

# Insulation and power monitoring system

2019



When energy matters



DIGIWARE BUS

Alarm1 Alarm2

socomec

ON  
FAULT  
CON

RESET  
ALARM1  
ALARM2  
TEST  
INI  
DATE/STOP

ISOM I-40

socomec

ISOM D-75

INSULATION

Rf > 4

MΩ

THRES  
HOLDS

Cf 10

μF

RESET

TEST

OK

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## Insulation monitoring for power networks and control circuits

### ISOM Digiware



**ISOM  
Digiware D**  
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**DIRIS  
Digiware U**  
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**ISOM  
Digiware L-60**  
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**ISOM  
Digiware F-60**  
*p. 22*

### ISOM



**ISOM K-40**  
*p. 24*

## Insulation monitoring solutions for medical locations

### ISOM Digiware

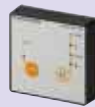


**ISOM  
Digiware D-55h**  
*p. 26*



**ISOM  
Digiware L-60h**  
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### ISOM



**ISOM D-15h**  
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**ISOM K-40h**  
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## Portable insulation fault location system



**ISOM PS-61**  
*p. 50*

## Core balance transformers and sensors



Locating  
core balance  
transformers  
*p. 36*



**ISOM T-15**  
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Current sensors  
**TE/TR/TF**  
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## Expert Services

Our experts are here for you to make your project a success.





# Expert solutions for the availability and safety of your unearthed IT system

Insulation monitoring

Choose an unearthed IT system and make power distribution availability a priority. This will give you constant control over the electrical distribution and its insulation from earth, no matter what happens. Your electrical installation will be stable and more reliable.



## Ensures a continuous power supply

The IT earthing system ensures you can continue to use your systems even if there's an insulation fault. This particular design makes it possible to limit the risks for operators and facilities.

## Guarantees the protection of assets and people

To protect against indirect contacts, standards (IEC 60364, etc.) state that an insulation monitoring device (IMD) must be installed. The ISOM system also minimises the risk of fire and explosion in BE2 and BE3 premises.

## Optimises maintenance costs of your electrical installation

Complementing an ultra-safe earthing system, the IT system requires continuous maintenance.

The ISOM IMD is suitable for all kinds of network. It is complemented by an insulation fault locator (IFL) allowing for an extended and more efficient earth fault location.

Combining the measurement of insulation and energy consumptions within the same equipment also reduces the overall cost of monitoring your electrical installations.

### The solution for



Naval and military infrastructures



Rail infrastructures



Process / manufacturing industries



Oil & gas industries

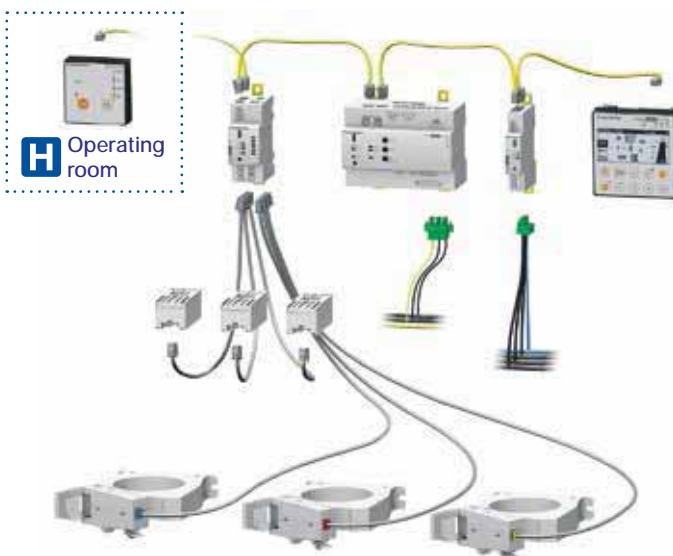


Energy production



Healthcare facilities

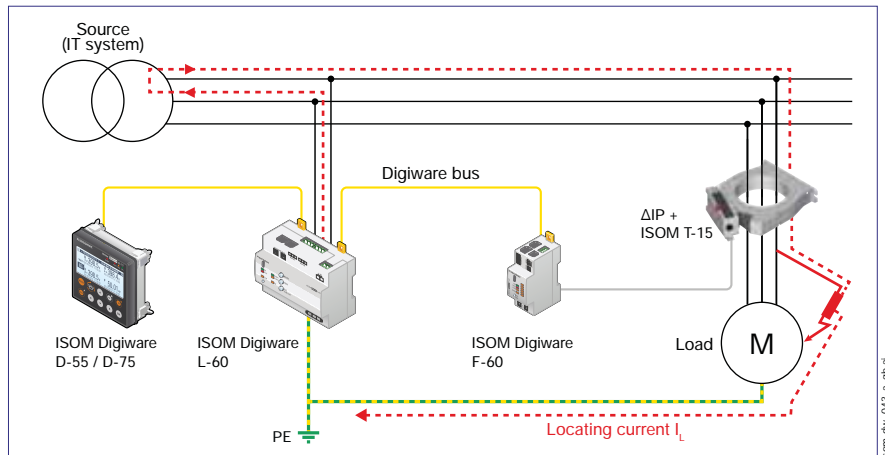
## ISOM Digiware for medical facilities



# Principles for insulation monitoring and fault location

The IT system ensures service continuity in case of an insulation fault. This means:

- The insulation monitoring device (IMD) monitors the evolution of the network insulation,
- Insulation faults are quickly located (IFL) and cleared.



Principles for insulation monitoring and fault location.

## Insulation monitoring device (IMD)

The IMD must be compatible with the leakage capacitance of the network and with the type (AC or DC) of resistive earth fault current generated by the loads.

SOCOMECC IMDs with their self-adaptive measurement signalling are compatible with highly capacitive networks. They cover every application and eliminate disturbances generated by power converters.

## Insulation fault location system (IFL)

Faults can be located in two ways:

- Automatically, with a permanently installed system
- Manually, with a portable system

A fault location system comprises:

- A locating current injector (LCI) that can be standalone or built into the IMD,
- One or multiple fault location modules equipped with locating core balance transformers.

The IMD detects an insulation fault which triggers an alarm. This information automatically activates the insulation fault location system.

Like the IMD, the LCI generates a pulse signal which depends on the severity of the insulation fault and on the mains voltage.

In case of a major insulation fault, the locating current signal value is automatically limited. The fault is detected by core balance transformers when the insulation fault occurs. The pulse current is analysed so the fault can be assessed.



### Performance

- The first revolutionary system with both insulation monitoring and power monitoring of circuits.
- 100% compatible with Digiware systems.
- 100% customisable and scalable.
- Full Socomec solution.
- Possible to combine ISOM and DIRIS Digiware modules within the same system.



### OhmScanner

- Precise and fast location of insulation faults.
- Anticipation of faults.
- Detailed mapping of the insulation (resistive and capacitive evaluation).
- Continuous monitoring of the insulation level of each circuit.



# Expert Services for unearthed IT systems

Insulation monitoring

Auditing, consultancy, implementation support, Socomec service experts help you in your energy efficiency improvement strategy. With our diverse expert services, you are guaranteed the best startup and use of your insulation monitoring solution.



SITEL611\_AEIPS

## Services

### Installation audit

Our technicians support you in monitoring your electrical insulation and finding insulation faults in your system.

### Startup

We check the settings and the proper operation of the devices. With these services you can quickly make the most of your system to ensure optimum continuity of service.

### Integration and mapping

We help integrate and configure the data collected in the WEBVIEW analysis and monitoring software.

We map your system's degree of insulation.

### Operation support

We offer remote operation support in case the preset insulation thresholds are reached, and carry out onsite work, if necessary.

### Certified training

Take a personalised training course to understand the distribution of different neutral systems and to make full use of the functionality of our solutions.

We provide personalised monitoring and regular upgrading of your maintenance equipment.

### The solution for

- > Process/manufacturing industries
- > Oil & gas industries
- > Energy production
- > Naval and military infrastructures
- > Transport
- > Healthcare facilities

### What we do

- > Installation audit
- > Startup
- > Integration and mapping
- > Operation support
- > Certified training

### Approvals and certifications

- > Socomec is registered as an ongoing professional training organisation.

## Installation audit

### What we do

- Study your electrical distribution.
- Check the insulation level of your electrical installation.
- Check that your insulation monitoring device is working properly.
- Find upstream and downstream insulation faults.
- Identify the faulty area and/or load, depending on the accessibility of your distribution.
- Portable insulation mapping and insulation fault location down to terminal circuits.

### Methods and hardware

- Cases for measuring insulation and locating faults.

## Startup

### What we do

- Check if devices are correctly configured.
- Operational tests simulating a fault current flowing through core balance transformers.
- Transfer skills on the operation of the products.
- Synthesis report containing test results, configurations and settings.

### Methods and hardware

- Measuring equipment and fault location system.
- Portable fault location system for industrial and hospital environments.
- Locating core balance transformers (split core, solid core).

## Operational support – Integration and mapping

### What we do

- Support in the configuration of the centralised system.
- Verify the setup of your system.
- Configure the system mapping with realtime visualisation of insulation levels.
- Set up alarm thresholds.
- Help in the analysis of the collected data and back up of the different configurations.

### Methods and hardware

- Measuring equipment and fault location system.
- Locating core balance transformers (split core, solid core).

## Certified training

### What we do

The training is intended to be both theoretical and practical, concise and interactive. At the end of the training, you will be aware of the IT neutral system arrangement and the elements necessary for using the fault-detection and locating system.

By simulating and locating insulation faults, you will be able to consolidate what was learned during the training.

This training course is aimed at the people who will monitor and maintain the correct insulation level of the electrical installation .

### Agenda

- Theoretical module:
  - IT neutral system and layout.
  - Monitoring and protective devices.
  - Installation standards.
- Practical module
  - Study of different configurations with ISOM products.
  - Handling and configuring the devices.
  - Practical exercises onsite.

## References

	Reference
Installation audit / ½ day	4797 AR21
Installation audit / 1 day	4797 AR11
Startup / ½ day	4797 IS21
Startup / 1 day	4797 IS11
Operation support / ½ day	4797 II21
Operation support / 1 day	4797 II11
Training on neutral systems / 1 day	4797 NF11



# Selection guide

## Insulation monitoring devices

### ISOM Digiware

Insulation monitoring

Build your own system

Control and power supply interface (24 VDC)

or

**ISOM Digiware D-55/D-75**      **ISOM Digiware D-55h Medical**

Voltage acquisition module

**DIRIS Digiware U-xx**

Module for insulation monitoring and fault locating signal injection

or

**ISOM Digiware L-60**      **ISOM Digiware L-60h Medical**

Module for insulation fault location and power monitoring

**ISOM Digiware F-60**

Locating core balance transformers

**$\Delta$ IP with ISOM T-15 adaptor**

Alarm report indicator for medical locations

**ISOM D-15h**

Find the best Digiware configuration!





The Socomec Meter Selector is your digital assistant, helping you find the best Digiware configuration for your power monitoring projects, and all in just a few clicks!

- Fill in information regarding your project.
- Download the system diagram and bill of material.
- All your projects are archived in your personal account.



### Control and power supply interface

Application	Power networks or control circuits		Medical facilities
			
<b>ISOM Digiware</b>	<b>D-55</b> <i>p. 12</i>	<b>D-75</b> <i>p. 12</i>	<b>D-55h</b> <i>p. 26</i>
Inputs	Digiware / RS485	Digiware / RS485	Digiware / RS485
Outputs	Ethernet	Ethernet	Ethernet
Protocol	Modbus TCP	Modbus TCP	Modbus TCP
Websserver		WEBVIEW - M	
Alarm management	Multipoint	Multipoint	Multipoint Alarm report for medical locations

### Voltage acquisition module



Application	Metering	Monitoring	Analysis
			
<b>DIRIS Digiware U</b>	<b>U-10</b> <i>p. 16</i>	<b>U-20</b> <i>p. 16</i>	<b>U-30</b> <i>p. 16</i>
<b>Multi-measurement</b>			
U12, U23, U31, V1, V2, V3, f	•	•	•
U system, V system			•
Ph/N unbalance			•
Ph/Ph unbalance			•
<b>Quality analysis</b>			
THDv1, THDv2, THDv3, THDu12, THDu23, THDu31		•	•
Peak factor V1, V2, V3, U12, U23, U31			•
Individual harmonics U & V (up to 63rd)			•
Voltage dips, swells and interruptions (EN 50160)			•
<b>Alarms</b>			
Thresholds and combinations			•
<b>Trends</b>			
Average values			•
<b>Format</b>			
Width/number of modules	18 mm / 1	18 mm / 1	18 mm / 1

# Selection guide


## Insulation monitoring devices

### ISOM Digiware




#### Module for insulation monitoring and locating signal injection

Application	Power networks or control circuits		Medical facilities
			
<b>ISOM Digiware</b>	<b>L-60</b> <i>p. 30</i>	<b>L-60t</b> <i>p. 30</i>	<b>L-60h</b> <i>p. 30</i>
Locating signal injection	•	•	•
Tropicalised version for extreme environments (humidity, shocks, vibrations)		•	
Threshold values (kΩ)	0.5 - 1000	0.5 - 1000	50 - 500
Network type	Very large network	Very large and extreme network	Large medical IT network
Maximum permissible leakage capacitance (µF)	300	300	10
Inputs/outputs	4 adjustable	4 adjustable	4 adjustable
Average measurement log Rf, Ce / External temperature monitoring	•	•	•
Format / number of modules	125 mm / 7	125 mm / 7	125 mm / 7

#### Module for insulation fault location and power monitoring





Application	Power networks or control circuits / medical	
		
<b>ISOM Digiware</b>	<b>F-60</b> <i>p. 22</i>	<b>F-60t</b> <i>p. 22</i>
Tropicalised version for extreme environments (humidity, shocks, vibrations)		•
Measures insulation and/or operating load current	6 inputs	6 inputs
Output	NOC relay	NOC relay
Average reading history Rf, Ce, I <sub>L</sub>	•	•
Format / number of modules	36 mm / 2	36 mm / 2
Metering: +/- kWh, +/- kVarh, kVAh	•	•
Metering: Multi-tariff (max. 8)	•	•
Metering: load curves	•	•
Multi-measurement: I1, I2, I3, In, ΣP, ΣQ, ΣS, ΣFP	•	•

#### Fault-locating core balance transformers

	Solid core	Rectangular solid-core transformers	Split core
			
	<b>ΔIP</b> <sup>(1)</sup> <i>p. 36</i>	<b>WR / TFR</b> <sup>(1)</sup> <i>p. 36</i>	<b>ΔIP-R</b> <sup>(1)</sup> <i>p. 36</i>
Opening (mm)			
∅ 15	•		
∅ 30	•		
∅ 50	•		•
∅ 80	•		•
∅ 120	•		•
∅ 200	•		
∅ 300	•		
70 x 175		•	
115 x 305		•	
150 x 350		•	
200 x 500		•	

(1) To use with an ISOM T-15 connection adaptor (see p. 40).

Insulation monitoring device and portable fault location system

Application	Power networks or control circuits	Medical facilities		All
				
<b>ISOM</b>	<b>K-40</b> <i>p. 24</i>	<b>K-40h</b> <i>p. 34</i>	<b>D-15h</b> <i>p. 34</i>	<b>PS-61</b> <i>p. 50</i>
Network type	Large	Medical IT network	Medical IT network	All
Functions	Insulation monitoring device	Insulation monitoring device	Alarm report indicator	Portable fault location system
<b>Characteristics</b>				
Max. mains voltage	480 VAC / 240 VDC	230 VAC		480 VAC / 480 VDC
Measurement concept	Self-adapting signal	Self-adapting signal		
Threshold values (kΩ)	1 - 1000	50 - 500		
Maximum leakage capacitance (µF)	150	5		
Number of alarm thresholds	2	1		1
Display	Backlit graphic display	Backlit graphic display	LEDs	Backlit graphic display
Locating signal injection				•
Communication	Modbus RTU	Modbus RTU	RJ45 bus	Ethernet
Mounting	Multi-mounting	Multi-mounting	Wall mounting	Portable
Dimensions W x H x D (mm)	96 x 96 x 67.6	96 x 96 x 67.6	80 x 80 x 26	546 x 347 x 247



# ISOM Digiware D-55 / D-75

## Control and power supply interfaces

Insulation monitoring



ISOM Digiware D-75

### The solution for

- > Industries
- > Energy production
- > Naval, military and railway infrastructures



### Strong points

- > High-resolution graphic screen
- > Secure power supply
- > Ergonomic and easy to use
- > Centralisation of measurement points
- > Email notifications
- > Embedded web server (D-75)

### Conformity to standards

- > CEI 61557-8
- > CEI 61557-9
- > CEI 61557-12
- > ISO 14025



### Approvals and certifications

- > Naval certifications <sup>(1)</sup>

(1) Certification in progress.

### Create your project

- > Find the best Digiware configuration:  
[www.meter-selector.com](http://www.meter-selector.com)



Configuration with EasyConfig, see general catalogue.

### Function

ISOM Digiware D-55 and D-75 control displays allow the following:

- A local visualisation of data from ISOM Digiware L-60 and F-60 modules, but also from the other modules connected to the Digiware bus or from COUNTIS E and DIRIS A over the RS485 bus
- Power supply of Digiware modules
- Access to this data over Ethernet

Via an RS485 connection, the ISOM Digiware display also acts as a gateway, centralising all measurements issued by the measuring devices and communicating over Ethernet. Dedicated version for medical locations available.

### Advantages

#### High-resolution graphic screen

The screen displays various graphical objects such as bar graphs and insulation curves with measurement cursors.

#### Secure power supply

The 24 VDC power supply prevents hazardous voltages on cabinet doors.

#### Ergonomic and easy to use

With its 10 buttons on the front panel, you can quickly access the measurement information. The Quick-Access button lets you quickly and easily navigate between the main operating screens.

It also makes it must easier to select and configure equipment and circuits.

#### Centralising measurement circuits

- Selecting the circuit
- Visualisation of data

#### Email notifications

In the event of an alarm, the device can automatically send an email to inform the operator (e.g. if there is an insulation fault).

#### Embedded web server (D-75)

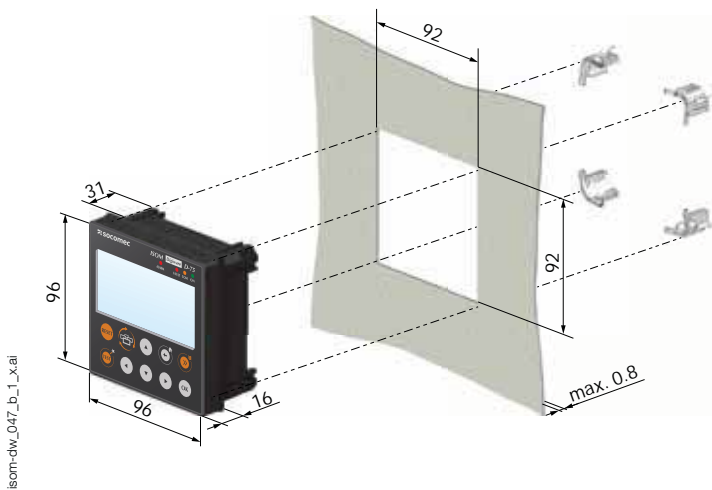
The visualisation software that is integrated to the ISOM Digiware D-75 allows to display measurement data remotely from any Web browser on a PC (WEBVIEW-M function, see General Catalogue).

## Front panel

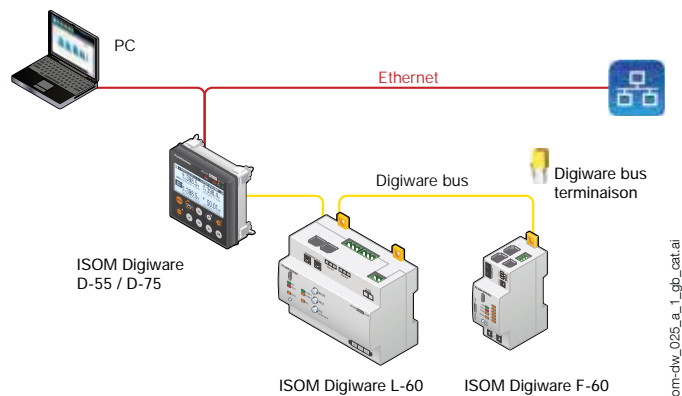
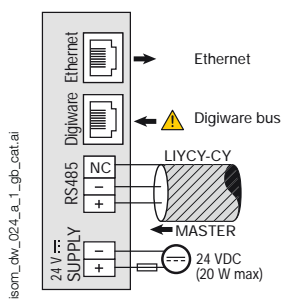


1. RESET: Resetting alarms
2. TEST: Starting test sequence on L-60 and F-60
3. Quick-Access button: Global insulation → Curves → Insulation per circuit → Power monitoring (if available)
4. Navigation buttons
5. OK button
6. Device selection
7. Home (long press)  
Back (short press)
8. LED indicators:  
ALARM: insulation fault  
FAULT: system alarm  
COM: com bus active  
ON: power on

## Dimensions (mm)



## Connections



# ISOM Digiware D-55 / D-75

Control and power supply interfaces

## Configuration

### Device consumption

Product	Power supplied (W)	Power consumed (W)
<b>Power supply</b>		
P15 230 V / 24 VDC 15 W	15	
P30 230 V / 24 VDC 30 W	30 <sup>(1)</sup>	
<b>Cables</b>		
50 metre package		1.5
<b>System interfaces</b>		
ISOM Digiware D-55 / D-55h		2.5
ISOM Digiware D-75		2.5
<b>IMD / voltage module</b>		
ISOM Digiware L-60 / L-60h		2.3
DIRIS Digiware U-xx		0.75
<b>IFL modules</b>		
ISOM Digiware F-60		0.5
ISOM T-15		0.05
<b>Single-point alarm report</b>		
ISOM D-15h		0.5
<b>Repeater</b>		
DIRIS Digiware C-32		1.5

(1) Max 20 W can be used with the Digiware system.

### Calculation rules for the max. number of devices on the Digiware bus

The total power consumed by the equipment connected to the Digiware bus must not exceed the power from the 24 VDC. Power supply must not exceed 20 W.

#### Sizing with power supply P15 (part no. 4829 0120) delivering 15 W

For example, it is possible to use

- 1 ISOM Digiware D-75 (2.5 W) display
- 1 IMD ISOM Digiware L-60 (2.3 W) module
- 25 metres of cable (0.75 W)

and

- 11 IFL ISOM Digiware F-60 (11 x 0.5 = 5.5 W) modules
- 66 adaptors ISOM T-15 (66 x 0.05 = 3.3 W)

-> **Total power = 14.35 W**

#### Sizing with a supply P30 power supply (part no. 4729 0603) can deliver max. 20 W to the Digiware system

For example, it is possible to use

- 1 ISOM Digiware D-75 (2.5 W) display
- 1 IMD ISOM Digiware L-60 (2.3 W) module
- 1 DIRIS Digiware U-xx (0.72 W) voltage module
- 25 metres of cable (0.75 W)

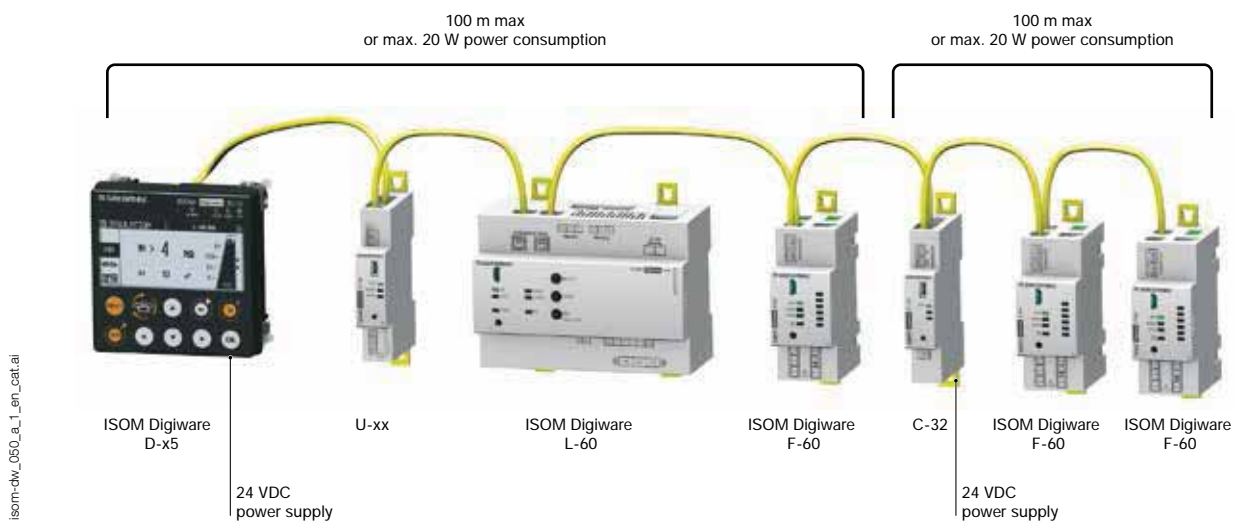
and

- 17 IFL ISOM Digiware F-60 (17 x 0.5 = 8.5 W) modules
- 102 adaptors ISOM T-15 (102 x 0.05 = 5.1 W)

-> **Total power = 19.87 W**

### Repeater

Whenever the power consumption is higher than 20 W or the distance is greater than 100 m, a DIRIS Digiware C-32 repeater is required. In an ISOM Digiware system, a maximum of 2 repeaters may be used.



## Technical characteristics

Digiware bus	
Function	Connection between ISOM Digiware modules
Cable type	Specific Socomec cable with RJ45 connection
RS485	
Connection type	2 to 3 half duplex wires
Protocol	Modbus RTU
Baudrate	1200 - 115200 bauds
Mechanical characteristics	
Type of screen	Capacitive touch-screen technology, 10 keys
Screen resolution	350 x 160 pixels
Front panel protection index	IP 65
Electrical characteristics	
Power supply	24 VDC +10% / -20%
Power consumption	2.5 VA

Communication	
Ethernet RJ45 10/100 Mbps	Gateway function: Modbus TCP
RJ45 Digiware	Control and power supply interface function
RS485 2-3 wires	Communication function with Modbus RTU slaves
USB	Upgrade and configuration via type B micro USB connector
Ports	
Inputs	Digiware; RS485
Outputs	Ethernet RJ45
Operating conditions	
Storage temperature	- 40 ... +70 °C
Operating temperature	-10 ... +55 °C
Relative humidity	90% at 55 °C
Installation category - degree of pollution	CAT III, 2
Operating conditions (version t)	
Storage temperature	- 40 ... +85 °C
Operating temperature	-10 ... +70 °C
Relative humidity	97% at 55 °C

## References

Standard displays		Reference
D-55	Multipoint display, Ethernet output	4729 0203
D-75	Multipoint display, Ethernet output with web server	4729 0205
Tropicalised display version		Reference
D-75t	Multipoint display, Ethernet output with web server	4729 0206
Power supply		Reference
P15	Power supply 100-240 VAC / 24 VDC 15 W	4829 0120
P30	Power supply 100-240 VAC / 24 VDC 30 W	4729 0603
Accessories		Reference
Panel mounting kit DIN 144 x 96 mm		4729 0290
IP 65 flexible cover for 144 x 96 mm panel mounting frame		4729 0291
DIN-rail mounting kit for ISOM Digiware D-x5 displays		4829 0230



# DIRIS Digiware U

## Voltage measurement module

Insulation monitoring



diris-dw\_005\_a\_cat

DIRIS Digiware U-10/U-20/U-30



Configuration with EasyConfig, see general catalogue.

### Function

You can use the ISOM Digiware system without DIRIS Digiware U modules.

#### Why add a DIRIS Digiware U module?

This module provides access to energy and power monitoring features on ISOM Digiware F & DIRIS Digiware I modules.

This pools together all the voltage measurements for all these modules.

The Digiware RJ45 Bus allows you to pass voltage measurements as well as power supply and communication to all connected products.

### Advantages

- A single voltage measurement point for all ISOM Digiware F and DIRIS Digiware I modules.
- A complete, dedicated solution:
  - Metering
  - Monitoring voltage
  - Quality analysis of the supplied voltage
- No hazardous voltage on cabinet doors.
- Suitable for all types of network: single-phase, two-phase, three-phase.

### The solution for

- > Industry
- > Building
- > Infrastructures
- > Data centers



### Strong points

- > 1 single voltage measurement point for the entire system
- > Plug & Play
- > Compact



RJ45 (Digiware Bus) cables are available.

### Compliance with standards

- > CEI 61557-12



- > ISO 14025



- > UL






### Create your project

- > Find the best Digiware configuration: [www.meter-selector.com](http://www.meter-selector.com)

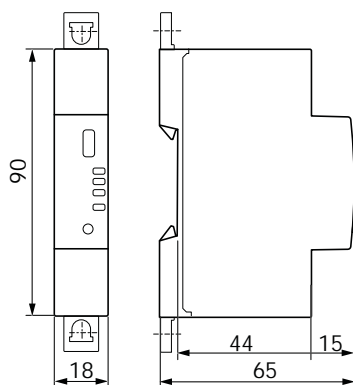




Application	Voltage measurement module		
	Metering	Monitoring	Analysis
			
	<b>U-10</b>	<b>U-20</b>	<b>U-30</b>
<b>DIRIS Digiware U</b>			
<b>Multi-measurement</b>			
U12, U23, U31, V1, V2, V3, f	•	•	•
U system, V system			•
Ph/N unbalance			•
Ph/Ph unbalance			•
<b>Power quality analysis</b>			
THDv1, THDv2, THDv3, THDu12, THDu23, THDu31		•	•
Individual harmonics U & V (up to 63rd)			•
Voltage dips, swells and interruptions (EN 50160)			•
<b>Alarms</b>			
Thresholds and combinations			•
<b>Trends</b>			
Average values			•
<b>Format</b>			
Width/number of modules	18 mm / 1	18 mm / 1	18 mm / 1

## Dimensions (mm)

### DIRIS Digiware U



diris-diw\_059\_b\_1\_x\_cat

## Technical characteristics

### Measurement characteristics

Voltage measurement - DIRIS Digiware U	
Characteristics of the network measured	50-300 VAC (Ph/N) - 87-520 VAC (Ph/Ph) - CAT III
Frequency range	45-65 Hz
Frequency accuracy	Class 0.02
Network type	Single-phase/ Two-phase / Two-phase with neutral / Three-phase / Three-phase with neutral
Measurement by voltage transformer	Primary: 400 000 VAC Secondary: 60, 100, 110, 173, 190 VAC
Input consumption	≤ 0,1 VA
Permanent overload	300 VAC Ph/N
Accuracy of voltage measurement	Class 0.2
Connection	Removable screw terminal block, 4 positions, stranded or solid 0.2-2.5 mm <sup>2</sup> cable

### Communication characteristics

USB <sup>(1)</sup>	
Protocol	Modbus RTU on USB
Function	Module configuration
Location	On each module
Connection	Type B micro USB connector

(1) On all Digiware modules.

## References

Digiware connection cables	Reference	
RJ45 cables for Digiware Bus	Length 0.06 m	4829 0189
	Length 0.10 m	4829 0181
	Length 0.20 m	4829 0188
	Length 0.50 m	4829 0182
	Length 1 m	4829 0183
	Length 2 m	4829 0184
	Length 5 m	4829 0186
	Length 10 m	4829 0187
50 m reel + 100 connectors	4829 0185	
Spare part number: Digiware bus terminating resistor (included with C-31 and D-xx)	4829 0180	
USB configuration cable	4829 0050	

DIRIS Digiware		Reference
U-10	Metering	4829 0105
U-20	Monitoring	4829 0106
U-30	Analysis	4829 0102

Accessories	To be ordered in multiples of	Reference
Fuse circuit breakers to protect voltage inputs (type RM) 3 pole	4	5701 0018
gG 10x38 0.5 A fuses	10	6012 0000



# ISOM Digiware L-60

Module for insulation monitoring and locating signal injection for power distribution and control circuits

Insulation monitoring



isom-dw\_004\_front

ISOM Digiware L-60



Configuration with EasyConfig, see general catalogue.

## Function

ISOM Digiware L-60 modules combine the functions of the insulation monitoring device (IMD) and the locating current injector (LCI). It monitors the insulation level of an IT system electrical installation. It is also available for medical locations and in a tropicalised version for extreme environments.

## Advantages

### Built-in injector

Having a locating current injector means you can quickly and easily integrate a permanent or portable fault location system, if necessary.

### OhmScanner technology

Our OhmScanner technology allows you to monitor the overall insulation level of the electrical installation as well as the detailed insulation of each circuit.

### Plug & Play

The combination with DIRIS Digiware voltage and current modules gives you a complete insulation and power monitoring system.

### Configurable inputs/outputs

The fully configurable inputs/outputs can be used with automation systems to relay alarm states for remote control of the L-60 (e.g. disabling in case of network coupling).

### Compatible with the ISOM FP-60 portable system

Use the ISOM FP-60 portable system together with the ISOM Digiware L-60 for fault location:

- On circuits not equipped with a permanently installed locating system.
- Closer to the final load.

### In-depth insulation

Resistive and capacitive evaluation for each circuit.

## The solution for

- > Industries
- > Energy production
- > Naval, military and railway infrastructures



## Strong points

- > Built-in locating current injector
- > OhmScanner technology
- > Plug & Play
- > Configurable inputs/outputs
- > Compatible with the portable system
- > In-depth insulation

## Integrated technologies



PreciSense

For more information, visit [www.socomec.com](http://www.socomec.com)

## Conformity to standards

- > CEI 61557-8
- > CEI 61557-9
- > ISO 14025



## Approvals and certifications

- > Naval certifications <sup>(1)</sup>

(1) Certification in progress

## Create your project

- > Find the best Digiware configuration: [www.meter-selector.com](http://www.meter-selector.com)



# ISOM Digiware L-60

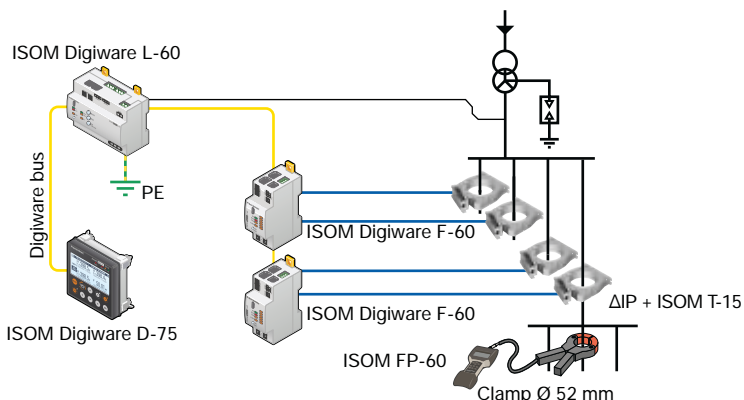
Module for insulation monitoring and locating signal injection for power distribution and control circuits

## Applications

This IMD can be used for multiple applications:

- Industrial, especially with variable-frequency drives (VFDs).
- AC, DC and combined networks:
  - Very large (up to 300  $\mu\text{F}$  of leakage)
  - With power converters

- Railway applications
- Coupled networks
- Heating systems with thyristors
- Finds faults on highly disturbed networks.
- Localisation of fugitive faults.



isom-dw\_027\_a\_1\_gb\_cat.ai

## General features

### IMD (insulation monitoring device)

- Automatically filters network disturbances.
- Digiware bus communication with ISOM Digiware D-x5 display.
- Self-control of the wiring.
- Timestamped log.
- Measurement inhibition function (disconnects the measuring circuit).

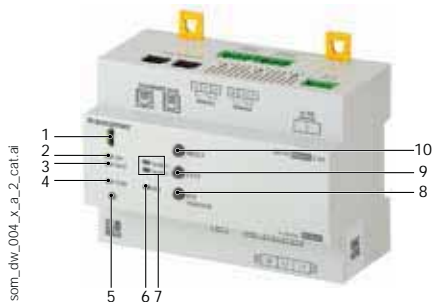
### INJ (locating current injector)

- OhmScanner technology to anticipate drops in insulation resistance on any circuit (with ISOM Digiware F-60).
- Adjustable location signal (1 - 5 - 10 - 25 mA).
- Synchronisation with ISOM Digiware F-60 locating modules via the Digiware bus.

### Temperature monitoring

- Alarm on fixed temperature threshold.

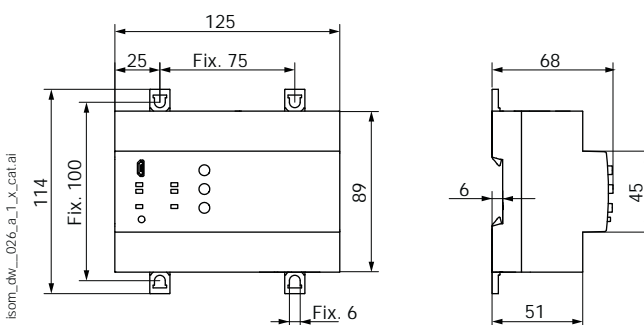
## Front panel



isom-dw\_004\_x\_a\_2\_cat.ai

1. USB port for configuration.
2. ON LED. Lights when the device is active.
3. FAULT LED for system alarms (connection, etc.)
4. COM LED. Flashes when the communication bus is active.
5. Auto-addressing button.
6. ALARM 1 and 2 LEDs. Light when the preset thresholds for alarm 1 or alarm 2 are reached.
7. INJ LED. Lights when the locating current injector is active.
8. INJ button. To start locating a fault.
9. TEST button. To run an autotest.
10. RESET button: To reset alarms.

## Dimensions (mm)

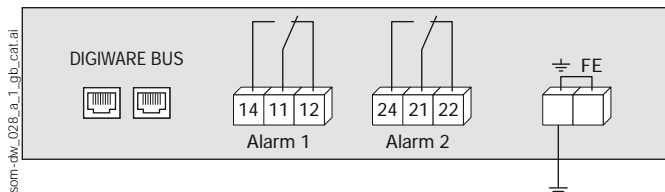


isom-dw\_026\_a\_1\_x\_cat.ai

Type	Modular
Dimensions W x H x D	125 x 89 x 68 mm
Front degree of protection	IP40
Terminal block degree of protection	IP20
Rigid cable cross-section	0.2 ... 2.5 mm <sup>2</sup>
Flexible cable cross-section	0.2 ... 2.5 mm <sup>2</sup>
Weight	370 g

## Terminals

### Upper terminal



isom-dw\_028\_a\_1\_gb\_cat.ai

**DIGIWARE BUS:** Digiware bus connection to other Digiware units

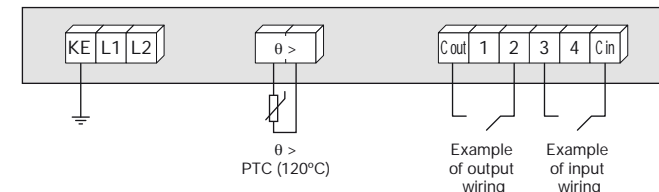
**14 - 11 - 12:** Relay output for alarm 1

**24 - 21 - 24:** Relay output for alarm 2

**Earth FE:** earth connection

**KE - L1 - L2:** mains voltage Un (see following page)

### Lower terminal



isom-dw\_029\_a\_1\_gb\_cat.ai

$\theta >$ : Connection to the temperature sensor (PTC)

**C out:** shared output connection

**C in:** shared input connection

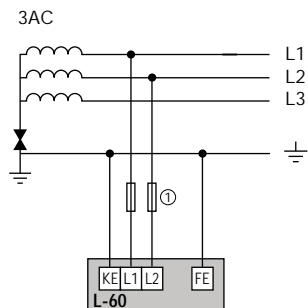
**1 - 2 - 3 - 4:** input or output connection (as per configuration)

# ISOM Digiware L-60

Module for insulation monitoring and locating signal injection  
for power distribution and control circuits

## Network and connection examples

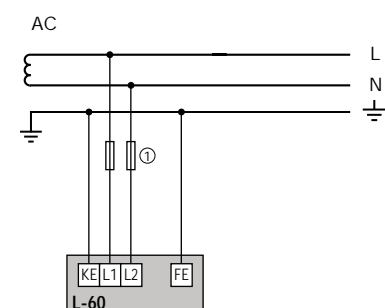
### Three-phase network



isom\_dw\_030\_a\_1\_x\_cat.ai

1. 2 A gG fuses

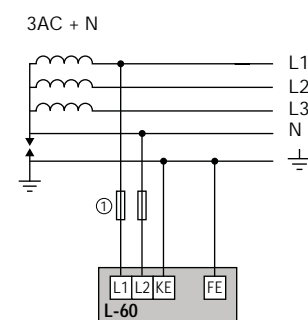
### Single-phase network



isom\_dw\_031\_a\_1\_x\_cat.ai

1. 2 A gG fuses

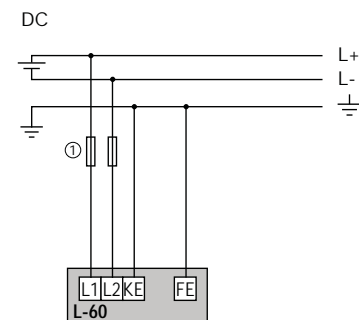
### Three-phase network + N



isom\_dw\_032\_a\_1\_x\_cat.ai

1. 2 A gG fuses

### DC network

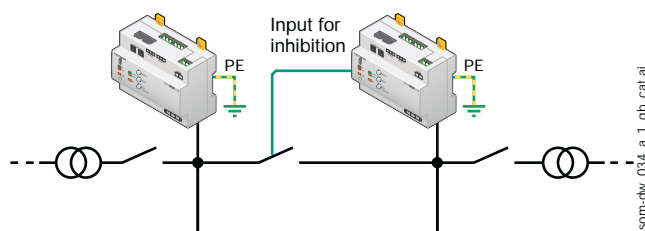


isom\_dw\_033\_a\_1\_x\_cat.ai

1. 2 A gG fuses

## Connections

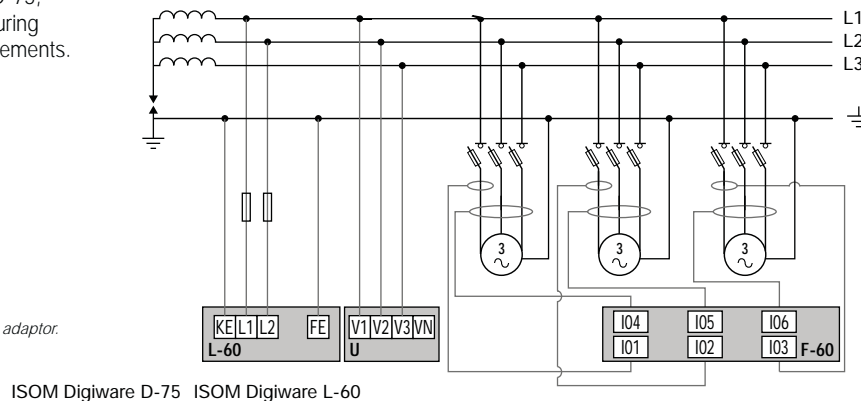
IMD automatically disconnected  
in case of network coupling.



isom\_dw\_034\_a\_1\_gb\_cat.ai

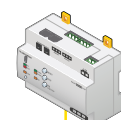
Connection example with ISOM Digiware D-75,  
F-60, T-15 and DIRIS Digiware U for measuring  
insulation, locating faults and multi-measurements.

- Balanced three-phase load.
- Current sensor
- Locating core balance transformer and T-15 adaptor.
- 2 A gG fuse



ISOM Digiware D-75 ISOM Digiware L-60

DIRIS Digiware U



Digiware bus

ISOM Digiware F-60

isom\_dw\_035\_a\_1\_gb\_cat.ai

# ISOM Digiware L-60

Module for insulation monitoring and locating signal injection  
for power distribution and control circuits

## Characteristics

Network voltage $U_n$	
AC operating range	AC 24 ... 480 V
DC operating range	DC 24 ... 480 V
Frequency	DC, 10 ... 460 Hz
Rated insulation voltage	690 V
Auxiliary power supply $U_s$	
Power supply voltage	Digiware bus
Max. consumption	2.3 W
Fault alarms	
Number of thresholds	2
Type of threshold	Adjustable
Value of the threshold	0.5 k $\Omega$ ... 1 M $\Omega$
Max. leakage capacitance	300 $\mu$ F
Inputs/outputs	
Number of I/O	4
Types of I/O	Adjustable

Output contacts	
Number of contacts	2
Contact type	Changeover switch
AC nominal voltage	250 V
DC nominal voltage	30 V
Sustained current	5 A
Operating mode	Standby / On
Preset operating mode	Standby
Operating conditions	
Operating temperature range	-10 ... +55 °C
Storage temperature	- 40 ... +70 °C
Relative humidity	90% at 55 °C
Operating conditions (version t)	
Operating temperature range	-10 ... +70 °C
Storage temperature	- 40 ... +85 °C
Relative humidity	97% at 55 °C

## References

Standard IMD version	Network voltage $U_n$	Alert threshold	Reference
L-60	AC 24 ... 480 V / DC 24 - 480 V	0.5 ... 1 000 k $\Omega$	4729 0110
Tropicalised IMD version	Network voltage $U_n$	Alert threshold	Reference
L-60t	AC 24 ... 480 V / DC 24 ... 480 V	0.5 ... 1 000 k $\Omega$	4729 0111
Accessories			Reference
PTC temperature sensor (120 °C)			4729 0560

## Need to monitor your installation ?

**WEBVIEW-M solution embedded the ISOM Digiware D-75 display**  
The ISOM Digiware D-75 display centralises data from modules in the Digiware range. It embeds the WEBVIEW-M software allowing remote visualisation, monitoring and use of measurement data and the insulation level of the electrical system.



*System requirement:  
WEBVIEW-M is  
embedded in the  
ISOM Digiware D-75.*



*ISOM Digiware D-75 is  
ready to be connected  
to a Cloud platform.*



*Display of electrical  
parameters from  
multiple devices on a  
customised dashboard  
like an electrical circuit  
drawing or a site  
drawing.*

## Expert Services

Our Expert Services team will **audit** your electrical installation, **commission** selected equipment and **train** the personnel in charge of its use. They will provide a **monitoring solution** for "turnkey" projects.

These services correspond to level 2 or 3 of the GIMELEC list of service categories.

For further information, please contact your nearest SOCOMEC branch.





# ISOM Digiware F-60

## Fault location module

for power networks and medical locations

Insulation monitoring



ISOM Digiware F-60



Configuration with EasyConfig, see general catalogue.

### Function

ISOM Digiware F-60 modules have 6 inputs to mutualise insulation and power monitoring. ISOM Digiware F-60 can locate highly resistive or fugitive faults.

It detects the locating signal generated by the ISOM Digiware L-60 IMD through  $\Delta$ IP locating core balance transformers linked to ISOM T-15 adaptors.

TE, TR and TF current sensors use a direct RJ12 connection. For  $\Delta$ IP locating core balance transformers, a T-15 adaptor must be used (mounted directly to the core balance transformer or on a DIN rail).

It comes in a tropicalised version for extreme environments. (ISOM Digiware F-60t).

### Advantages

#### Simultaneous scanning

Ensures fast and reliable detection including fugitive faults, throughout the electrical installation.

#### OhmScanner solution

Our OhmScanner technology allows you to track the system's general insulation level, while regularly measuring the insulation of each circuit in detail.

#### In-depth insulation

Resistive and capacitive evaluation for each circuit.

#### 2 in 1

One module combines insulation monitoring and power monitoring for multiple circuits. Associated with a DIRIS Digiware U voltage module, it provides the I, U, E, P measurement of each monitored circuit. Adding a DIRIS Digiware I-3x module gives you additional features including power quality monitoring, alarm thresholds and measurement logs.

#### Locating current injector (LCI) synchronisation

Filters and avoids network disturbances.

### The solution for

- > Industries
- > Energy production
- > Naval, military and railway infrastructures
- > Healthcare facilities



### Strong points

- > Simultaneous scanning
- > OhmScanner technology
- > In-depth insulation
- > 2 in 1
- > LCI synchronisation

### Integrated technologies



PreciSense

For more information, visit [www.socomec.com](http://www.socomec.com)

### Conformity to standards

- > CEI 61557-9
- > CEI 61557-12
- > ISO 14025



### Approvals and certifications

- > Naval certifications<sup>(1)</sup>

(1) Certification in progress.

### Create your project

- > Find the best Digiware configuration:  
[www.meter-selector.com](http://www.meter-selector.com)

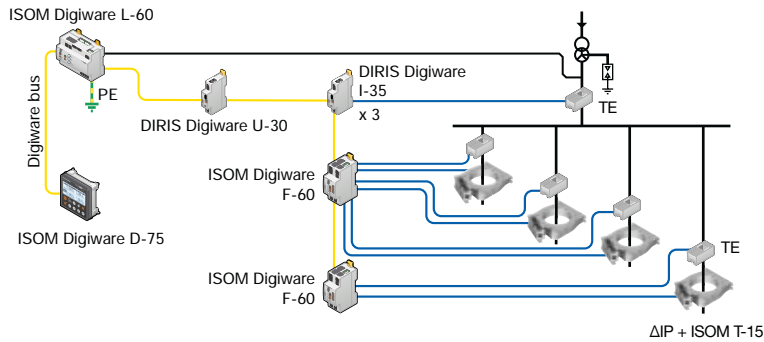


# ISOM Digiware F-60

Fault location module  
for power networks and medical locations

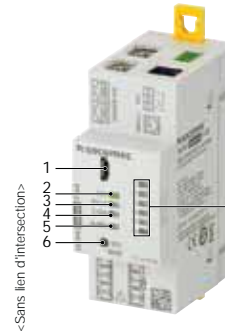
## Applications

The ISOM Digiware F-60 locating module is more commonly used in industrial environments for IT system electrical networks. Synchronised with the ISOM Digiware L-60 insulation monitoring device via the Digiware bus, it increases the efficiency of the system for disturbed networks.



isom-diw\_036\_a\_1\_gb\_catal

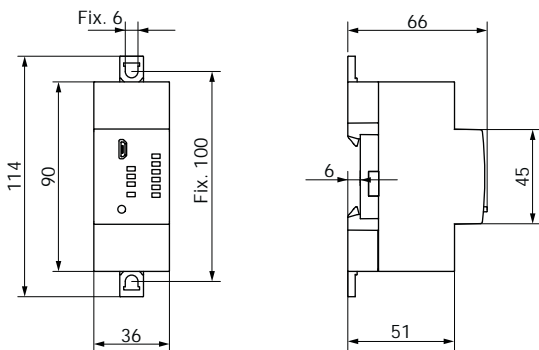
## Front panel



<Sans lien d'intersection>

1. USB port for configuration.
2. ON LED. Lights when the device is active.
3. FAULT LED for system alarms (core transformer connections, etc.)
4. COM LED. Flashes when the communication bus is active.
5. ALARM LED. Lights if there is an alarm on one of the channels 1 to 6.
6. TEST / RESET button. Starts the autotest (long press) and resets alerts (short press). Used for self-addressing in configuration mode.
7. Individual LED alarm signals for each channel 1 to 6.

## Dimensions (mm)

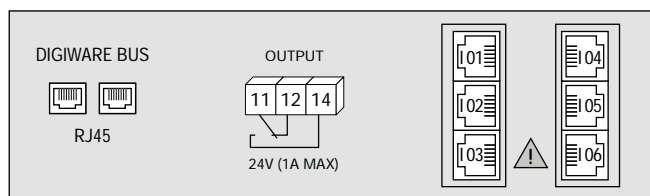


isom-diw\_037\_a\_1\_x\_catal

## Characteristics

<b>Network voltage <math>U_n</math></b>	
AC operating range	Refer to ISOM Digiware L-60
<b>Auxiliary power supply <math>U_s</math></b>	
Power supply voltage	Digiware bus
Max. consumption	1.2 W
<b>Scanning channels</b>	
Number of channels per device	6
Locating current threshold	Adjustable 0.2 ... 25 mA
Insulation threshold	Adjustable 0.5 k $\Omega$ ... 400 k $\Omega$
<b>Connection</b>	
Number of core balance transformers	6 via ISOM T-15 adaptor
Connection type	Specific Socomec cable with RJ12 connectors
<b>Output contacts</b>	
Number of contacts	1
Contact type	Changeover switch
AC nominal voltage	24 V
DC nominal voltage	24 V
Sustained current	1 A
Preset operating mode	Standby
<b>Operating conditions</b>	
Operating temperature range	-10 ... + 55 °C
Storage temperature	- 40 ... + 70 °C
Relative humidity	90% at 55 °C
<b>Operating conditions (version t)</b>	
Operating temperature range	-10 ... + 70°C
Storage temperature	- 40 ... + 85 °C
Relative humidity	97% at 55 °C

## Borniers et raccords



**DIGIWARE BUS:** Digiware bus connection to other Digiware units  
11 - 12 - 14: alarm relay output

**I01 - I02 - I03 - I04 - I05 - I06:** ISOM T-15 connection (to core transformers) and current sensors TE/TR/TF

isom-diw\_038\_a\_1\_x\_catal

## References

<b>Standard locating version</b>	<b>Alarm threshold</b>	<b>Reference</b>
F-60	0.5 ... 400 k $\Omega$ / 0.2 ... 25 mA	4729 0126
<b>Tropicalised locating version</b>	<b>Alarm threshold</b>	<b>Reference</b>
F-60t	0.5 ... 400 k $\Omega$ / 0.2 ... 25 mA	4729 0127
<b>Accessories</b>		<b>Reference</b>
ISOM T-15 adaptor for locating core balance transformer (mandatory to connect to ISOM Digiware F-60)		4729 0590
ISOM T-15t adaptor for locating core balance transformer (mandatory to connect to ISOM Digiware F-60t)		4729 0591
Specific RJ12 cables to connect to ISOM T-15		see page 45
Panel mounting frame 36 x 46 mm for F-60 modules		4729 0190



# ISOM K-40

Insulation monitoring device  
for power networks and control circuits

Insulation monitoring



isom\_486\_a\_front

ISOM K-40



Configuration with EasyConfig, see general catalogue.

## Function

The ISOM K-40 insulation monitoring device monitors the insulation level of medium IT system electrical networks. It is also designed for monitoring the insulation of control circuits.

## Advantages

### Alarm log

The device records and timestamps current or finished alarms and events.

### Quick Access button

The device has a dedicated button to quickly and easily navigate between the main operating screens.

### AC current measurement

The device has a sensor input to monitor the single-phase current.

### Temperature monitoring

The device has a temperature monitoring function (generates an alarm if the preset threshold is exceeded).

### Inhibition function

You can configure the temperature input when the IMD is in exclusion mode, to manage network couplings.

### Modbus® communication

The device has an RS485 connection with Modbus protocol (speed up to 115,200 bauds).

### Multi-mounting box

Thanks to the casing design, the device can be panel mounted or put on a DIN rail.

## The solution for

- > Industries
- > Energy production
- > Infrastructures



## Strong points

- > Alert log
- > Quick Access button
- > AC current measurement
- > Temperature monitoring
- > Inhibition function
- > Modbus® communication
- > Multi-mounting box

## Compliance with standards

- > CEI 61557-8



- > ISO 14025



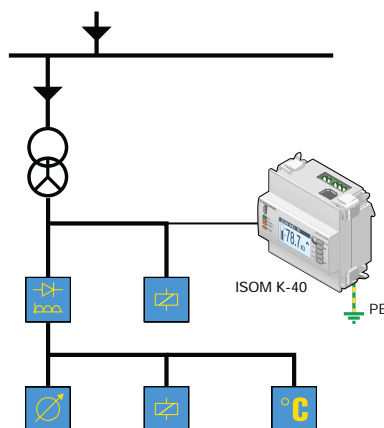
## Applications

These IMDs can be used for multiple applications:

- Universal use in industry
- Monitoring AC, DC and combined networks (up to 150 µF of leakage)
- Coupled networks
- Insulation monitoring on AC, combined or DC circuits which may have symmetrical faults (PLC circuits, rectifiers...).

ISOM K-40 is intended for circuits where the signalling of continuous symmetrical faults is imperative and is suitable for higher leakage capacitance AC control circuits (e.g. with an EMC filter or numerous PLC inputs).

Note: In accordance with IEC 61557-8 and EN 61557-8, the use of IMDs capable of detecting symmetrical faults is mandatory for low-voltage DC circuits (> 120 VDC regular or 140 VDC peak).



isom\_510\_a\_1\_x\_catal

Typical monitored loads: rectifiers, relays, sensors and probes.



# ISOM K-40

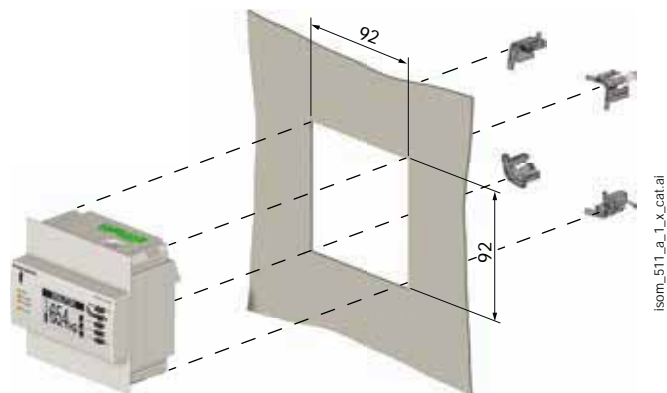
Insulation monitoring device  
for power networks and control circuits

## Front panel

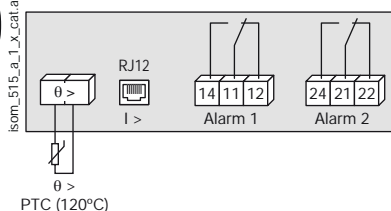
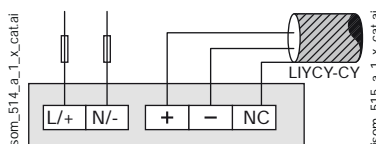
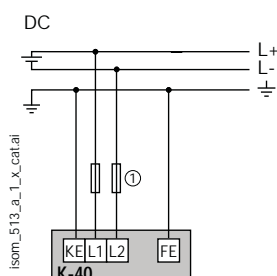
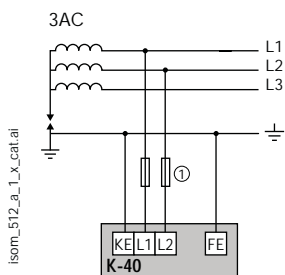


1. USB port for configuration.
2. ON LED. Lights when the device is active.
3. ALARM 1 and 2 indicators. Light when the preset thresholds for Alarm 1 or Alarm 2 are reached.
4. COM LED. Flashes when the communication bus is active.
5. Backlit graphic display.
6. TEST/RESET button. Starts the autotest (long press) and resets alerts (short press).
7. Quick-Access button (short press) - HOME to main menu (long press).
8. Hotkeys.
9. OK buttons (short press) - Back (long press).

## Dimensions (mm)



## Terminals and connections



1. 2 A gG fuses

L1 - L2: network voltage  $U_n$   
 KE - FE: earth connection  
 L/+ - N/-: auxiliary power supply  $U_s$   
 AC power supply: 1 A gG fuses  
 DC power supply: T1AH300VDC fuses  
 + - NC: RS485 Modbus

$\theta >$ : Connection to the temperature sensor (PTC)  
 I >: RJ12 connection to current sensor  
 12 - 11 - 14: relay output for alarm 1  
 22 - 21 - 24: relay output for alarm 2

## Characteristics

<b>Network voltage <math>U_n</math></b>	
AC operating range	AC 24 ... 480 V
DC operating range	DC 24 ... 240 V
Frequency	DC 50 ... 460 Hz
Assigned operating voltage	480 V
<b>Auxiliary power supply <math>U_s</math></b>	
Power supply voltage	As per reference
Max. consumption	10 VA
<b>Fault alarms</b>	
Number of thresholds	2
Type of threshold	Adjustable
Value of the threshold	1 k $\Omega$ ... 1 M $\Omega$
Max. leakage capacitance	150 $\mu$ F

<b>Inputs/outputs</b>	
Temperature or inhibition	PTC or digital inputs - 2 wires
Current sensors	TE, TR, TF models - RJ12
<b>Output contacts</b>	
Number of contacts	2
Contact type	Changeover switch
AC nominal voltage	230 V
DC nominal voltage	30 V
Sustained current	3 A
Operating mode	Standby / On
Preset operating mode	Standby
<b>Operating conditions</b>	
Operating temperature range	-10 ... +55 °C
Storage temperature	-40 ... +85 °C
Relative humidity	95% at 55 °C

## References

ISOM Digiware	Network voltage $U_n$	Auxiliary power supply $U_s$	Alert threshold	Reference
K-40 AC	AC 24 ... 480 V / DC 24 ... 240 V	AC 110 ... 230 V 50-60 Hz / DC 120 ... 240 V	1 ... 1000 K $\Omega$	4725 0120
K-40 DC	AC 24 ... 480 V / DC 24 ... 240 V	24 VDC	1 ... 1000 K $\Omega$	4725 0121
<b>Accessories</b>				<b>Reference</b>
TE (not TE-90), TR or TF current sensors				see page 42
PTC temperature sensor				4729 0560



# ISOM Digiware D-55h

Control and power supply interfaces  
for medical locations

Insulation monitoring



ISOM Digiware D-55h

## The solution for

- > Operating rooms
- > Anaesthesia rooms
- > Recovery rooms
- > Invasive imaging rooms



## Strong points

- > High-resolution graphic screen
- > Secure power supply
- > Ergonomic and easy to use
- > Centralising measurement circuits
- > Email notifications
- > Alarm reporting for medical locations

## Conformity to standards

- > CEI 61557-8
- > CEI 61557-9
- > CEI 61557-12
- > ISO 14025



## Approvals and certifications

- > Naval certifications <sup>(1)</sup>

(1) Certification in progress.

## Create your project

- > Find the best Digiware configuration:  
[www.meter-selector.com](http://www.meter-selector.com)



Configuration  
with EasyConfig,  
see general catalogue.

## Function

ISOM Digiware D-55h remote screens give you:

- A local visualisation of data from ISOM Digiware L-60h and F-60 modules, but also from the other modules connected to the Digiware network or from COUNTIS E and DIRIS A over the RS485 bus
- Power supply of Digiware modules
- Access to this data over Ethernet

Via an RS485 connection, the ISOM Digiware screen also acts as a gateway, centralising all information issued by other ISOM devices and communicating over Ethernet.

The screen can also be used in medical locations (optional wall mounting kit) for remote alarm reporting.

## Advantages

### High-resolution graphic screen

The screen displays various graphical objects such as bar graphs and insulation curves with measurement cursors.

### Secure power supply

The 24 VDC power supply prevents hazardous voltages on the cabinet doors.

### Ergonomic and easy to use

With its 10 buttons on the front panel, you can quickly access the measurement information. The Quick-Access button lets you quickly and easily navigate between the main operating screens.

It also makes it easy to select and configure equipment and circuits.

### Centralising measurement circuits

- Circuit selection.
- Visualisation of data.

### Email notifications

In the event of an alarm, the device can automatically send an email to inform operators (e.g. if there is an insulation fault).

### Alarm reporting for medical locations

The device can also be used as a remote alarm indicator (Ethernet connection).

It shows alarms related to the insulation resistance and to the overloading or overheating of the medical IT transformer.

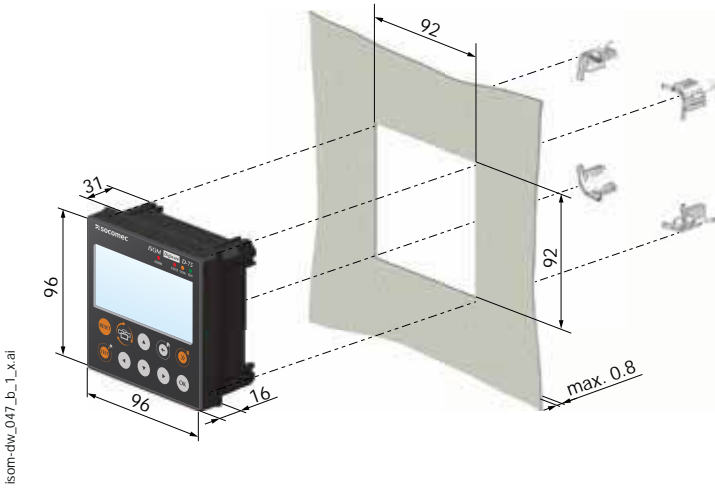
### Front panel



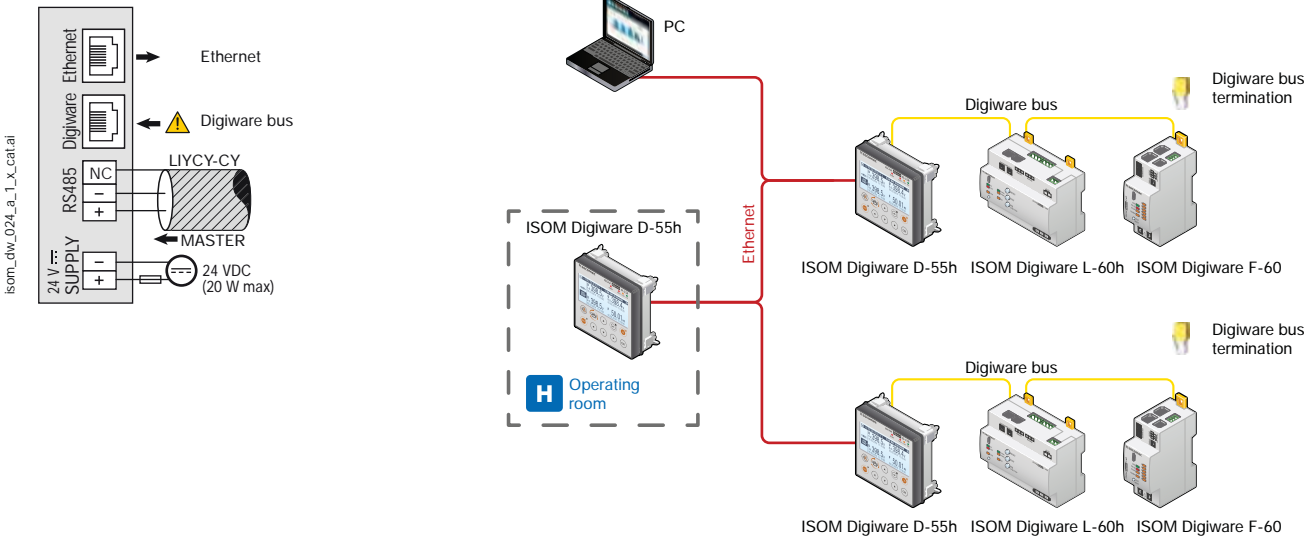
1. Buzzer stop
2. TEST: Starting test sequence on L-60h and F-60h
3. Navigation buttons
4. Device selection
5. OK button
6. Quick-Access button: Global insulation → Curves → Insulation per circuit → Power Monitoring (if available)
7. Home (long press) / Back (short press)
8. LED indicators:  
ALARM: insulation fault  
FAULT: system alarm  
COM: com bus active  
ON: power on

### Dimensions (mm)

Panel cutout DIN 96 x 96 mm



### Connections



# ISOM Digiware D-55h

Control and power supply interfaces  
for medical locations

## Characteristics

Digiware bus	
Function	Connection between ISOM Digiware modules
Cable type	Specific Socomec RJ45 cable
RS485	
Connection type	2 to 3 half duplex wires
Protocol	Modbus RTU
Baudrate	1200 to 115 200 bauds
Mechanical characteristics	
Type of screen	Capacitive touch-screen technology, 10 keys
Screen resolution	350 x 160 pixels
Front panel protection index	IP65
Electrical characteristics	
Power supply	24 VDC +10% / -20%
Power consumption	2.5 VA

Communication	
Ethernet RJ45 10/100 Mbs	Gateway function: Modbus TCP
RJ45 Digiware	Control and power supply interface function
RS485 2-3 wires	Communication function with Modbus RTU slaves
USB	Upgrade and configuration via type B micro USB connector
Ports	
Inputs	Digiware, RS485
Outputs	Ethernet RJ45
Environmental characteristics	
Storage temperature	- 40 ... + 70 °C
Operating temperature	-10 ... + 55 °C
Humidity	95% at 55 °C
Installation category, degree of pollution	CAT III, 2

## References

Medical display version		Reference
D-55h	Multipoint display, Ethernet output	4729 0204
Power supply		Reference
P15	Power supply 100-240 VAC / 24 VDC 15 W	4829 0120
P30	Power supply 100-240 VAC / 24 VDC 30 W	4729 0603
Accessories		Reference
Wall mounting accessory (flush-mount wall box kit)		4729 0292

### Need to monitor your installation ?

#### WEBVIEW-M solution embedded the ISOM Digiware D-75 display

The ISOM Digiware D-75 display centralises data from modules in the Digiware range. It embeds the WEBVIEW-M software allowing remote visualisation, monitoring and use of measurement data and the insulation level of the electrical system.



*System requirement: WEBVIEW-M is embedded the ISOM Digiware D-75.*



*ISOM Digiware D-75 is ready to be connected to a Cloud platform.*



*Display of electrical parameters from multiple devices on a customised dashboard like an electrical circuit diagram or a site drawing.*

### Expert Services

Our Expert Services team will **audit** your electrical installation, **commission** selected equipment and **train** the personnel in charge of its use. They will provide a **monitoring solution** for "turnkey" projects.

These services correspond to level 2 or 3 of the GIMELEC list of service categories.

For further information, please contact your nearest SOCOMEC branch.





# ISOM Digiware L-60h

Insulation monitoring device  
for medical locations

Insulation monitoring



ISOM Digiware L-60h

## The solution for

- > Operating rooms
- > Anaesthesia rooms
- > Recovery rooms
- > Invasive imaging rooms



## Strong points

- > Locating current injector
- > Plug & Play
- > Temperature monitoring
- > Configurable inputs/outputs

## Conformity to standards

- > IEC 61557-8 Annex A
- > IEC 61557-9 Annex A
- > HD 60364-7-710
- > ISO 14025



## Create your project

- > Find the best Digiware configuration:  
[www.meter-selector.com](http://www.meter-selector.com)



Configuration with EasyConfig, see general catalogue.

## Function

ISOM Digiware L-60h is an insulation monitoring device combining:

- The monitoring of the insulation level of a medical IT system
- The monitoring of operating load current of medical IT single-phase insulation transformers (up to 50 A with the use of ISOM Digiware F-60)
- The monitoring of the temperature increase of the medical IT transformer.

It also integrates an additional signal injection for the localisation insulation faults and synchronises with ISOM Digiware F-60 fault locators.

It can be connected to the multipoint ISOM Digiware D-55h or single-circuit ISOM D-15h alarm report indicators.

## Advantages

### Locating current injector

Having a locating current injector means you can quickly and easily integrate a permanent fault location system, if necessary.

### Plug & Play

The combination with DIRIS Digiware voltage and current modules gives you a complete insulation and power monitoring system.

### Temperature monitoring

The device has a temperature monitoring function (sends an alarm if the preset threshold is exceeded).

### Configurable inputs/outputs

The fully configurable inputs/outputs inform on the status of external equipment (e.g. inverter), and enable a remote control of the L-60h module. (e.g. TEST or RESET).

## Functions

### Insulation monitoring

Measures the insulation level of single-phase or three-phase medical IT networks in operating rooms that may contain DC powered parts, galvanically connected to the AC network (e.g. electronic devices, monitors, etc.).

Adapts automatically to leakage capacitance (maximum 10 µF).

### Measurement of operating load current

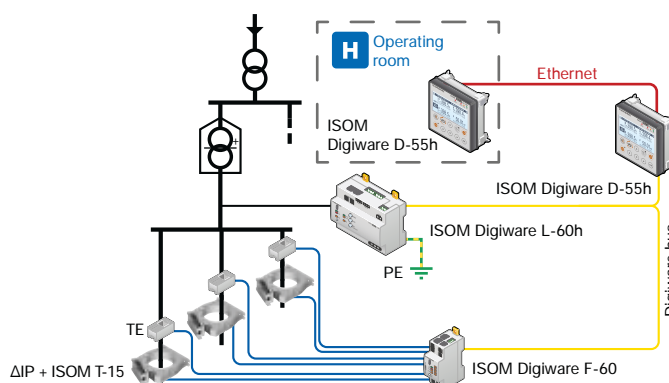
Done with ISOM Digiware F-60 and current sensors (order separately).

### Temperature measurement

Done with a PTC temperature sensor (order separately) or integrated into the insulation transformer of the medical location.

### Locating current injector

Limited to 1 mA and synchronised with the ISOM Digiware F-60 fault location module via the Digiware bus.



isom-dw\_040\_a\_1\_gp\_cat.ai

## General features

### IMD (insulation monitoring device)

- Automatically filters network disturbances.
- Digiware bus communication with ISOM Digiware D-55h display.
- Self-control of the wiring.
- Timestamped log.

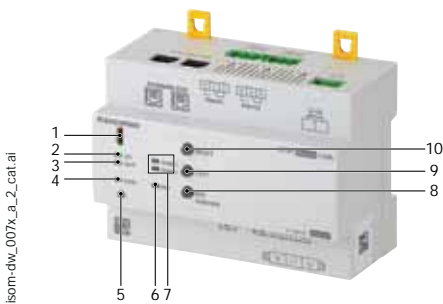
### INJ (locating current injector)

- Location current limited to 1 mA.
- Synchronisation with ISOM Digiware F-60 fault-locating modules via the Digiware bus.

### Current and temperature monitoring

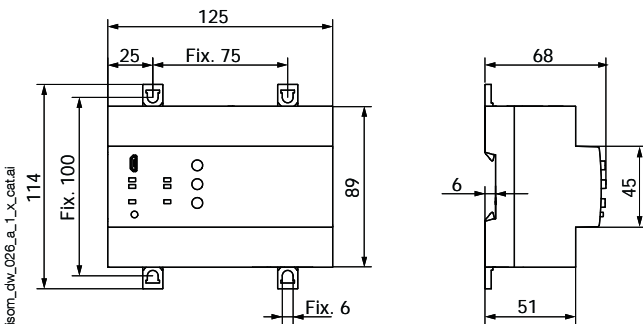
- Alarm on temperature threshold.
- Alarm on current threshold (with ISOM Digiware F-60).

## Front panel



1. USB port for configuration.
2. ON LED. Lights when the device is active.
3. FAULT LED for system alarms (connection, etc.)
4. COM LED. Flashes when the communication bus is active.
5. Auto-addressing button.
6. INJ LED. Lights when the locating current injector is active.
7. ALARM 1 and 2 LEDs. Light when the preset thresholds for Alarm 1 or Alarm 2 are reached.
8. INJ button. To start locating a fault.
9. TEST button. To run an autotest.
10. RESET button: To reset alarms.

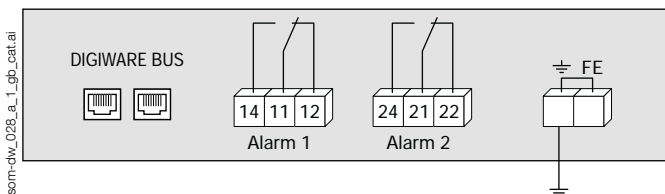
## Dimensions (mm)



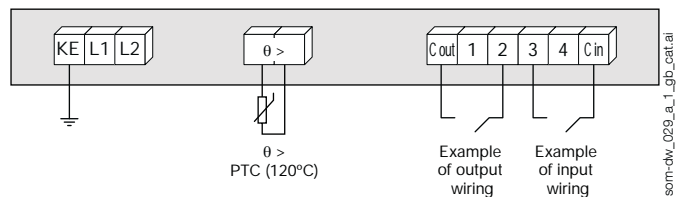
Type	Modular
Dimensions W x H x D	125 x 89 x 68 mm
Front degree of protection	IP40
Terminal block degree of protection	IP20
Rigid cable cross-section	0.2 ... 2.5 mm <sup>2</sup>
Flexible cable cross-section	0.2 ... 2.5 mm <sup>2</sup>
Weight	370 g

## Terminals

### Upper terminal



### Lower terminal



**DIGIWARE BUS:** Digiware bus connection to other Digiware modules

14 - 11 - 12: relay output for alarm 1

24 - 21 - 24: relay output for alarm 2

**EARTH FE:** earth connection

**KE - L1 - L2:** mains voltage  $U_n$  (see following page)

$\theta >$ : Connection to the temperature sensor (PTC)

**C out:** common output connection

**C in:** common input connection

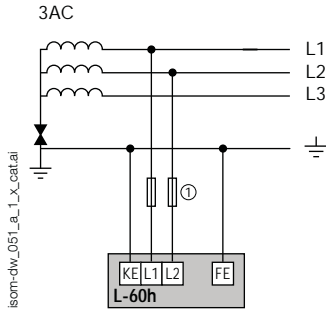
1 - 2 - 3 - 4: input or output connection (as per configuration)

# ISOM Digiware L-60h

Insulation monitoring device  
for medical locations

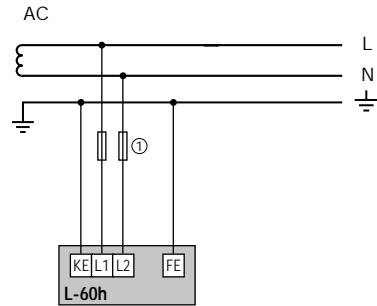
## Connections

### Three-phase network



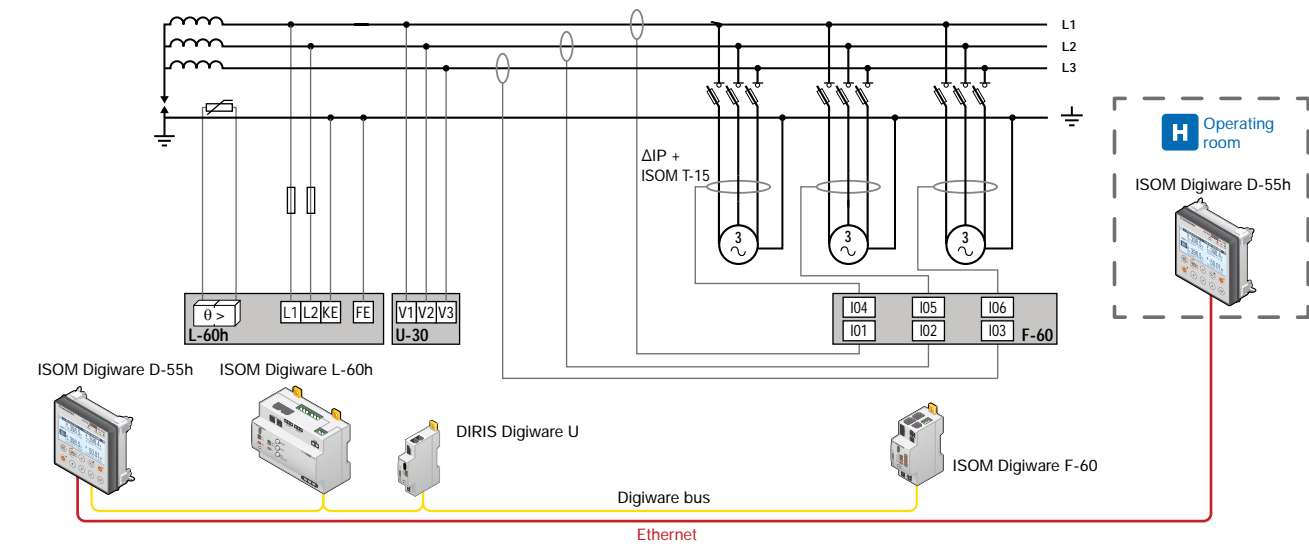
1. 2 A gG fuses

### Single-phase network



1. 2 A gG fuses

Connection example with ISOM Digiware D-55h, F-60, T-15 and DIRIS Digiware U for insulation monitoring, localisation of faults along with monitoring of the temperature rise and overload of the insulation transformer.



isom-dw\_046\_a\_1\_gp\_cat.ai



## Characteristics

<b>Network voltage <math>U_n</math></b>	
AC operating range	AC 24 ... 250 V
Frequency	50-60 Hz
Assigned operating voltage	690 V
<b>Auxiliary power supply <math>U_s</math></b>	
Power supply voltage	Digiware bus
Max. consumption	2.3 W
<b>Fault alarms</b>	
Number of thresholds	1
Type of threshold	Adjustable
Value of the threshold	50 k $\Omega$ ... 500 k $\Omega$
Max. leakage capacitance	10 $\mu$ F
<b>Inputs/outputs</b>	
Number of I/O	4
Types of I/O	Adjustable

<b>Output contacts</b>	
Number of contacts	2
Contact type	Changeover switch
AC nominal voltage	250 V
DC nominal voltage	30 V
Sustained current	5 A
Operating mode	Standby / On
Preset operating mode	Standby
<b>Operating conditions</b>	
Operating temperature range	-10 ... +55 °C
Storage temperature	-40 ... +85 °C
Relative humidity	95% at 55 °C

## References

ISOM Digiware	Network voltage $U_n$	Alert threshold	Reference
L-60h	AC 24 ... 250 V	50 ... 500 k $\Omega$	4729 0112
<b>Accessories</b>			<b>Reference</b>
PTC temperature sensor (120°C)			4729 0560

### Need to monitor your installation ?

#### WEBVIEW-M solution embedded the ISOM Digiware D-75 display

The ISOM Digiware D-75 display centralises data from modules in the Digiware range. It embeds the WEBVIEW-M software allowing remote visualisation, monitoring and use of measurement data and the insulation level of the electrical system.



*System requirement: WEBVIEW-M is embedded the ISOM Digiware D-75.*



*ISOM Digiware D-75 is ready to be connected to a Cloud platform.*



*Display of electrical parameters from multiple devices on a customised dashboard like an electrical circuit diagram or a site drawing.*

### Expert Services

Our Expert Services team will **audit** your electrical installation, **commission** selected equipment and **train** the personnel in charge of its use. They will provide a **monitoring solution** for "turnkey" projects.

These services correspond to level 2 or 3 of the GIMELEC list of service categories.

For further information, please contact your nearest SOCOMEC branch.





# ISOM K-40h / ISOM D-15h

Insulation monitoring device  
for medical locations

Insulation monitoring



ISOM K-40h



ISOM D-15h

## The solution for

- > Operating rooms
- > Anaesthesia rooms
- > Recovery rooms
- > Invasive imaging rooms



## Strong points

- > Alarm log
- > Quick Access button
- > Current monitoring
- > Temperature monitoring
- > Modbus communication
- > ISOM D-15h alarm report

## Conformity to standards

- > CEI 61557-8 annexe A
- > ISO 14025



Configuration  
with EasyConfig,  
see general catalogue.

## Function

The ISOM K-40h insulation monitoring device monitors the insulation level in medical facilities. It also indicates if the medical IT transformer overloads or overheats.

## Advantages

### Alarm log

The device records and timestamps active or finished alarms and events.

### Quick Access button

The device has a dedicated button to quickly and easily navigate between the main operating screens.

### Current monitoring

The device has an RJ12 current sensor input to monitor the operating load current.

### Temperature monitoring

The device has a temperature monitoring function (generates an alarm if the threshold is exceeded).

### Modbus communication

The device has an RS485 connection with Modbus protocol.

### ISOM D-15h alarm report

It displays alarms in case of insulation fault, overheating and overload of the medical IT transformer measured by the ISOM K-40h IMD.

## Applications

### Monitoring the insulation of medical facilities

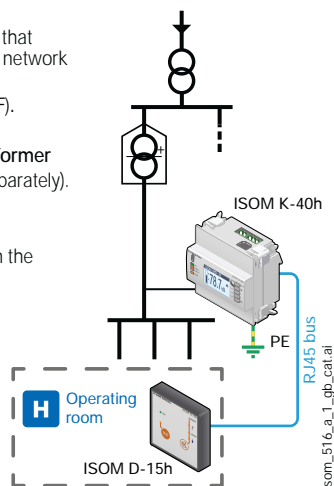
Measures the insulation level of single-phase medical IT networks that may contain DC powered parts, galvanically connected to the AC network (e.g. electronic devices, TV monitors). It automatically adapts to the leakage capacitance (maximum 5  $\mu$ F).

### Monitoring the operating load current of the medical IT transformer

Carried out via Digiware TE, TR or TF current sensors (ordered separately).

### Monitoring the temperature of the medical IT transformer

Monitoring via a PTC or integrated Clickson temperature sensor in the transformer (ordered separately).

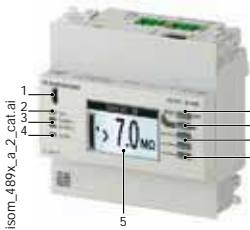


# ISOM K-40h / ISOM D-15h

Insulation monitoring device  
for medical locations

## Front panel

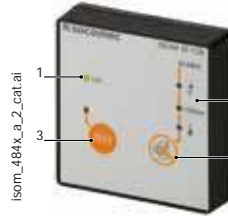
### ISOM K-40h



1. USB port for configuration.
2. ON LED. Lights when the device is active.
3. ALARM 1 LED. Lights if the medical IT transformer overloads or overheats. ALARM 2 LED. Lights if the insulation threshold is exceeded.
4. COM LED. Flashes when the communication bus is active.
5. Backlit graphic display.
6. TEST/RESET. Runs the autotest (long press) and resets alerts (short press).
7. Quick-Access button (short press) - HOME to main menu (long press).

8. Hotkeys.
9. OK buttons (short press) - Back (long press).

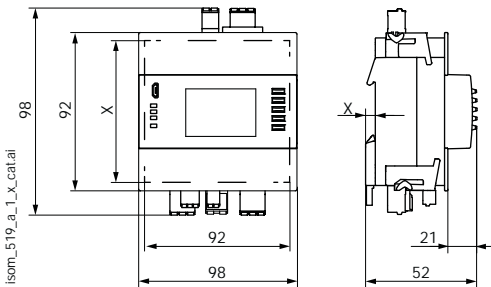
### ISOM D-15h



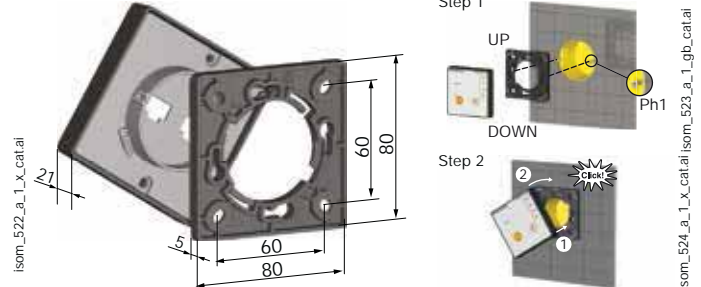
1. ON LED. Lights when the device is active.
2. LED signals:
  - Lights up if the medical IT transformer overheats.
  - >I<sub>max</sub> lights up during an overload
  - ⚡ lights if the insulation threshold is exceeded.
3. TEST button, the LED flashes during the test.
4. Buzzer Stop button.

## Dimensions (mm)

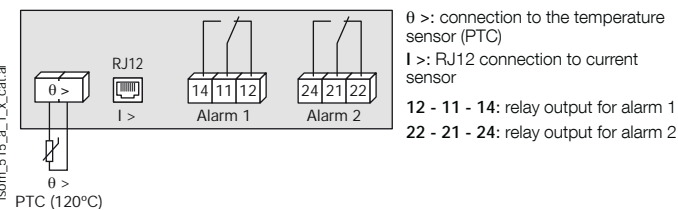
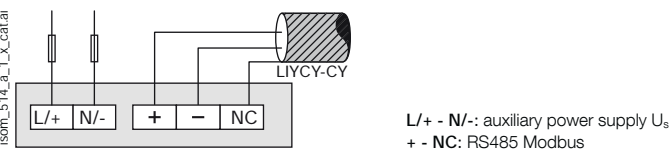
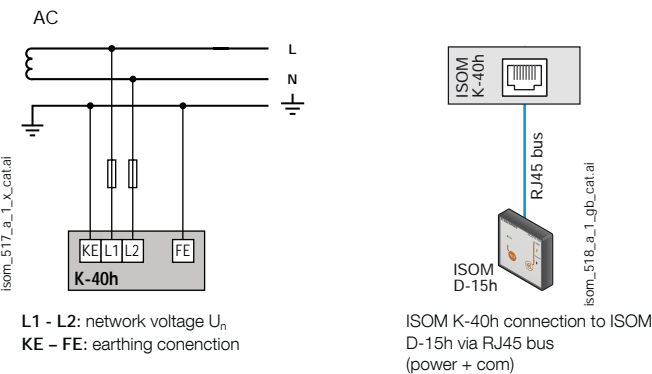
### ISOM K-40h



### ISOM D-15h



## Terminals and connections



## Characteristics

<b>Network voltage <math>U_n</math></b>	
AC operating range	AC 24 ... 250 V
Frequency	50 ... 60 Hz
Assigned operating voltage	480 V
<b>Auxiliary power supply <math>U_s</math></b>	
Power supply voltage	AC 110-230 V
Max. consumption	8.1 VA (K-40h) 0.2 VA (D-15h)
<b>Fault alerts</b>	
Number of thresholds	1
Type of threshold	Adjustable
Value of the threshold	50 k $\Omega$ ... 500 k $\Omega$
Max. leakage capacitance	5 $\mu$ F
<b>Inputs/outputs</b>	
Temperature or inhibition	PTC or digital inputs - 2 wires
Current sensors	TE, TR, TF models - RJ12
K-40h / D-15h connection	RJ45 Socomec cable
<b>Output contacts</b>	
Number of contacts	2
Contact type	Changeover switch
AC nominal voltage	230 V
DC nominal voltage	30 V
Sustained current	3 A
Operating mode	Standby / On
Preset operating mode	Standby
<b>Operating conditions</b>	
Operating temperature range	-10 ... +55 °C
Storage temperature	-40 ... +85 °C
Relative humidity	95% at 55 °C

## References

ISOM Digware	Network voltage $U_n$	Auxiliary power supply $U_s$	Alarm threshold	Reference
K-40h	AC 24 ... 250 V	AC 110-230 V	50-500 k $\Omega$	4725 0122

Accessories	Reference
ISOM D-15h alarm report indicator	4729 0200
TE current sensors (not TE-90), TR or TF	see page 42
PTC temperature sensor	4729 0560



# Fault-locating core balance transformers

Associated with ISOM Digiware F-60 modules

Insulation monitoring



Core balance transformer  $\Delta$ IP-R



Core balance transformer  $\Delta$ IP



Core balance transformer WR

## The solution for

- > Industries
- > Energy production
- > Naval, military and railway infrastructures
- > Healthcare facilities



## Strong points

- > A complete range
- > Numerous mounting options ( $\Delta$ IP and  $\Delta$ IP-R)
- > Patented centring solution ( $\Delta$ IP and  $\Delta$ IP-R)
- > A rapid installation and safe implementation ( $\Delta$ IP-R)

## Conformity to standards

- > IEC 61869-1



## Create your project

- > Find the best Digiware configuration:  
[www.meter-selector.com](http://www.meter-selector.com)



## Function

The implementation of core balance transformers is required to locate faults. They enclose the active conductors to detect an earth fault current.

Socomec **core balance transformers** meet measurement sensitivity needs and are suitable to ISOM Digiware locating systems.

Solid core ( $\Delta$ IP, WR and TFR series) or split core ( $\Delta$ IP-R series), they are adapted to all cabling configurations.

The ISOM T-15 adaptor is needed to connect the locating core balance transformers to the ISOM Digiware F-60 (see page 40).

## Advantages

### A complete range

All shapes and sizes are available for use with any cable/bar size and configuration.

### Numerous mounting options ( $\Delta$ IP et $\Delta$ IP-R)

Mounted on DIN rail, backplate or directly on a cable,  $\Delta$ IP-R core balance transformers can adapt to any installation constraints to make wiring easier and faster.

### Patented centring solution ( $\Delta$ IP et $\Delta$ IP-R)

The flexible cable centring accessory is a patented SOCOMEC innovation. It centers the cable within the core balance transformer to ensure accurate measurement and to improve its immunity to network disturbances. It also allows you to mount the core balance transformer directly onto the cable.

### A rapid installation and safe implementation ( $\Delta$ IP-R)

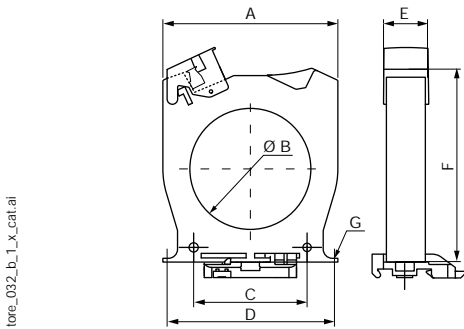
Thanks to an innovative "one click" opening/closing system, without the need of additional accessories, split-core  $\Delta$ IP-R toroids have been designed to ensure a fully safe installation.

# Fault-locating core balance transformers

Associated with ISOM Digiware F-60 modules

## Dimensions (mm)

### ΔIP-series solid core balance transformers

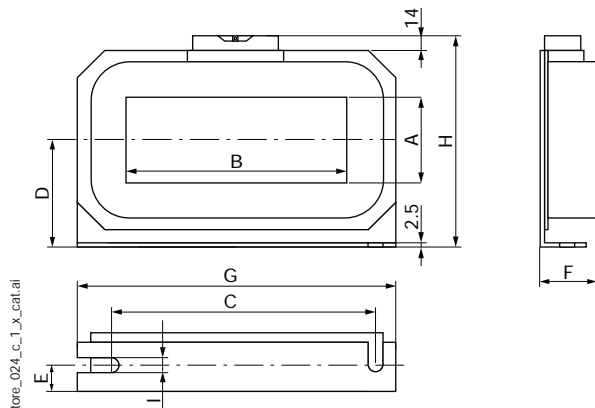


tore\_032\_b\_1\_x\_cat.ai

Type	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	Weight (kg)
ΔIP diameter 15	53	17.3	25	50	26	81	M4	0.10
ΔIP diameter 30	92	30	50	85	26	103.5	M4	0.15
ΔIP diameter 50	102.5	50	50	90	26	125	M5	0.27
ΔIP diameter 80	116	80	75	105	26	142.5	M5	0.38
ΔIP diameter 120	163	120	100	150	26	182.5	M6	0.72
ΔIP diameter 200	253	200	150	175 x 41.2	51	274	M6	1.74
ΔIP diameter 300	370	300	200	250 x 41.5	50	390	M6	3.60

A. Width  
B. Diameter  
C. Spacers  
D. Rear bracket spacers  
E. Depth  
F. Height  
G. Diameter of fixing screws

### WR-series rectangular solid core balance transformers



tore\_024\_c\_1\_x\_cat.ai

Type	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	I (mm)	Weight (kg)
WR 70 x 175	70	175	225	85	22	46	261	176	7.5	2.9
WR 115 x 305	115	305	360	116	25	55	402	240	8	6.3
WR 150 x 350	150	350	415	140	28	55	460	285	8	8.2

A. Window width  
B. Window length  
C. Spacers  
D. Half-height  
E. Depth of mounting spacers  
F. Depth  
G. Width  
H. Height  
I. Width of oblong fixing holes

## Accessories for ΔIP and ΔIP-R core balance transformers

T-15 adaptor for ΔIP core balance transformers*	Reference
T-15	4729 0590
T-15t	4729 0591

\* T-15 and T-15t adaptors can be mounted directly on the ΔIP locating core balance transformers for diameters  $\geq 30$  mm (see p. 40).



isom\_527\_a\_1\_x\_cat.ai

isom\_528\_a\_1\_x\_cat.ai

Flexible cable centring accessory	$\varnothing$ (mm)	Reference
Flexible cable centring accessory	30	4950 0011
Flexible cable centring accessory	50	4950 0012
Flexible cable centring accessory	80	4950 0013
Flexible cable centring accessory	120	4950 0014



tore\_040\_a\_1\_cat

Metal mounting bracket	$\varnothing$ (mm)	Reference
Metal mounting bracket	30	4950 0001
Metal mounting bracket	50	4950 0002
Metal mounting bracket	80	4950 0003
Metal mounting bracket	120	4950 0003
Metal mounting bracket	200	4950 0004
Metal mounting bracket	300	4950 0005



tore\_038\_a\_1\_cat

Screw-in/out terminal block	Reference
Screw-in/out terminal block	4950 0041



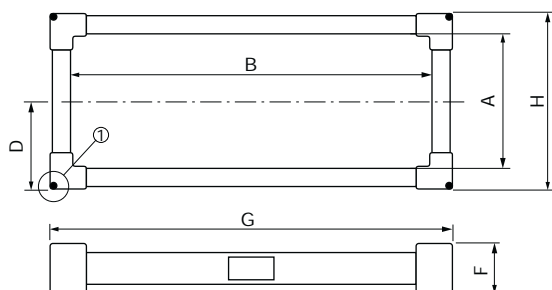
tore\_042\_a\_1\_cat

# Fault-locating core balance transformers

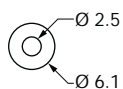
Associated with ISOM Digiware F-60 modules

## Dimensions (mm)

### TFR-series rectangular closed transformers



① Additional mounting details

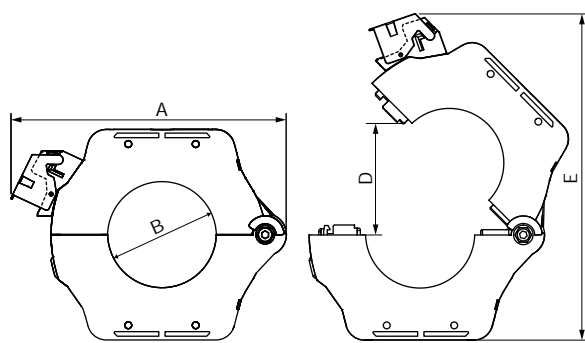


Type	A (mm)	B (mm)	D (mm)	F (mm)	G (mm)	H (mm)	Weight (kg)
TFR 200 x 500	200	500	140	62	585	285	7.2

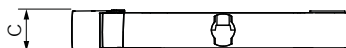
A. Window width  
B. Window length  
D. Half-height  
F. Depth  
G. Width  
H. Height

lore\_027\_h\_1\_fr\_cat

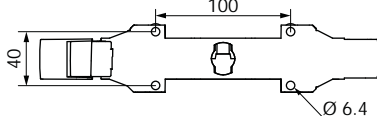
### ΔIP-R series split core balance transformers



ΔIP-R Ø 80 mm



ΔIP-R Ø 120 mm



Type	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Weight (kg)
ΔIP-R Ø 80	204	79	30	108	260	0.85
ΔIP-R Ø 120	252	119	30	149	328	1.5

A. Width  
B. Diameter  
C. Depth  
D. Aperture  
E. Height when open

lore\_064\_b\_1\_x\_cat

## Characteristics

Electrical characteristics	ΔIP	ΔIP-R
Insulation coordination	in accordance with IEC 60664-1	in accordance with IEC 60664-1
Max. operating voltage	720 VAC	720 VAC
Rated shock voltage	8 kV	8 kV
Rated withstand voltage	3 kV	3 kV
Degree of pollution	3	3
Transformation ratio	600 / 1	600 / 1
Primary rated current	10 A	10 A
Power rating	0.05 VA	0.05 VA
Max. accuracy class	3	3
Operating temperature range	-40 ... +80 °C	-40 ... +80 °C
Flammability class	UL94V-0	UL94V-0

(1) W-B series: please contact us.

### Electrical features for series WR and TFR

Insulation coordination	in accordance with IEC 60664-1
Insulation voltage	690 VAC
Rated shock voltage	8 kV
Dielectric quality	6 kV
Degree of pollution	3
Transformation ratio	600 / 1
Primary rated current	10 A
Power rating	0.05 VA
Max. accuracy class	5
Operating temperature range	-10 ... +55 °C
Flammability class	UL94V-0

# Fault-locating core balance transformers

Associated with ISOM Digiware F-60 modules

## References

<b><math>\Delta</math>IP<sup>(1)</sup> series solid core balance transformers</b>		
Type	Diameter of the core balance transformer (mm)	Reference
$\Delta$ IP $\varnothing$ 15	15	4750 6015
$\Delta$ IP $\varnothing$ 30	30	4750 6030
$\Delta$ IP $\varnothing$ 50	50	4750 6050
$\Delta$ IP $\varnothing$ 80	80	4750 6080
$\Delta$ IP $\varnothing$ 120	120	4750 6120
$\Delta$ IP $\varnothing$ 200	200	4750 6200
$\Delta$ IP $\varnothing$ 300	300	4750 6300

<b>WR and TFR-series rectangular solid core transformers</b>		
Type	Aperture of the core balance transformer (mm)	Reference
WR 70 x 175	70 x 175	4795 0717
WR 115 x 305	115 x 305	4795 1130
WR 150 x 350	150 x 350	4795 1535
TFR 200 x 500	200 x 500	4795 2050

<b><math>\Delta</math>IP-R<sup>(1)</sup> series open core balance transformers</b>		
Type	Diameter of the core balance transformer (mm)	Reference
$\Delta$ IP-R $\varnothing$ 80	80	4750 6081
$\Delta$ IP-R $\varnothing$ 120	120	4750 6121

(1)  $\Delta$ IP and  $\Delta$ IP-R core balance transformers come with a sealable protective cover, a push-in terminal block (except 15 mm with fixed terminal block and without cover), and a DIN rail mounting accessory for diameters below 200 mm.



# ISOM T-15

Connection adaptor to ISOM Digiware F-60 modules  
for locating core balance transformers

Insulation monitoring



tore\_1102\_front.psd

**ISOM T-15**  
mounted on a  $\Delta$ IP  $\varnothing$  50 core balance transformer

## The solution for

- > Industries
- > Energy production
- > Naval, military and railway infrastructures
- > Healthcare facilities



## Strong points

- > Self-powered
- > Alarm LED
- > Plug & Play
- > Compatible with all core balance transformers

## Conformity to standards

- > CEI 61557-9
- > ISO 14025



## Conformity to standards

- > Naval certifications <sup>(1)</sup>

*(1) Certification in progress*

## Create your project

- > Find the best Digiware configuration:  
[www.meter-selector.com](http://www.meter-selector.com)



## Function

The **ISOM T-15** adaptor acts as the interface between the locating core balance transformer and the ISOM Digiware F-60 module for insulation fault location purposes.  $\Delta$ IP locating core balance transformers equipped with ISOM T-15 adaptors can be combined with current sensors (TE, TR, TF) on the same ISOM Digiware F-60 module. The adaptor comes in a tropicalised version (ISOM T-15t) for extreme environments.

## Advantages

### Self-powered

The ISOM T-15 is powered by the ISOM Digiware F-60 module, via the RJ12 link.

### Alarm LED

With the integrated alarm LED on the ISOM T-15, you can quickly locate the fault inside the cabinet.

### Plug & Play

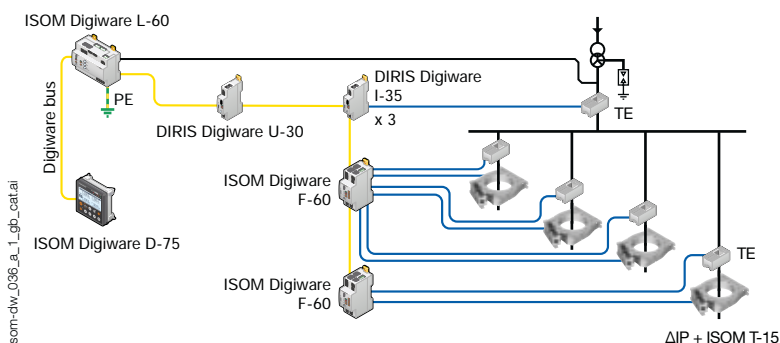
The direct mechanical and electrical connections to the  $\Delta$ IP core balance transformer and the RJ12 link to the ISOM Digiware F-60 simplifies the integration of the Digiware system.

### Compatible with all core balance transformers

- Existing  $\Delta$ IP range  
The mechanical design of the ISOM T-15 allows it to be mounted directly onto the  $\Delta$ IP core balance transformers (diameter 30 mm and above), without any cabling or tools. Existing installations equipped with  $\Delta$ IP core balance transformers can be upgraded to an ISOM Digiware system.
- Other core balance transformers  
The ISOM T-15 module can also be connected to third-party locating core balance transformers and mounted on a DIN rail. It acts as the interface between the core balance transformer and the ISOM Digiware F-60 locating module.

## Applications

Associated with the ISOM Digiware F-60 locating module, the ISOM T-15 adaptor locates the insulation fault. It physically detects the cable responsible for the fault.



isom-dw\_036\_a\_1\_gb\_cat.ai

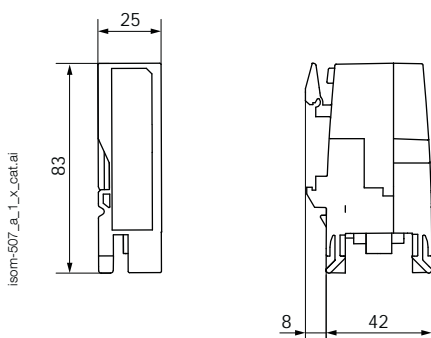


### Front panel



1. Clip to mechanically and electrically connect to the  $\Delta$ IP core balance transformer.
2. Alarm LED. Lights if there is fault on the circuit or flashes if there is a connection problem with the core balance transformer.
3. Connection base to the  $\Delta$ IP core balance transformer (supplied with 2-pin removable terminal block for remote connection).
4. DIN rail mounting clip.
5. RJ12 connection to ISOM Digiware F-60.

### Dimensions (mm)



### Terminals and connections

#### Connection



RJ12: Connection to ISOM Digiware F-60



L - K: 2-pin connection to the locating core balance transformer

### Characteristics

<b>Network voltage <math>U_n</math></b>	
AC operating range	Refer to ISOM Digiware F-60
<b>Auxiliary power supply <math>U_s</math></b>	
Power supply voltage	Self-powered
Power consumption	0.05 W
<b>Scanning channels</b>	
Number of channels per device	1
Locating current threshold	Adjustable 0.2 ... 25 mA
Insulation threshold	Adjustable 0.5 k $\Omega$ ... 400 k $\Omega$
<b>Connection</b>	
Number of core balance transformers	1
Connection type	Specific Socomec cable with RJ12 connectors

<b>Operating conditions</b>	
Operating temperature range	-10 ... +55 °C
Storage temperature	-40 ... +70 °C
Relative humidity	90% at 55 °C
<b>Operating conditions (version t)</b>	
Operating temperature range	-10 ... +70 °C
Storage temperature	-40 ... +85 °C
Relative humidity	97% at 55 °C
Operating mode	Standby / On
Preset operating mode	Standby

### References

<b>Standard adaptor version</b>		<b>Reference</b>
T-15		4729 0590
<b>Tropicalised adaptor version</b>		<b>Reference</b>
T-15t		4729 0591
<b>Accessories</b>		<b>Reference</b>
Specific RJ12 cables to connect to ISOM Digiware F-60		see page 22

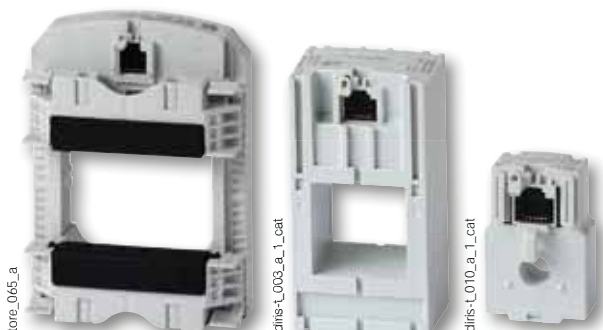


# TE sensors

## Solid current sensors

used with DIRIS Digiware I, DIRIS A-40, DIRIS B, and ISOM Digiware F-60

Insulation monitoring



TE solid sensors

### The solution for

- > Industry
- > Building
- > Infrastructure
- > Data center



### Strong points

- > Plug & Play
- > Accuracy as per standard IEC 61557-12
- > Installation

### Conformity to standards

- > IEC 61557-12



- > ISO 14025



- > UL



### Create your project

- > Find the best Digiware configuration:  
[www.meter-selector.com](http://www.meter-selector.com)



### Function

TE smart **current sensors** measure the load currents of an electrical system and send the data to meters and measurement hubs via an RJ12 plug-and-play output. Thanks to a wide measurement range, TE current sensors cover the full current range of 5 to 2000 A, with 7 references. TE solid current sensors can be connected to DIRIS Digiware and DIRIS B-30 via a rapid RJ12 connection.

Numerous accessories are available to aid the installation of sensors in any type of cabinet.

### Advantages

#### Plug & Play

- A rapid RJ12 connection makes wiring easy and reliable and prevents wiring errors. This also allows automatic detection of the sensor type and size/transformation ratio.
- The sensors can be installed in both directions.

#### Installation

- The TE solid sensor range is specially designed for new installations, and has the same pitch as the most common protective devices.

#### Accuracy as per standard IEC 61557-12

- Class 0.5 for the global measuring chain (measurement hub + TE current sensors) from 2 to 120% of the nominal current  $I_n$ .

## Mounting

Linear assembly with the protective devices  
TE-25 / TE-35 / TE-45 / TE-55 / TE-90



DIN rail mounted



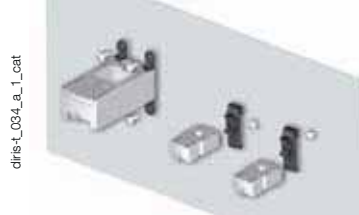
TE-90 clamps



Staggered assembly  
TE-18 / TE-35 / TE-45 / TE-55



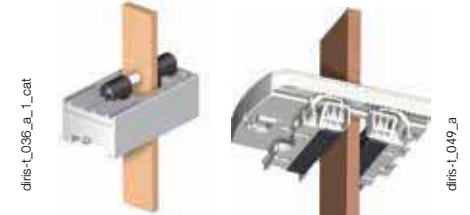
Back-plate mounting



Cable mounting



Bar mounting



## Connections

TE / TR / TF current sensors







# TE sensors

## Solid current sensors

used with DIRIS Digiware I, DIRIS A-40, DIRIS B, and ISOM Digiware F-60

### Mounting accessories

Mounting accessories delivered with TE sensors:

Switch mounting		TE-18	TE-25	TE-35 TE-45 TE-55	TE-90
	DIN rail and back-plate	1 pc			2 pcs
	DIN rail		2 pcs	2 pcs	
	Back-plate		4 pcs	4 pcs	6 pcs
	Busbar			2 pcs	

diris-t\_042\_a - 043\_a - 044\_a - 045\_a

### Compatible accessories

#### Adapter for CT with 5A secondary

diris-t\_041\_a\_1\_cat



- With this adapter you can use a current transformer with a 5 A output on DIRIS Digiware I, DIRIS B and DIRIS A-40. For use with standard 5 A CTs for measuring applications of > 2000 A. The dimensions are the same as the TE-18.

#### Coupling link

diris-t\_020\_a\_1\_cat



- Associated with the TE range, this accessory is for inter-connecting the sensors when linear or staggered mounted.



#### Sealable cover

diris-t\_046\_a\_1\_cat

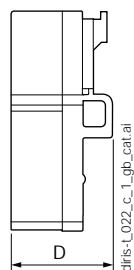
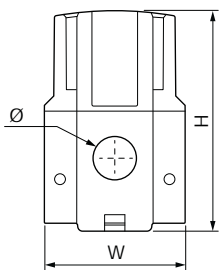


- Using a sealable cover guarantees the immunity of the sensor connection on TE/TR/TF current sensors.

### Dimensions (mm)

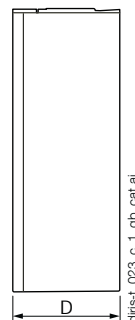
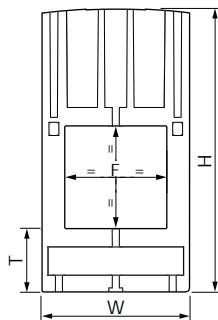
#### TE - Solid current sensors

TE-18



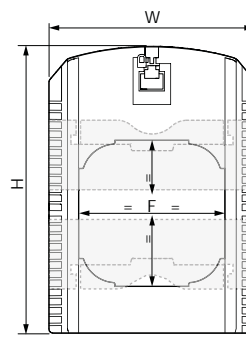
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TE-25 / TE-35 / TE-45 / TE-55

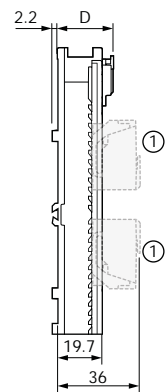


diris-t\_023\_c\_1\_gb\_cat.ai

TE-90



1. Switch mounting



diris-t\_047\_b\_1\_gb\_cat.ai

Model	Nominal current range (A)	Real range covered (A)	Pitch (mm)	H x W x D (mm)	F (mm)	T (mm)
TE-18	5 ... 20 / 25 ... 63	0.1 ... 24 / 0.5 ... 75	18	45 x 28 x 20	8.6	-
TE-25	40 ... 160	0.8 ... 192	25	65 x 25 x 32.5	13.5 x 13.5	17.5
TE-35	63 ... 250	1.26 ... 300	35	71 x 35 x 32.5	21 x 21	17.5
TE-45	160 ... 630	3.2 ... 756	45	86 x 45 x 32.5	31 x 31	19.5
TE-55	400 ... 1000	8 ... 1200	55	100 x 55 x 32.5	41 x 41	21.5
TE-90	600 ... 2000	12 ... 2400	90	126 x 90 x 24.6	64 x 64	-

### Specifications

TE - Solid current sensors							
Model	TE-18	TE-18	TE-25	TE-35	TE-45	TE-55	TE-90
Nominal current range $I_n$ (A)	5 ... 20	25 ... 63	40 ... 160	63 ... 250	160 ... 630	400 ... 1000	600 ... 2000
Real range covered (A)	0.1 ... 24	0.5 ... 75	0.8 ... 192	1.26 ... 300	3.2 ... 756	8 ... 1200	12 ... 2400
Max. current (A)	24	75.6	192	300	756	1200	2400
Weight (g)	24	24	69	89	140	187	163
Max. voltage (phase/neutral)	300 V						
Rated withstand voltage	3 kV						
Frequency	50/60 Hz						
Intermittent overload	10 x $I_n$ over 1 sec						
Measurement category	CAT III						
Protection degree	IP30 / IK06						
Operating temperature	-10 ... +70°C						
Storage temperature	-25 ... +85°C						
Relative humidity	95% RH non-condensing						
Altitude	< 2000 m						
Connection	Socomec RJ12 cable						

### References

Model	Nominal current range (A)	Real range covered (A)	Pitch (mm)	Reference
TE-18	5 ... 20	0.1 ... 24	18	4829 0500
TE-18	25 ... 63	0.5 ... 75	18	4829 0501
TE-25	40 ... 160	0.8 ... 192	25	4829 0502
TE-35	63 ... 250	1.26 ... 300	35	4829 0503
TE-45	160 ... 630	3.2 ... 756	45	4829 0504
TE-55	400 ... 1000	8 ... 1200	55	4829 0505
TE-90	600 ... 2000	12 ... 2400	90	4829 0506

Accessories	Reference
Coupling link (20 linear assembly parts and 10 for staggered assembly)	4829 0598
5 A CT adapter (measurements of >2000 A) (max primary current 10000 A for 5 A CT)	4829 0599
Sealable caps (20 pieces)	4829 0600

RJ12 connection cables	Cable length (m)								
	0.1	0.2	0.3	0.5	1	2	5	10	50 m reel + 100 connectors
Number of cables	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference
1	-	-	-	-	-	-	4829 0602	4829 0603	4829 0601
3	4829 0580	4829 0581	4829 0582	4829 0595	4829 0583	4829 0584	-	-	-
4	-	-	-	4829 0596	4829 0588	4829 0589	-	-	-
6	4829 0590	4829 0591	4829 0592	4829 0597	4829 0593	4829 0594	-	-	-



# TR sensors

## Split-core current sensors

used with DIRIS Digiware I, DIRIS A-40, DIRIS B, and ISOM Digiware F-60

Insulation monitoring



TR Split-core current sensors

### Function

TR current sensors **measure** the current on an electrical installation. Used with a measuring instrument in the DIRIS Digiware, DIRIS A-40, DIRIS B or ISOM Digiware F-60, they can perform accurate measurements of between 25 and 600 A, and provide access to a global class of precision. The RJ12 connection system makes it easier to connect it all up, and the integrated intelligence prevents any configuration errors.

### Advantages

#### Smart sensors

- Sensors with an extended operational range.
- Automatic detection of size.
- Disconnection in secured load
- Rapid connection by RJ12 and identification of cables by colour coding.

#### PreciSense technology

- Guaranteed measurement precision in line with standard IEC 61557-12 : class 1 for overall measurements of 2 to 120% of  $I_n$ .

### The solution for

- > Existing applications
- > Industry
- > Building
- > Infrastructures
- > Data centers



### Strong points

- > Smart sensors
- > PreciSense technology: Global precision class in accordance with the IEC 61557-12 standard.
- > Easy installation and configuration.

### Integrated technologies



For more information, visit [www.socomec.com](http://www.socomec.com)

### Conformity to standards

- > CEI 61557-12



- > ISO 14025



- > UL



### Create your project

- > Find the best Digiware configuration: [www.meter-selector.com](http://www.meter-selector.com)



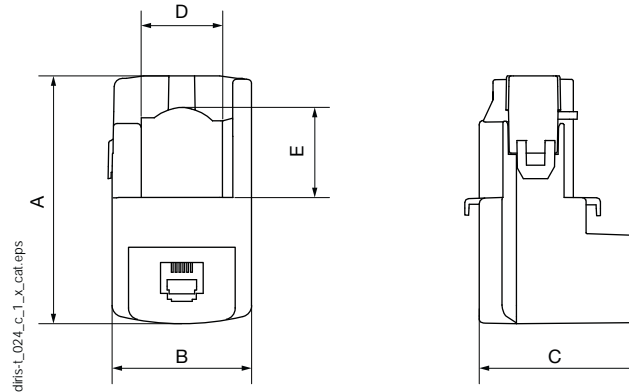
### Mounting

Cable mounting



### Dimensions (mm)

TR-10 / TR-14 / TR-21 / TR-32



Model	Nominal current range (A)	Actual coverage range (A)	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Max. opening (mm)
TR-10	25 - 63	0.5 ... 75.6	44	26	28	-	-	10
TR-14	40 - 160	0.8 ... 192	67	29	28	14	15	14
TR-21	63 - 250	1.26 ... 300	65	37	43	21	23	21
TR-32	160 - 600	3.2 ... 720	86	53	47	32	33	32

### Characteristics

Model	TR-10		TR-14		TR-21		TR-32	
Nominal current range $I_n$ (A)	25 ... 63		40 ... 160		63 ... 250		160 ... 600	
Actual coverage range (A)	0.5 ... 75.6		0.8 ... 192		1.26 ... 300		3.2 ... 720	
Max. current (A)	75.6		192		300		720	
Weight (g)	74		117		211		311	
Max. voltage (phase/neutral)	300 V							
Rated withstand voltage	3 kV							
Frequency	50/60 Hz							
Intermittent overload	10 x $I_n$ for 1 s							
Measurement category	CAT III							
Global class used with DIRIS Digiware/A-40/B-10/B30	Class 1	Class 0.5	Class 1	Class 0.5	Class 1	Class 0.5	Class 1	Class 0.5
Protection degree	IP20 / IK07							
Operating temperature range	-10 to +70 °C						-10°...+55 °C	
Storage temperature	-25 to +85 °C							
Relative humidity	95% RH non-condensing							
Altitude	< 2000 m							
Connection	Socomec RJ12 cable							

### References

Model	Nominal current range (A)	Actual coverage range (A)	Diameter (mm)	Reference
TR-10	25 - 63	0.5 ... 75	10	4829 0555
TR-14	40 - 160	0.8 ... 192	14	4829 0556
TR-21	63 - 250	1.26 ... 300	21	4829 0557
TR-32	160 - 600	3.2 - 720	32	4829 0558

RJ12 connection cables	Cable length (m)								
	0.1	0.2	0.3	0.5	1	2	5	10	50 m reel + 100 connectors
Number of cables	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference
1							4829 0602	4829 0603	4829 0601
3	4829 0580	4829 0581	4829 0582	4829 0595	4829 0583	4829 0584			
4				4829 0596	4829 0588	4829 0589			
6	4829 0590	4829 0591	4829 0592	4829 0597	4829 0593	4829 0594			



# TF sensors

## Flexible current sensors

used with DIRIS Digiware I, DIRIS A-40, DIRIS B, and ISOM Digiware F-60



TF Flexible current sensors

diris\_L077.eps

### The solution for

- > Industry
- > Building
- > Infrastructure
- > Data centers



### Strong points

- > Plug & Play
- > Accuracy according to IEC 61557-12
- > Installation
- > Simplified installation

### Integrated technologies



PreciSense

For more information visit [www.socomec.com](http://www.socomec.com)

### Compliance with standards

- > IEC 61557-12



- > ISO 14025



- > UL



### Create your project

- > Find the best Digiware configuration:  
[www.meter-selector.com](http://www.meter-selector.com)



## Function

TF flexible **current sensors** measure the load currents of an electrical circuit and send the data to meters and Power Monitoring Devices or current modules via an RJ12 plug-and-play connection. Thanks to a wide measurement range, TF current sensors cover a wide current range from 150 to 6000 A, with only 5 references. TF flexible current sensors can be used with DIRIS Digiware I modules, DIRIS A-40 and DIRIS B.

## Advantages

### Plug & Play

- A rapid RJ12 connection makes wiring easy and reliable and prevents wiring errors. This also allows automatic detection of the sensor type and rating.
- The sensors can be installed in both directions.

### Accuracy according to IEC 61557-12

- Class 0.5 for the global measuring chain (PMD + TF current sensors) from 2 to 120% of the nominal current  $I_n$ .
- Accuracy is guaranteed regardless of the position of the conductor in the loop.

### Safe locking mechanism

- The locking system prevents the loop from opening, guaranteeing continuous functioning and accuracy even under harsh conditions.

### Installation

- The TF flexible sensor range is specially designed for existing installations with strict integration constraints or with high-intensity currents.

### Simplified installation

- The Rogowski integrator is directly integrated to the RJ12 cable enabling a quick and compact integration (no DIN rail assembly required) inside electrical panels.
- The integrator is self supplied by the PMD through the RJ12 cable and does not need any external power supply.



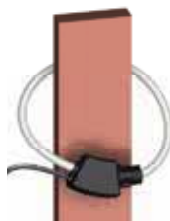
### Installation

Cable mounting



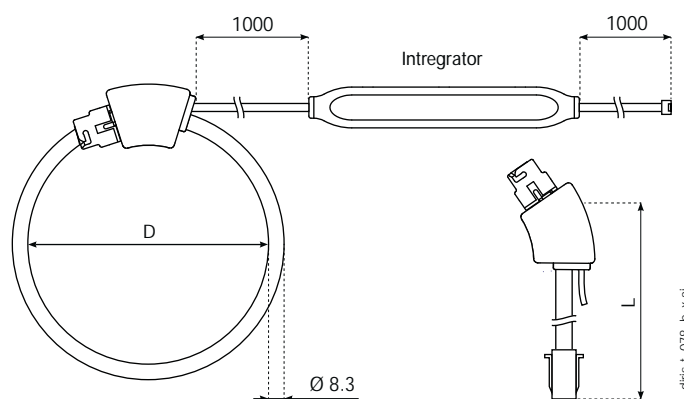
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Bar mounting



diris-L\_080.psd

### Dimensions (mm)



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Model	Nominal current range (A)	Real range covered (A)	D = Ø loop (mm)	L = Loop length (mm)
TF-80	150 ... 600	3 ... 720	80	251
TF-120	400 ... 2000	8 ... 2400	120	377
TF-200	600 ... 4000	12 ... 4800	200	628
TF-300	1600 ... 6000	32 ... 7200	300	942
TF-600	1600 ... 6000	32 ... 7200	600	1885

Integrator dimensions: 128 x 19 x 15 mm

### Technical characteristics

Model	TF-80	TF-120	TF-200	TF-300	TF-600
Nominal current range $I_n$ (A)	150 ... 600	400 ... 2000	600 ... 4000	1600 ... 6000	1600 ... 6000
Real range covered (A)	3 ... 720	8 ... 2400	12 ... 4800	32 ... 7200	32 ... 7200
Weight (g)	130	142	164	193	274
Max. voltage (phase/neutral)	600 V				
Rated withstand voltage	3.6 kV				
Accuracy class	0.5 in association with DIRIS Digiware I, DIRIS A-40, DIRIS B based on IEC 61557-12				
Frequency	50 / 60 Hz				
Intermittent overload	10 x $I_n$ for 1 s				
Measurement category	CAT III				
Protection degree	IP30 / IK07				
Operating temperature	-10 ... +70°C				
Storage temperature	-25 ... +85°C				
Relative humidity	95% RH non-condensing				
Altitude	< 2000 m				
Connection	Socomec cable or equivalent RJ12 straight, twisted pair, unshielded, 600 V, -10 ... +70 °C				

### References

Model	Nominal current range (A)	Real range covered (A)	D = Ø loop (mm)	L = Loop length (mm)	Reference
TF-80	150 ... 600	3 ... 720	80	251	4829 0574
TF-120	400 ... 2000	8 ... 2400	120	377	4829 0575
TF-200	600 ... 4000	12 ... 4800	200	628	4829 0576
TF-300	1600 ... 6000	32 ... 7200	300	942	4829 0577
TF-600	1600 ... 6000	32 ... 7200	600	1885	4829 0578
<b>Accessories</b>					<b>Reference</b>
Female/female connector for extension of the RJ12 connection between PMD and TF sensor.					4829 0670

RJ12 connection cables	Cable length (m)								
	0.1	0.2	0.3	0.5	1	2	5	10	50 m reel + 100 connectors
Number of cables	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference
1									
3	4829 0580	4829 0581	4829 0582	4829 0595	4829 0583	4829 0584	4829 0602	4829 0603	4829 0601
4				4829 0596	4829 0588	4829 0589			
6	4829 0590	4829 0591	4829 0592	4829 0597	4829 0593	4829 0594			



# ISOM PS-61

Portable insulation fault location system  
for power networks or control circuits

Insulation monitoring



isom\_501.psd

Full case  
**ISOM PS-61**



isom\_505.psd

Portable locating current injector  
**ISOM JP-61**



isom\_504.psd

Portable locating device  
**ISOM FP-60**

## The solution for

- > Industries
- > Energy production
- > Naval, military and railway infrastructures



## Strong points

- > Insulation measured by circuit
- > In-depth insulation
- > Fully compatible with the permanent ISOM Digiware system
- > Diagnostics of differential currents on TNS and TT networks
- > Graphic analysis of the locating signal
- > Micro-SD card for backup
- > Improved ergonomics for portable use

## Conformity to standards

- > IEC 61557-9



## Function

The **ISOM PS-61** is a portable system that allows you to:

- Extend the ISOM Digiware system for accurate fault-localisation
- Audit the insulation of power networks or control circuits.

### Portable ISOM JP-61 locating current injector

Portable case for the following functions:

- Locating current injector
- Insulation monitoring

It performs:

- The localisation of insulation faults in IT systems with single and three-phase AC and DC networks from 20 to 480 V.
- The measurement of differential currents in IT, TT and TN systems on single-phase or three-phase AC networks from 2 mA to 10 A.

### ISOM FP-60 portable locating unit

- Extended sensitivity range:
  - IT system: between 0.2 and 25 mA
  - TT/TNS system: between 2 mA and 10 A
- A graphical display to analyse the locating signal.
- Backlight button on the front panel.
- Robustness (protective bumpers provided).

## Advantages

### Insulation measured by circuit

The ISOM FP-60 locating unit – with a connection to the electrical network – provides insulation readings of the monitored circuit.

### In-depth insulation

By measuring the local voltage, you get a detailed insulation evaluation with breakdown of resistive and capacitive components for a better appraisal of the insulation.

### Fully compatible with the permanent ISOM Digiware system

The ISOM FP-60 portable locating unit is compatible with the locating signal generated by an ISOM Digiware L-60.

### Diagnostics of differential currents on TNS and TT networks

The ISOM FP-60 locator can also be used to measure the differential current (to check if the residual-current device RCD is working properly).

### Graphic analysis of the locating signal

The graphic display shows the locating signal to evaluate the interference level of the monitoring system.

### Micro-SD card for backup

With this device, you can save screenshots to a micro-SD card.

### Improved ergonomics for portable use

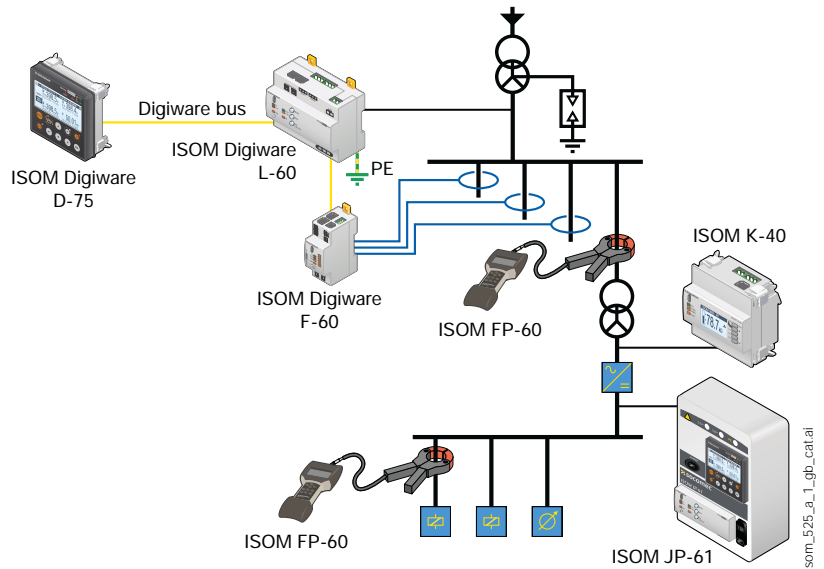
The battery life makes it easier to operate the unit in portable mode. The soft protective bumpers protect the device from occasional shocks.

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## Functions

- Portable standalone detection or in addition to permanently installed ISOM Digiware F-60 locating modules.
- Detects fugitive faults.
- Locates capacitive zero-currents or on protective conductors.
- Prevents and diagnoses accidental tripping of RCDs (knock-on effects, current resulting from filtering...).



## Contents



1. Portable rolling case with retractable handle.
2. ISOM JP-61 locating current injector box.
3. ISOM FP-60 portable locating unit.
4. Detection clamps (20 and 52 mm).
5. Wire grabber and set of connecting cables (network, mains)
6. USB charger.

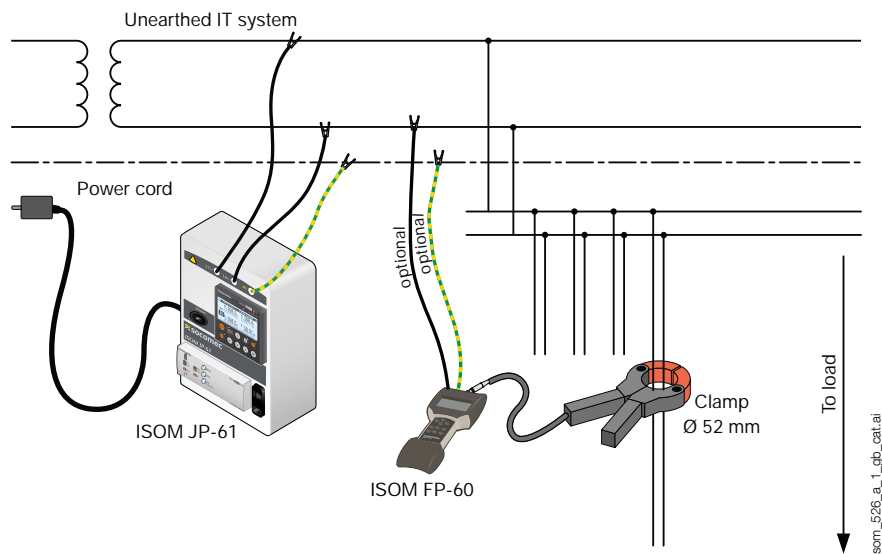
## Dimensions

Type	Case
Dimensions W x H x D	546 x 347 x 247 mm
Hardware	Polypropylene
Protection degree	IP 67
Weight (empty case)	7 kg
Weight (full case)	12 kg

# ISOM PS-61

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## Connections



## Characteristics

### ISOM JP-61 locating current injector

<b>Insulation</b>	
Rated operating voltage	600 V
Insulating voltage	690 V
<b>Power supply</b>	
Power supply $U_s$	230 VAC 50-60 Hz
<b>Monitored network <math>U_n</math></b>	
Monitored network voltage $U_n$	AC 24 - 480 V / DC 24 - 480 V
Frequency range	DC, 10-460 Hz
<b>Injection</b>	
Adjustable max. locating current	1, 2.5, 10 or 25 mA
<b>Operating conditions</b>	
Operating temperature range	-10 ... +55 °C
Storage temperature	-40 ... +70 °C
<b>General features</b>	
Dimensions W x H x D	254 x 180 x 90 mm
Weight	1 000 g

### ISOM FP-60 locating unit

<b>Power supply</b>	
Power supply $U_s$	Li-On battery
Battery life	> 8 hours with backlight on
<b>Measured input: FLD mode</b>	
Measurement range	40 $\mu$ A at 25 mA
<b>Measured input: AC differential mode</b>	
Measurement range	3 mA at 10 A
<b>Operating conditions</b>	
Operating temperature range	-20 ... +60 °C
Storage temperature	-20 ... +60 °C
<b>General features</b>	
Dimensions W x H x D	315 x 117 x 49 mm
Weight	1 500 g

### Detection clamps

<b>Clamp diameter 20 mm</b>	
Diameter	20 mm
Dimensions W x H x D	135 x 65 x 32 mm
Cable length	$\pm$ 2,000 mm
Output connection	BNC connector
Protection index (standard NF C 20-010, IEC 60529)	IP40
Weight	200 g
<b>Clamp diameter 52 mm</b>	
Diameter	52 mm
Dimensions W x H x D	216 x 111 x 45 mm
Cable length	$\pm$ 2,000 mm
Output connection	BNC connector
Protection index (standard NF C 20-010, IEC 60529)	IP40
Weight	550 g
<b>Clamp diameter 115 mm</b>	
Diameter	115 mm
Dimensions W x H x D	308 x 150 x 43 mm
Cable length	$\pm$ 2,000 mm
Output connection	BNC connector
Protection index (standard NF C 20-010, IEC 60529)	IP40
Weight	1,700 g

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## References

ISOM PS-61	Reference
Full case ISOM PS-61 containing: ISOM JP-61 + ISOM FP-60 + clamps Ø 20 mm and Ø 52 mm + cabling accessories JP-61 + FP-60	4725 0210
Separate components	Reference
ISOM JP-61 locating current injector	4725 0220
ISOM FP-60 locating unit	4725 0230
Clamp Ø 20 mm	4794 1020
Clamp Ø 52 mm	4794 1052
Clamp Ø 120 mm	4794 1120
Set of connecting accessories for ISOM JP-61	4725 0290
Set of connecting accessories for ISOM FP-60	4725 0291
Empty case	4725 0292





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