

Trafo Ω x Superintend[®]



Industry

IMD Insulation Monitoring device

Line Insulation Monitoring System

IM-01.IND

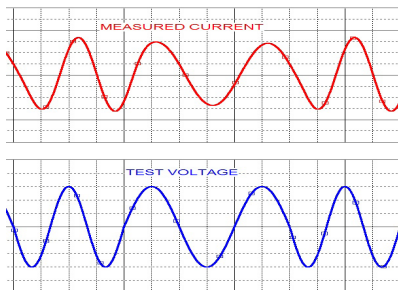


- NEW FEATURE! Modbus/TCP interface for remote monitoring and controlling!
- Visual user interface and easy installation
- Automatic recognition of the network impedance and capacitance (subharmonic distortion)
- Load and temperature monitoring of the isolation transformer and a potential free alarm contact
- Optional remote modules for insulation and transformer monitoring
- Possibility of connecting PE conductor monitoring units
- Removable microSD memory card for analyzing the usage history and fault events
- Suitable for frequency converter applications

INSULATION RESISTANCE MEASUREMENT PRINCIPLE WITH 2 FREQUENCIES SHAPED LIKE SINE WAVES

Basics of the operation:

Device supplies continuously test signal pattern of two sinusoidal voltages to the insulated supply system. This signal causes a small injected current which flows through the insulation resistance and capacitance back to the PE- potential. The current amplitudes and phase angles of the both frequencies are measured and thereafter analyzed by using statistical analyses, and the resistance and capacitance values are calculated by using very ordinary electrical circuit theory and complex math. Depending on the resistance and the capacitance the frequencies are automatically adjusted for the best accuracy and response time. In the case of subharmonic noise in the power supply system due to motor drives, the lowpass filters and test frequencies, among other things, are automatically adjusted.



Typical wave forms above.

This kind of test system functions in all kinds of power supply systems from pure DC to AC and fulfill the response times of IEC 61557-8. The lowest limit for AC- frequency / amplitude in the power supply system is specified in the data sheets of the device. This measuring method is good in cases where high capacitance and resistance exist at the same time in the power supply system insulation because there is no need to wait for the current to decrease as with pulse voltage measurement method. One additional feature of this method is the real capacitance value display. The capacitance value is rather

high nowadays because of large amounts of different kinds of switch mode power supplies connected in office environments or similar.

Practically every to the mains-connected device has an internal switch mode power supply having a radio interference filter with PE- connected capacitors from 1nF to 50nF. This insulation monitor device keeps log files of capacitance and resistance changes among other things in a microSD memory card. In case of trouble this log can be examined backwards to find the time stamp when a significant change has taken place in the resistance or capacitance. The changes or events in the power supply system can be tracked accordingly to those date and time.

Power supply specifications

Nominal Input voltage	110-240 VAC, 110-300 VDC (Schurter 0001.2503 (T800mA))
Nominal input current	0.04 A at 230 VAC
Line frequency	48 ~ 62 Hz

Measurement specification

Maximum DC input voltage	800 VDC
Maximum AC input voltage	690 VAC
Resistance measurement range	20kΩ...5MΩ with better than 15% accuracy
Capacitance measurement range	220nF...100uF
System frequency	DC, 10Hz - 500Hz
Measuring impedance	220kOhm
Test voltage	30Vp max

Three alarm contacts with settable limits (potential free changeover)

Alarm contact	5A at 250VAC
Pre-alarm contact	5A at 250VAC
Transformer alarm contact	5A at 250VAC

Other functions

- RS-485 serial connection for remote units
- Modbus/TCP interface for remote monitoring and controlling
- Memory logging with microSD card slot
- Analog output of resistance 0...20 mA, with current loop transmitter CLT-01
- High voltage couplers HVC-16AC, HVC-40AC and HVC-72AC enables insulation level monitoring of industrial isolated (IT) networks with voltages up to 1600 VAC, 4000 VAC or 7200VAC
- Suitable also for frequency converter solutions

- Easy and explanatory user interface LEDs and backlit LCD display
- Compatible also with 3 phase IT networks
- Self-testing automatic Continuous
- Self-testing immediate With TEST button
- Transformer monitoring and remote modules of IM-01.MED are also compatible with IM-01.IND

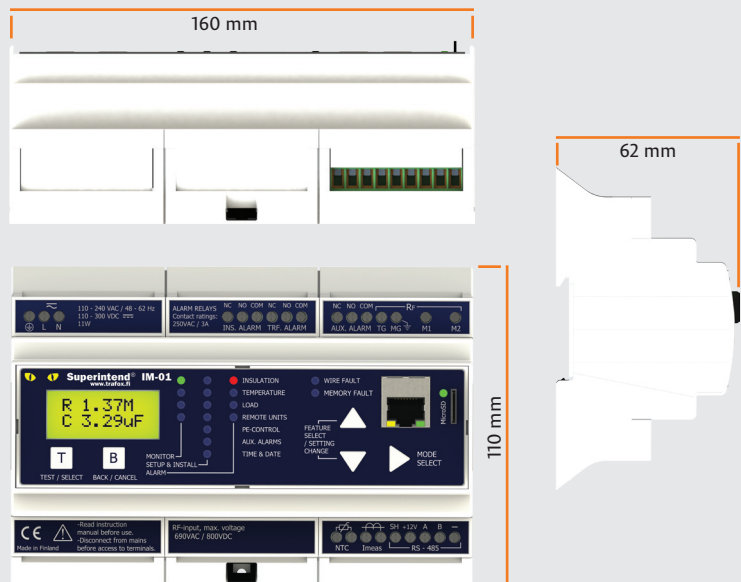
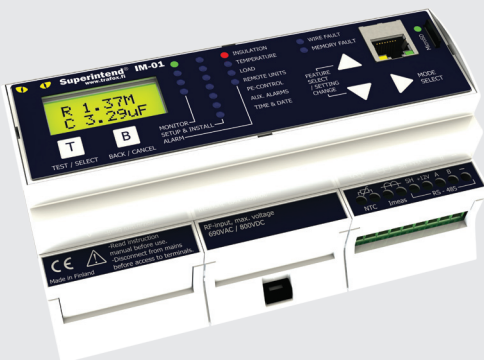
Standards

Measurements	IEC 61557-8:2014
Safety	IEC 61010-1:2010 (3 rd Edition) SGS Tüv SAAR type approved, IEC 60664-1 and IEC 60664-3
EMC	IEC 61326-2-4, CISPR 11 / EN55011, IEC61000-4-2, IEC61000-4-3, IEC61000-4-4, IEC61000-4-5, IEC61000-4-6, IEC61000-4-8, IEC61000-4-11 Tested / approved by Nemko

General

Dimension (W x L x D)	IM-01.IND	160 x 110 x 62 mm
	CLT-01	36 x 110 x 62 mm
	HVC-16AC	160 x 110 x 62 mm
	HVC-40AC	189 x 265 x 130 mm
Weight	HVC-72AC	189 x 352 x 130 mm
	IM-01.IND	0,35 kg
	CLT-01	0,08 kg
	HVC-16AC	0,24 kg
Case Material	HVC-40AC	4,10 kg
	HVC-72AC	5,90 kg
		Plastic
Mounting interface	DIN rail clamp or screw mounting	

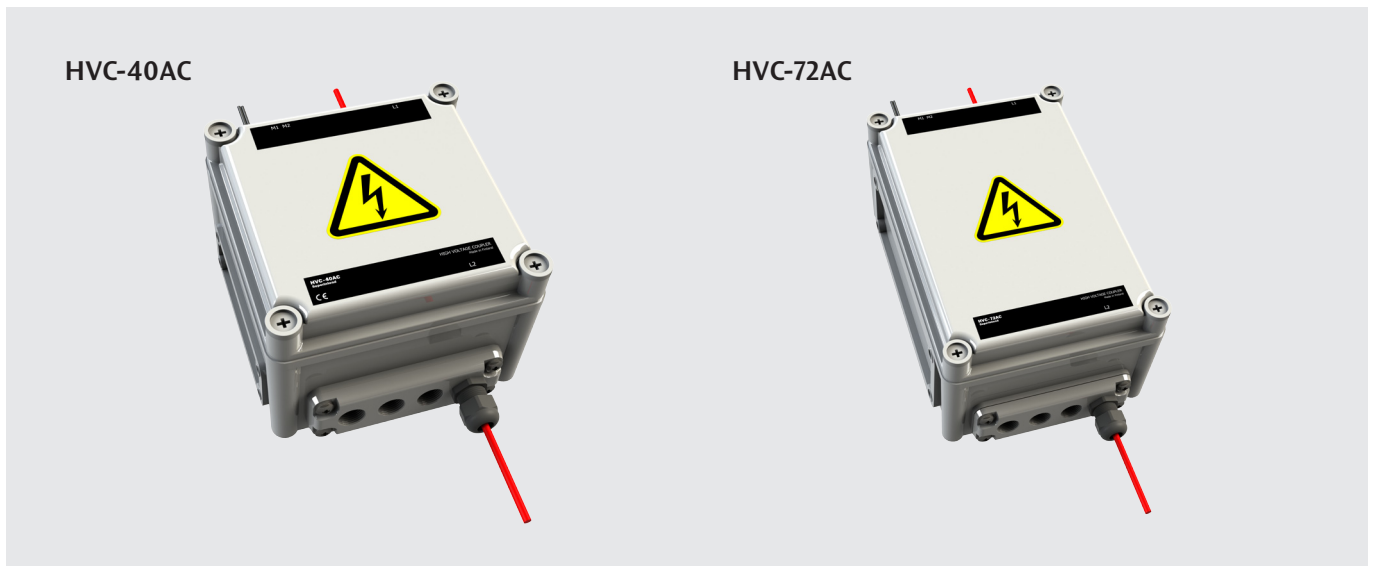
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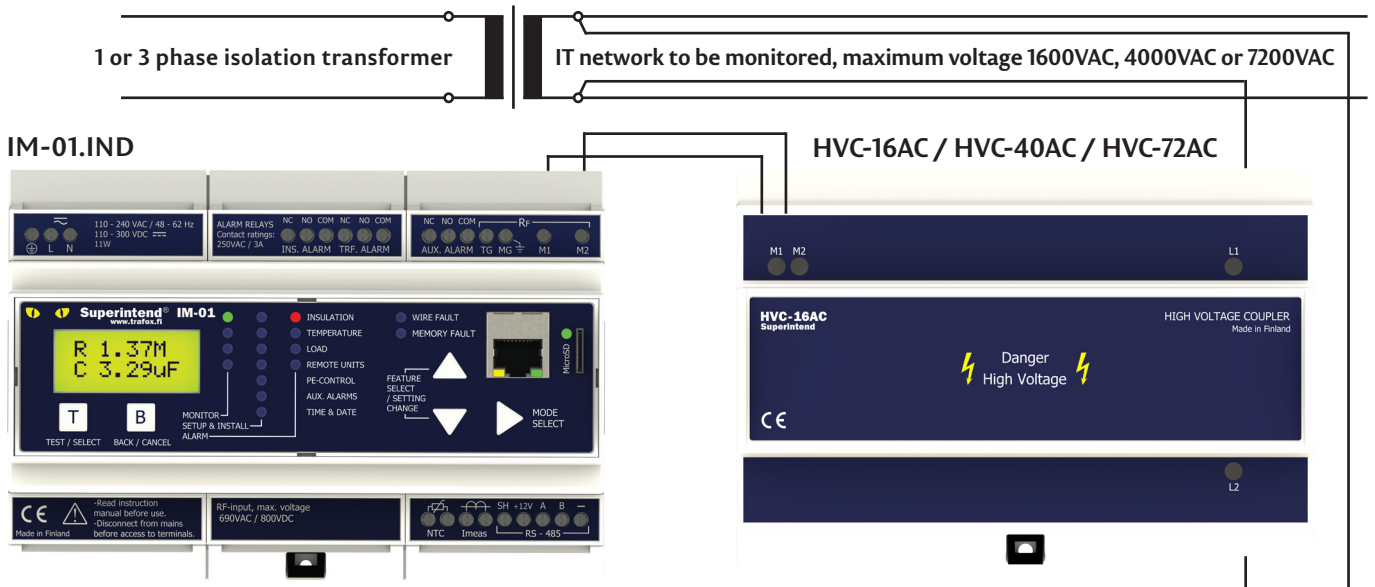
Accessories

Current loop transmitter: CLT-01

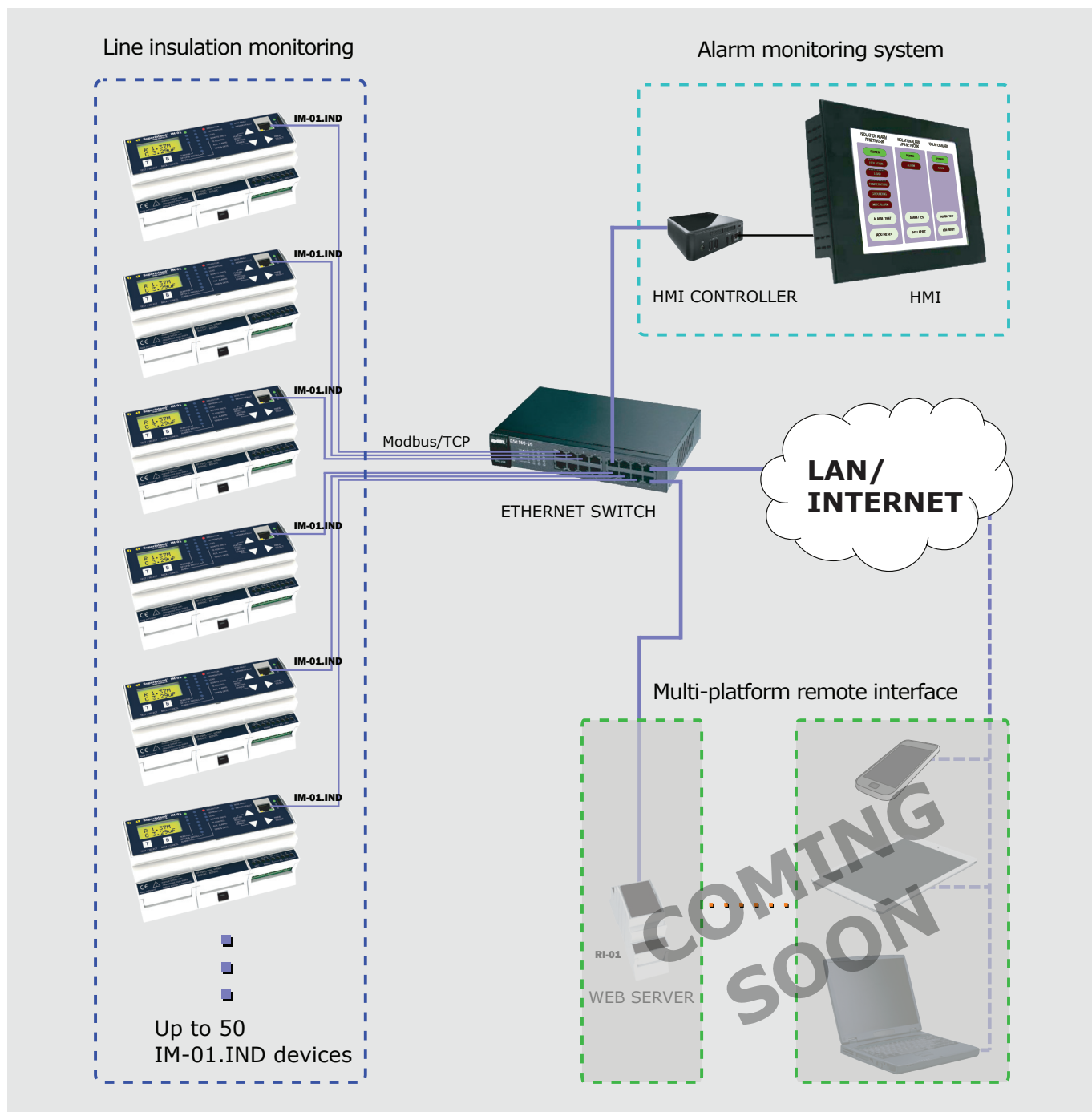
High voltage couplers: HVC-16AC, HVC-40AC and HVC-72AC





Principle of connecting high voltage couplers



Remote Monitoring and Controlling of line insulation



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Muuntosähkö

Trafox is a brand of Muuntosähkö Oy. We develop, manufacture and customise high-quality transformers, chokes, filters and Trafox Superintend® monitoring devices for a large number of applications.

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