Vigilohm

Insulation Monitoring for Ungrounded Networks

Catalog 2025

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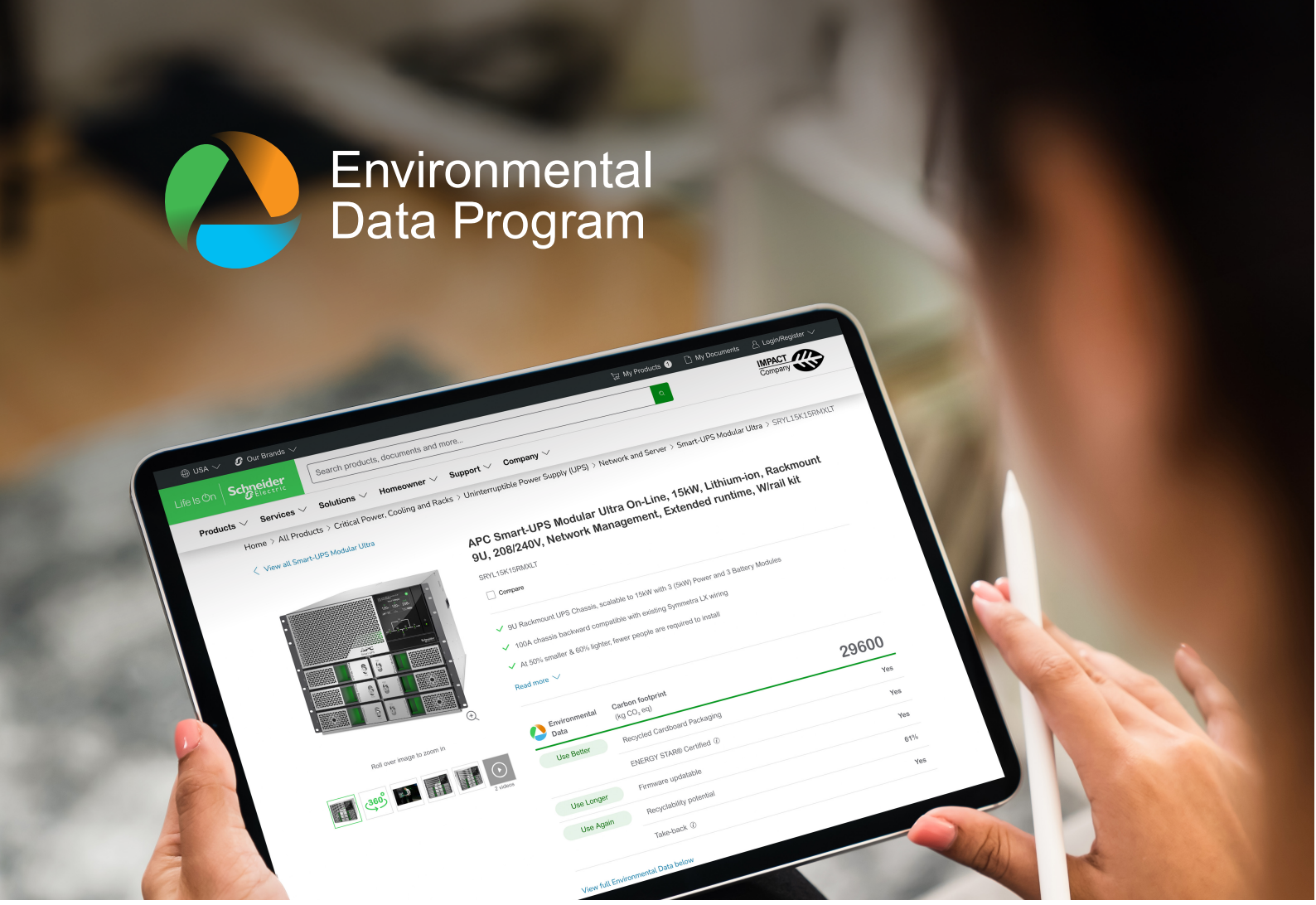
Life Is On Schneider Electric

Environmental Data Program

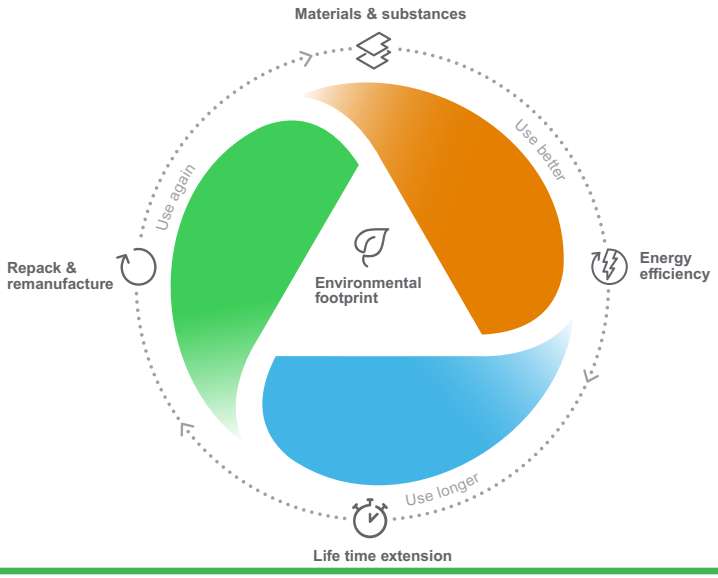


Next-level transparency for better-informed product choices

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 repairability 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

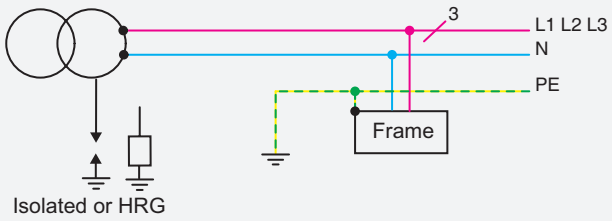
Any electrical installation must ensure both the safety of people and the protection of its assets. Over time, loads and conductors may experience insulation degradation to earth, leading to potential safety risks. One way to protect the installation and people is to install protection devices that will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

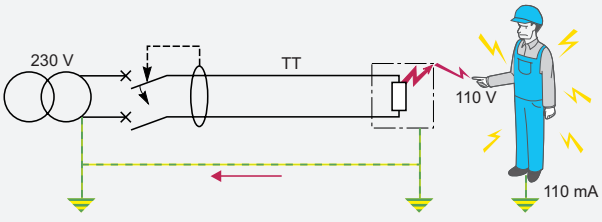
One way to ensure the protection of an installation and maintain service continuity is to isolate all or part of it from earth. This is what is called an IT earthing network or ungrounded network.

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

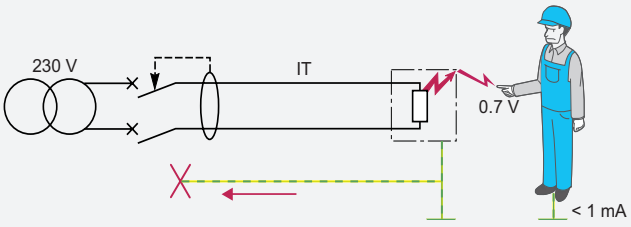


As such, in the event of an insulation fault, current cannot loop via the transformer's neutral resulting in:
- No dangerous contact voltage when touching metal parts.
- Very low fault currents.

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.

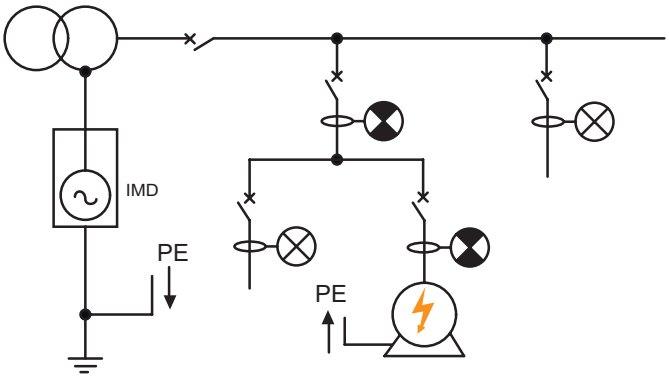
Finally, we have also made sure that Vigilohm is a best-in-class solution in terms of installation with no cabling between the insulation monitoring device and the fault locators, enabling full scalability of your installation.

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.

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.

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:

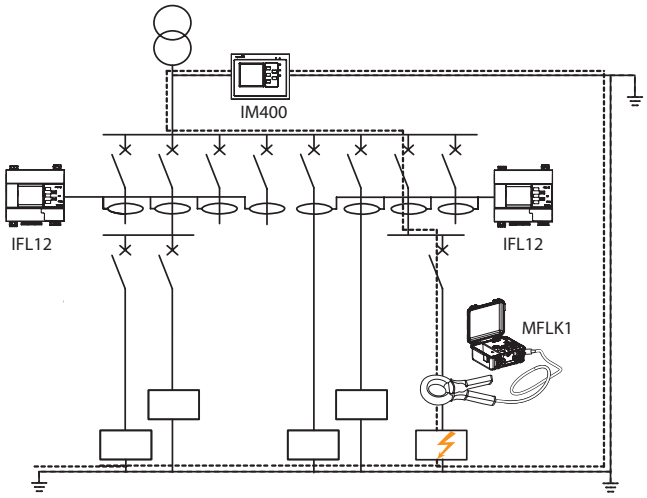
- Locally alert with a LED which of 12 feeders is faulty.
- Display the resistance measurement per feeder.
- Display the capacitance measurement per feeder.
- Configure the monitoring of each of the 12 feeders individually.
- Set specific alarm threshold per feeder.
- Communicate by Modbus RS485 natively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



Measure - Indicate - Locate - Repair

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

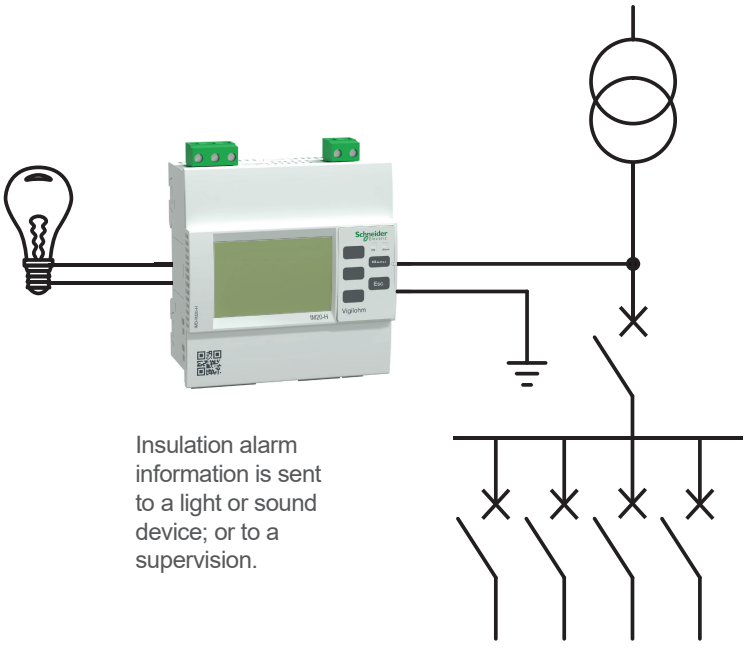
At Schneider Electric, we have been designing Insulation Monitoring Devices (IMDs) for more than 60 years. With this strong experience and understanding of ungrounded networks' specific constraints, we provide a range of solutions tailored to your needs while keeping a limited number of references for 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 IFL12 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.



IM9, IM10 or IM20 for Small IT Networks or IT Islands

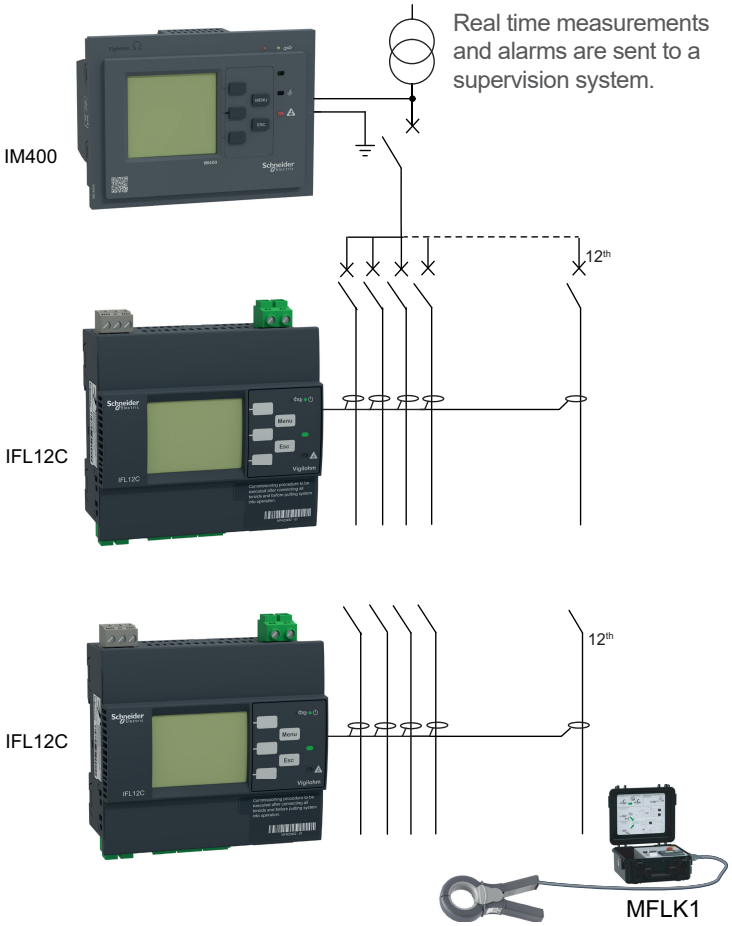
Vigilohm, a Solution that Adapts to your Installation Size and Characteristics

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 IFL12 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 IFL12 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).



IM400 Series for Large or Complex IT Earthing Networks

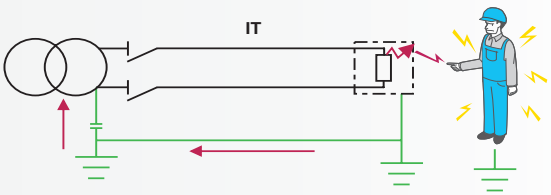
IFL12s benefit OPEX

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

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	110-230V AC 125-250V DC		
110-440V AC/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.

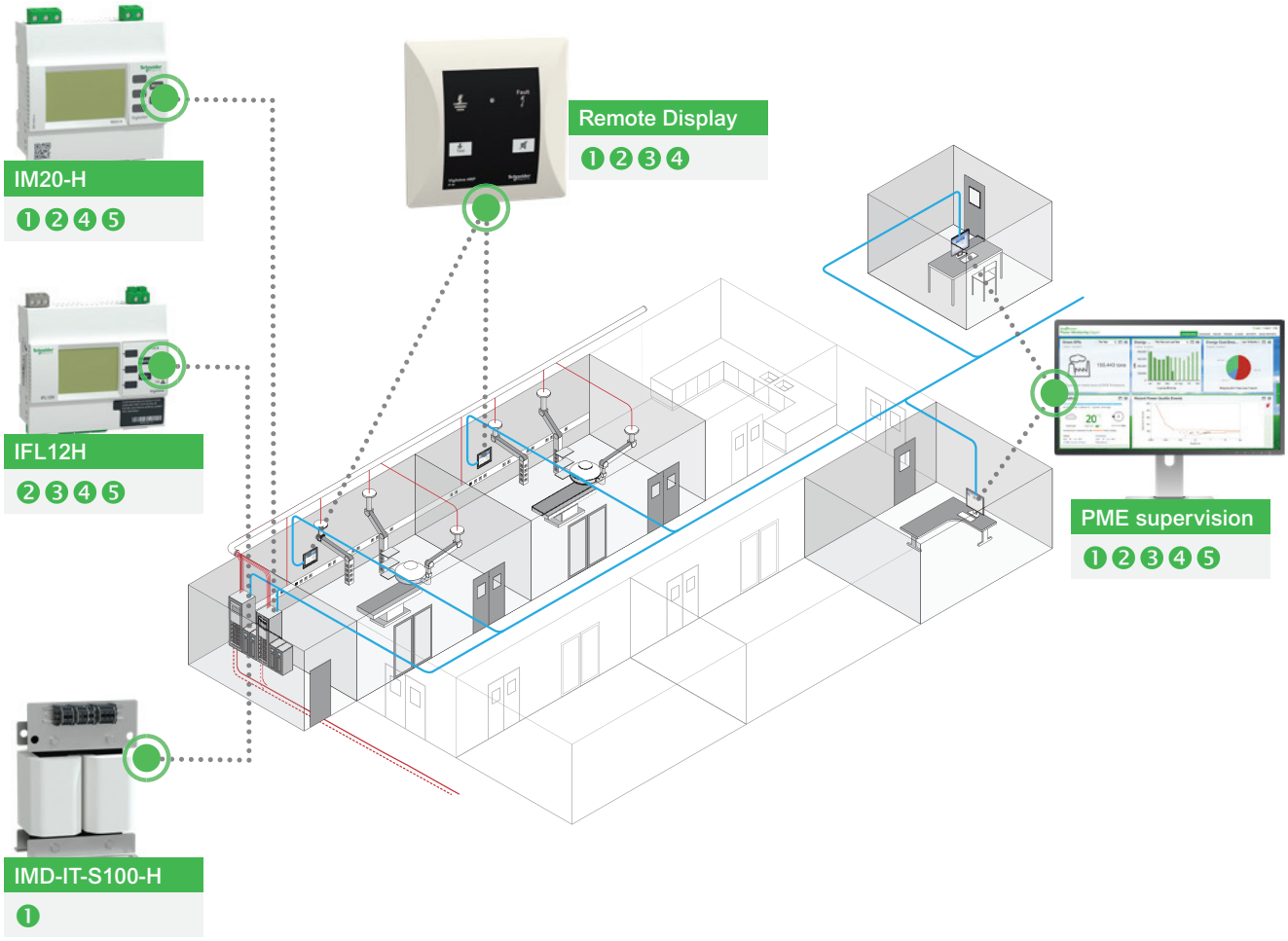
Some key points required by these standards include:

- 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.

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.

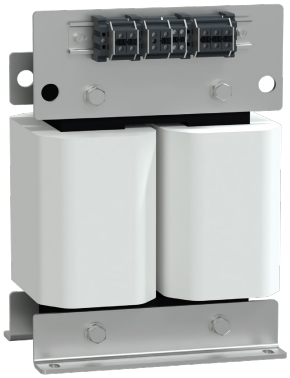
Both allow the regular insulation test required by the IEC 60364-7-710 standard to be performed.
In addition, the OTD will locate the insulation fault and offer other advanced functions such as medical gas monitoring or UPS status.

HRP OTD

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:

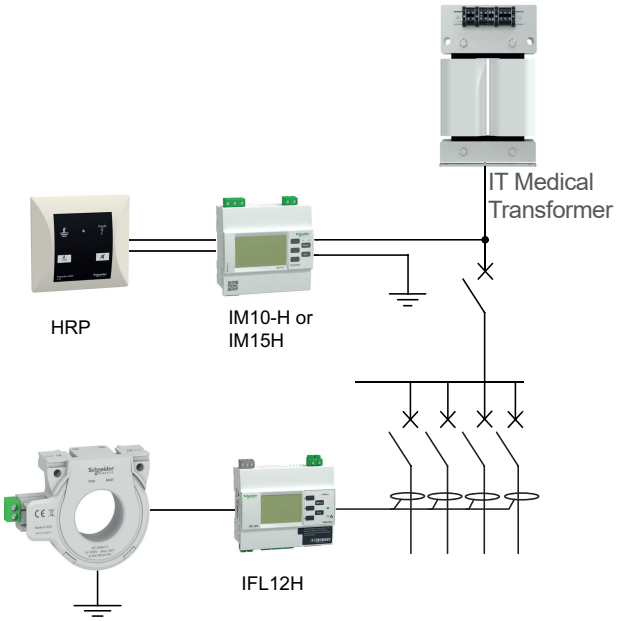
- Available in 6.3, 8 and 10 kVA.
- Umax between phases is limited to 250 Vac 50 Hz.



Healthcare

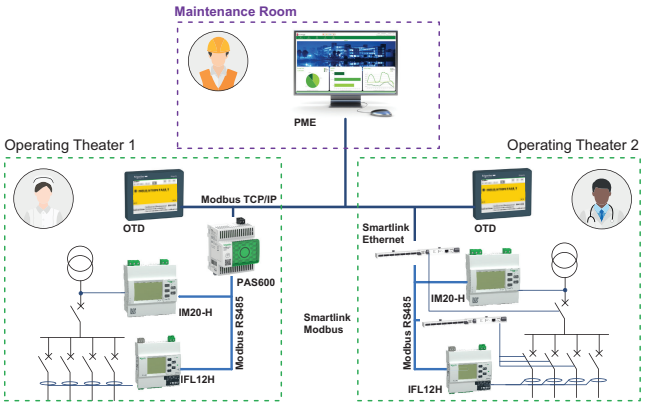
Vigilohm solutions to meet your needs

- 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.



Standard Compliant Solution

- 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.

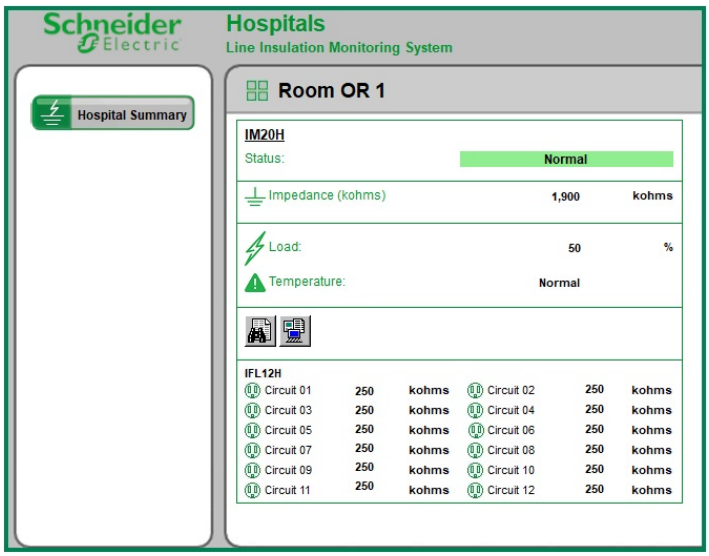


Advanced Solution with Remote Monitoring

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.

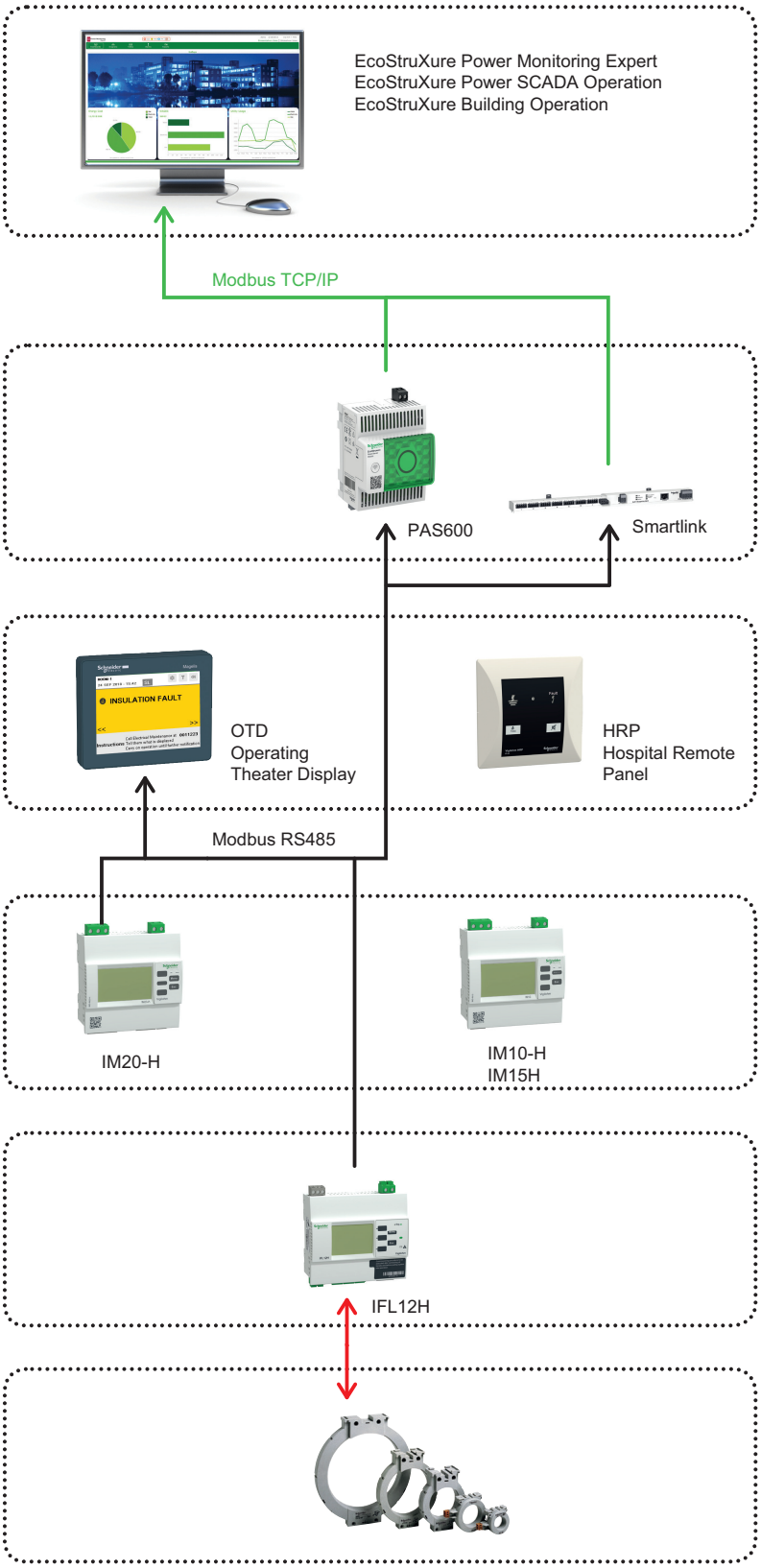


Customize your messages!

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.

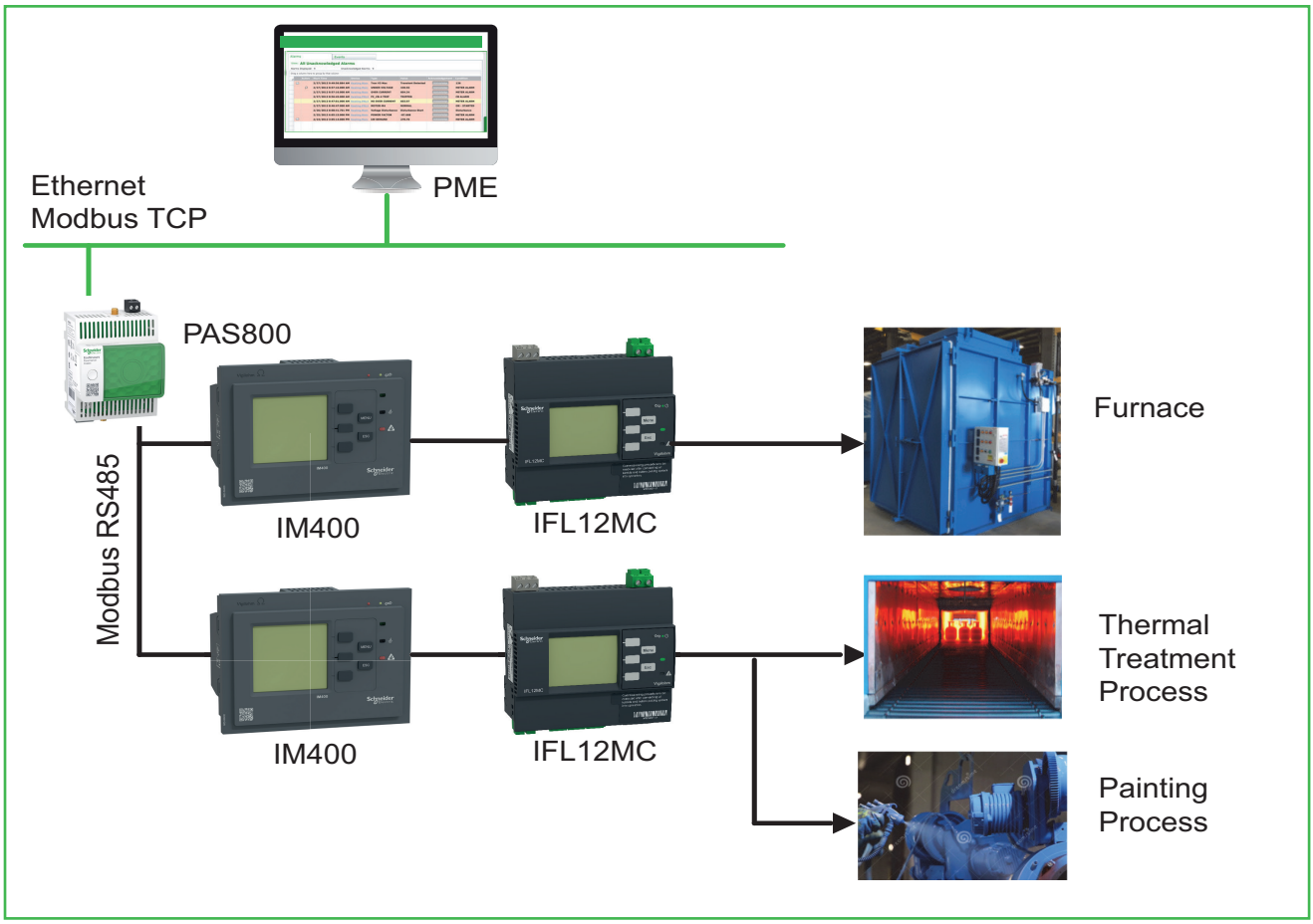
- Fast response time and recording of intermittent insulation faults allow correlation of faults with the start of a specific load or process.
- Modbus RS485 communicating IM400 and IFL12 facilitate the on-site maintenance with a supervision system.
- A conformally coated version is available for industrial 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.

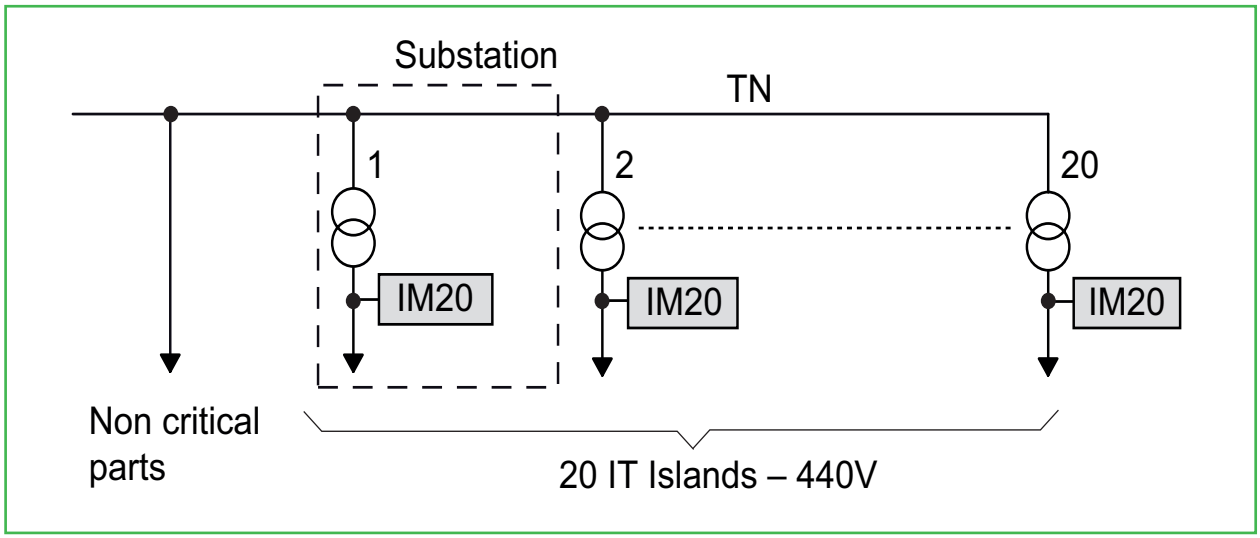
Any abnormal insulation decrease is detected and results in maintenance actions. Timestamped alarms allow correlation of the fault with the start of a process or a machine, and facilitate post-incident analysis.



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

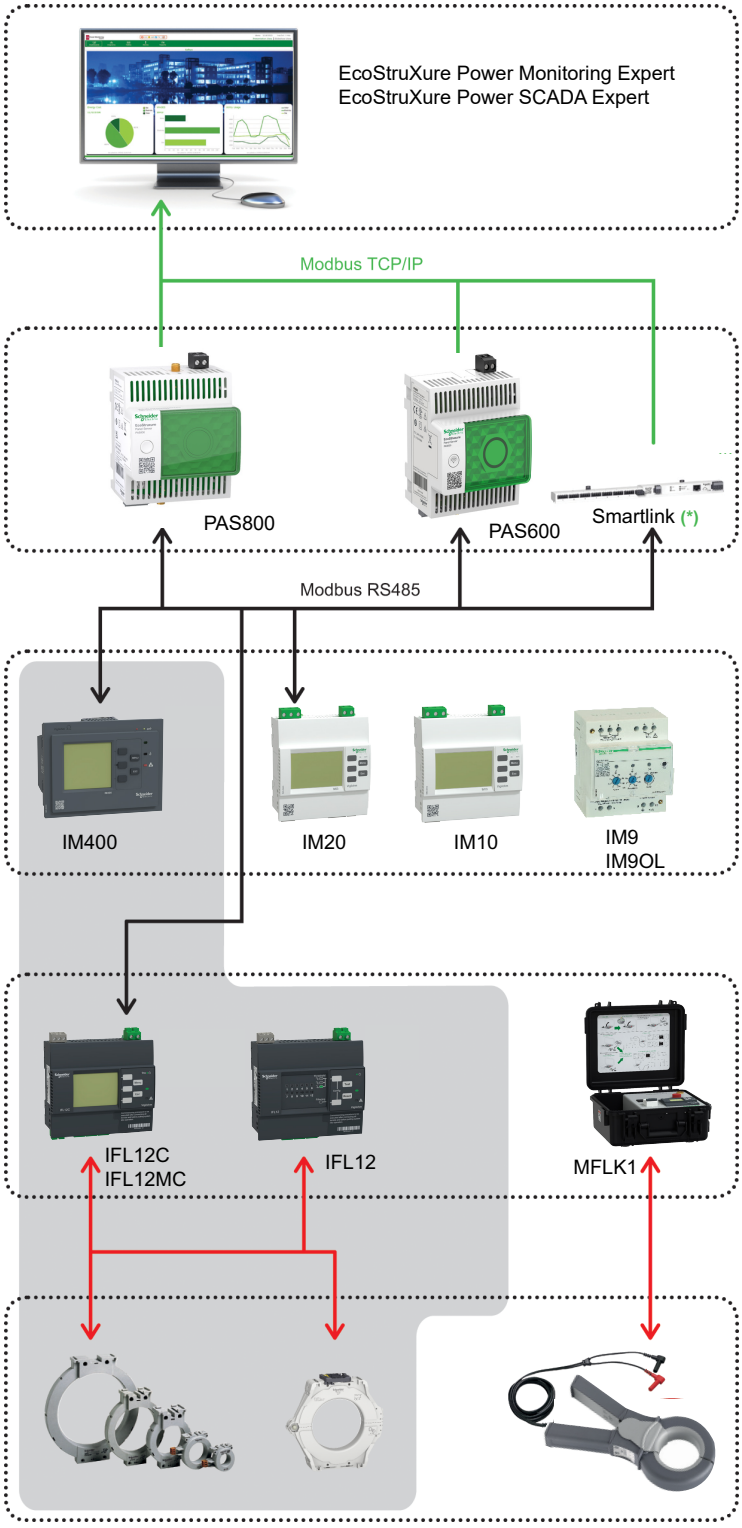
Monitoring of the global network insulation

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…

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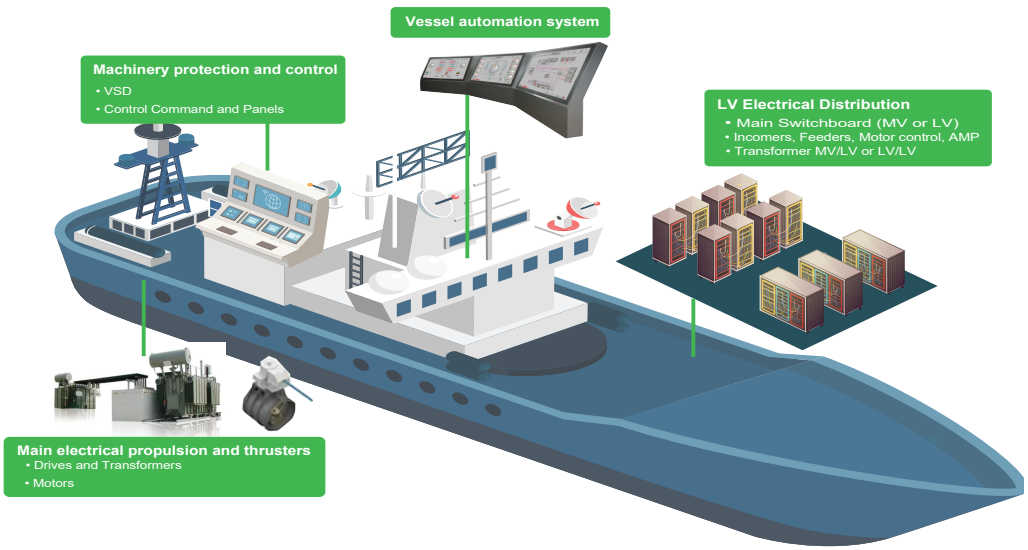
Vigilohm products comply with Classification Societies' requirements.

Classification Societies



Vigilohm Solution

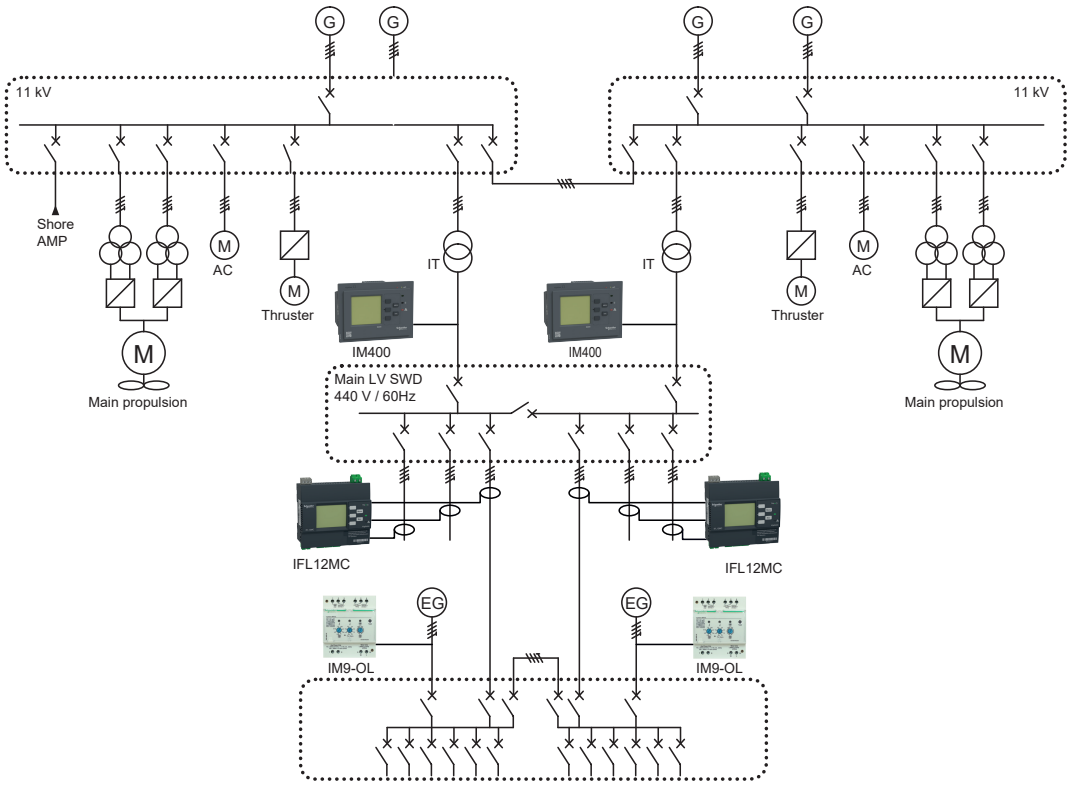
Vigilohm provides a complete range of products compatible with marine applications.

- 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).

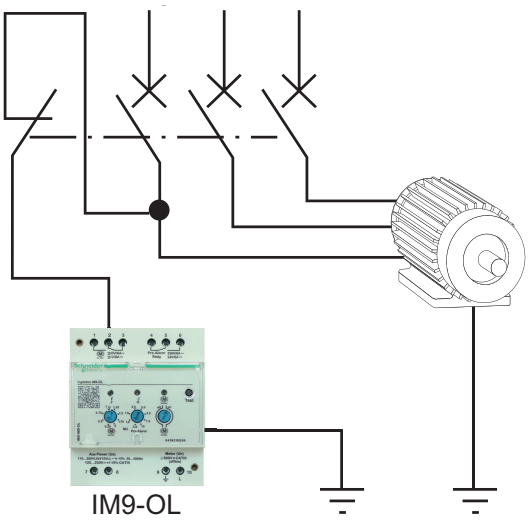
Local Regulations for Buildings Open to the Public

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.

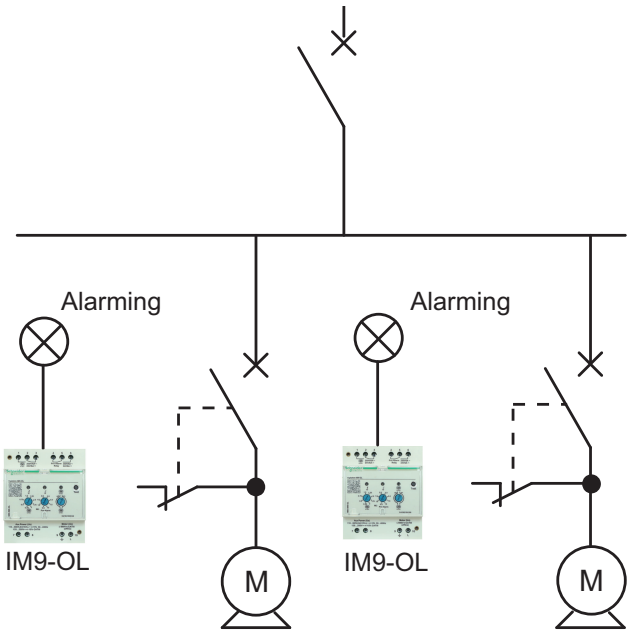


IM9-OL is Compatible with Any Grounding System: IT, TN, TT

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.



Smoke Extractor motors used in case of fire

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:

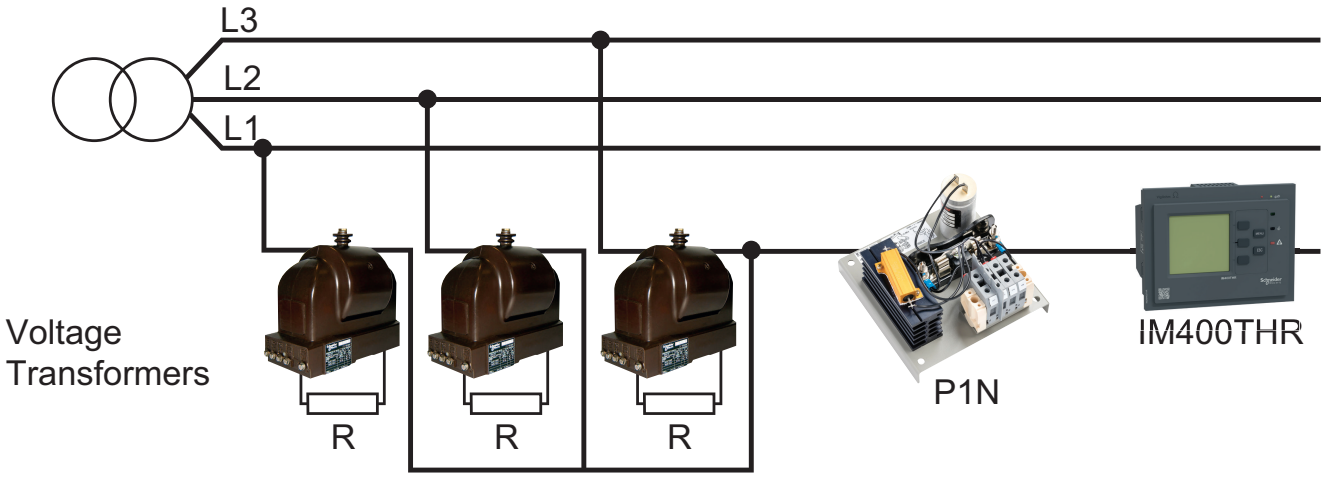
- IM400THR and IM400LTHR IMDs.
- MV voltage transformers.
- P1N Ground Adaptor.

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?

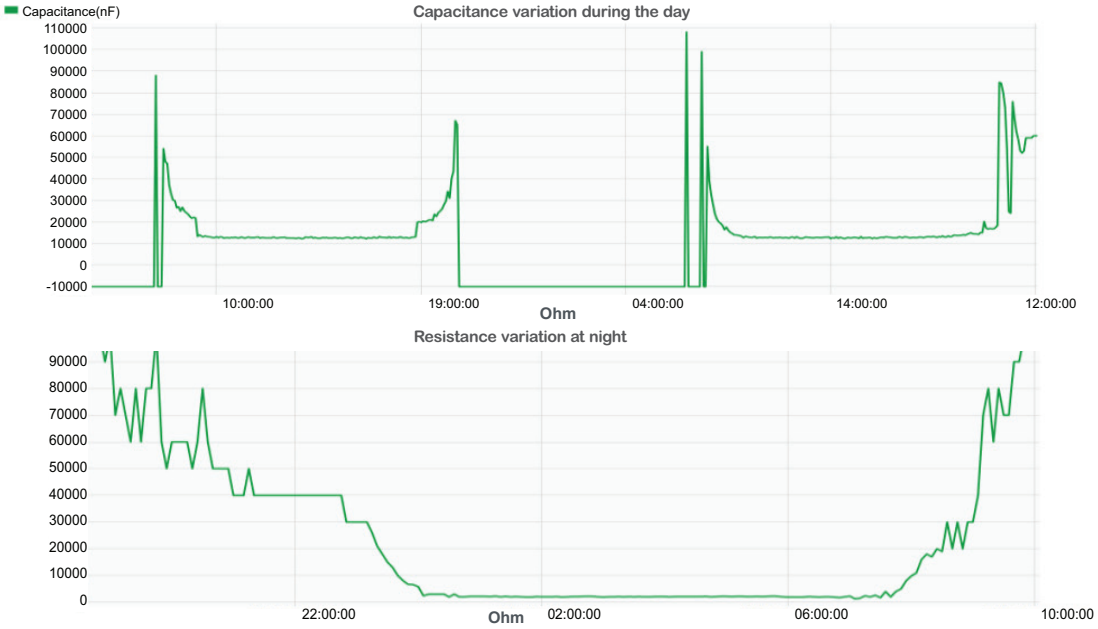
PV installations may present a risk of fire due to earth faults, which are usually caused by damage to conductor insulation. Several such undetected earth faults on the DC side and resulting fire cases have been well documented in recent years. Monitoring of the insulation is therefore critical, and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



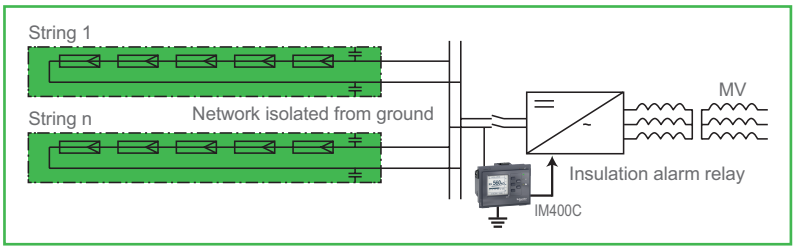
Vigilohm Solution

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.



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.

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

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.

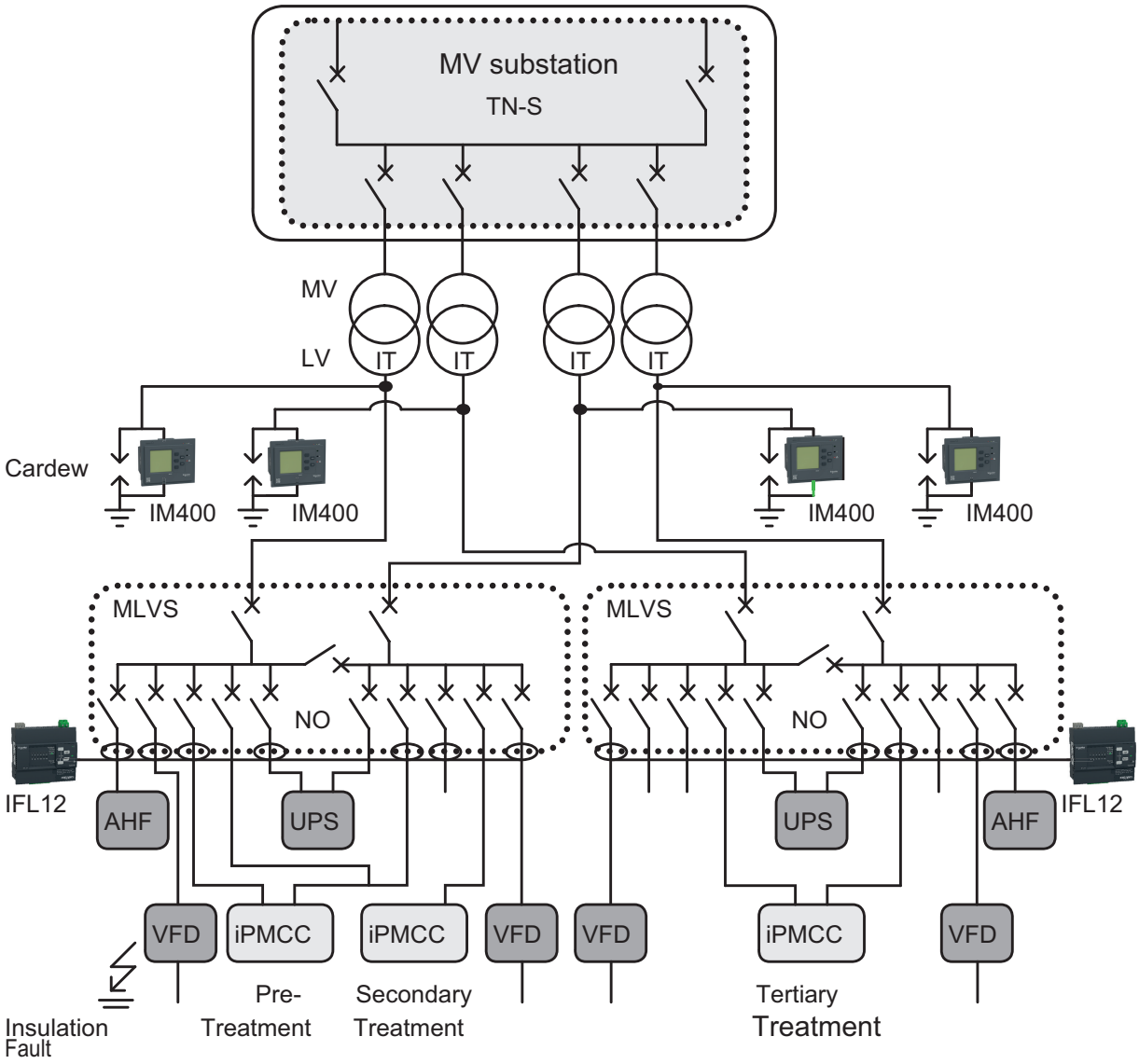
Water and Waste Water

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.

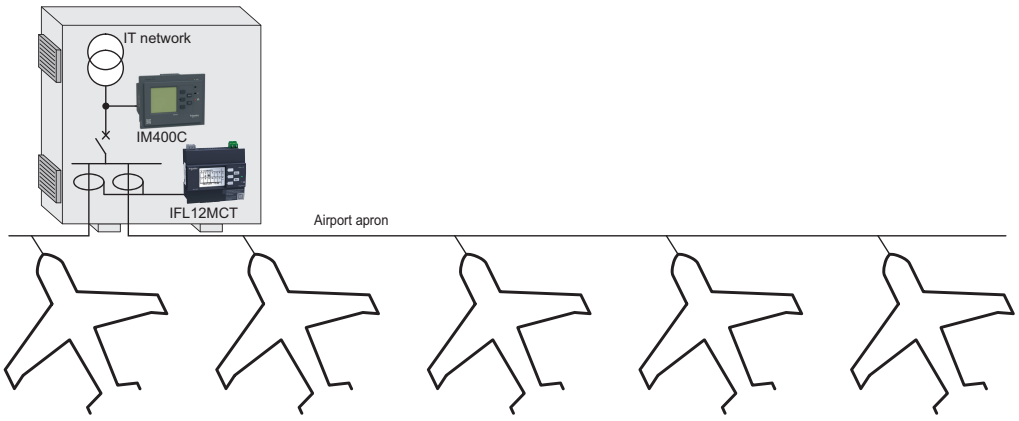
Infrastructure and Transportation

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.

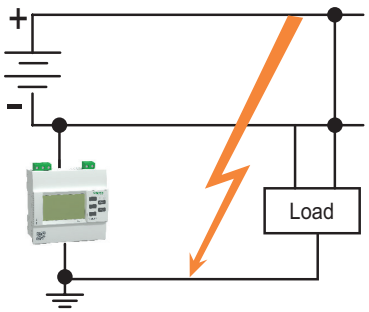
To know more
Refer to the document "Circuit breakers for direct current applications up to 380 V DC: Choosing and implementing protective devices"

Vigilohm Solution

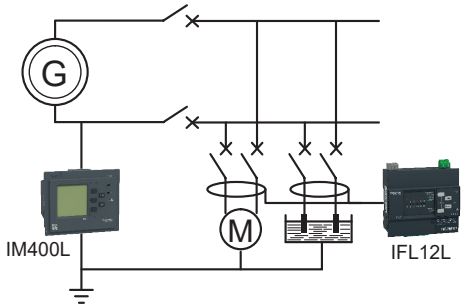
- IM10, IM20, and IM400 IMDs are compatible with DC networks as they inject a low-frequency AC component. IM9 is not suited for DC network monitoring as it injects a DC component.
- Insulation Fault Locators (IFL12 range) are also compatible with the monitoring of DC networks.
- The Vigilohm range also 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:

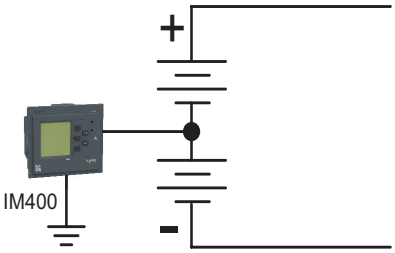
Insulation Monitor injection is wired to one polarity. Whenever the network includes charges or batteries, the injection signal flows over both polarities, allowing the detection of an insulation fault affecting any part of the network.



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

Table of Contents - Products Datasheets

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

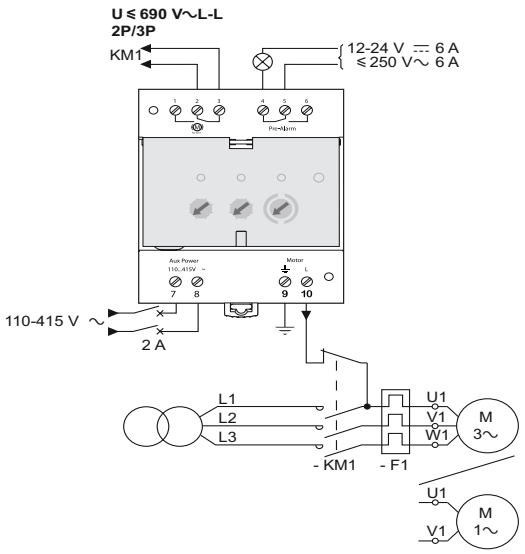
- AC networks up to 690V.
- IM9-OL monitors insulation of offline equipment, such as fire pumps, motors or generators. This insulation monitoring is mandatory in certain buildings and countries.
- IM9-OL is suitable for any grounding arrangement such as TT, TN or IT.

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

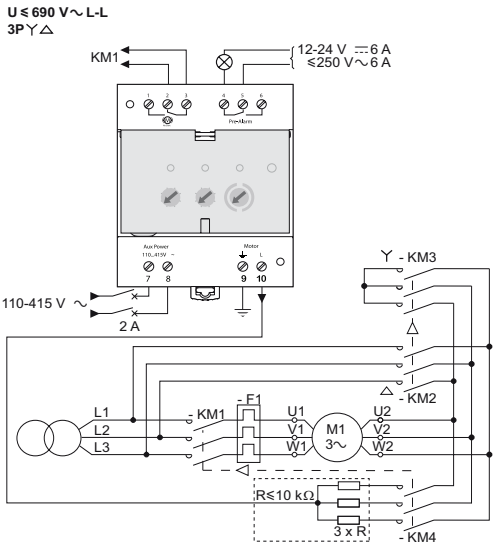
Scan here to know more about the product.

Examples of Architecture

Direct-on-line Starting Motor

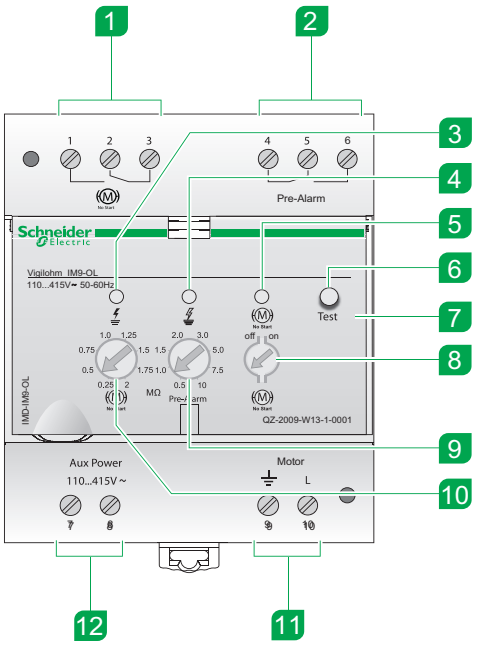


Star-delta Starting Motor



Off-line Equipment Insulation Monitoring

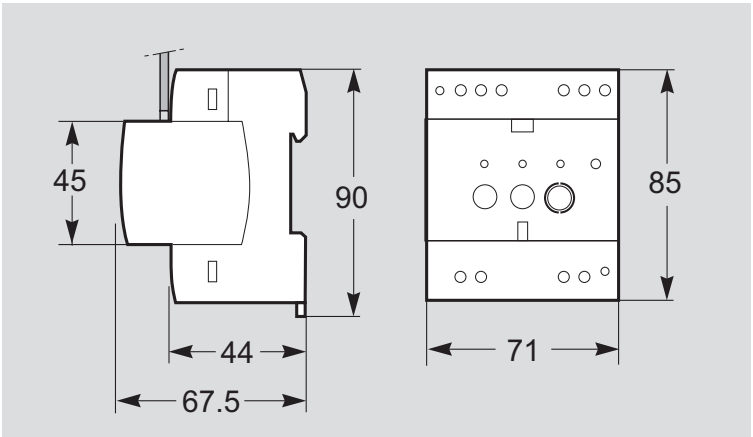
Physical Description



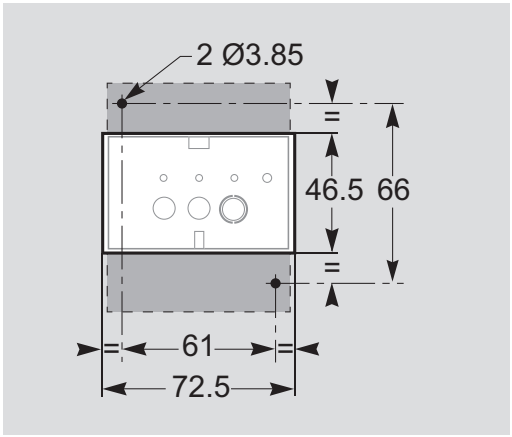
1. Motor no start relay (control of KM1)
2. Failsafe pre-alarm relay
3. Motor insulation fault LED
4. Pre-alarm LED
5. Motor no start LED
6. Test button
7. Transparent sealable cover
8. Motor no start selector
   ON: «Motor no start» activated
   OFF: «Motor no start» inhibited
9. Pre-alarm threshold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

Vigilohm IM9
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.

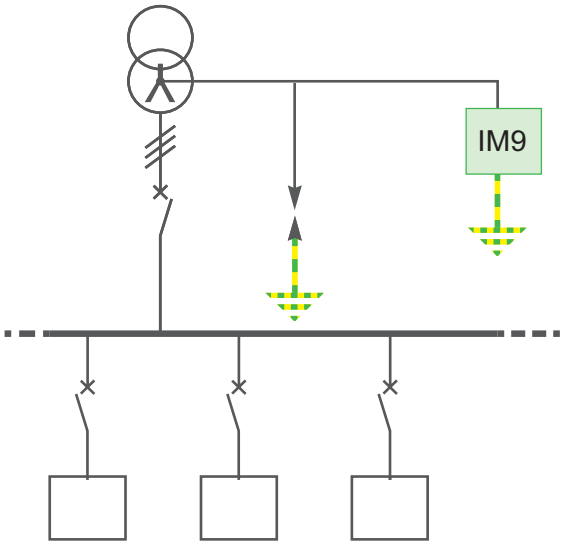
Applications

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.

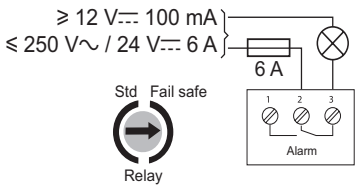
Example of Architecture



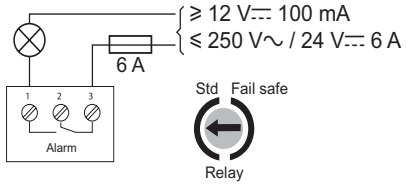
Insulation Monitoring Devices

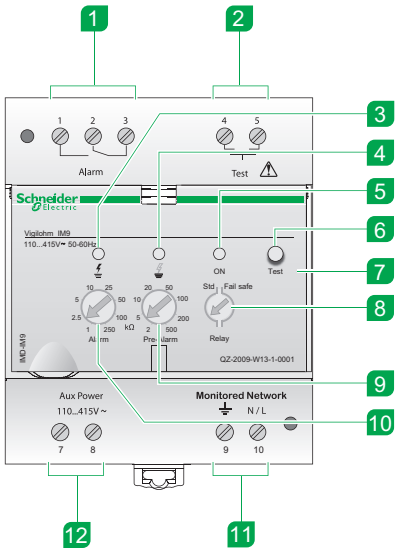
Physical Description

Failsafe wiring



Standard wiring

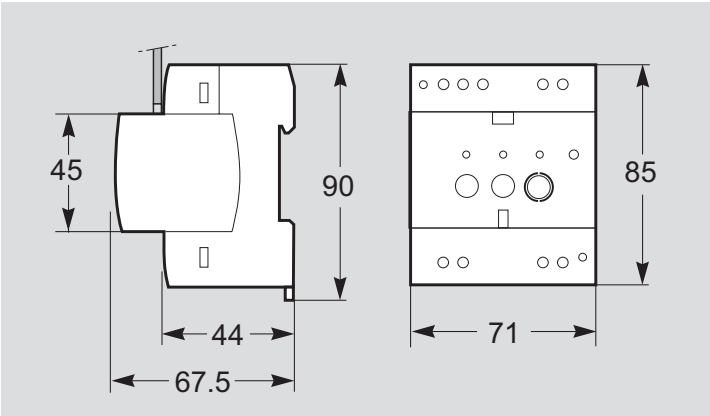




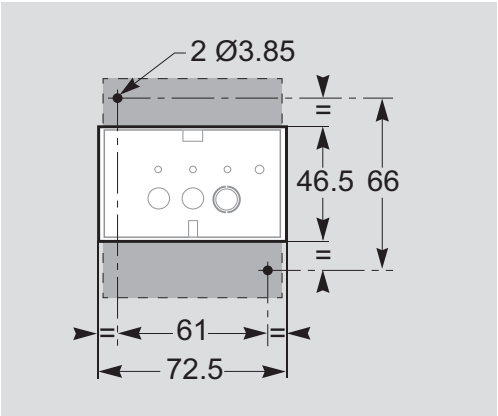
1. Alarm relay
2. Remote test
3. Alarm LED
4. Pre-alarm LED
5. Operating indicator light
6. Test button
7. Transparent sealable cover
8. Failsafe or standard alarm relay setting
9. Pre-alarm setting
10. Alarm setting
11. Injection
12. Auxiliary power supply

Dimensions (mm)

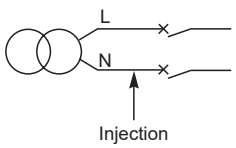
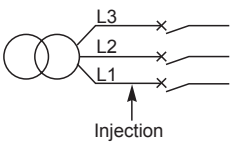
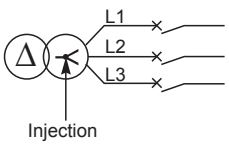
Dimensions (mm)



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.

Vigilohm IM9
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)

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

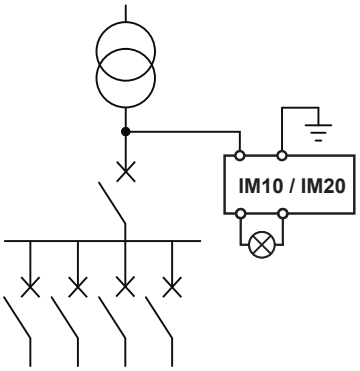
- IM10 and IM20 are suitable for small to mid-sized IT networks up to 600V (without voltage adaptors).
- Typical segments: Industry, power generation, marine, railways, airports, oil and gas, mining, heating and cooling, lifts and so on.

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

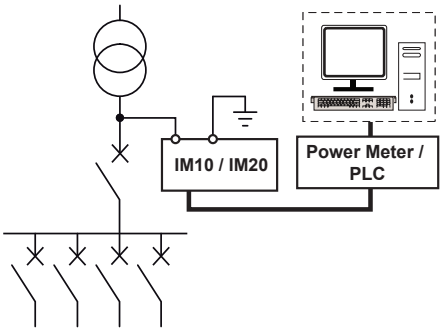
Scan here to know more about the product.

Examples of Architecture

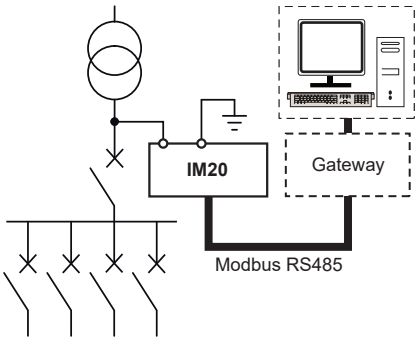
Local alarm



Local + Remote alarm via relay output

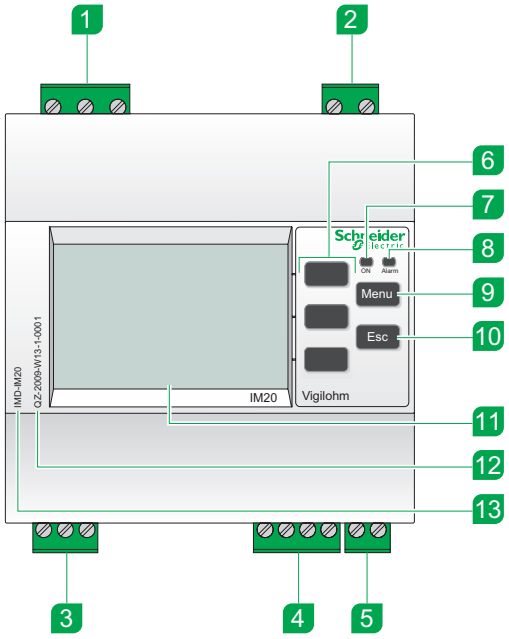


Local + Remote alarm via communication port



Insulation Monitoring Devices

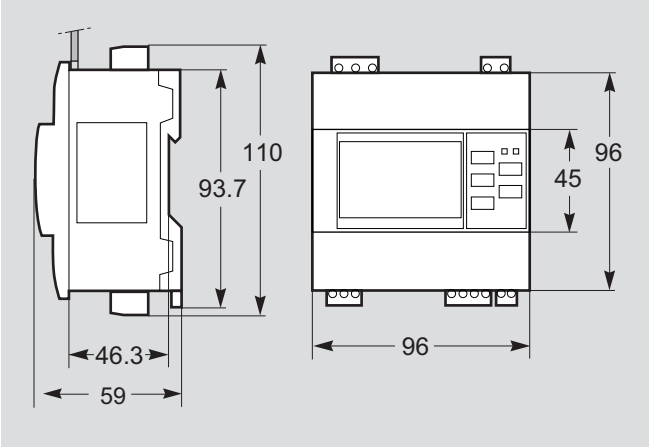
Physical Description



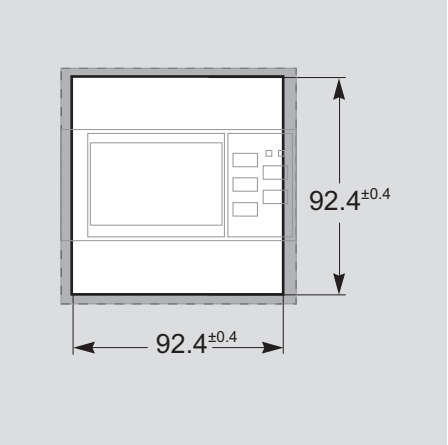
1. Injection terminal block
2. Auxiliary power supply terminal block
3. Alarm relay terminal block
4. Modbus port terminal block (IM20)
5. Injection inhibition input (IM20)
6. Contextual menu buttons
7. Operating indicator light
8. Insulation alarm indicator light
9. Menu button
10. ESC button to return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

Dimensions (mm)

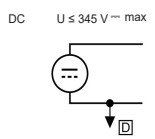
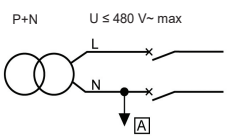
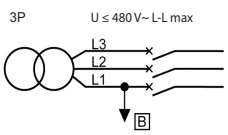
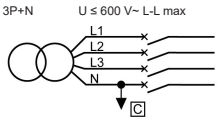
Dimensions (mm)

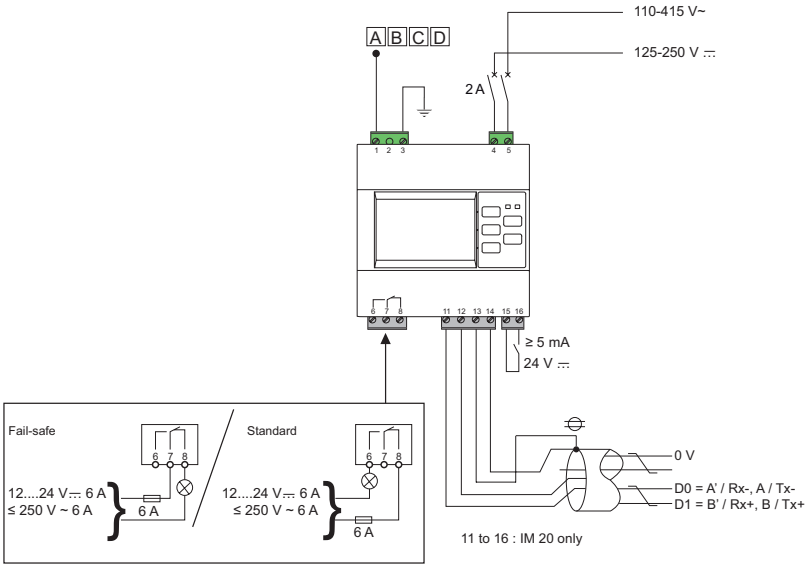


Flush mounting (mm)



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} ≤ 480Vac	-
AC Connection to Neutral	-	U_{LN} ≤ 480Vac	-	U_{LL} ≤ 600Vac
DC Connection to Line	U < 345Vdc	-	-	-



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 µF	
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 MΩ	
	Accuracy at 10 kΩ - 1 µF	< 5%	5%
Capacitance measurement	Range	Not available	100 nF - 70 µF
	Accuracy at 10 kΩ - 1 µF	-	5%
Measurement filtering time		4 - 40 or 160 sec	
Transient fault capture		Yes	
Pre-alarm thresholds		1 kΩ - 1 MΩ	
Alarm thresholds		500 Ω - 500 kΩ	
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.

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.

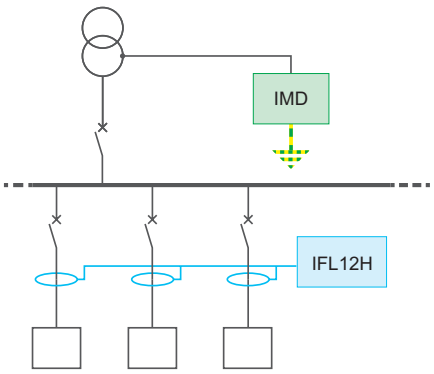
Applications

- 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.

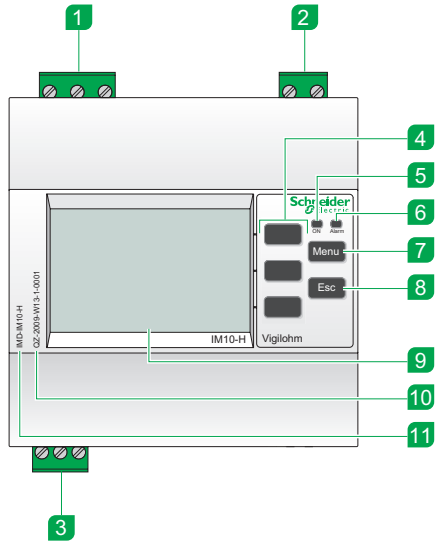
Examples of Architecture



Insulation Monitoring Devices for Medical Premises

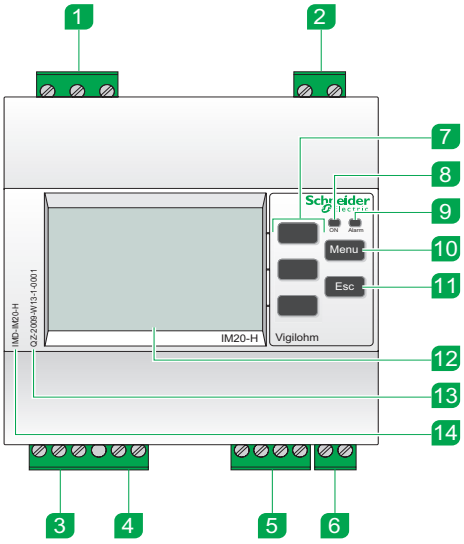
Physical Description

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

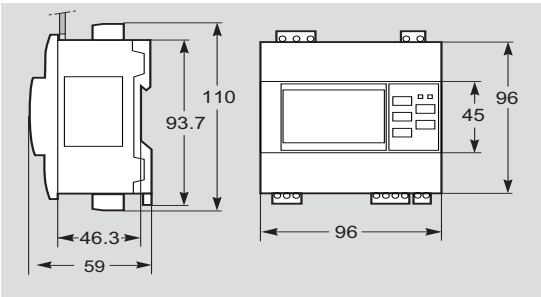
IM15H and IM20-H



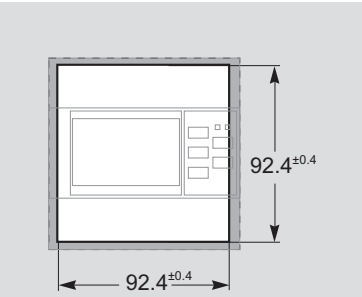
1. Injection terminal block
2. Auxiliary power supply terminal block
3. Insulation alarm relay and overheat/overload alarm relay
4. 1 A or 5 A CT input for transformer's secondary current monitoring
5. Modbus communication terminal block (IM20-H)
6. Bimetal input for transformer's temperature monitoring
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)

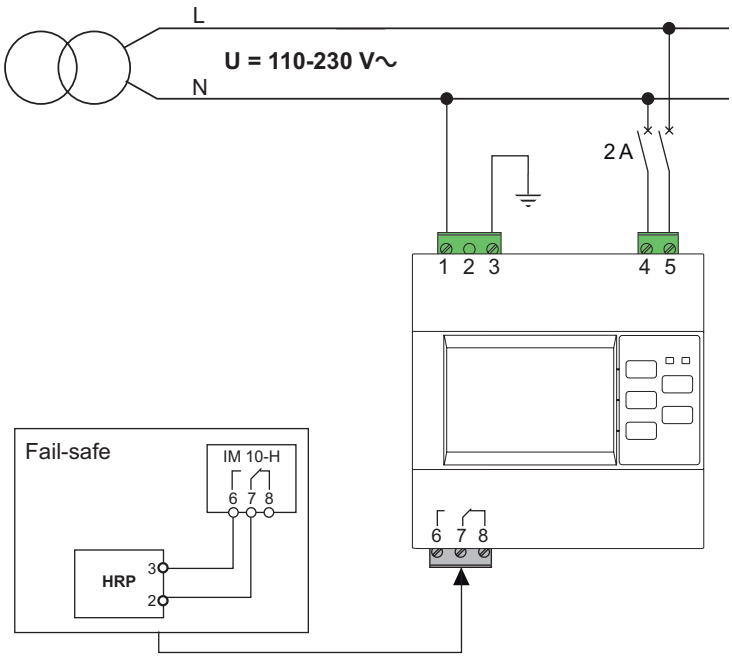


Flush mounting (mm)

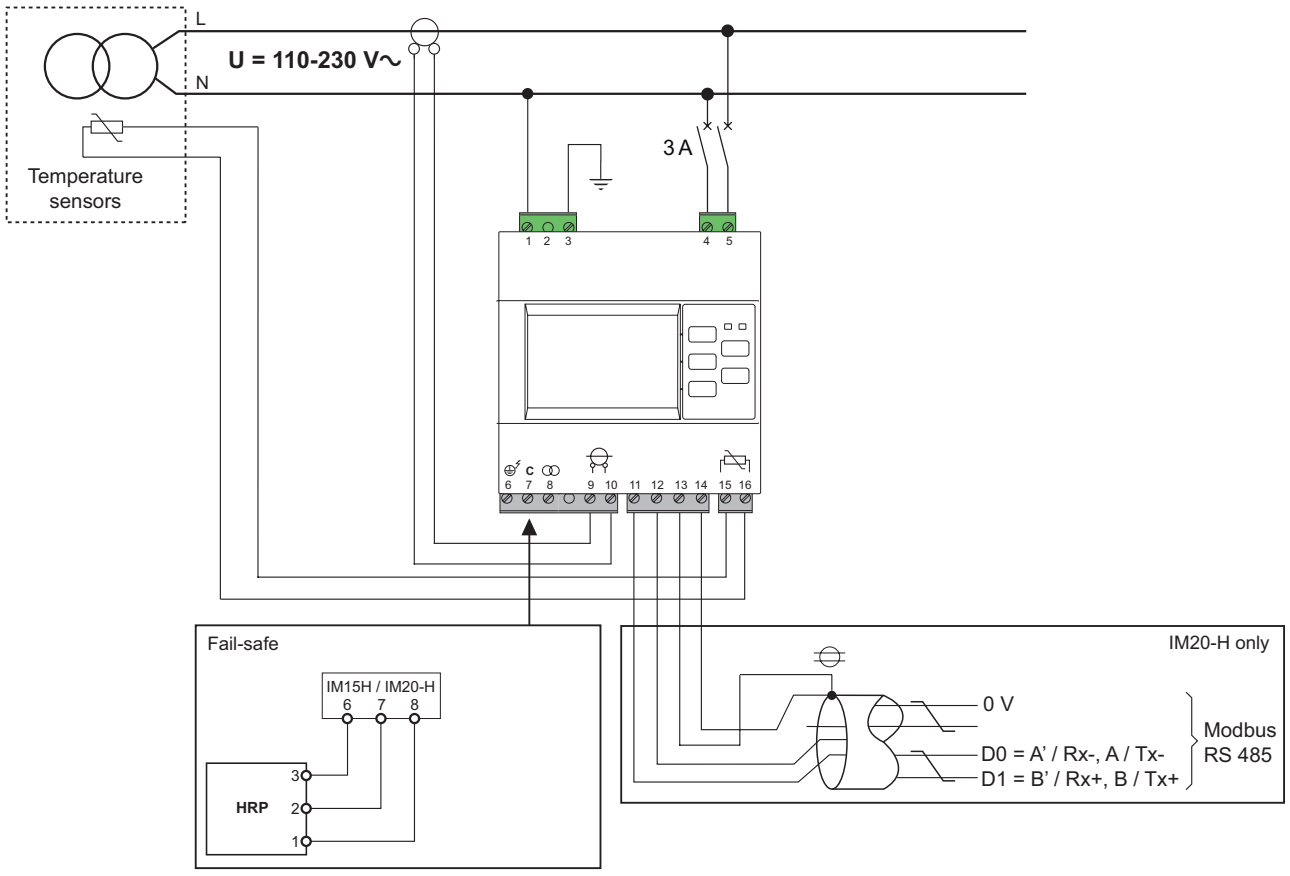


Connection

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 µF		
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 MΩ		
	Accuracy at 10 kΩ - 1 µF	< 5%		
Capacitance measurement	Range	Not available		
	Accuracy at 10 kΩ - 1 µF	-		
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		50 kΩ - 500 kΩ		
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 ≤ 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		

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:

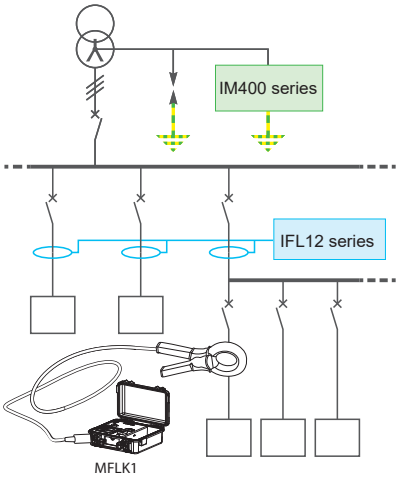
- Control command networks, including sensitive loads such as PLCs, I/Os, sensors.
- Power circuits networks, including power loads and power electronics such as speed drives, inverters, rectifiers, etc.
- Photovoltaic utility scale sites, e.g., 4 MW per inverter (IM400C).
- Typical segments: Industry, 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)

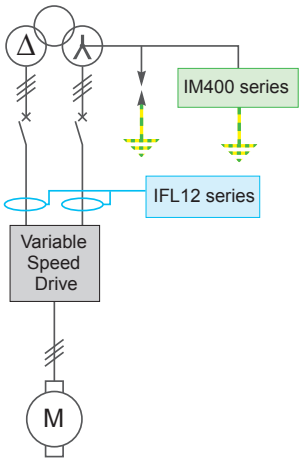
Scan here to know more about the product.

Examples of Architecture

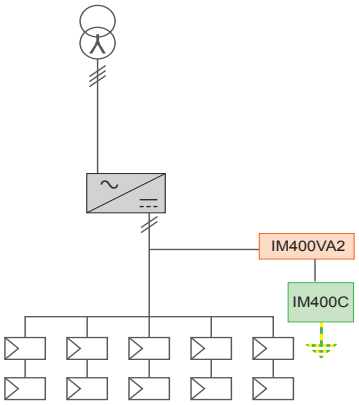
Control command mode



Power Circuit mode

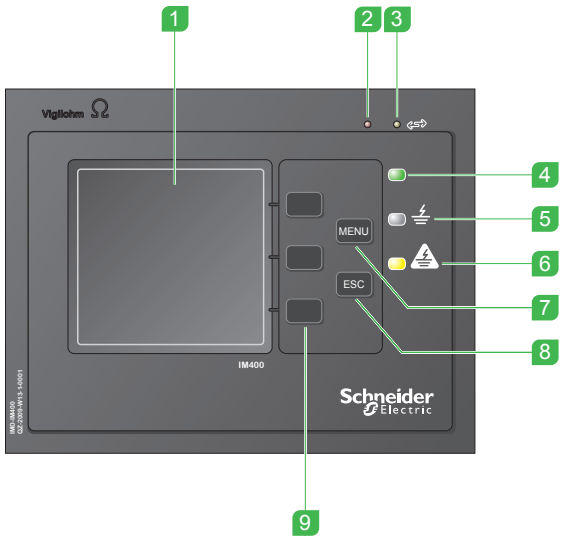


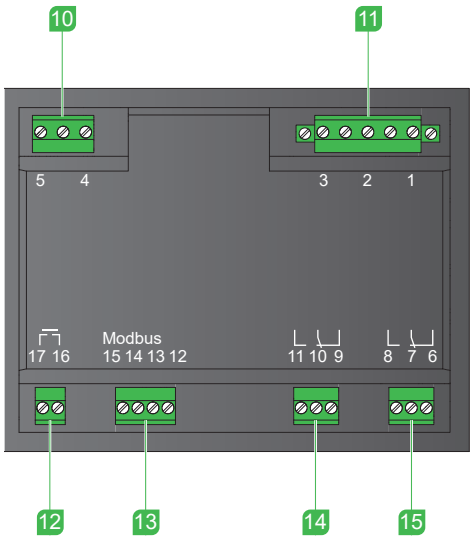
Photovoltaic mode



Insulation Monitoring Devices

Physical Description

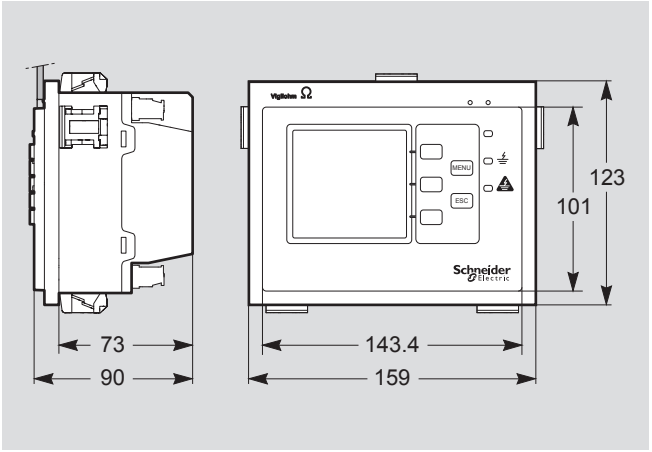




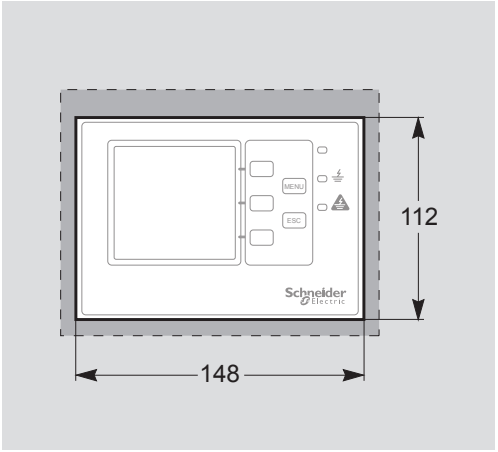
1. Display
2. Red indicator light for product status
3. Yellow indicator light for Modbus communication indication
4. Green indicator light for correct insulation indication
5. White indicator light for preventive insulation alarm
6. Yellow indicator light for insulation alarm
7. MENU button
8. ESC button 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

Dimensions (mm)

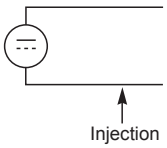
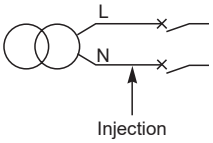
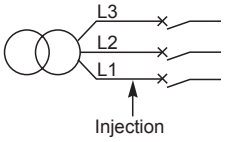
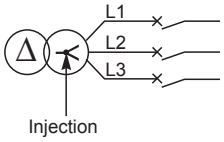
Dimensions (mm)



Flush mounting (mm)

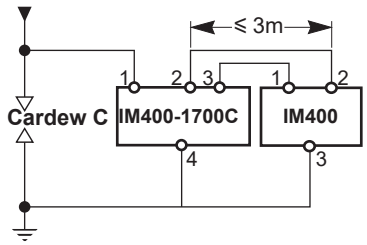
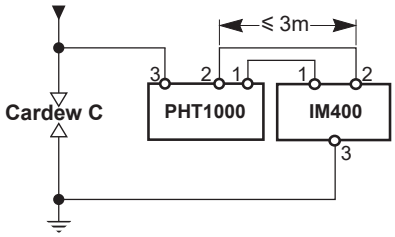
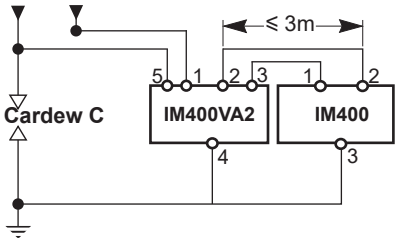


Connection

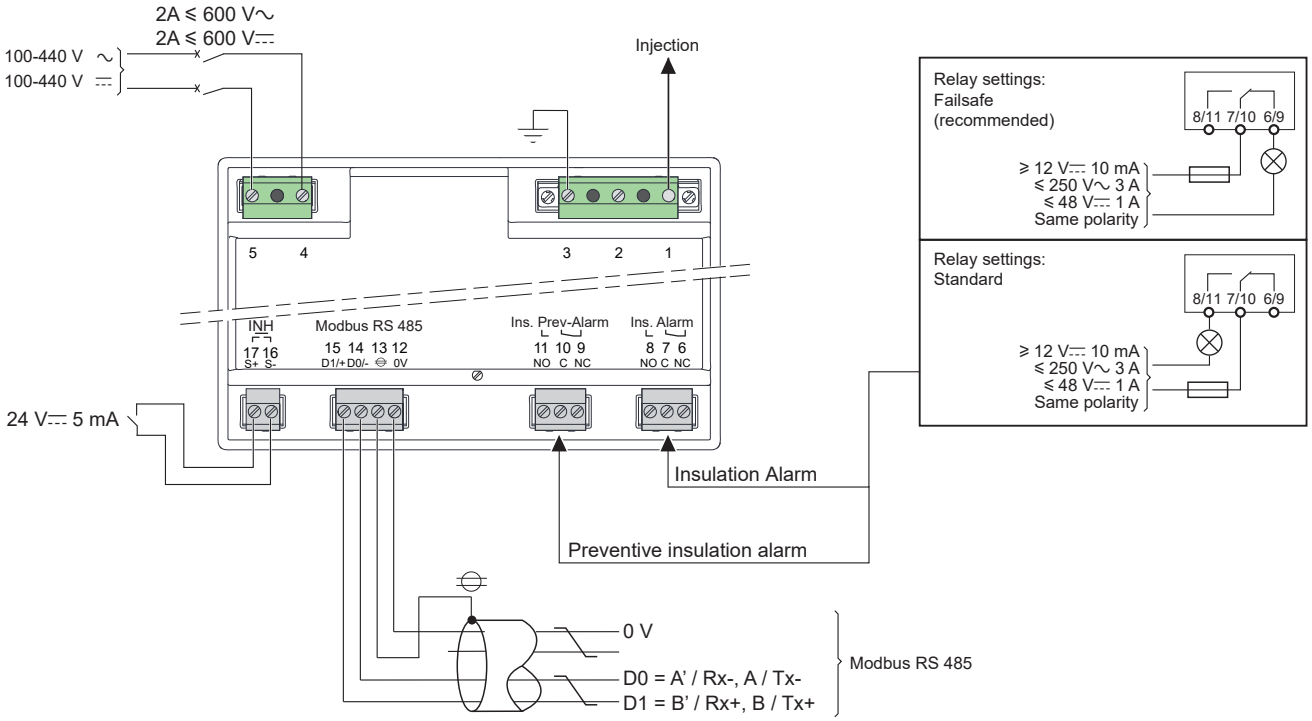
	Direct current	Single phase network	Three-phase network without accessible neutral	Three-phase network with accessible neutral, distributed or not
				
AC Connection to Line	-	-	U_{LL} ⩽ 480 Vac	-
AC Connection to Neutral	-	U_{LN} ⩽ 480 Vdc	-	U_{LL} ⩽ 830 Vac
DC Connection to Line	U ⩽ 480 Vdc	-	-	-
Fault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

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 µF		Many loads < 500/5500 µF
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 MΩ		
	Accuracy at 10 kΩ - 1 µF	1%		
Capacitance measurement	Range	10 nF - 500 µF		10 nF - 5500 µF
	Accuracy at 10 kΩ - 1 µF	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 kΩ - 1 MΩ		
Alarm thresholds		40 Ω - 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 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.

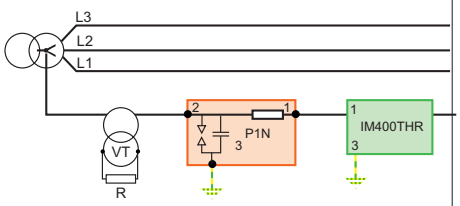
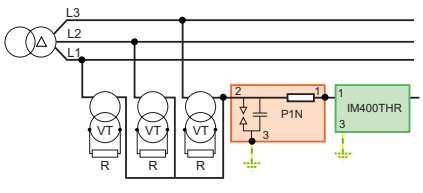
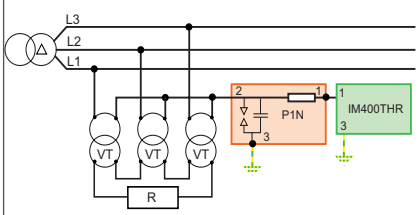
Applications

- 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

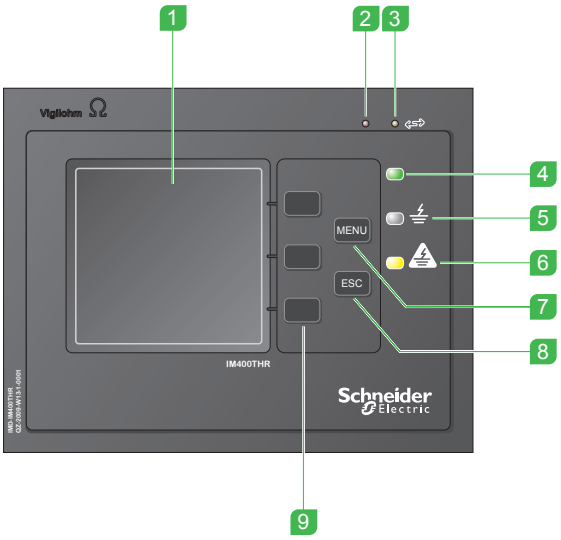
Scan here to know more about the product.

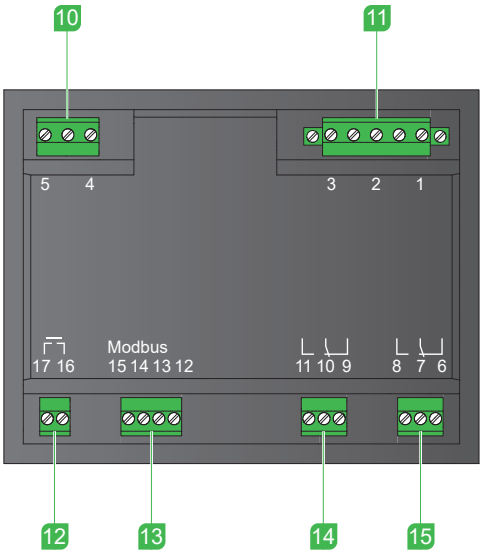
Examples of Architecture

Three-phase network with accessible neutral	Three-phase network without accessible neutral	
		

Vigilohm IM400THR / IM400LTHR
Insulation Monitoring Device

Physical Description

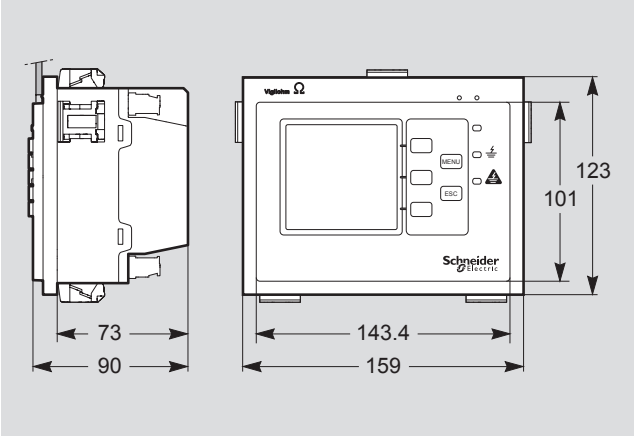




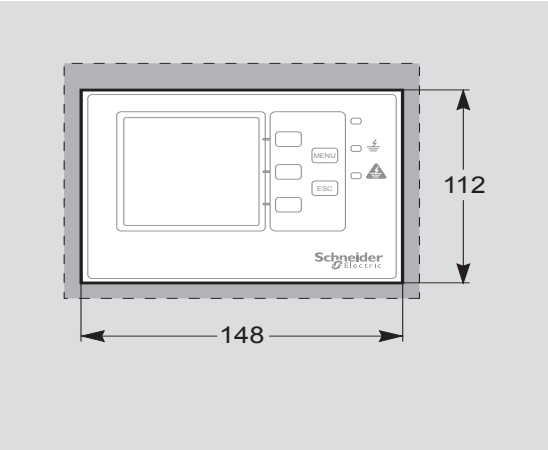
1. Display
2. Red indicator light for product status
3. Yellow indicator light for Modbus communication indication
4. Green indicator light for correct insulation indication
5. White indicator light for preventive insulation alarm
6. Yellow indicator light for insulation alarm
7. MENU button
8. ESC button 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

Dimensions (mm)

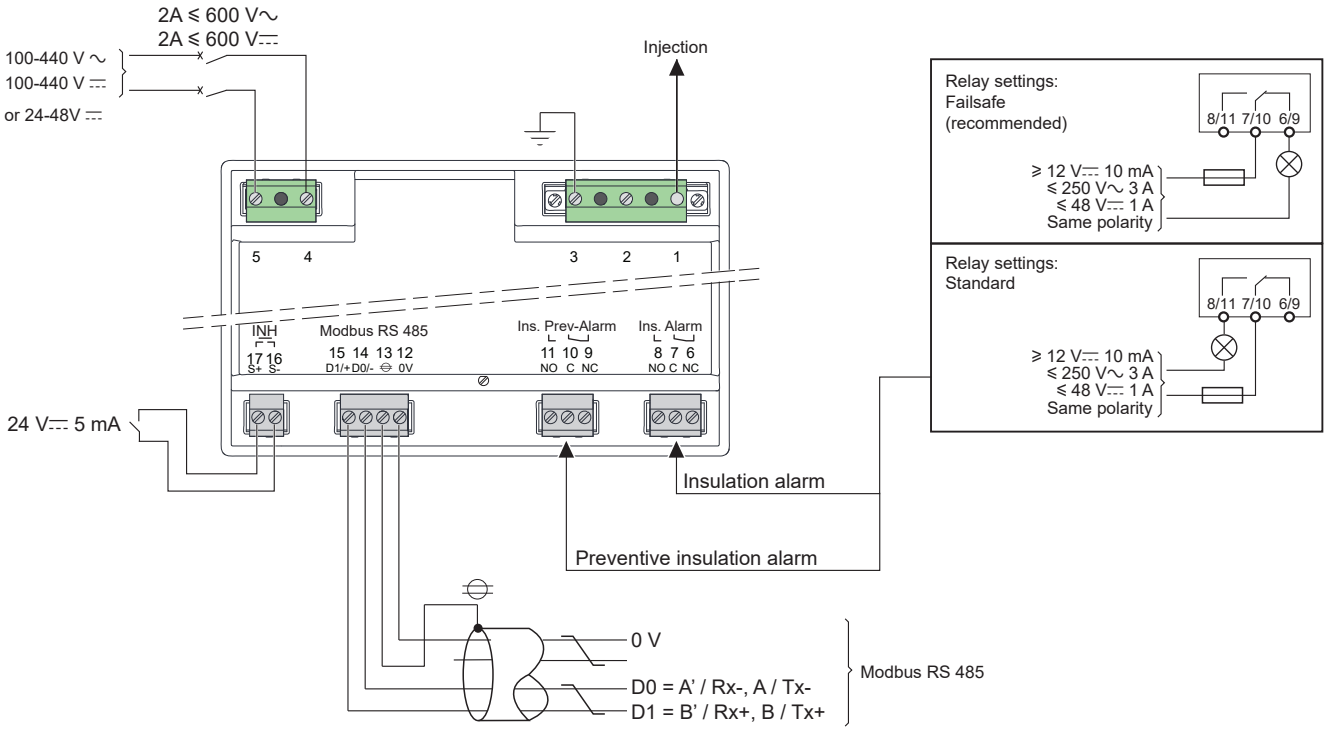
Dimensions (mm)



Flush mounting (mm)



Connection



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.

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.

Applications

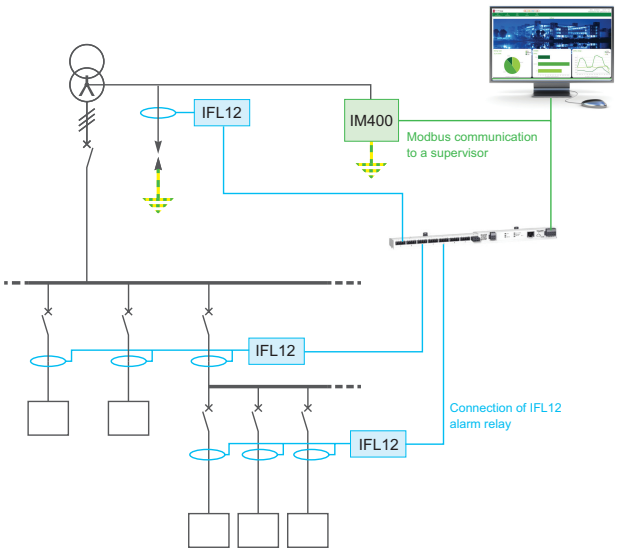
- Ungrounded networks requiring automatic insulation fault location.
- Power circuits networks, including power loads and power electronics such as speed drives, inverters, rectifiers, etc.
- Typical segments: industry, power generation, marine, railways, airport, oil and gas, mining, water, heating 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.

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

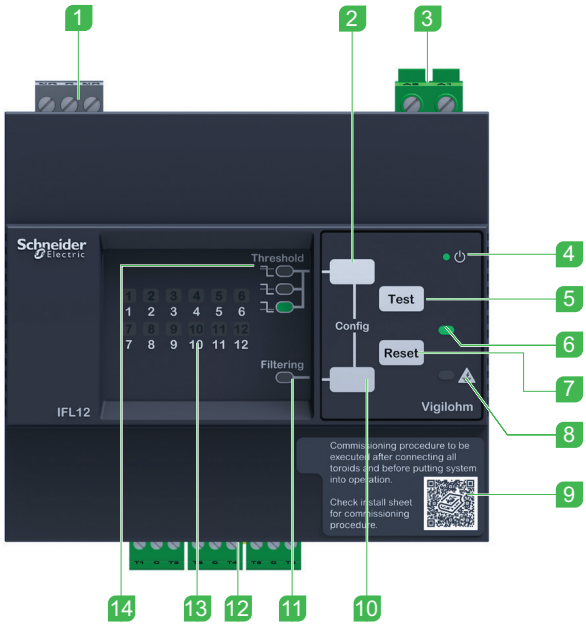
Scan here
to know more
about the product.

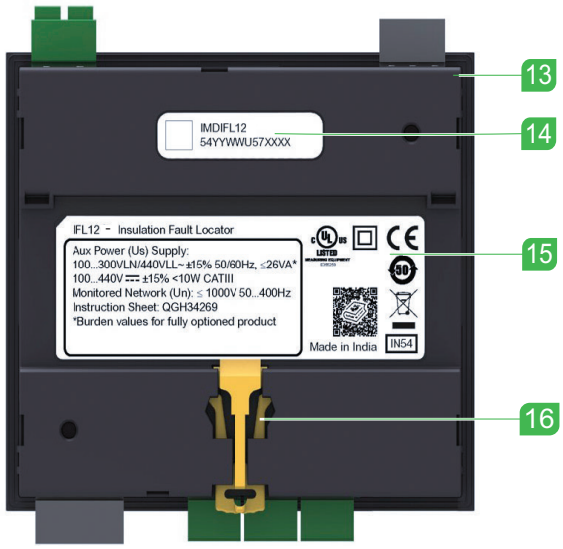
Vigilohm IFL12 / IFL12L
Insulation Fault Locators

Example of Architecture



Physical Description

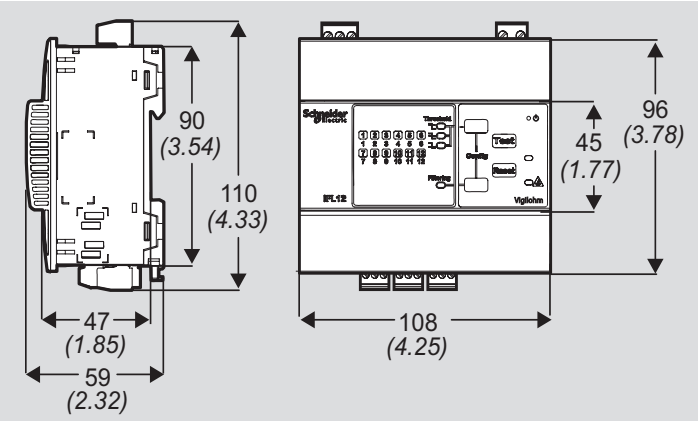




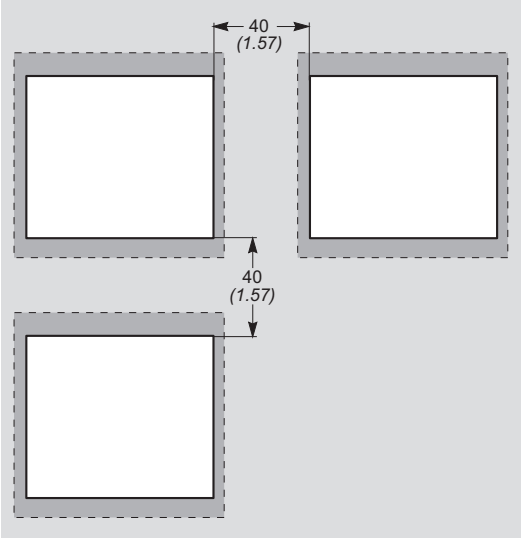
1. Alarm relay
2. Alarm threshold selection button
3. Auxiliary power supply
4. Product status LED
5. Test button
6. No alarm LED
7. Reset button
8. Alarm LED
9. Peel off label
10. Filtering enable/disable button
11. Filtering enable/disable LED
12. 12 toroid connections
13. 12 channel LEDs
14. Low /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

Dimensions (mm)

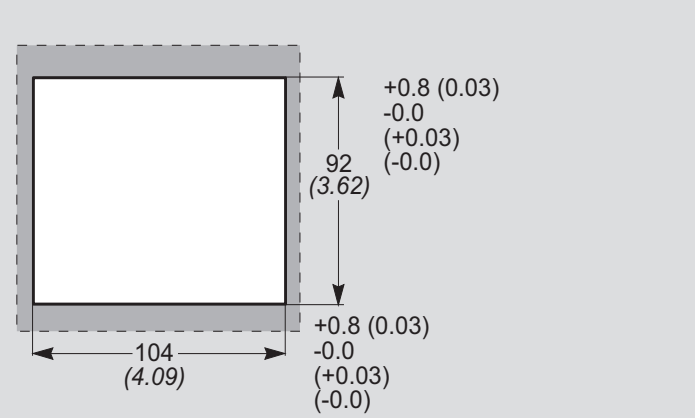
Dimensions (mm)



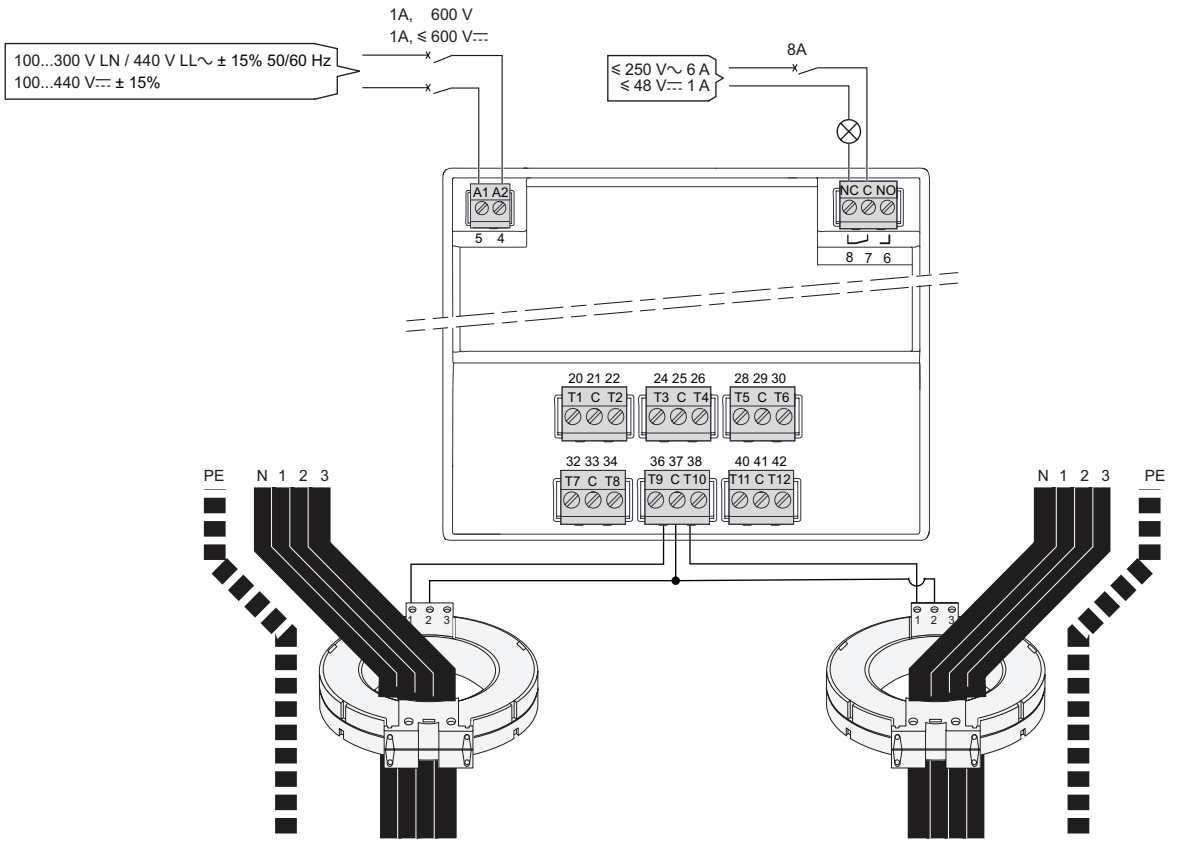
Minimum clearance between flush mounted devices mm / (inch)



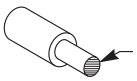
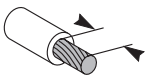
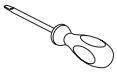
Cut-out for flush mount mm / (inch)



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 mm² (16 AWG) 2 conductors - 0.75 mm² (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 mm² (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 mm² (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.

Vigilohm IFL12C
Communicating Insulation Fault Locator

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

Scan here to know more about the product.

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

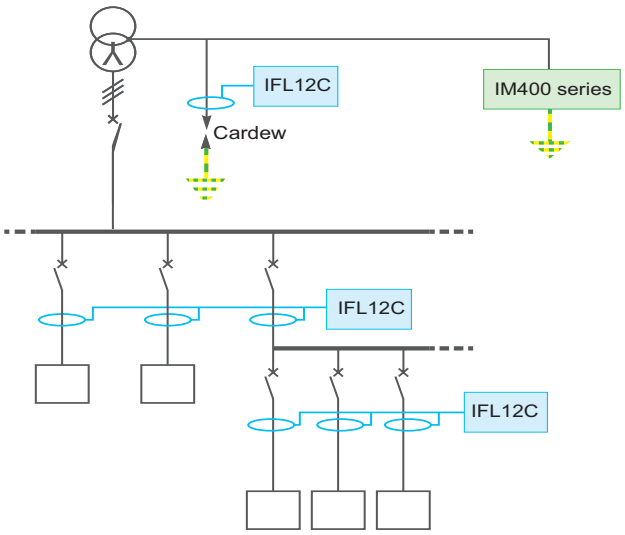
- One common alarm threshold for all feeders (Low, Medium, or High).
- Fast response time: 5s.
- Filtering for highly disturbed systems.
- Intermittent insulation fault reporting.
- Insulation fault is displayed on the LCD.
- Simple and user-friendly human-machine interface.
- Stand-alone device with 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.

Applications

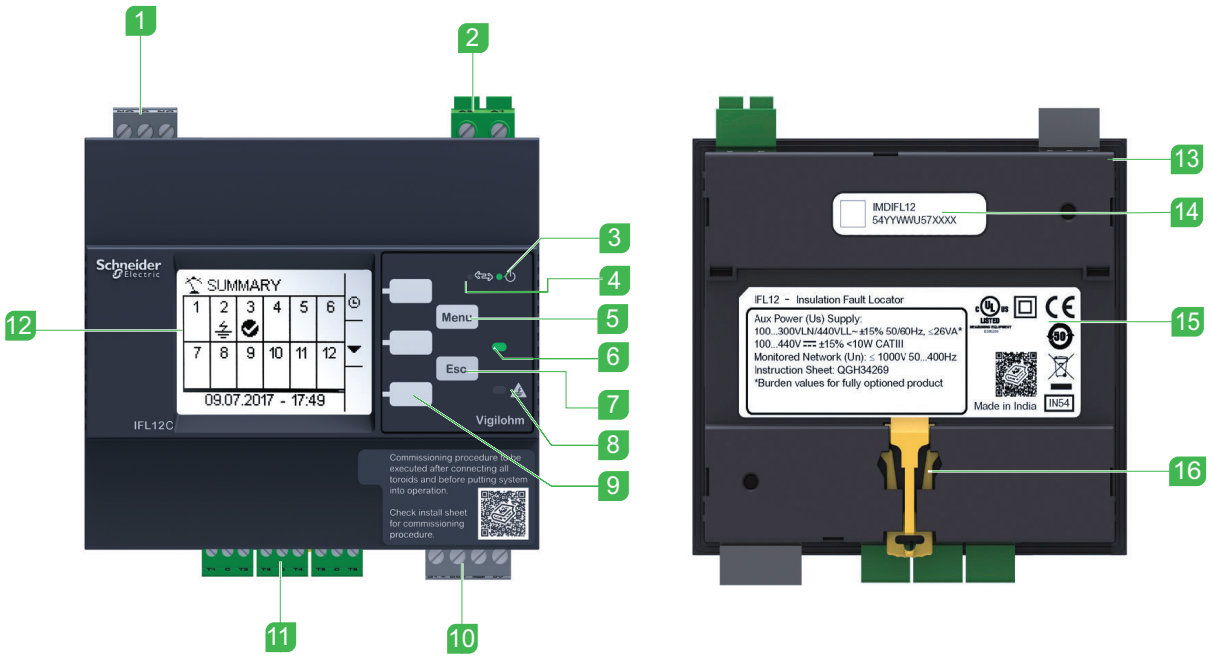
- Ungrounded networks requiring automatic insulation fault location.
- Power circuits networks, including power loads and power electronics such as speed drives, inverters, rectifiers, etc.
- Typical segments: electrical distribution, industry, power generation, marine, airports, oil and gas, mining,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

Vigilohm IFL12C
Communicating Insulation Fault Locator

Example of Architecture



Physical Description

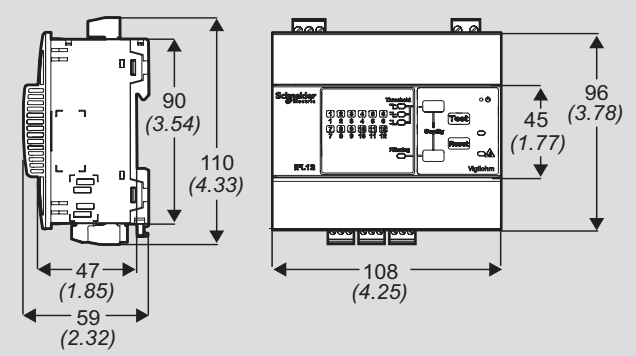


1. Alarm relay
2. Auxiliary power supply
3. Product status LED
4. Communication LED
5. Menu button
6. No alarm LED
7. Esc button
8. Alarm LED
9. Contextual menu buttons
10. RS-485 communication
11. 12 toroid connections
12. LCD screen
13. Gasket
14. Commercial reference and manufacturing data
15. Label
16. DIN mounting clip

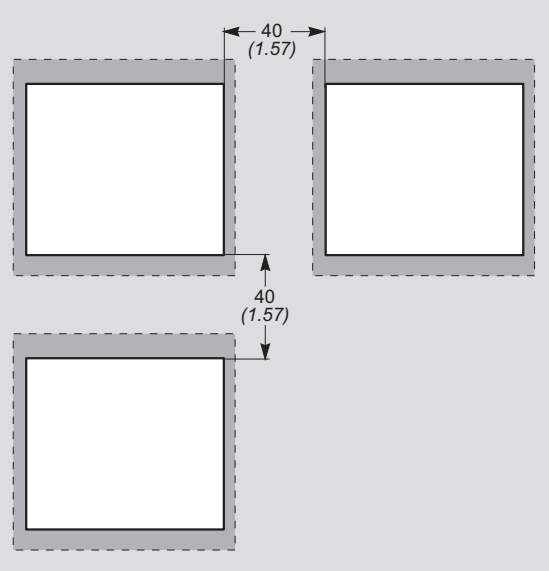
Vigilohm IFL12C
Communicating Insulation Fault Locator

Dimensions (mm)

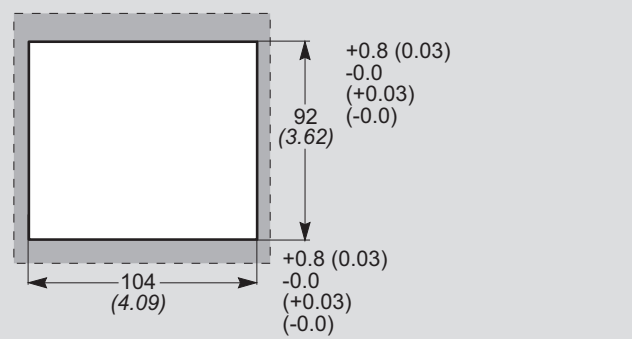
Dimensions (mm)



Minimum clearance between flush mounted devices mm / (inch)

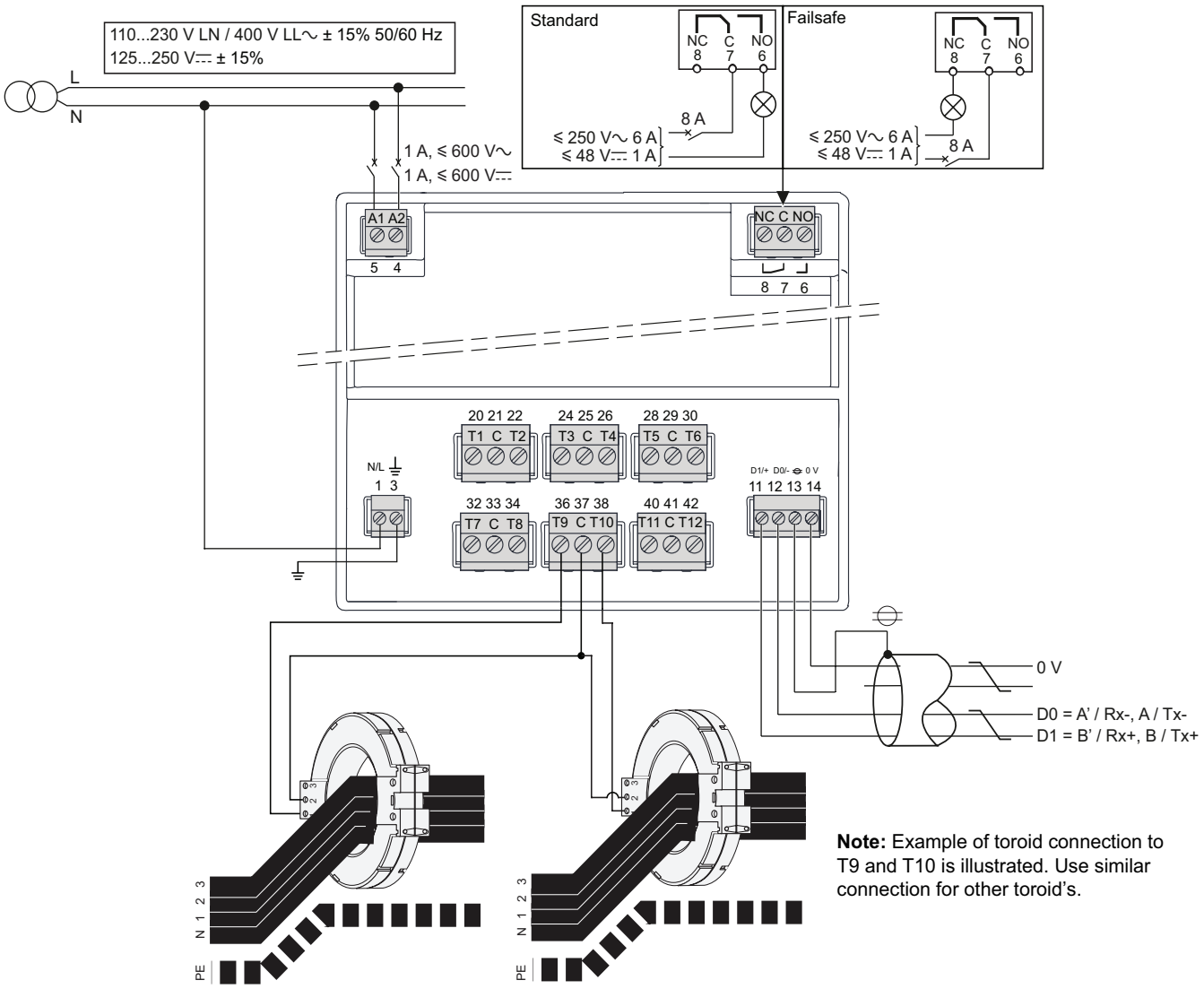


Cut-out for flush mount mm / (inch)

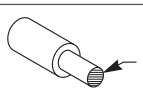
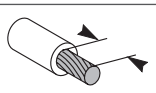
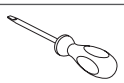


Vigilohm IFL12C
Communicating Insulation Fault Locator

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 mm² (16 AWG) 2 conductors - 0.75 mm² (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 mm² (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 mm² (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 mm² (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 mm² (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

Vigilohm IFL12C
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

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

Scan here to know more about the product.

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

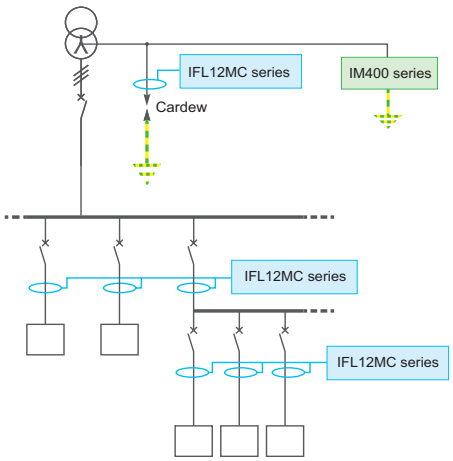
- Each feeder has its own alarm threshold.
- Fast response time: 5 seconds.
- Filtering for highly disturbed power systems.
- Intermittent insulation fault reporting.
- Measures and displays each feeder's insulation resistance from 100 Ω to 250 kΩ, and leakage capacitance from 0.1 µF to 15 µF.
- Stand-alone 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

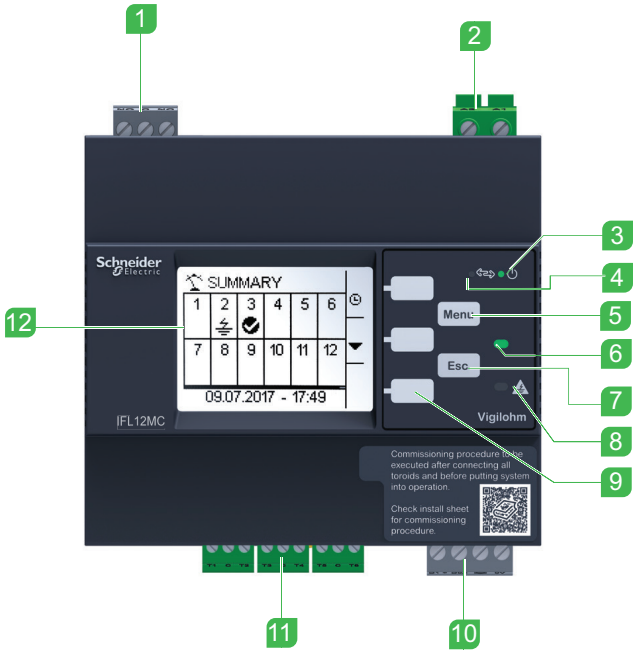
- Ungrounded/IT earthing networks requiring automatic insulation fault location.
- Power circuits networks, including power loads and power electronics such as speed drives, inverters, rectifiers, etc.
- Control command networks, including sensitive loads such as PLCs, I/Os, sensors.
- Typical segments: 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.

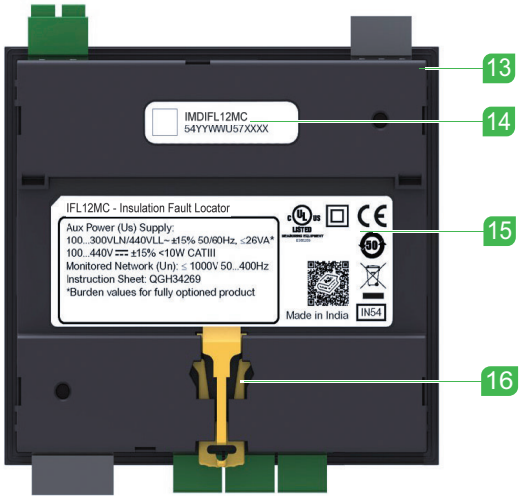
Advanced Insulation Fault Locators

Example of Architecture



Physical Description



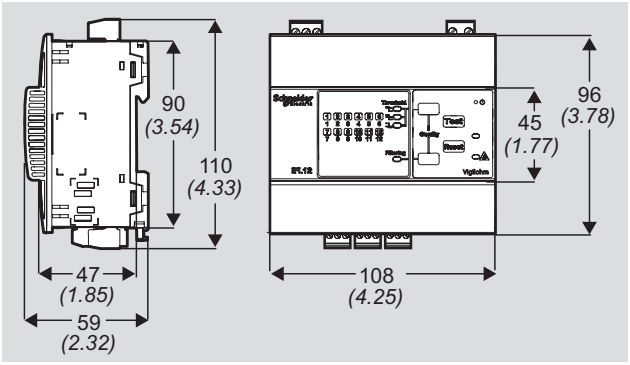


1. Alarm relay
2. Auxiliary power supply
3. Product status LED
4. Communication LED
5. Menu button
6. No alarm LED
7. Esc button
8. Alarm LED
9. Contextual menu buttons
10. RS-485 communication
11. 12 toroid connections
12. LCD screen
13. Gasket
14. Commercial reference and manufacturing data
15. Label
16. DIN mounting clip

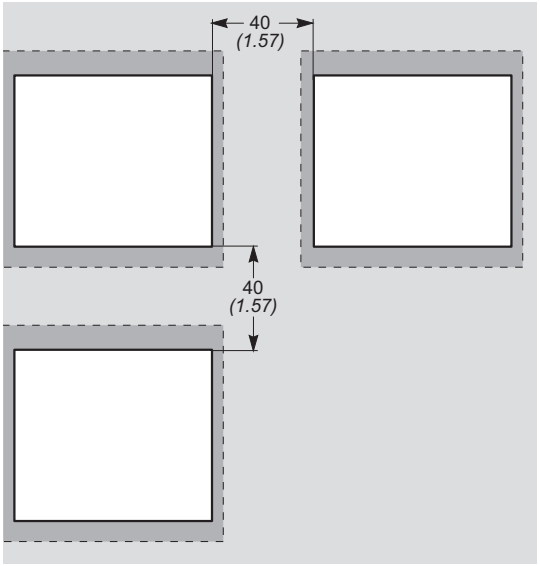
Vigilohm IFL12MC / LMC / MCT
Advanced Insulation Fault Locators

Dimensions (mm)

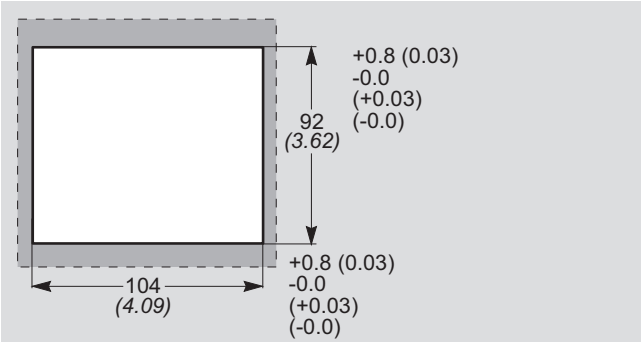
Dimensions (mm)



Minimum clearance between flush mounted devices mm / (inch)

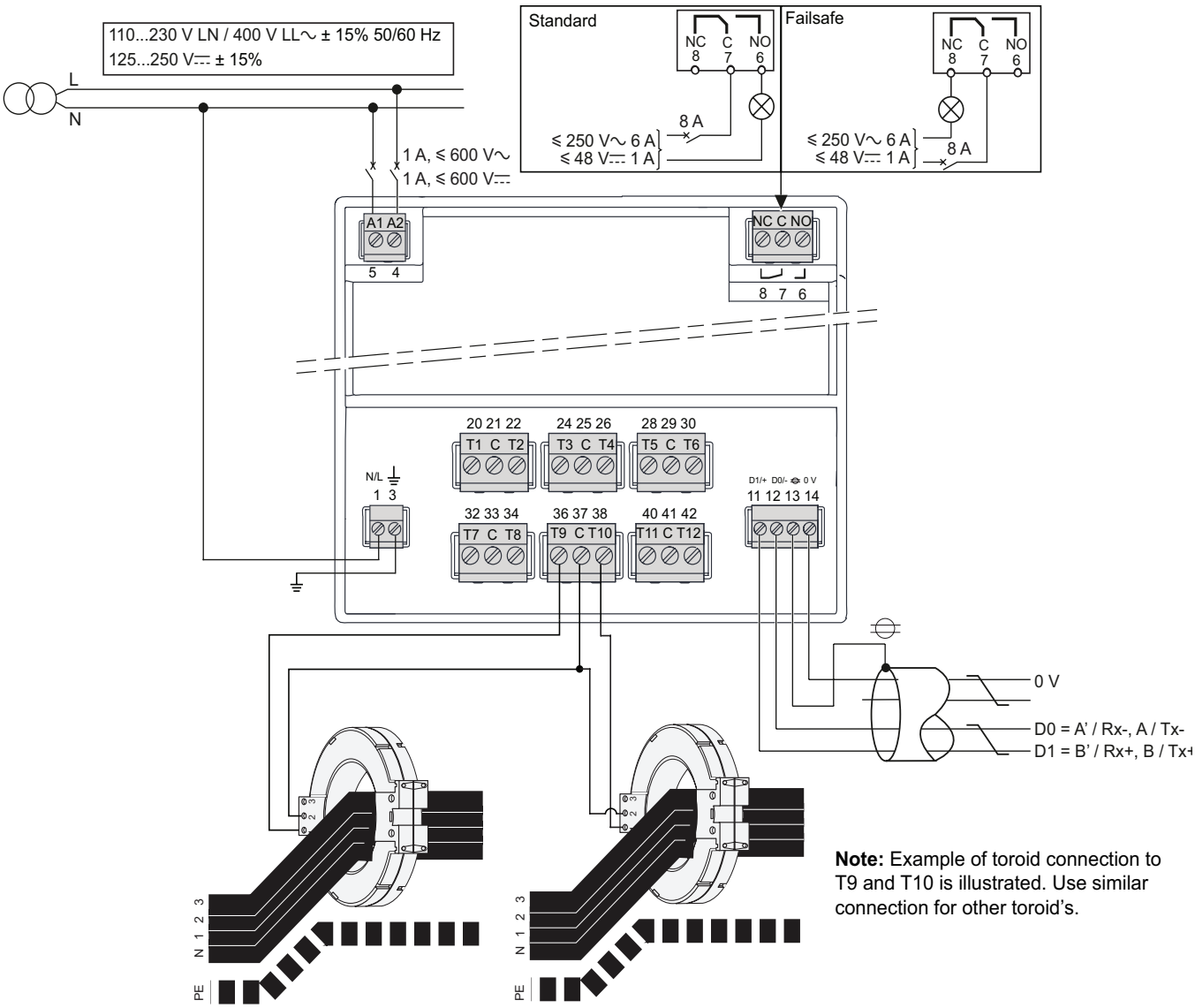


Cut-out for flush mount mm / (inch)

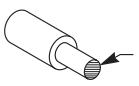
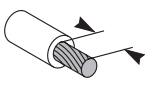
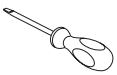


Advanced Insulation Fault Locators

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 mm² (16 AWG) 2 conductors - 0.75 mm² (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 mm² (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 mm² (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 mm² (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 mm² (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		
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	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.

Vigilohm IFL12H
Insulation Fault Locator for Healthcare Facilities

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

Scan here to know more about the product.

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

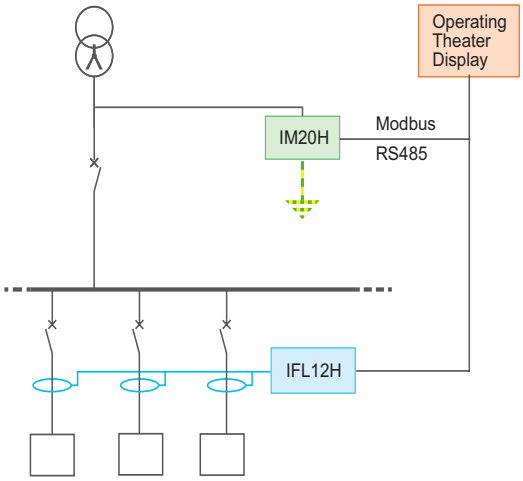
- Each feeder has its own alarm threshold.
- Fast response time: 5 seconds.
- Intermittent insulation fault reporting.
- Large screen and interactive human-machine interface to ease operation and maintenance.
- Displays product status according to standard.
- Measures and displays each feeder's insulation 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.

Applications

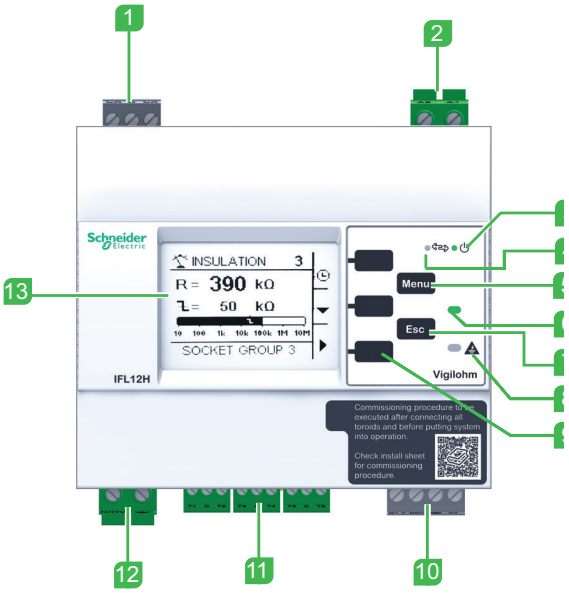
- For Group 2 medical premises, such as operating theaters, intensive care units, and recovery rooms, designed as per IEC60364-7-710, where ungrounded networks are used and where automatic insulation fault location is required.
- Strongly recommended in networks where a medical IT system is used to supply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

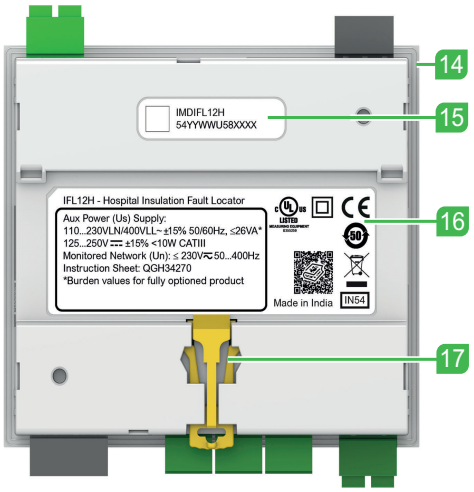
Vigilohm IFL12H
Insulation Fault Locator for Healthcare Facilities

Example of Architecture



Physical Description



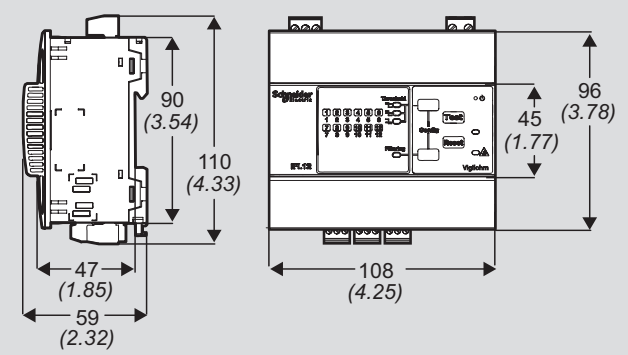


1. Alarm relay
2. Auxiliary power supply
3. Product status LED
4. Communication LED
5. Menu button
6. No alarm LED
7. Esc button
8. Alarm LED
9. Contextual menu buttons
10. RS-485 communication
11. 12 toroid connections
12. Voltage input
13. LCD screen
14. Gasket
15. Commercial reference and manufacturing data
16. Label
17. DIN mounting clip

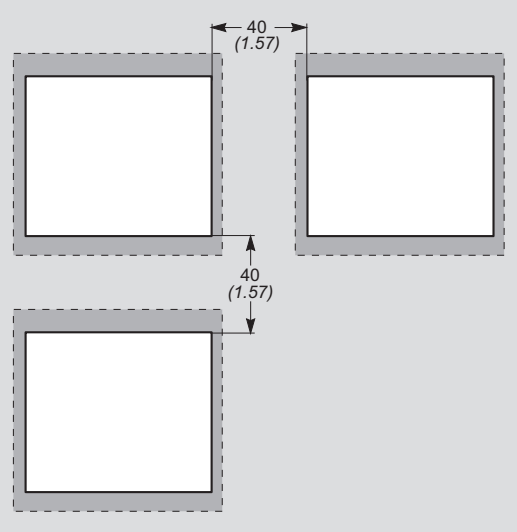
Insulation Fault Locator for Healthcare Facilities

Dimensions (mm)

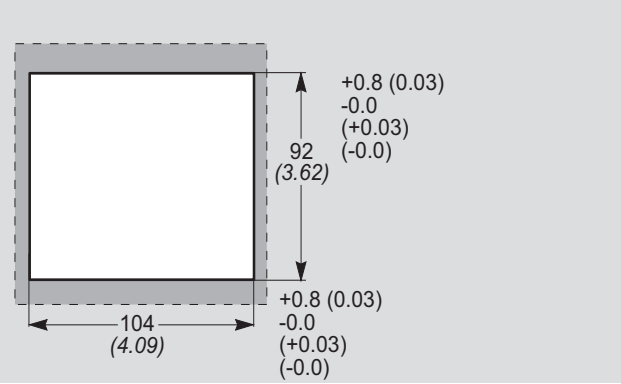
Dimensions (mm)



Minimum clearance between flush mounted devices mm / (inch)

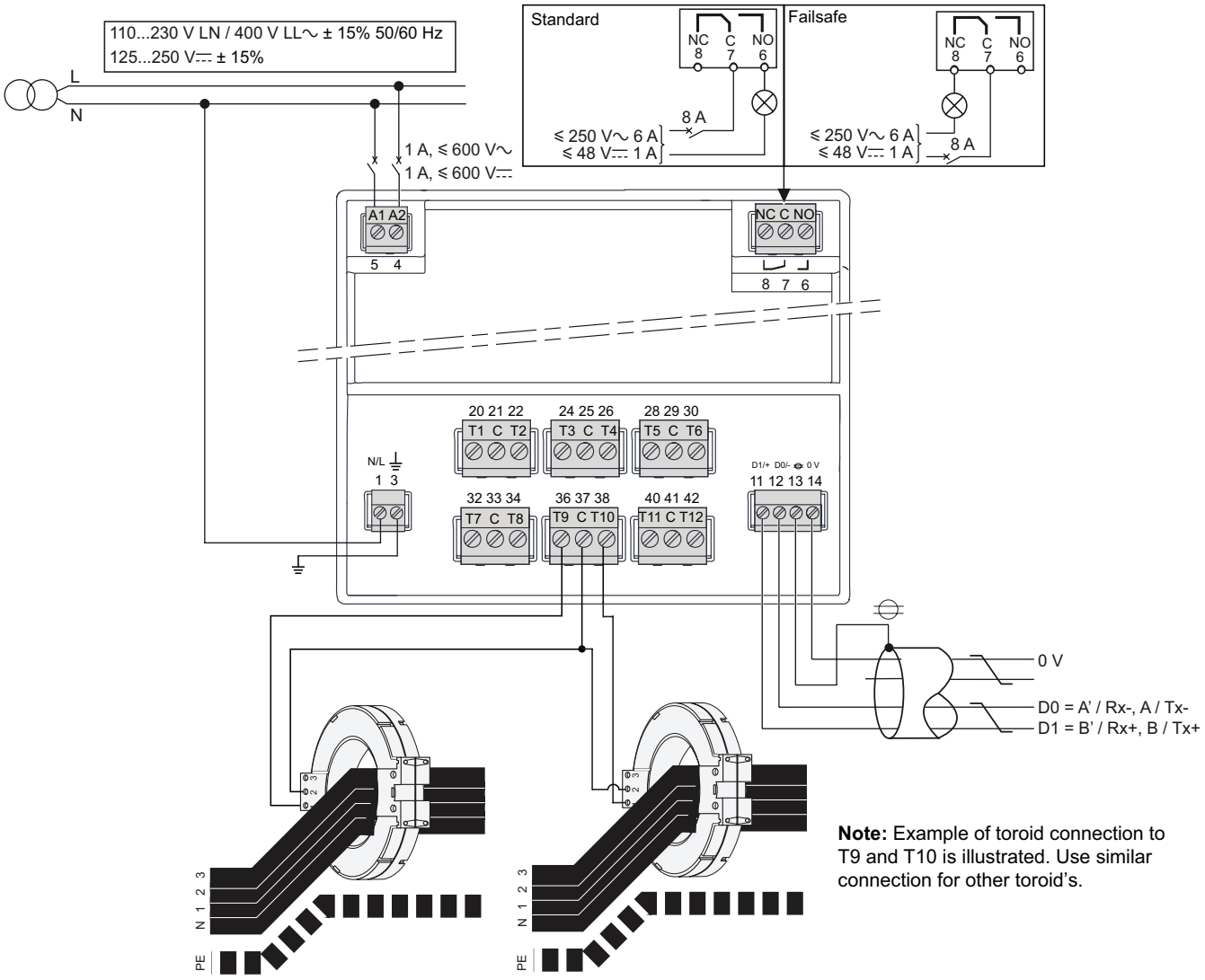


Cut-out for flush mount mm / (inch)

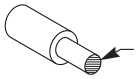
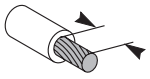
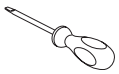


Insulation Fault Locator for Healthcare Facilities

Connection



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 mm² (16 AWG) 2 conductors - 0.75 mm² (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 mm² (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 mm² (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 mm² (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 mm² (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 IFL12H
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 µF
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 kΩ
Feeder capacitance measurement range		Not compatible
Fault alarm thresholds		50 Ω to 200 kΩ
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.

Manual Fault Locating Kit

MFLK1

CP15 CP100 and CP50

AC/DC CE c UL us LISTED EAC

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.

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:

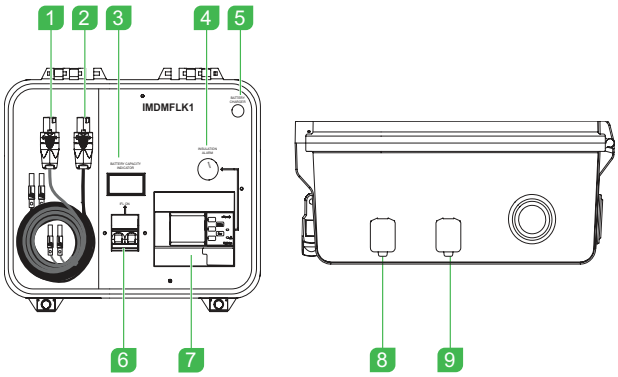
1. If the network includes automatic IFL12s, the IFL12 will display the network feeder where the insulation fault is located.
2. If no IFL12 monitors the sub-feeders, then install the kit under this feeder to calibrate it.
3. Connect the amp clamp to input via its dedicated cable.
4. Calibrate the MFLK1 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.

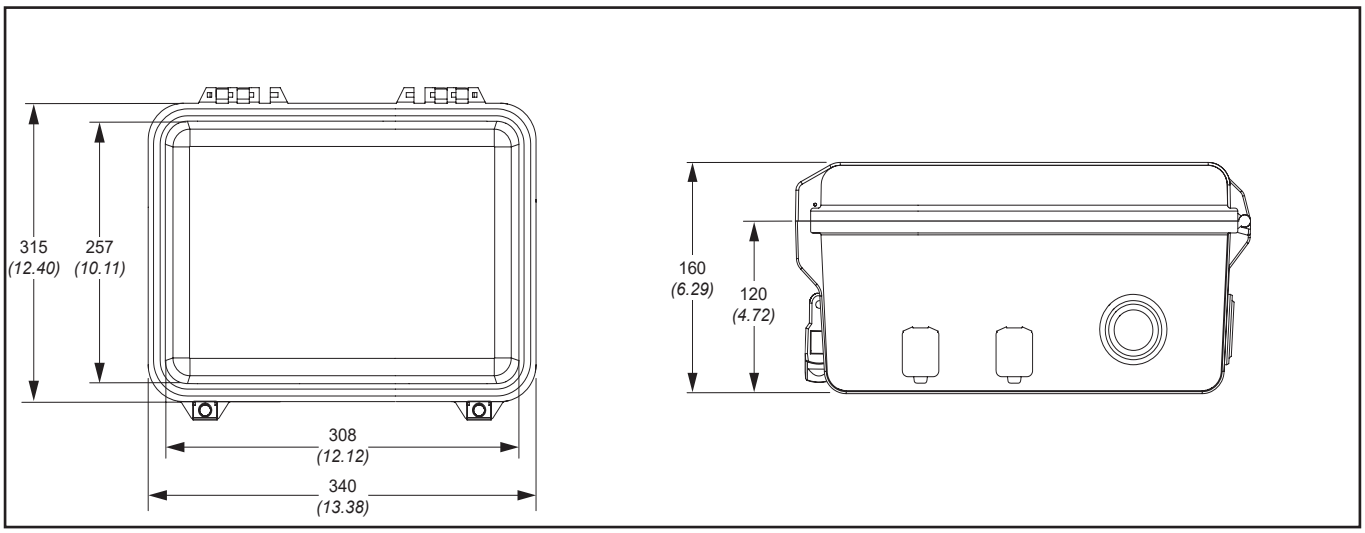
Manual Fault Locating Kit

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)



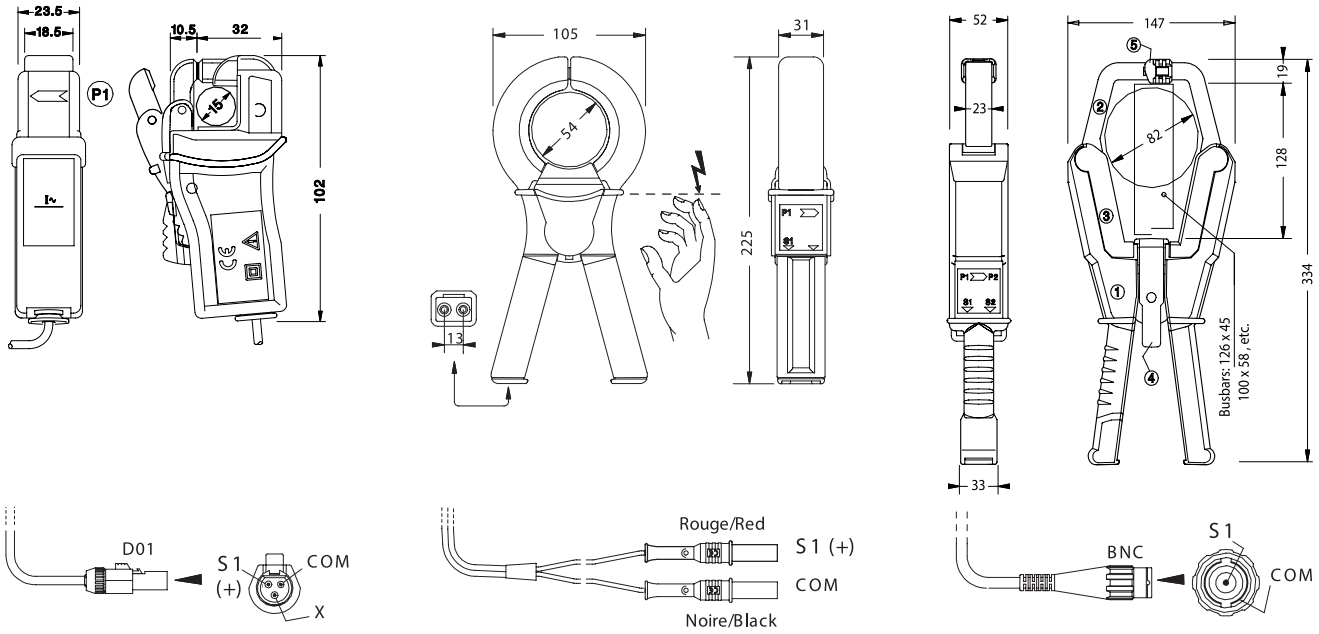
General Characteristics

	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

Manual Fault Locating Kit

Physical Description and Dimensions (mm) Clamps

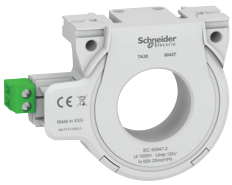
The MFLK1 mobile locating kit works in combination with the clamps below. Its compact design, leak tightness and 24-h battery enable it to be easily carried around long networks, and on various types of terrain.



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.

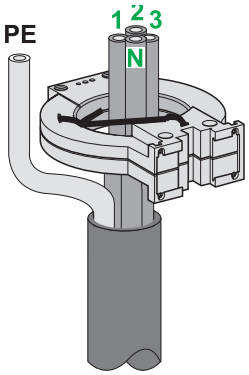
A type closed toroid: IA80.

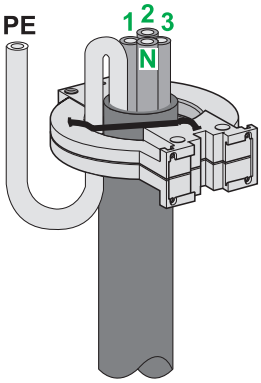
OA type split toroid: TOA80.

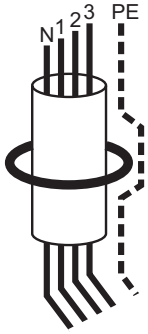
AC/DC CE cULus LISTED EAC

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 Insultion 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).

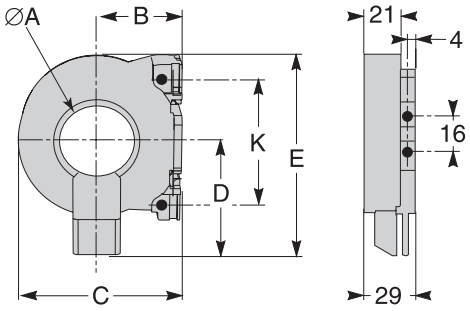
Characteristics of the connection between fault locator and toroid:

- Resistance ≤ 3 Ω
- Wire cross-section: from 0.75 mm² to 1.5 mm²
- Max. length: 100 m

Earth Leakage Current Detectors

Dimensions (mm)

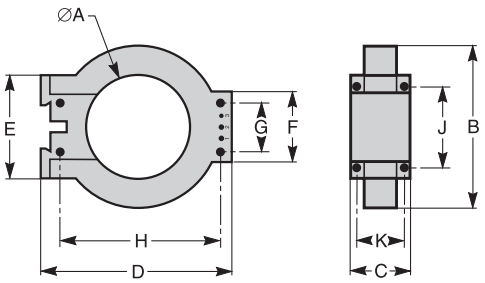
TA30 and PA50



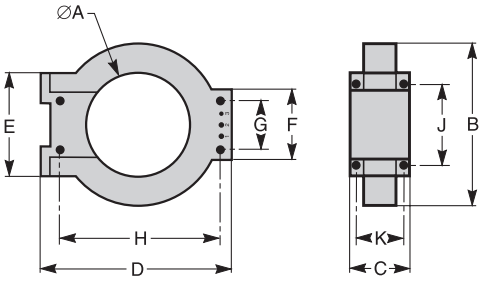
Type	Dimensions (mm)					
	ØA	B	C	D	E	F
TA30	9.4	32.5	63	44	74.5	50
PA50	50.4	45	88	57	100	60

IA80, MA120, SA200,GA300 Toroids

IA80 and MA120



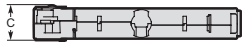
SA200 and GA300



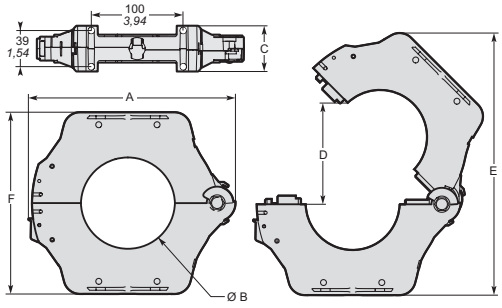
Type	Dimensions (mm)									
	ØA	B	C	D	E	F	G	H	J	K
IA80	80	122	44	150	80	55	40	126	65	35
MA120	118	164	39	190	140	-	-	163	125	30
SA200	196	256	46	274	120	90	60	254	104	37
GA300	291	360	46	390	120	90	60	369	104	37

TOA80 and TOA120 Toroids

TOA80



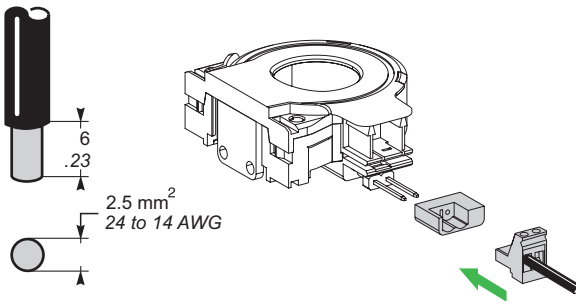
TOA120



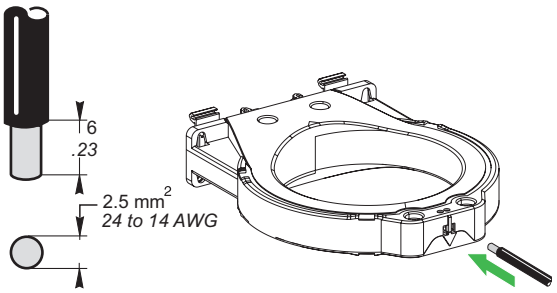
Type	Dimensions (mm)					
	A	B	C	D	E	F
TOA80	177	80	28	108	235	156
TOA120	225	120	50	150	303	205

Connection

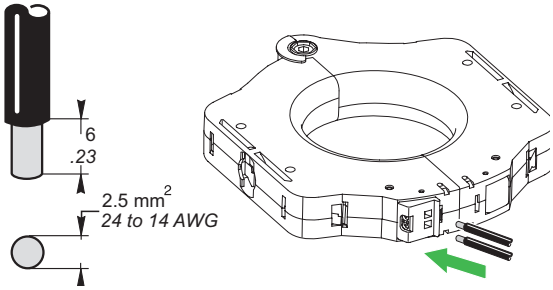
TA30 and PA50 toroids



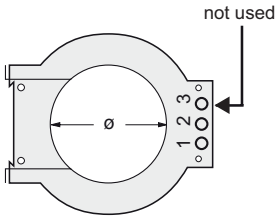
IA80, MA120, SA200 and GA300 toroids



TOA80 and TOA120 toroid

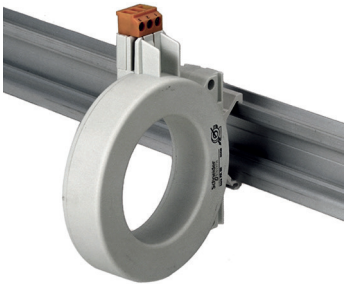


Terminal 3 not used for toroid wiring



Mounting examples for Type A toroids

On rail Ø30 to Ø80 mm



On plate or section Type A Ø30 to Ø200 mm

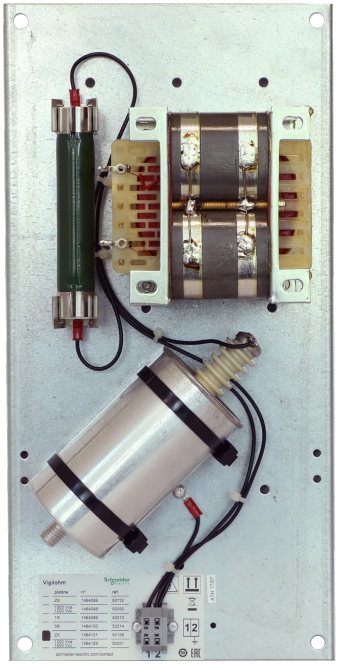
On cable Ø120 to Ø300 mm

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 Ui	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 Uimp (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			

Earthing Impedance



AC/DC CE EAC

IEC61010-1
UL 61010-1
IEC61326-4

Scan here to know more about the product.

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 transfomer).
- 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.

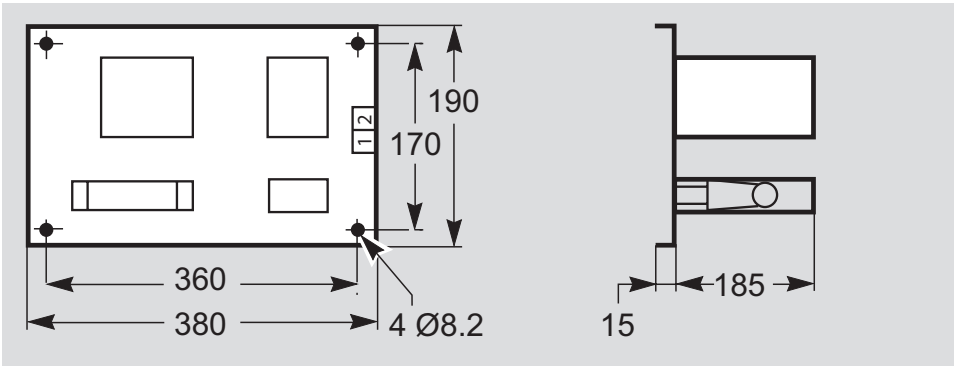
Application

- 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.

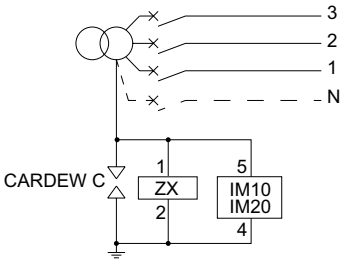
Dimensions (mm)

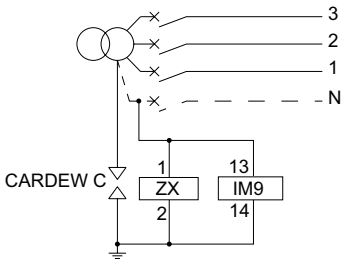


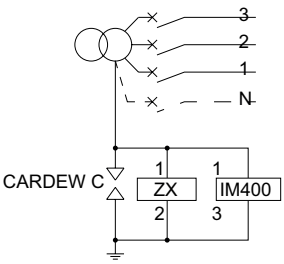
Version : 1.0 - 05-11-2025
PLSED310020EN

Earthing Impedance

Connection



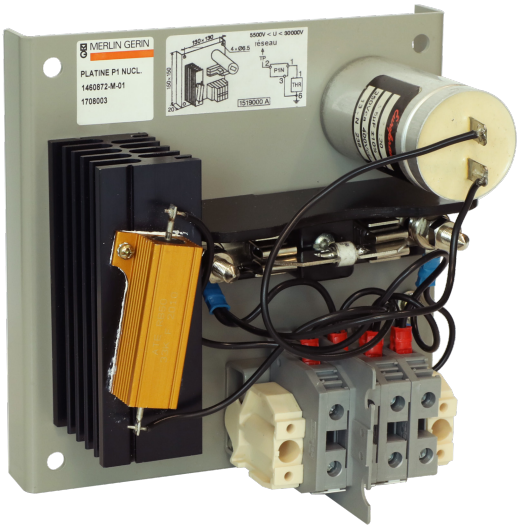




General Characteristics

	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

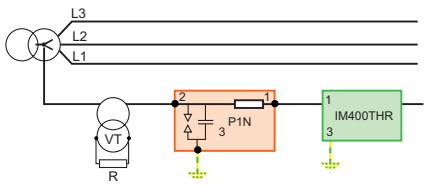
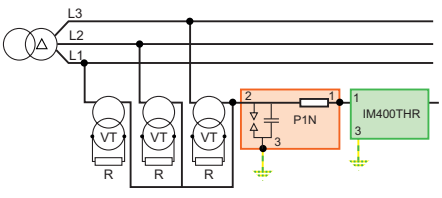
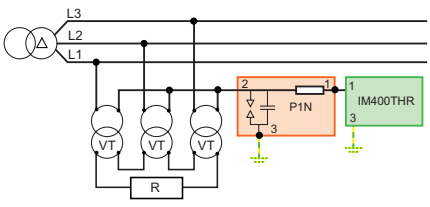
- IM400THR and IM400LTHR.
- Used in combination with voltage transformers.

AC/DC

IEC61010-1
UL 61010-1
IEC61326-4

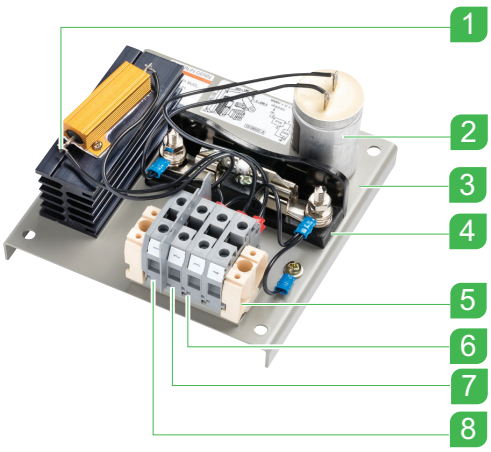
Scan here to know more about the product.

Examples of Architecture

Three-phase network with accessible neutral	Three-phase network without neutral accessible	
		

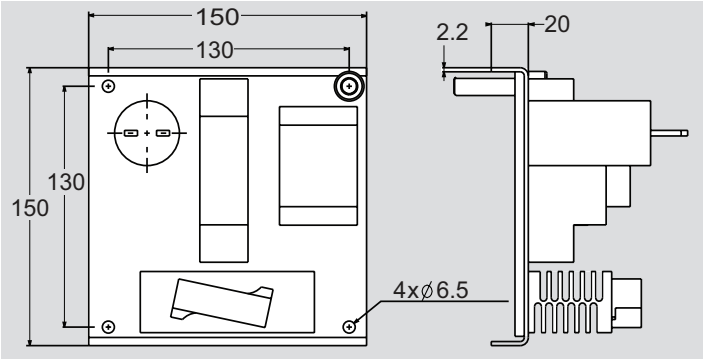
Vigilohm P1N Plate
Ground Adaptor

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

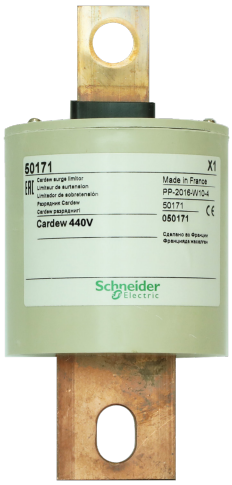
Dimensions (mm)



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

Surge Limiter



AC/DC

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

Scan here
to know more
about the product.

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.

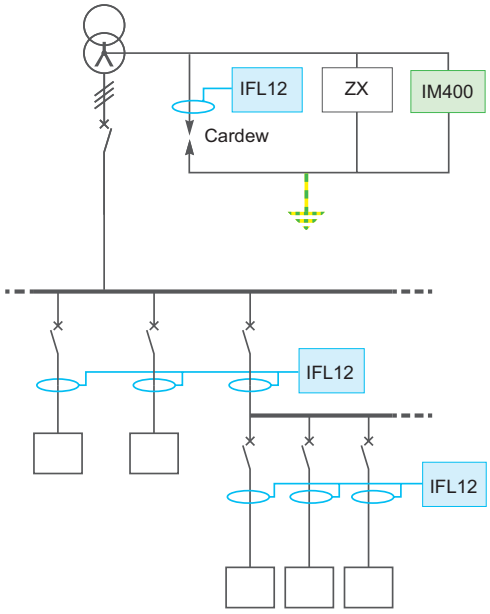
Main Features

- 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.

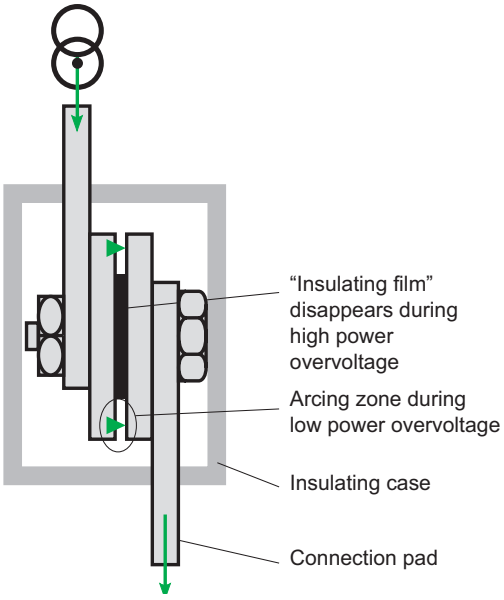
Example of Architecture



Physical Description

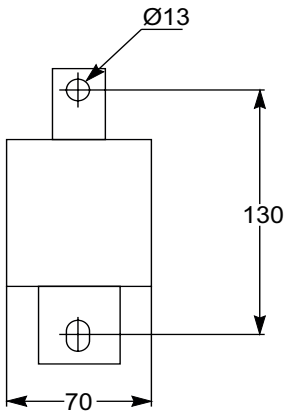
Cartridge

Base

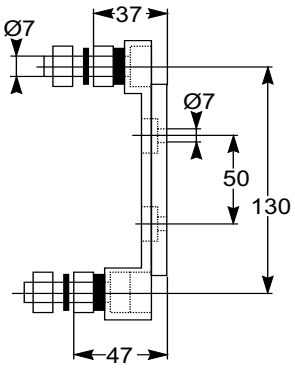


Interior view of the Cardew

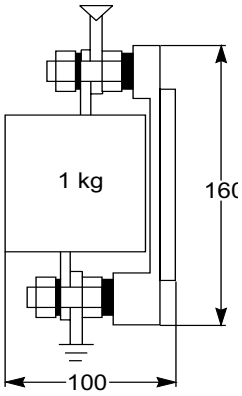
Dimensions (mm)



Cartridge



Base



Cartridge

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: $S = \sqrt{I^2t}/k$, 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		

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

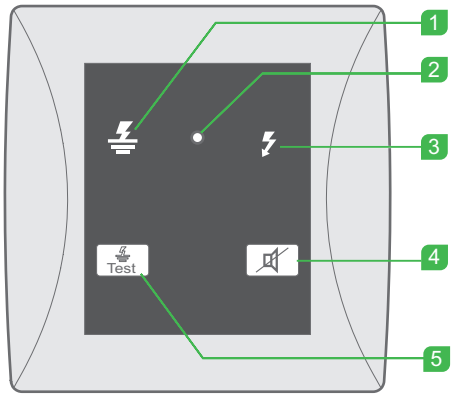
The HRP works in association with the IMD range dedicated to hospitals, such as the IM10-H, IM15H, and IM20-H.

AC/DC

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

Scan here
to know more
about the product.

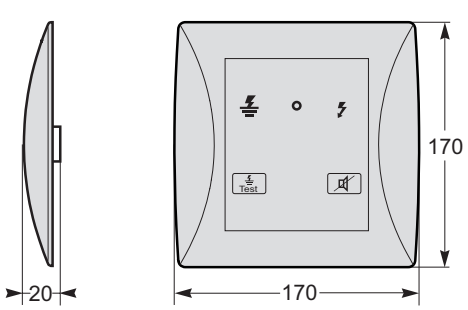
Physical Description

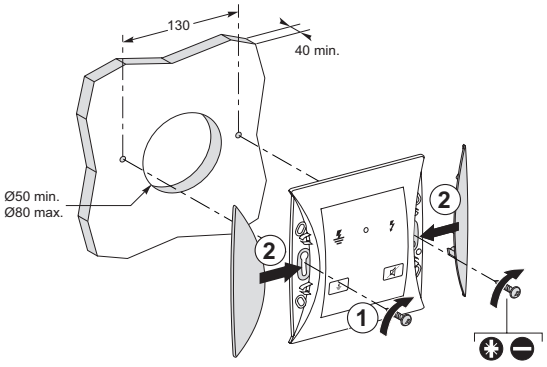


1. Insulation fault indicator
2. HRP operation indicator
3. Electrical fault indicator (caused by overload, overheating of transformer or circuit-breaker trip)
4. Button to stop alarm buzzer
5. Insulation test button

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

AC/DC

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

Scan here
to know more
about the product.

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 unders tanding 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...

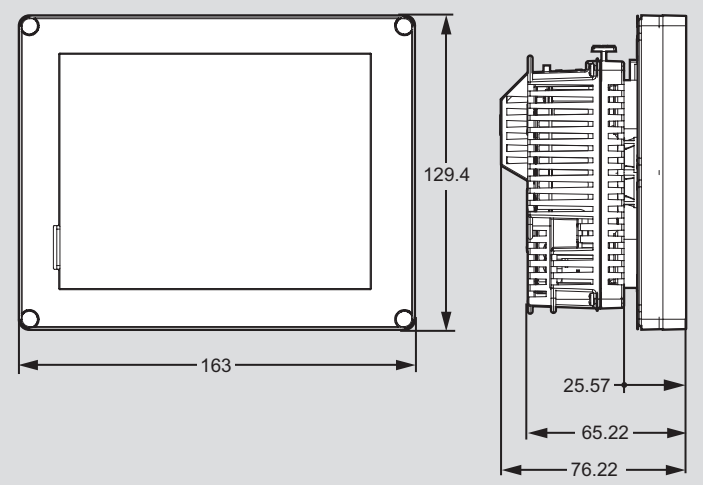
Compatible Products

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.

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

IT Medical Transformers

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.

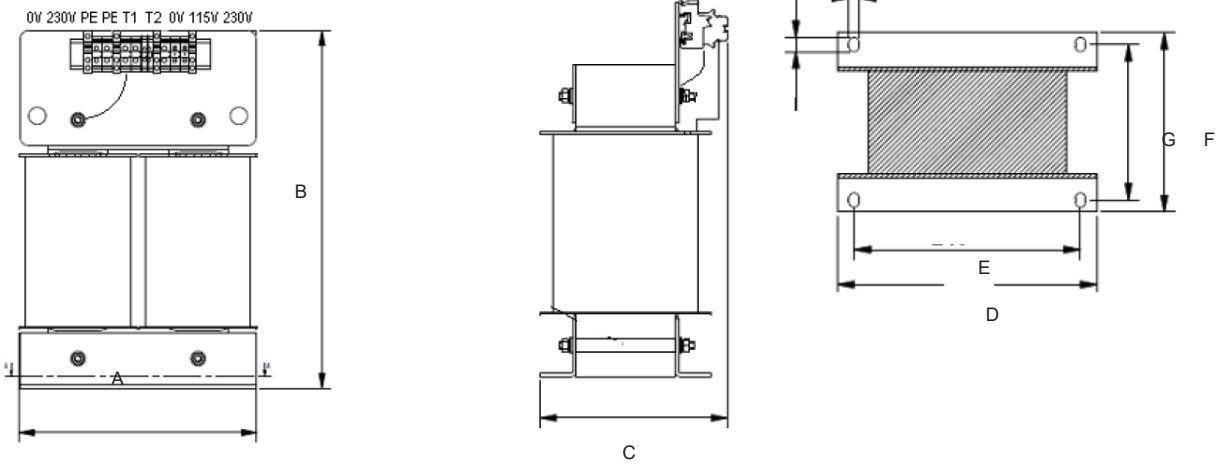
This solution allows to have continuity of service in case of overload, as the technician can correct the issue without having an interruption of power.

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

Scan here
to know more
about the product.

Dimensions (mm)



IT Medical Transformers

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 µF).

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

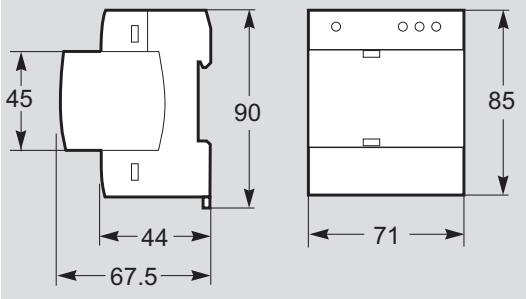
IEC 61010-1
UL 61010-1
IEC 61326-4

Scan here to know more about the product.

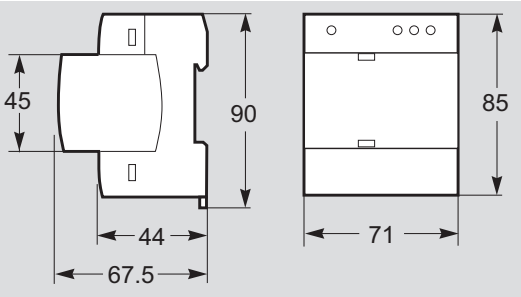
Voltage Adaptors

Dimensions (mm)

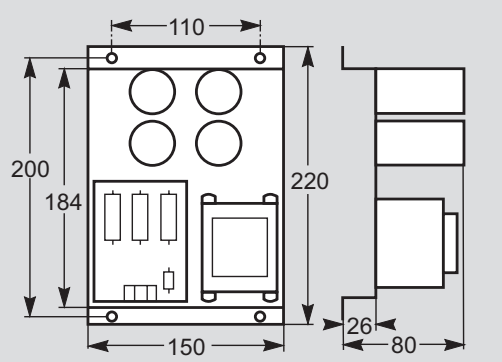
IM20-1700



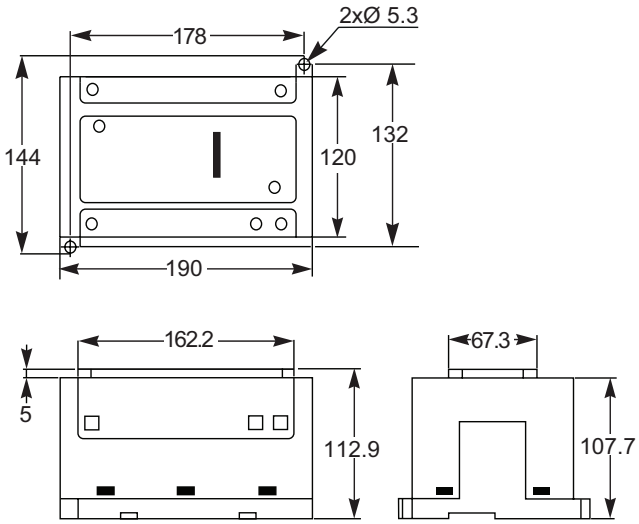
IM400-1700C



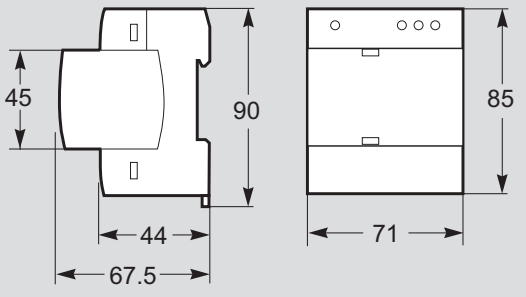
PHT1000



IM400VA2



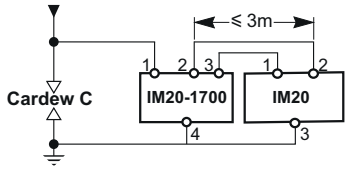
IFL12VA1T

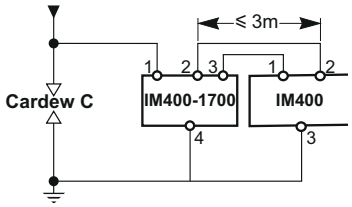


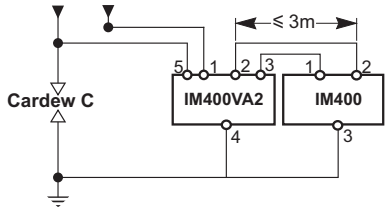
Voltage Adaptors

Installation

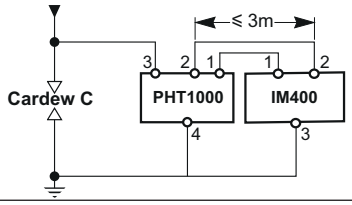
IM20-1700	IM400-1700C	IM400VA2
Connection to network: to neutral or to a phase or to a polarity	Connection to network: to neutral or to a phase or to a polarity	Connection to network: two points of connection, to neutral + a phase or to two phases or to two polarities

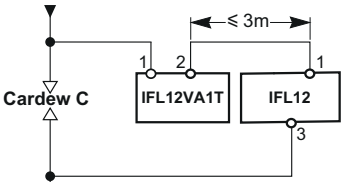






PHT1000	IFL12VA1T
Connection to network: to neutral or to a phase or to a polarity	Connection to network: to neutral or to a phase or to a polarity





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)	<1700 Vac (connection to neutral) or <1000 Vac (connection to a phase)				<2600 Vac (connection to neutral) or <1500 Vac (connection to a phase)
DC Voltage range	<1000 Vdc	<1200 Vdc	<1000 Vdc	<1200 Vdc	<1500 Vdc
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	500µF (if not used in Photovoltaic application) 2000µF (Photovoltaic)	500 µF	5500 µF
Product Performances					
Internal impedance	400 kΩ	243 kΩ	400 kΩ	660 kΩ	564 kΩ
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

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Schneider Electric Industries SAS
35, Rue Joseph Monier
CS 30323
92506 Rueil Malmaison Cedex

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