | | LCD Display | |
| Feeder resistance value displayed | | 100 Ω to 250 kΩ | |
| Feeder capacitance value displayed | | 0.1 μF to 15 μF | |
| Display languages | | En, Fr, Es, Pt, Zh, It, De, Ru | |
| Installation | | | |
| Cable or logical pairing with IM400 | | Unnecessary | |
| Protection degree (Front/Rear) | | IP54 / IP20 | |
| Overtoltage category | | 300 V OVC3 / 600 V OVC2 | |
| Pollution degree (Front/Rear) | | 2 | |
| Operation temperature | | -25°C to +70°C | |
| Storage temperature | | -40°C to +85°C | |
| Maximum altitude | | 3000 m | |
| Climatic acc. IEC60721 | | 1K22 / 2K11 / 3K24 | |
| Weight | | 0.305 kg | |
| Mechanical acc. IEC60721 | | 1M11 / 2M4 / 3M11 | |
| Relative humidity | | ≤92% | |
| IEC / UL Compliance | | EN/IEC 61557-9 EN/IEC 61557-15 IEC61010-1 IEC61326-2-4 UL61010-1 | |
| Marine certification | Yes | N/A | Yes |
| Compatibility | | | |
| With current IMDs | | IM400, IM400L, IM400C | |
| With older IMDs | | XM200, XM300, XML3xx | |
| With IM400 operating modes | Control, Power and M-RW-PV | Control, Power | Control, Power and M-RW-PV |
| With toroid's | | TA30, PA50, IA80 MA120, SA200, GA300 TOA80 and TOA120 | |
| With IFL12VA1T Voltage Adaptor | Compatible | Not compatible | Compatible |
| With PHT1000 Voltage Adaptor* | | Compatible | |
| Gateways and supervision | | PAS600, PAS800, PME | |

* From 480 to 1000 Vac if IFL12 and IM400 are connected through a common PHT1000.

Insulation Fault Locator for Healthcare Facilities



Functions

- Once a network alarm has been triggered by an insulation fault, the faulty feeder needs to be located in critical locations such as operation theatres and Group 2 medical premises.
- When associated with the IM10-H, IM15H, or IM20-H, the IFL12-H series simultaneously and automatically monitors up to 12 feeders and detects an insulation fault according to the alarm threshold.
- In case of an insulation fault on any feeder, the IFL12-H triggers an alarm via the output contact relay and through the Modbus RS485 communication port.

Main Features

- Each feeder has its own alarm threshold.
- Fast response time: 5 seconds.
- Intermittent insulation fault reporting.
- Large screen and interactive human-machine interface to ease operation and maintenance.
- Displays product status according to standard.
- Measures and displays each feeder's insulation resistance from 100Ω to 250 kΩ.
- Stand-alone device with no wire or logical connection to the insulation monitoring device, greatly simplifying installation.
- Compatible with a range of current transformers.
- In case of existing IT earthing installation, possibility to re-use existing Current Transformers to simplify installation and reduce downtime.
- Unlimited number of IFL12 per IMD for installation scalability.
- Fast dedicated commissioning procedure.
- User-friendly LCD HMI in 8 languages.
- Communication to supervision via Modbus RS485 port, allowing remote configuration and reporting of real-time data and alarms.
- Timestamped event log.



EN/IEC61557-9
IEC61010-1
UL 61010-1
IEC61326-2-4
IEC60364-7-710



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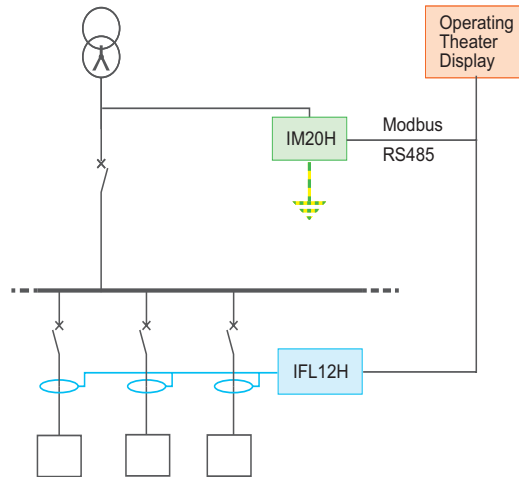


Applications

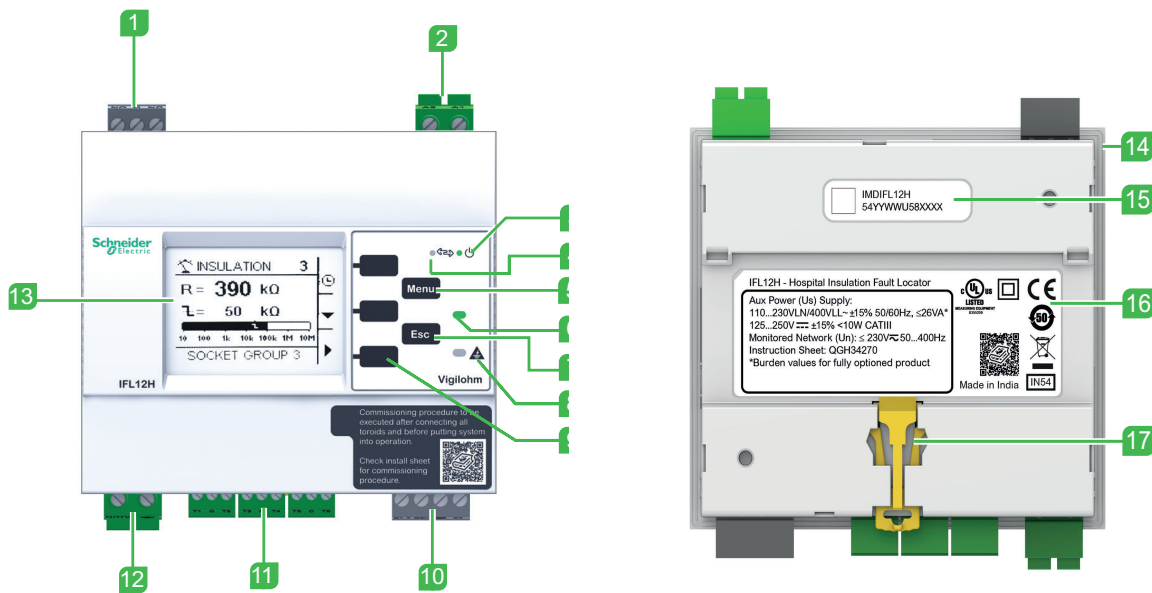
- For Group 2 medical premises, such as operating theaters, intensive care units, and recovery rooms, designed as per IEC60364-7-710, where ungrounded networks are used and where automatic insulation fault location is required.
- Strongly recommended in networks where a medical IT system is used to supply multiple rooms or locations.

Insulation Fault Locator for Healthcare Facilities

Example of Architecture



Physical Description



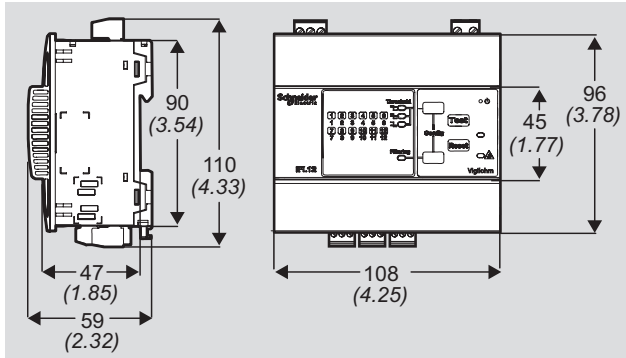
- 1 Alarm relay
- 2 Auxiliary power supply
- 3 Product status LED
- 4 Communication LED
- 5 Menu button
- 6 No alarm LED
- 7 Esc button
- 8 Alarm LED
- 9 Contextual menu buttons

- 10 RS-485 communication
- 11 12 toroid connections
- 12 Voltage input
- 13 LCD screen
- 14 Gasket
- 15 Commercial reference and manufacturing data
- 16 Label
- 17 DIN mounting clip

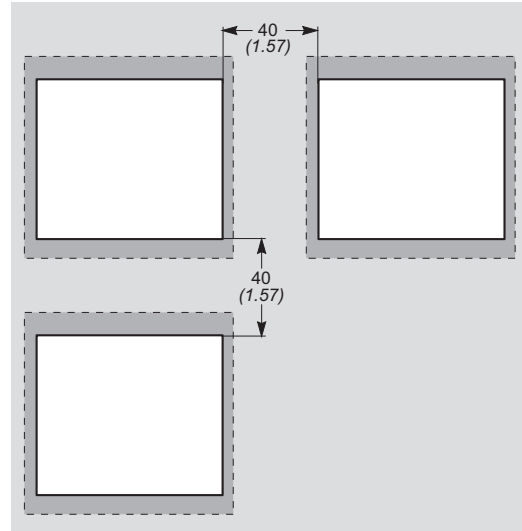
Insulation Fault Locator for Healthcare Facilities

Dimensions (mm)

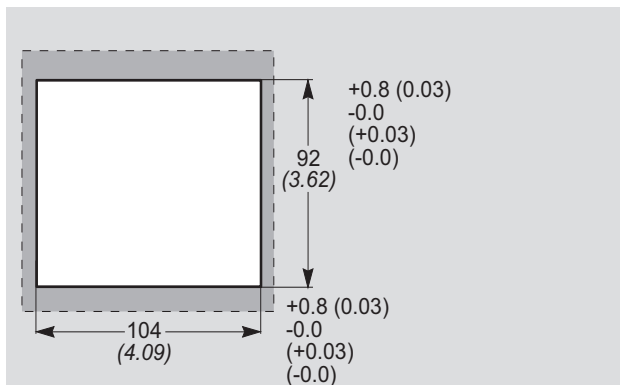
Dimensions (mm)



Minimum clearance between flush mounted devices mm / (inch)

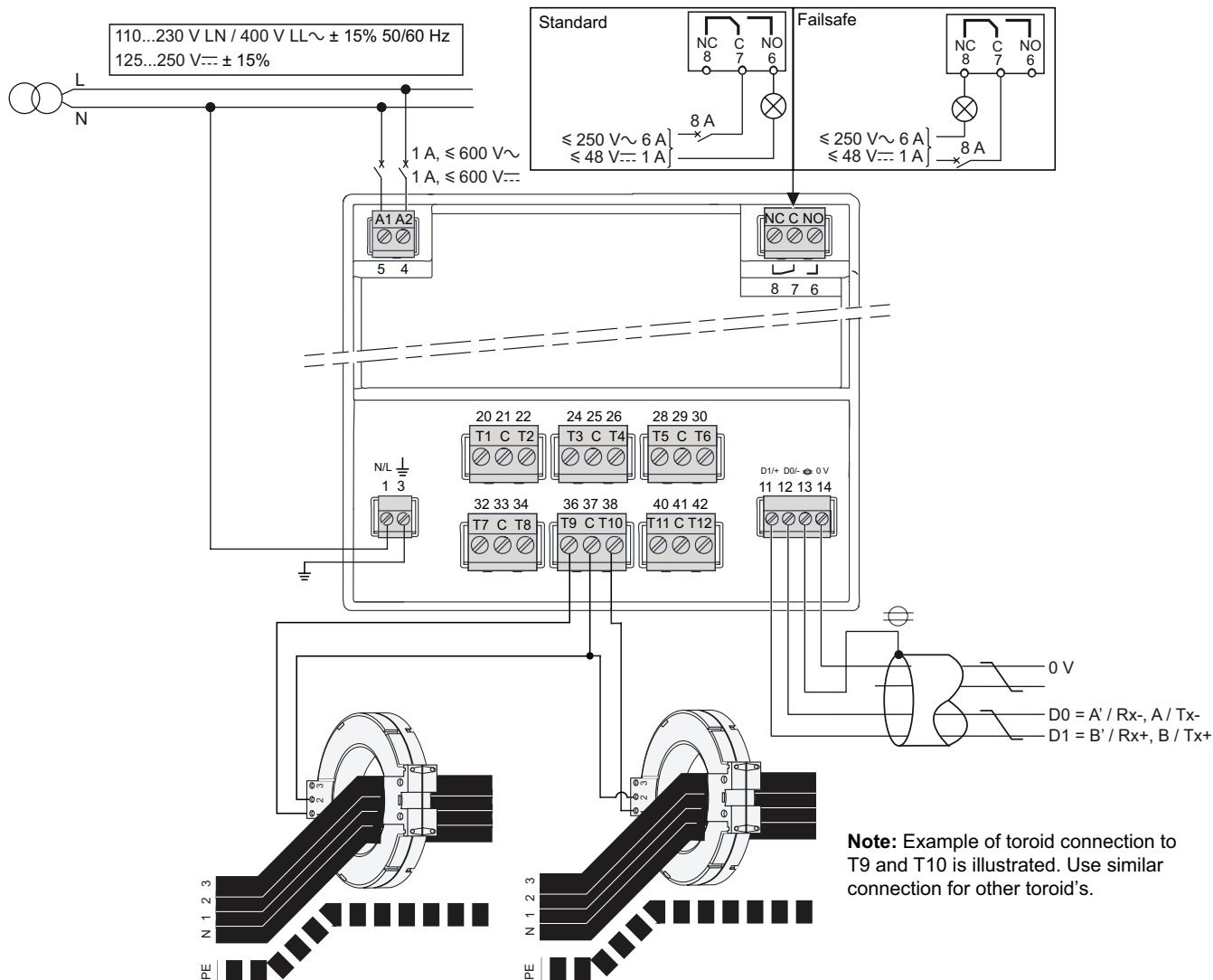


Cut-out for flush mount mm / (inch)



Insulation Fault Locator for Healthcare Facilities

Connection



| {T1, C, T2}, {T3, C, T4}, {T5, C, T6}, {T7, C, T8}, {T9, C, T10}, {T11, C, T12} | 1 conductor - 1.5 mm ² (16 AWG) 2 conductors - 0.75 mm ² (18 AWG) | 7mm (0.28 in) ± 1 mm (0.040 in) | ∅ 2.5 mm (7/64 in) | 0.22 - 0.25 Nm (1.9 - 2.2 in lb) |
|---|--|---------------------------------|--------------------|----------------------------------|
| A1, A2 | 0.2 - 2.5 mm ² (24 - 14 AWG) | 7mm (0.28 in) ± 1 mm (0.040 in) | ∅ 3 mm (1/8 in) | 0.5 - 0.6 Nm (4.4 - 5.3 in lb) |
| NC, C, NO | 0.2 - 2.5 mm ² (24 - 14 AWG) | 7mm (0.28 in) ± 1 mm (0.040 in) | ∅ 3 mm (1/8 in) | 0.5 - 0.6 Nm (4.4 - 5.3 in lb) |
| N/L, \perp | 0.82 - 3.31 mm ² (18 - 12 AWG) | 7mm (0.28 in) ± 1 mm (0.040 in) | ∅ 3 mm (1/8 in) | 0.5 - 0.6 Nm (4.4 - 5.3 in lb) |
| +, -, ∅, C | 0.13 - 0.82 mm ² (26 - 18 AWG) | 7mm (0.28 in) ± 1 mm (0.040 in) | ∅ 3 mm (1/8 in) | 0.5 - 0.6 Nm (4.4 - 5.3 in lb) |

Insulation Fault Locator for Healthcare Facilities

General Characteristics

| | | IFL12H |
|--|------------------------|---|
| Commercial Reference | | IMDIFL12H |
| Application | | Group II medical premises |
| Network to Monitor | | |
| Network earthing system | | Ungrounded (IT) |
| Network type | | 1P+N |
| Network Voltage up to | | 230 Vac |
| | | 230 Vdc |
| Network capacitance up to | | < 5 μ F |
| Network application | | Low disturbance |
| Insulation Fault Locators | | |
| Power supply | Voltage | 110- 230 Vac +/-15% 125 - 250 Vdc +/-15% |
| | Frequency | 50/60 Hz |
| | Max. consumption | <25 VA <10 W |
| | Recommended protection | 1 A |
| Number of monitored feeders | | 12 |
| Sequential or simultaneous feeder monitoring | | Simultaneous |
| Feeder resistance measurement range | | 100 Ω to 250 k Ω |
| Feeder capacitance measurement range | | Not compatible |
| Fault alarm thresholds | | 50 Ω to 200 k Ω |
| Measurement filtering Time | | < 5 sec |
| Fault alarm delay setting | | Not compatible |
| Transient insulation fault capture | | Yes |
| Graphical display of R over 1h or 1 day | | Not compatible |
| Time-stamped fault event log | | Yes |
| Characteristics and Performance | | |
| Self-test | | Manual / Automatic |
| Detection of toroid's connection | | Manual / Automatic |
| Detection of IM400 injection current | | Permanent |
| Alarm relay | Quantity | 1 |
| | Type of contact | Changeover |
| | Breaking capacity AC | 250 Vac / 6 A |
| | Breaking capacity DC | 48 Vdc / 1 A , 3 mA min. load |
| | Setting | Failsafe or Standard |
| Communication port | | Modbus RS485 |

General Characteristics

| | IFL12H |
|------------------------------------|--|
| Human Machine Interface | LCD Display |
| Feeder Resistance value displayed | Yes |
| Feeder Capacitance value displayed | - |
| Display languages | En, Fr, Es, Pt, Zh, It, De, Ru |
| Installation | |
| Cable or Logical pairing with IMD | not needed |
| Protection Degree (Front/Rear) | IP54 / IP20 |
| Overvoltage Category | III |
| Pollution Degree | 2 |
| Operating temperature | -25°C to +55°C |
| Storage temperature | -40°C to +85°C |
| Maximum altitude | 3000 m |
| Climatic acc. IEC60721 | 1K22 / 2K11 / 3K24 |
| Mechanical acc. IEC60721 | 1M11 / 2M4 / 3M11 |
| Relative humidity | ≤92% |
| IEC / UL Compliance | EN/IEC 61557-9 IEC 60364-7-710 IEC 61557-15 IEC 61010-1 IEC 61326-2-4 UL61010-1 |
| Marine certification | Yes |
| Compatibility | |
| With current IMDs | IM10-H, IM15H, IM20-H |
| With older IMDs | Not compatible |
| With Toroids | TA30, PA50, IA80 MA120, SA200, GA300 TOA80 and TOA120 |
| With IFL12VA1T | Not compatible |
| With PHT1000 Voltage Adaptor* | Not compatible |
| Gateways and supervision | PAS600, PAS800, PME |

* From 480 to 1000 Vac if IFL12 and IM400 are connected through a common PHT1000.

Vigilohm MFLK1 and Clamps

Manual Fault Locating Kit



MFLK1



CP15 CP100 and CP50

Functions

- The Manual Fault Locating Kit (MFLK1) is used when a continuous insulation fault is detected on the ungrounded/IT earthing network by the IM400 and the IFL12 if present.
- It will locate the continuous fault, whether it is on the load or on the power supply cable.
- The MFLK1 is usually used with permanent IFL12 fault locators to help manually find the exact location of a fault.
- MFLK1 is easily used over the length of the network as it displays a percentage of fault current consumption.

You can quickly assess whether the fault is upstream or downstream of your measurement point. The MFLK1 also ensures continuity of service on the installation while the fault is being located.

Main Features

- Portable, with a power autonomy of up to 24 hours.
- Adaptable to the fault type via its calibration.
- Independent from the network during measurements; the kit does not need to be physically connected to the electrical installation.
- Calibration and quick, accurate measurement: 15 seconds per measurement, and 45 seconds for calibration.
- Monitoring on each feeder, displaying the resistance and capacity by means of the voltage cable.
- Visual and audio alarms for both the insulation fault or the current probe disconnection.

Applications

- Any IT segment (hospitals, industry, energy production, maritime, rail, airports, oil industry, mining, and so on..).

Usage

An insulation fault is indicated by the IMD:

1. If the network includes automatic IFL12s, the IFL12 will display the network feeder where the insulation fault is located.
2. If no IFL12 monitors the sub-feeders, then install the kit under this feeder to calibrate it.
3. Connect the amp clamp to input via its dedicated cable.
4. Calibrate the MFLK1 by connecting the clamp to the faulty feeder as per the IFL12 information. Calibration will take approximately 45 seconds. Once calibrated, the battery will have a life of 24 hours to take the measurements.
5. Take the measurements on each sub-feeder with the same clamp, ensuring that the clamp includes all the active cables, excluding the PE. Each measurement will take approximately 30 seconds.

Compatible Auxiliaries

- The measurements are taken by means of three-current clamps supplied separately: CP15, CP50, and CP100 for cable diameters up to 12 mm, 44 mm, and 66 mm respectively.
- Requires network monitoring by an IM400 or XM300 to replace the fitted IMD.

AC/DC



cUL US LISTED



IEC61010-1
IEC61010-2-032
IEC61010-2-031
600 VRMS, Category III, Pollution degree 2
EN 61326



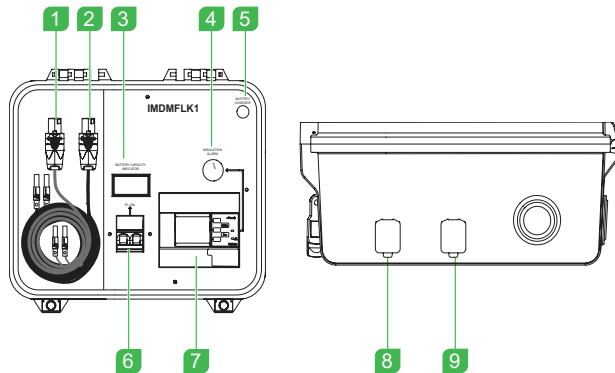
Scan here to know more about the product.



Vigilohm MFLK1 and Clamps

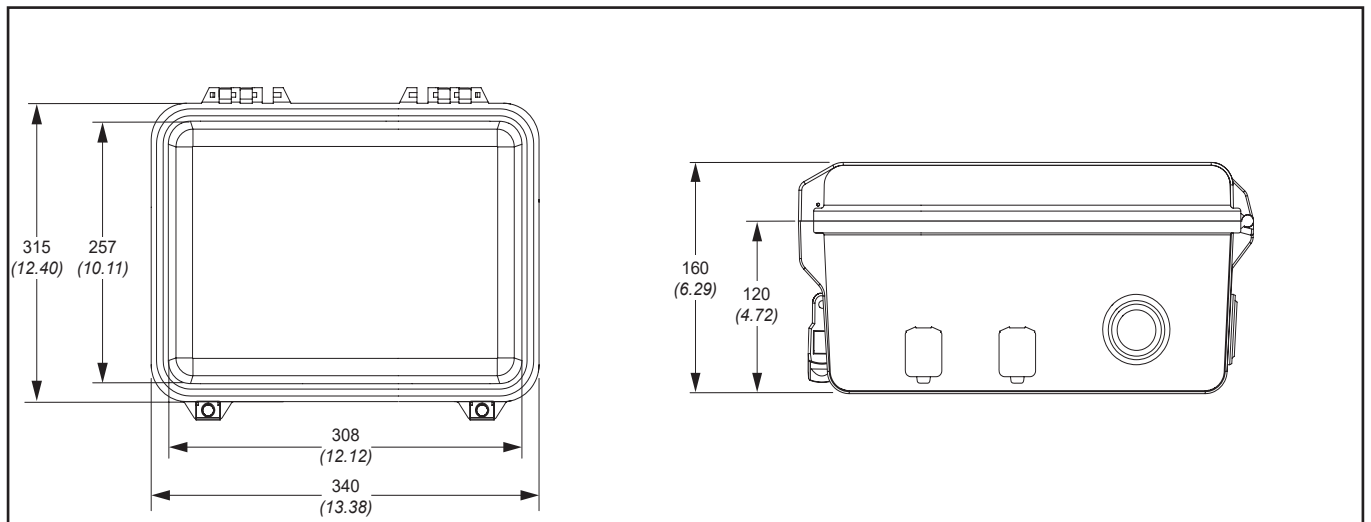
Manual Fault Locating Kit

Physical Description



- A** Connection cable to probes for CP15, CP50 or CP100
- B** Connection cable to voltage input socket not connected here
- C** Battery charge level
- D** LED and buzzer
- E** Power supply socket
- F** Fault locator
- G** On / off switch
- H** CP15, CP50 and CP100 clamp connectors
- I** Voltage input socket connector

Dimensions (mm)



General Characteristics

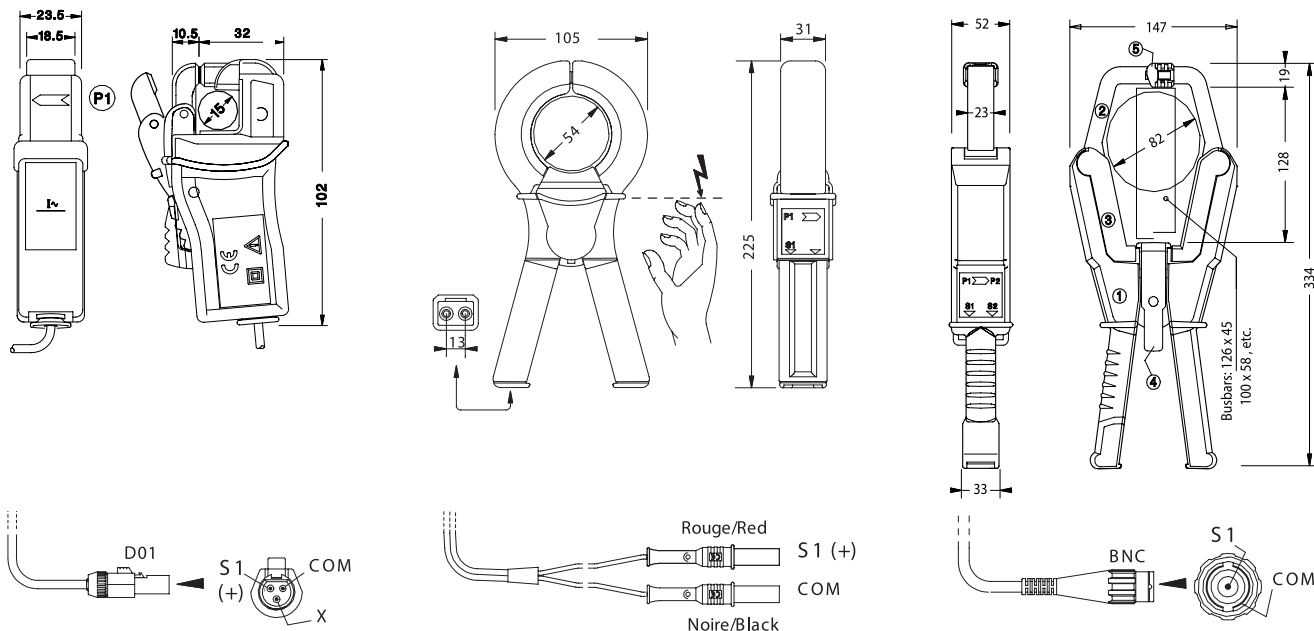
| | MFLK1 |
|--|--|
| Commercial Reference | IMDMFLK1 |
| Features | |
| Type of installation to monitor | < 230 Vac/Vdc, network-connected input voltage < 1000 Vac/Vdc, input voltage without network connection |
| Compatibility with | IM400 series |
| Connectible auxiliary | 1 clamp, from CP15, CP50 and CP100 |
| Kit life | 24 h |
| Charging time | 7 h |
| Calibration time | 45 secs |
| Measurement time | 15 secs |
| Weight | 7 kg |
| Dimensions | 340 x 315 x 160 mm |
| Operating temperature ness | -20 to +45°C |
| Storage temperature | -20 to +60°C |
| Humidity (non-condensed) // leak tight | 5-95% |
| Altitude | < 3000 m |
| Auxiliary power supply (clamp) | 24 Vdc |
| Consumption | < 4 W |
| Network max. capacity | 20 µF |

Vigilohm MFLK1 and Clamps

Manual Fault Locating Kit

Physical Description and Dimensions (mm) Clamps

The MFLK1 mobile locating kit works in combination with the clamps below. Its compact design, leak tightness and 24-h battery enable it to be easily carried around long networks, and on various types of terrain.



General Characteristics

| | CP15 | CP50 | CP100 |
|---|----------------------|-------------------|-------------------|
| Commercial Reference | IMDCP15 | IMDCP50 | IMDCP100 |
| General | | | |
| Maximum cable diameter | 12 mm | 43.5 mm | 66 mm |
| Dimensions | 102 x 32.5 x 23.5 mm | 225 x 105 x 31 mm | 334 x 147 x 52 mm |
| Weight | 0.165 kg | 0.650 kg | 1.900 kg |
| Frequency | AC and DC networks | | |
| Operating temperature | -10 to +55°C | | |
| Storage temperature | -20 to +70°C | -40 to +70°C | |
| Humidity (non-condensed) // leaktightness | 15-85% | | ≤ 85% |
| Operating voltage | 600 Vac/Vdc | | |
| Maximum current carried by cable | 250 A RMS | 1200 A RMS | 3600 A RMS |

Earth Leakage Current Detectors



A type closed toroid: PA30. A type closed toroid: MA120.



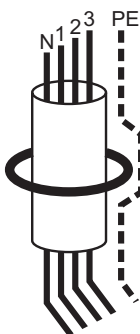
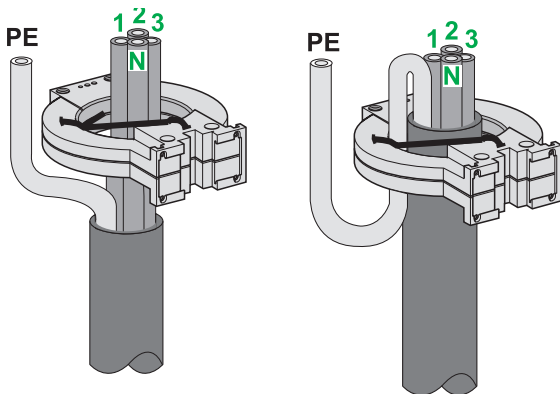
A type closed toroid: IA80. OA type split toroid: TOA80.



IEC61010-1
UL 61010-1
IEC61326-4



Scan here to know more about the product.



Functions

- The Vigilohm Toroids are used with the Vigilohm IFL12 Insulation Fault Locators for the location and measurement of insulation faults on ungrounded/IT earthing systems.
- They measure the injected component from the Vigilohm IM400 Insulation Monitoring Device and transmit a proportional signal to the associated IFL12 fault locator.
- Closed toroids (A type) are suitable for new installations and extensions.
- Split toroids (OA type) are suitable for renovated installations and extensions.

Compatible Auxiliaries

- The Vigilohm Toroids are compatible with all Vigilohm Insulation Fault Locators: IFL12, IFL12L, IFL12C, IFL12MC, IFL12MCT, IFL12LMC, and IFL12H.
- Previous Vigilohm Insulation Fault Locators are also compatible with these toroids: XD312H (compatible with TA30), XD301, XD312, XD308C, XL308, XL316, XML308, and XML316.
- To confirm compatibility of toroids with older products, contact your technical support.

Cable Installation

Usage guidelines with a Vigilohm Insulation Fault Locator:

- On an AC network, the toroid must include all phases (and the neutral if it is distributed).
- On a DC network, the toroid must include both polarities.
- The toroid must not include the PE conductor.
- The direction of the toroid does not matter.

N123 PE Line overcurrent immunity

Line overcurrent, due to motor starting or transformer powering, can cause unintentional fault detection. Several simple precautions can be taken to avoid this inconvenience. When combined, their efficiency is increased:

- Place the toroid on a straight part of the cable.
- Center the cable in the toroid.
- Use a toroid with a diameter significantly larger than that of the through cable (1.4 x Ø).

Under severe operating conditions, the use of a mild steel sleeve placed around the cable in the core greatly improves immunity:

- Mild steel strip 1/10 mm thick to be wrapped several times around the cable that passes through the toroid (minimum thickness 1 mm).

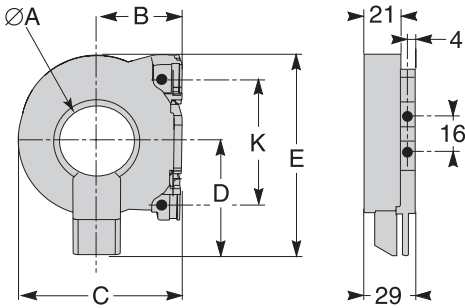
Characteristics of the connection between fault locator and toroid:

- Resistance $\leq 3 \Omega$
- Wire cross-section: from 0.75 mm² to 1.5 mm²
- Max. length: 100 m

Earth Leakage Current Detectors

Dimensions (mm)

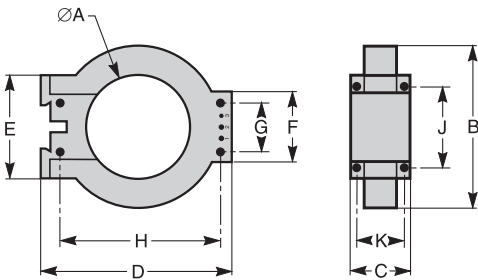
TA30 and PA50



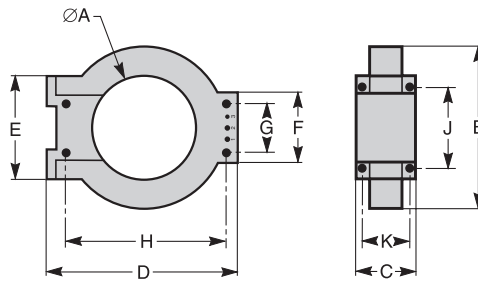
| Type | Dimensions (mm) | | | | | |
|------|-----------------|------|----|----|------|----|
| | ØA | B | C | D | E | F |
| TA30 | 9.4 | 32.5 | 63 | 44 | 74.5 | 50 |
| PA50 | 50.4 | 45 | 88 | 57 | 100 | 60 |

IA80, MA120, SA200, GA300 Toroids

IA80 and MA120



SA200 and GA300



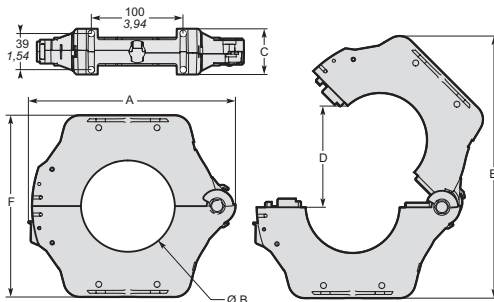
| Type | Dimensions (mm) | | | | | | | | | |
|-------|-----------------|-----|----|-----|-----|----|----|-----|-----|----|
| | ØA | B | C | D | E | F | G | H | J | K |
| IA80 | 80 | 122 | 44 | 150 | 80 | 55 | 40 | 126 | 65 | 35 |
| MA120 | 118 | 164 | 39 | 190 | 140 | - | - | 163 | 125 | 30 |
| SA200 | 196 | 256 | 46 | 274 | 120 | 90 | 60 | 254 | 104 | 37 |
| GA300 | 291 | 360 | 46 | 390 | 120 | 90 | 60 | 369 | 104 | 37 |

TOA80 and TOA120 Toroids

TOA80



TOA120



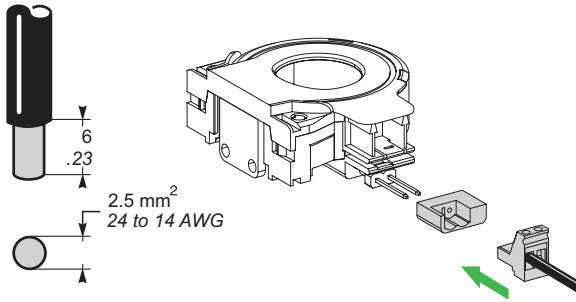
| Type | Dimensions (mm) | | | | | |
|--------|-----------------|-----|----|-----|-----|-----|
| | A | B | C | D | E | F |
| TOA80 | 177 | 80 | 28 | 108 | 235 | 156 |
| TOA120 | 225 | 120 | 50 | 150 | 303 | 205 |

Vigilohm Toroids

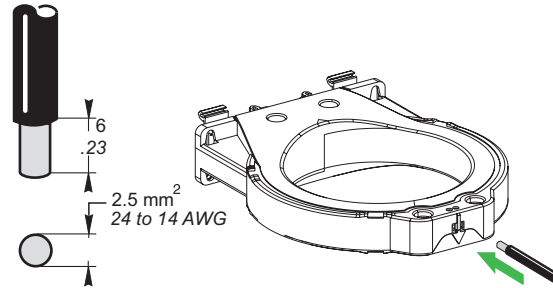
Earth Leakage Current Detectors

Connection

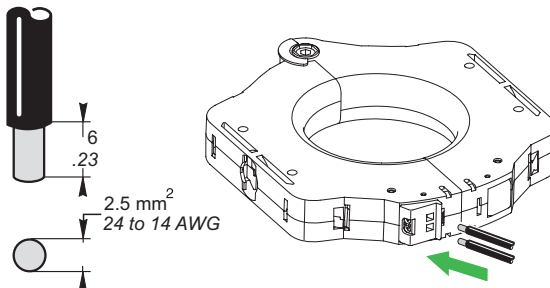
TA30 and PA50 toroids



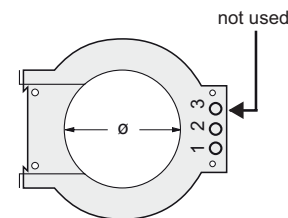
IA80, MA120, SA200 and GA300 toroids



TOA80 and TOA120 toroid



Terminal 3 not used for toroid wiring



Mounting examples for Type A toroids

On rail Ø30 to Ø80 mm



On plate or section Type A Ø30 to Ø200 mm



On cable Ø120 to Ø300 mm



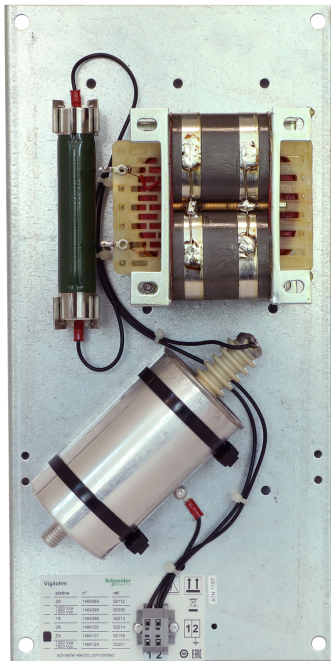
Earth Leakage Current Detectors

General Characteristics

| | A type closed toroid | | TOA type split toroid | |
|--|-------------------------------------|----------|-----------------------|--------|
| Commercial Reference | TA30: 50437 | | TOA80: 50420 | |
| | PA50: 50438 | | | |
| | IA80: 50439 | | | |
| | MA120: 50440 | | TOA120: 50421 | |
| | SA200: 50441 | | | |
| | GA300: 50442 | | | |
| General Characteristics | | | | |
| Insulation voltage U_i | 1000 V | | | |
| Operating-temperature range | - 35 °C / +70 °C | | | |
| Storage-temperature range | -55 °C / +85 °C | | | |
| Degree of protection | IP30 (connections IP20) | | | |
| Electrical Characteristics | | | | |
| Transformation ratio | 1/1000 | | | |
| Overvoltage category | 4 | | | |
| Rated impulse withstand voltage U_{imp} (kV) | 12 | | | |
| Dimensions and Weight | | | | |
| TA30 toroid | Ø 30 mm | 0.120 kg | - | |
| PA50 toroid | Ø 50 mm | 0.200 kg | - | |
| IA80 toroid | Ø 80 mm | 0.420 kg | - | |
| MA120 toroid | Ø 120 mm | 0.450 kg | - | |
| SA200 toroid | Ø 200 mm | 1.320 kg | - | |
| GA300 toroid | Ø 300 mm | 2.280 kg | - | |
| TOA80 toroid | - | - | 80 mm | 0.9 kg |
| TOA120 toroid | - | - | 120 mm | 1.5 kg |
| Mounting | | | | |
| DIN rail mounting | TA30, PA50, IA80, MA120, SA200 | | TOA80, TOA120 | |
| Plain, slotted or profiled plate | IA80, MA120, SA200, GA300 | | TOA80, TOA120 | |
| Environment | | | | |
| Damp heat, equipment not in service (IEC 60068-2-30) | 28 cycles +25 °C / +55 °C / RH 95 % | | | |
| Damp heat, equipment in service (IEC 60068-2-56) | 48 hours, environment category C2 | | | |
| Salt mist (IEC 60068-2-52) | KB test, severity 2 | | | |
| Degree of pollution (IEC 60664-1) | 3 | | | |

Vigilohm ZX Plate

Earthing Impedance



Functions

The ZX is an earthing impedance to be connected between an ungrounded/IT earthing network (transformer's neutral) and the ground.

- It prevents voltage variations that can cause damage to some devices present on the network (such as PLCs, modems, power supplies when they are near the transformer).
- It allows residual currents in the event of a fault, to loop back through the transformer and thus be seen by the main residual current protection.
- The use of ZX earthing impedance is not mandatory, but it is particularly recommended for small IT networks (limited length of cable).

Main Features

- Combination of R, L, C components.
- At 50Hz, ZX's impedance is 1500 Ω . At the injection frequency of a Vigilohm Insulation Monitoring Device, ZX's impedance is high and does not affect the Vigilohm measurements.

Application

- Small ungrounded networks below 500 Vac.
- Not compatible with healthcare and photovoltaic applications.

Compatible Products

- Compatible with the use of any Insulation Monitoring Device.
- To be connected in parallel with the Insulation Monitoring Device and the Cardew surge limiter.

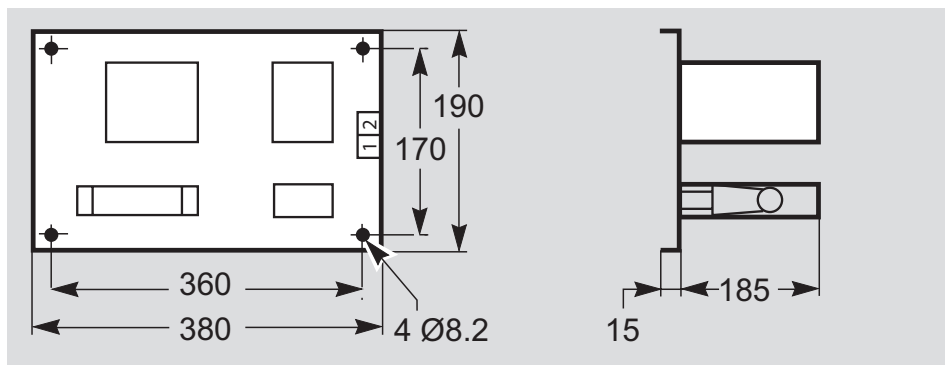


IEC61010-1
UL 61010-1
IEC61326-4



Scan here
to know more
about the product.

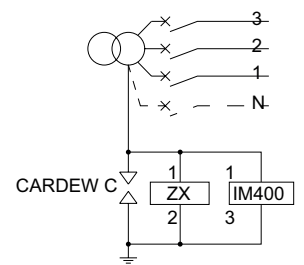
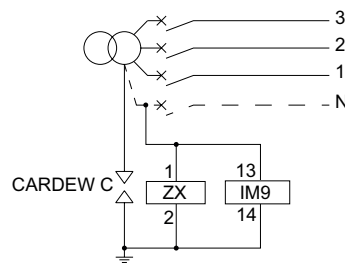
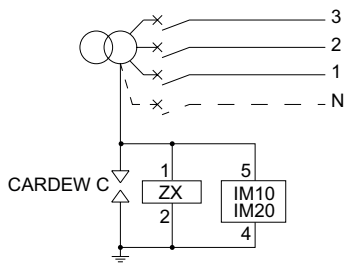
Dimensions (mm)



Vigilohm ZX Plate

Earthing Impedance

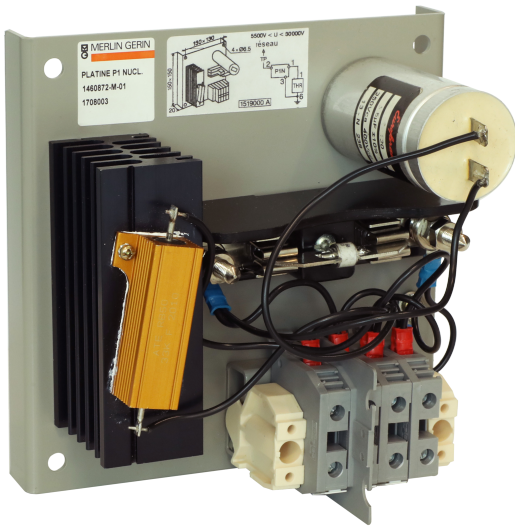
Connection



General Characteristics

| | ZX Impedance |
|--|--------------------|
| Commercial Reference | 50159 |
| Type of Network to be Monitored | |
| AC Voltage range | 0...500 Vac |
| Grounding arrangement | IT |
| Product Performances | |
| Impedance | 1500 Ω at 50 Hz |
| Weight | 1,75 kg |
| Mounting | Wall mounted, grid |

Vigilohm P1N Plate Ground Adaptor



Functions

- Used in combination with a Vigilohm IM400THR or IM400LTHR to monitor the insulation of medium-voltage ungrounded/ IT earthing networks.
- Filters the AC signal and protects the IM400THR for network overvoltages.
- Mandatory accessory.

Compatible Products

- IM400THR and IM400LTHR.
- Used in combination with voltage transformers.



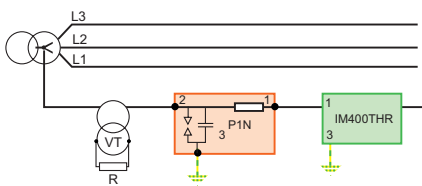
IEC61010-1
UL 61010-1
IEC61326-4



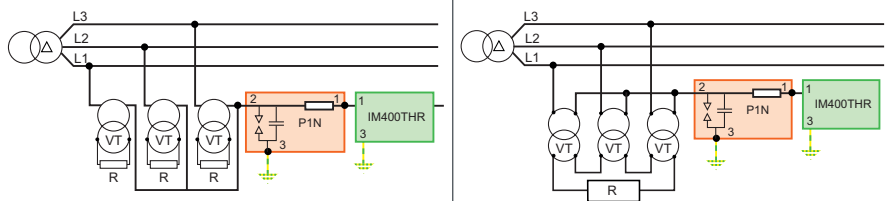
Scan here
to know more
about the product.

Examples of Architecture

Three-phase network with accessible neutral

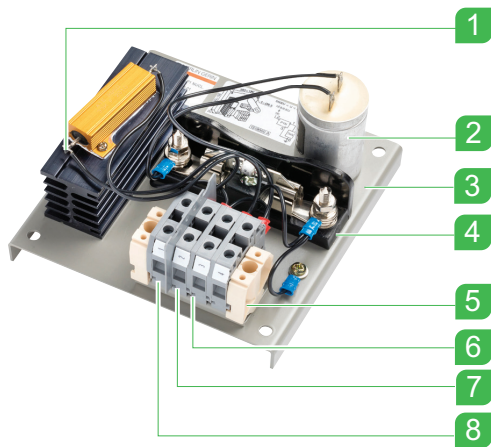


Three-phase network without neutral accessible



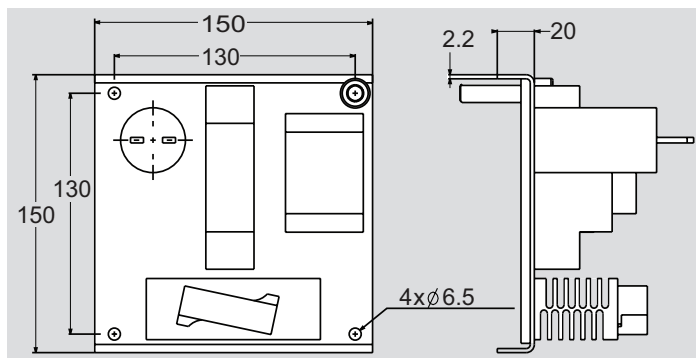
Vigilohm P1N Plate Ground Adaptor

Physical Description



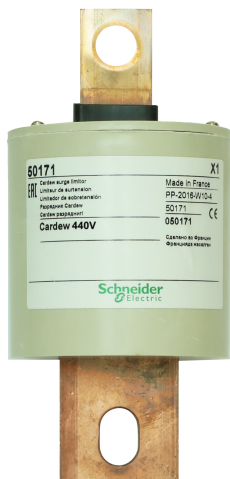
- 1 Filter resistor
- 2 Filter capacitor
- 3 Mounting plate
- 4 Gas discharge tube
- 5 Terminal block
- 6 Terminal 3 to ground
- 7 Terminal 2 to voltage transformer
- 8 Terminal 1 to IM400THR

Dimensions (mm)



General Characteristics

| | | P1N Ground Adaptor |
|--|----------------------------|---|
| Commercial Reference | | 1460872 |
| Type of Network to be Monitored | | |
| AC (max phase to phase voltage) | IM400 Connected to neutral | assigned voltage of the voltage transformer |
| | IM400 Connected to phase | assigned voltage of the voltage transformer |
| DC (max line voltage) | | Not compatible |
| Grounding arrangement | | IT / ungrounded medium voltage |
| Product Performances | | |
| Weight | | 1 kg |
| Mounting | | Wall mounted |
| Environment | | |
| Overvoltage category | | 300 V/OVC3 / 600 V/OVC2 |
| Temperature strength | For operation | -25°C to +55°C |
| Altitude max. | | 3000 m |



Functions

Cardew surge limiters can be used on ungrounded/IT earthing networks and installed at the output of the MV/LV transformer to protect from overvoltages that can be due to:

- Internal breakdown of the MV/LV transformer.
- Lightning strikes on the upstream MV network.

Main Features

- Cardews are required (mandatory in some countries) when one wants to protect IT networks downstream of an MV/LV transformer.
- Not required downstream of an LV/LV transformer.
- Can withstand the short-circuit current of the transformer.
- A Cardew consists of two conductive elements separated by an insulating film. A high-energy overvoltage will cause the internal insulating film to melt, allowing the overvoltage to be evacuated to the ground. Once the internal insulating film has melted, it causes an insulation fault on the IT network, detected by the Insulation Monitoring Device. The Cardew cartridge then needs to be replaced.

Compatible Products

It is recommended to monitor the Cardew with an insulation fault locator such as IFL12; so that an insulation fault due to the Cardew can be immediately identified, and its cartridge replaced.

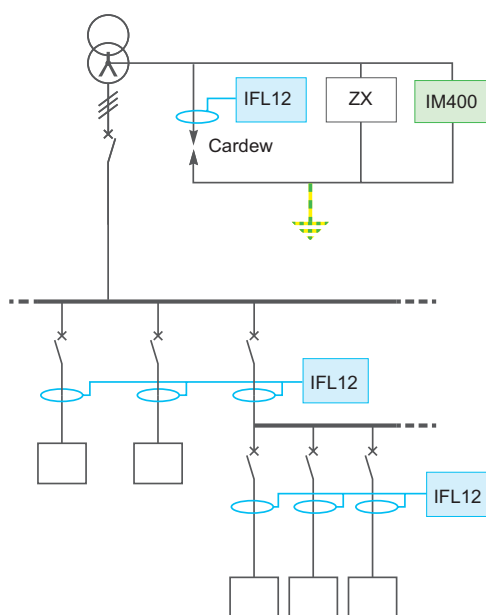


IEC 60950
NFC 63-150
NFC 15-100
Mandatory in some countries



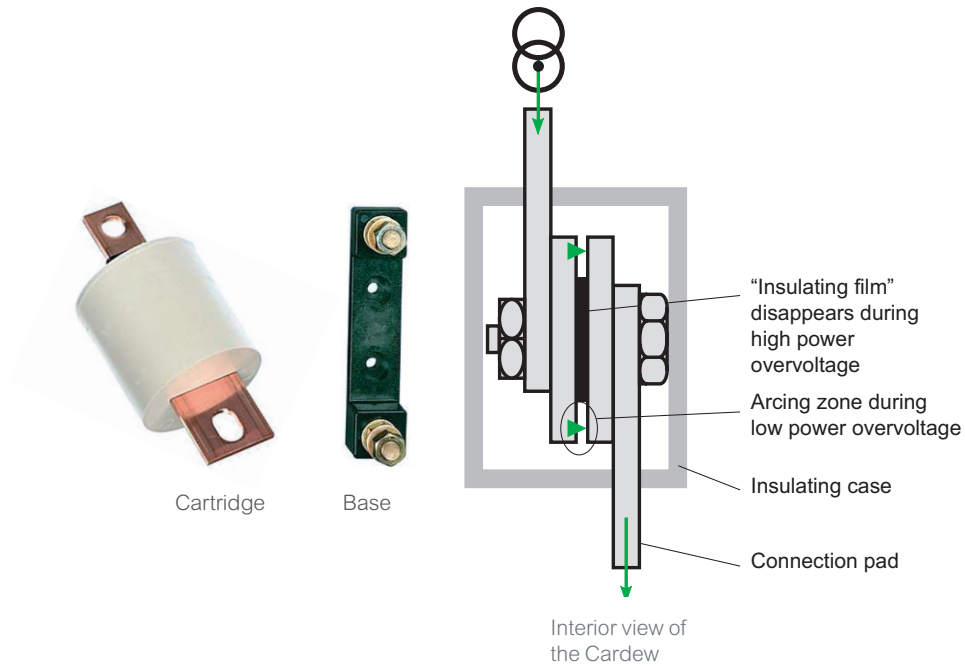
Scan here to know more about the product.

Example of Architecture

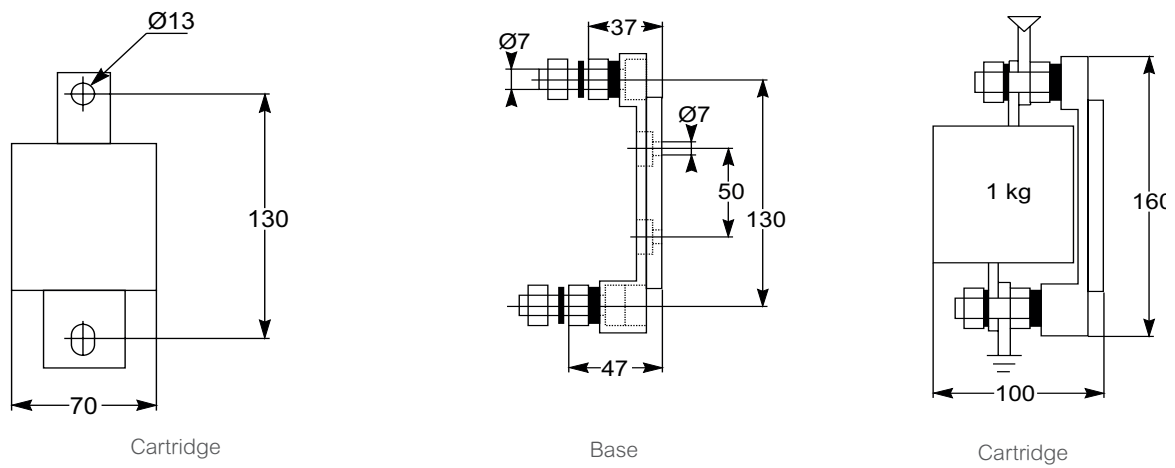


Vigilohm Cardew C Surge Limiter

Physical Description



Dimensions (mm)



Connection

- Cardew must be connected as close as possible to the MV/LV transformer between neutral and ground, or between a phase and ground if neutral is not accessible.
- Specification of the connecting cable should be the following:
 - Sizing of cable or bar should be adapted to the transformer rating.
 - Connecting conductor should be considered as a protective conductor (PE); the calculation of its cross-sectional area should comply with standards, considering that the protection for this part of the installation is done by protective devices located upstream of the MV/LV transformer.
 - According to IEC 60364 standard, calculation formula of the size of the PE conductor is: $S = \sqrt{I^2 t / k}$, where S is the cross-sectional area of the PE conductor in mm², I is the fault current, t is the operating time of the protective device and k is a co-efficient that depends on the metal and insulation material used for the conductor.



To know more :

Refer to the technical publication: The IT earthing system (unearthed neutral) in LV)

General Characteristics

| | | Cardew 440V | Cardew 660V | Cardew 1000V |
|--|----------------------|--|----------------------|----------------------|
| Commercial Reference | | 50171 | 50172 | 50183 |
| Cardew Base | | 50169 | | |
| Type of Network to be Monitored | | | | |
| Max phase to phase voltage | Connected to neutral | 380 V < U ≤ 660 V | 660 V < U ≤ 1000 V | 1000 V < U ≤ 1560 V |
| Ui arcing voltage | | 700 V < Ui ≤ 1100 V | 1100 V < Ui ≤ 1600 V | 1600 V < Ui ≤ 2400 V |
| Product Performances | | | | |
| Internal impedance | | 10 ⁻¹⁰ Ω | | |
| Non-arcing voltage at 50 Hz | | < 1.6 x nominal voltage | | |
| Arcing voltage at 50 Hz | | > 2.5 x nominal voltage | | |
| Maximum current after arcing | | 40 kA/0.2 s | | |
| Mounting | | Cable or bar with a size adapted to the transformer rating | | |
| Weight | | 1 kg | | |
| Environment | | | | |
| Temperature strength | For operation | -5°C to +40°C | | |
| | For storage | -25°C to +70°C | | |

Vigilohm HRP

Hospital Remote Panel



Functions

The HRP (Hospital Remote Panel) is an interface designed for installation in critical medical rooms, such as operating theaters. It provides real-time information to medical staff about:

- The existence of an insulation fault within the medical room.
- The existence of an electrical fault due to transformer over load or overheating.

The HRP also facilitates the easy triggering of the regular insulation tests required by the IEC 60364-7-710 standard.

Main Features

The HRP includes the following:

- An indicator for insulation fault (yellow).
- An indicator for electrical fault (red).
- An indicator for correct operation signal light (green).
- A push button to trigger an insulation test (an insulation fault of 39 kΩ is generated).
- A push button to stop the alarm buzzer. Alarm volume can be adjusted from the HRP.

Applications

Critical Group 2 medical premises as per IEC 60364-7-710, such as operating theaters, intensive care units, and recovery rooms.

Compatible Auxiliaries

The HRP works in association with the IMD range dedicated to hospitals, such as the IM10-H, IM15H, and IM20-H.



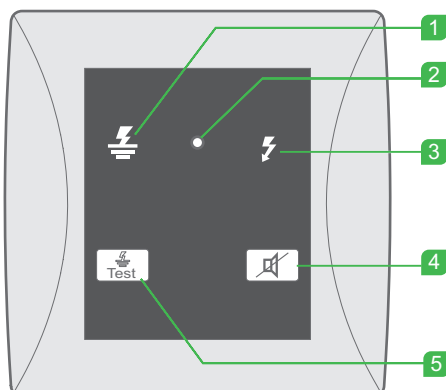
IEC61010-1
 UL 61010-1
 IEC61326-4
 IEC60364-7-710
 EN/IEC61557-8
 IEC60601-1



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 about the product.



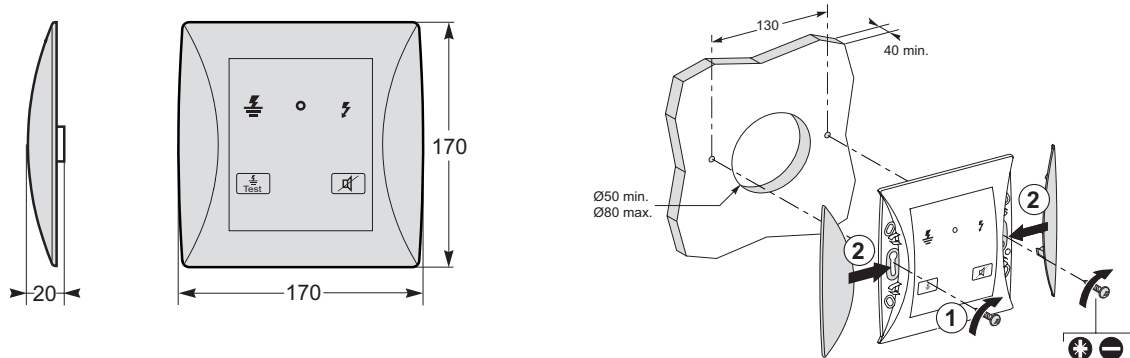
Physical Description



- 1 Insulation fault indicator
- 2 HRP operation indicator
- 3 Electrical fault indicator (caused by overload, overheating of transformer or circuit-breaker trip)
- 4 Button to stop alarm buzzer
- 5 Insulation test button

Vigilohm HRP Hospital Remote Panel

Dimensions (mm)



General Characteristics

| | | HRP |
|-----------------------------------|-----------------|-------------------|
| Commercial Reference | | 50168 |
| Mechanical Characteristics | | |
| Weight | | 0.5 kg |
| Case | Plastic | Vertical mounting |
| Degree of protection | | IP54 IK08 |
| Dimensions | Height | 170 mm |
| | Width | 170 mm |
| | Depth | 20 mm |
| Buzzer | Factory setting | 80 db |
| Electrical Characteristics | | |
| Auxiliary supply voltage | 24 Vdc | 65 mA |
| Environment | | |
| Operating temperature | | 0 °C to 40 °C |
| Storage temperature | | -25 °C to +70 °C |
| Maximum relative humidity | | 90 % |
| Altitude | | 2000 m |

Operating Theater Display



Functions

The OTD (Operating Theater Display) is an interface designed for installation in critical medical rooms, such as operating theaters. It provides real-time information to medical staff about:

- The existence and location of an insulation fault within the medical room.
- The existence of an electrical fault due to transformer overload or overheating.
- The tripping of circuit breakers.
- The status of medical gas or UPS.

Main Features

- Simple and intuitive human-machine interface, informing the medical staff about the status of the medical room.
- Messages shown on the OTD can be customized to display specific instructions to the medical staff and ease the understanding of information and actions to take.
- The OTD includes a buzzer to provide a sound signal in case of an alarm. The buzzer can be stopped from the OTD.
- The OTD is based on a Magelis reference HMISCU8A5.

Application

Critical medical premises as per IEC 60364-7-710, such as operating theaters, intensive care units, and recovery rooms...

Compatible Products

The OTD works in association with:

- Insulation Monitor: IM20-H.
- Insulation Fault Locator: IFL12H (up to 4 IFL12H can be connected to an OTD).
- SmartLink to retrieve the position of circuit breakers, and the status of medical gas and UPS.



IEC61010-1
UL 61010-1
IEC61326-4
IEC60364-7-710



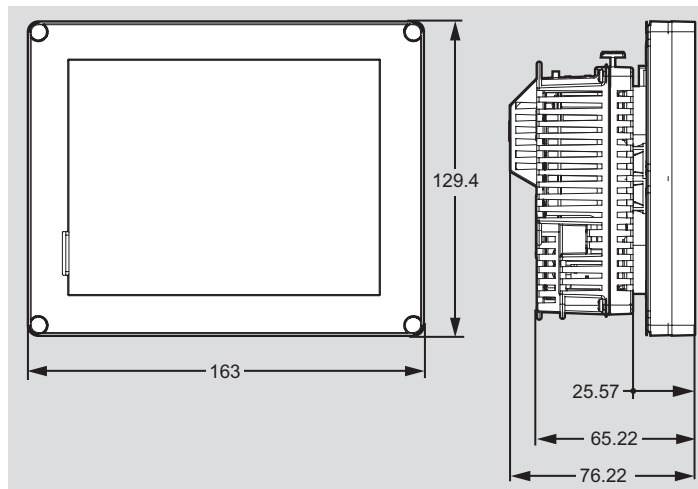
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about the product.



Vigilohm OTD

Operating Theater Display

Dimensions (mm)



General Characteristics

| | | Operating Theater Display |
|-----------------------------------|--------------------------------|---|
| Commercial Reference | | IMDLRDH |
| Product Performance | | |
| Display | Resolution | 320 x 240 pixels QVGA, 65k colors |
| | Display type | 5,7 inch with backlit LED color TFT LCD |
| Display operation | | Touch panel |
| Communication | Protocols | Modbus RS485, Modbus TCP/IP |
| | Ports | 1 RJ45 port for RS485 1 RJ45 port for Ethernet TCP/IP 1 USB 2.0 type mini B port 1 USB 2.0 type A port |
| Mechanical Characteristics | | |
| Protection degree | Front | IP65 |
| | Rear | IP20 |
| Electrical Characteristics | | |
| Power Supply | Auxiliary Power Supply Voltage | 24 V CC (20.4 to 28.8 V CC) |
| | Maximum Consumption | 24 W |
| Environment | | |
| Temperature strength | For operation | 0 °C to 50 °C |
| | For storage | -25 °C to +70 °C |
| Relative Humidity | | 85 % |
| Altitude max. | | 2000 m |



Functions

- Single-phase isolated transformers enabling ungrounded/ IT earthing networks for Group 2 medical premises, as per IEC 60364-7-710.
- Compliant with NF EN 61558-2-15 medical use edition 2001-10: leakage current between the enclosure and the earth is limited to 3.5 mA, limitation of the voltage assigned to the secondary between phases at 250 V – 50 Hz.

Compatible Products

- Insulation Monitoring Devices: IM10-H, IM15H, IM20-H and IFL12H.
- Overheat and overload monitoring can be done by IM15H or IM20-H.

Note: Thermal protection against overload is performed by the temperature sensors embedded in the transformers. A magnetic protection can be used instead of a magnetothermal one for the upstream protection of the transformer.

This solution allows to have continuity of service in case of overload, as the technician can correct the issue without having an interruption of power.

These transformers have an inrush current up to 12 In, and the MA curve is the most appropriate.



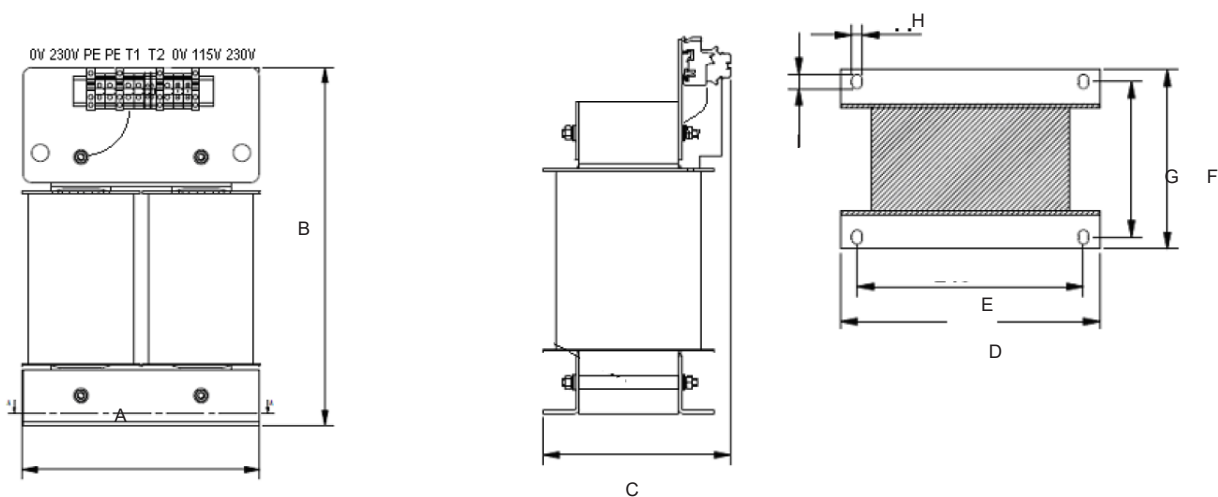
IEC 60364-7-710
IEC 61558-2-15: 2011
GB 19212.1
GB 19212.16-2005



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to know more
about the product.



Dimensions (mm)



General Characteristics

| | Single Phase, Isolated Transformer, 6.3KVA | Single Phase, Isolated Transformer, 8KVA | Single Phase, Isolated Transformer, 10KVA |
|---|--|--|---|
| Commercial Reference | IMD-IT-S63-H | IMD-IT-S80-H | IMD-IT-S100-H |
| Product Performances | | | |
| Rated Power | 6.3 kVA | 8 kVA | 10 kVA |
| Rated supply voltage | 230 V +/- 10% | | |
| Rated output voltage | 230 Vac / 115 Vac | | |
| Rated output current | 27.4 A | 34.7 A | 43.5 A |
| Rated frequency | 50 / 60 Hz +/- 3Hz | | |
| Efficiency | > 96 % | | |
| Short circuit voltage | < 3 % | | |
| No-load losses | 65 W max | 75 W max | 85 W max |
| Winding losses | 150 W max (25°C) | 200 W max (25°C) | 250 W max (25°C) |
| In-rush Current | < 12 Ip | | |
| Leakage current between primary and bracket | < 3,5 mA (when input 230V/50Hz) | | |
| Leakage current between primary and secondary | < 3,5 mA (when input 230V/50Hz) | | |
| Noise | < 50 dB at 1 meter | | |
| Mechanical Characteristics | | | |
| Protection degree | IP00 | | |
| Weight | 72 kg | 79 kg | 97 kg |
| Cooling | AN | | |
| Insulation class | H | | |
| Dimension - A | 280 mm max | | |
| Dimension - B | 427 mm max | | |
| Dimension - C | 210 mm max | 225 mm max | 255 mm max |
| Dimension - D | 275 mm | | |
| Dimension - E | 240 mm +/- 2 | | |
| Dimension - F | 190 mm | 205 mm | 235 mm |
| Dimension - G | 165 mm +/- 3 | 180mm +/- 3 | 210 mm +/- 3 |
| Dimension - H | 11 mm | | |
| Dimension - I | 15 mm | | |
| Environment | | | |
| Temperature - for storage | -25°C to 60°C | | |
| Temperature - for operation | 0°C to 40°C | | |
| Humidity | 20 to 80% RH without dew | | |
| Use category | Indoor | | |
| Altitude | <2000 m | | |

Voltage Adaptors



IM20-1700, IM400-1700C



IFL12VA1T



PHT1000



IM400VA2

Functions

Vigilohm voltage adaptors allow monitoring of the insulation level of networks with a higher voltage level than what the Insulation Monitoring Devices can natively stand.

They are connected between the network and the IMD and lower the voltage level seen by the IMD. They can function in networks with high capacitance value (max 5500 μ F).

Applications

- Industrial sites (IM20-1700, IM400-1700C) to enable Vigilohm on networks up to 1700 Vac or 1000 Vdc.
- Photovoltaic sites (IM400-1700C, IM400VA2).
- Sites with harsh environments (IM400-1700C, IM400VA2 are conformally coated).

Compatible Products

- Vigilohm IMDs: IM20, IM400, IM400L, IM400C.
- Vigilohm IFL12 series with IFL12VA1T: IFL12, IFL12L, IFL12C, IFL12MC, IFL12LMC, IFL12MCT.
- PHT1000 is also compatible with the use of Insulation Fault Locators: IFL12 range (except IFL12H), and former ranges XD301, XD312, XL3xx, XML3xx.

AC/DC

CE

EAC

UL US LISTED

IEC 61010-1
UL 61010-1
IEC 61326-4



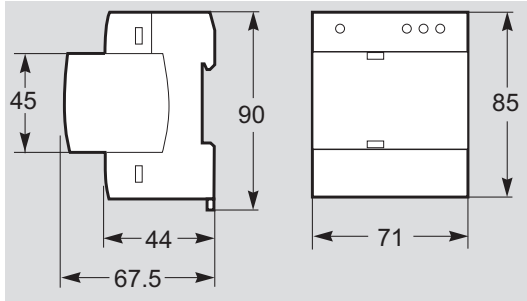
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Vigilohm IM20-1700, IM400-1700C, IM400VA2, PHT1000 and IFL12VA1T

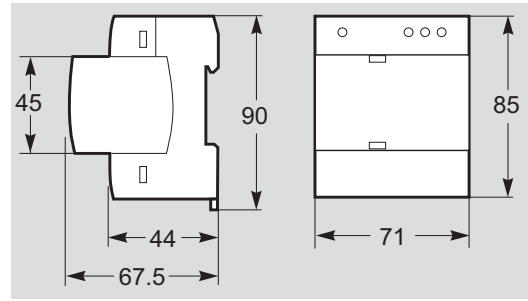
Voltage Adaptors

Dimensions (mm)

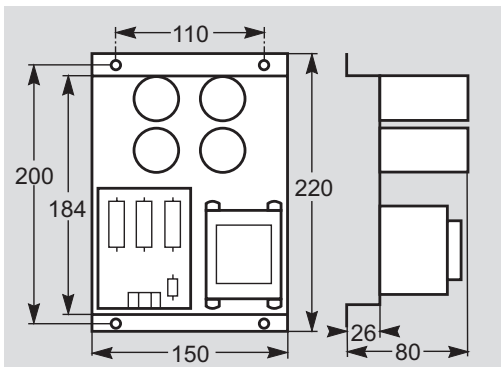
IM20-1700



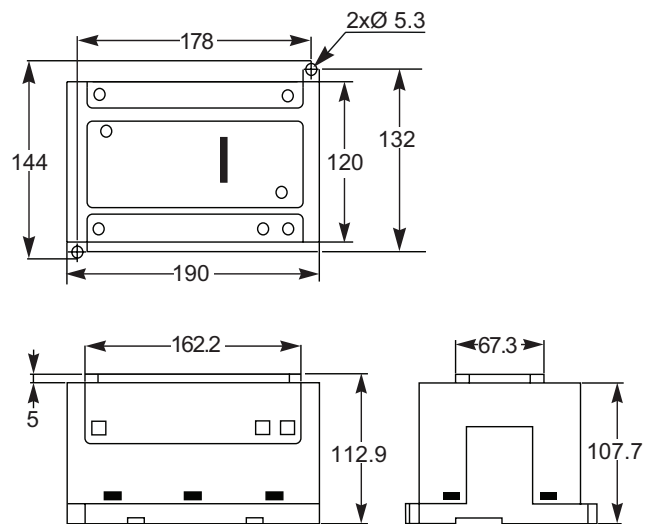
IM400-1700C



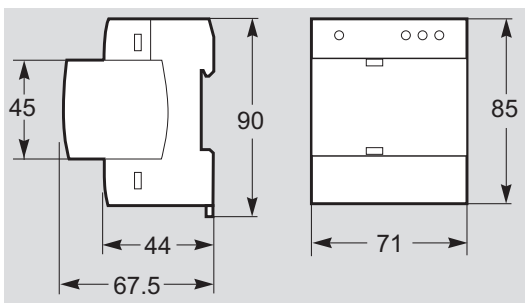
PHT1000



IM400VA2

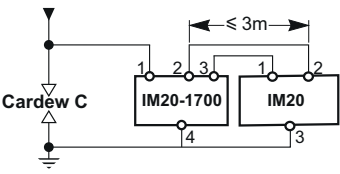
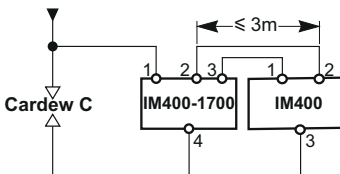
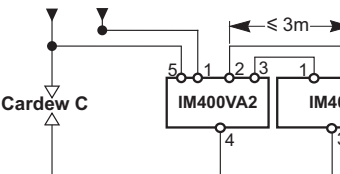
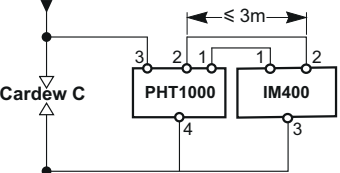
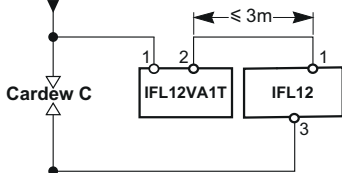


IFL12VA1T



Voltage Adaptors

Installation

| IM20-1700 | IM400-1700C | IM400VA2 |
|--|--|---|
| Connection to network: to neutral or to a phase or to a polarity | Connection to network: to neutral or to a phase or to a polarity | Connection to network: two points of connection, to neutral + a phase or to two phases or to two polarities |
|  |  |  |
| PHT1000 | IFL12VA1T | |
| Connection to network: to neutral or to a phase or to a polarity | Connection to network: to neutral or to a phase or to a polarity | |
|  |  | |

General Characteristics

| | IM20-1700 | IFL12VA1T | IM400-1700C | PHT1000 | IM400VA2 |
|---|--|---|---|-----------------------------------|--|
| Commercial Reference | IMD-IM20-1700 | IMDIFL12VA1T | IMDIM400-1700C | 50248 | IMD-IM400VA2 |
| Type of Network to be Monitored | | | | | |
| Type of application | Industrial ungrounded networks | Industrial and Photovoltaic ungrounded networks | Industrial ungrounded networks | Photovoltaic ungrounded networks | |
| AC Voltage range (max ph-ph voltage) | <math><1700 \text{ Vac}</math> (connection to neutral) or <math><1000 \text{ Vac}</math> (connection to a phase) | | | | <math><2600 \text{ Vac}</math> (connection to neutral) or <math><1500 \text{ Vac}</math> (connection to a phase) |
| DC Voltage range | <math><1000 \text{ Vdc}</math> | <math><1200 \text{ Vdc}</math> | <math><1000 \text{ Vdc}</math> | <math><1200 \text{ Vdc}</math> | <math><1500 \text{ Vdc}</math> |
| Compatibility with Insulation Monitor | IM20 | No | IM400C | IM400, IM400L, IM400C | IM400C |
| Maximum distance to insulation monitor | 3 meters | - | 3 meters | | |
| Compatibility with Insulation Fault Locator | No | IFL12C, IFL12MC, IFL12LMC, IFL12MCT | No | IFL12 series, XD301, XD312, XL3xx | No |
| Maximum network capacitance | 150 μF | 500 μF | 500 μF (if not used in Photovoltaic application) 2000 μF (Photovoltaic) | 500 μF | 5500 μF |
| Product Performances | | | | | |
| Internal impedance | 400 k Ω | 243 k Ω | 400 k Ω | 660 k Ω | 564 k Ω |
| Mounting | DIN rail | | | Mounting plate or in a box | DIN rail and mounting plate |
| Weight | 0.2 kg | 0.1 Kg | 0.2 kg | 2 kg | 0.75 kg |
| Environment | | | | | |
| Conformal coating | No | Yes | No | Yes | Yes |

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