

# Trafo $\Omega$ x Superintend<sup>®</sup>



Industry

IMD Insulation  
Monitoring device

# Line Insulation Monitoring System

IM-01.IND, IM-01.IND\_\*+HVC-\*AC

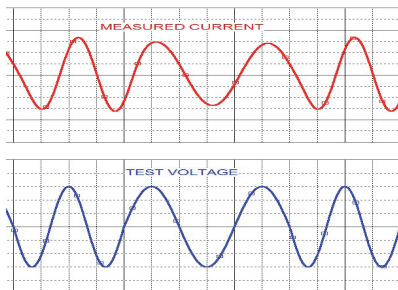


- NEW FEATURE! Modbus/TCP interface for remote monitoring and controlling!
- Visual user interface and easy installation
- Automatic recognition of the network impedance and capacitance (subharmonic distortion)
- Load and temperature monitoring of the isolation transformer and a potential free alarm 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.*

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

<b>Maximum input voltage</b> IM-01.IND: 500 VAC / 700 VDC IM-01.IND_6_9 + HVC-6_9AC: 690 VAC / 950 VDC IM-01.IND_16 + HVC-16AC: 1600 VAC / 950 VDC IM-01.IND_40 + HVC-40AC: 4000 VAC IM-01.IND_72 + HVC-72AC: 7200 VAC	
<b>Resistance measurement range</b>	10kΩ...10MΩ
<b>Capacitance measurement range</b>	≤ 1000uF
<b>System frequency</b>	DC, 10Hz - 500Hz
<b>Measuring impedance</b> IM-01.IND: 150kΩhm IM-01.IND_6_9 + HVC-6_9AC: 100kΩhm IM-01.IND_16 + HVC-16AC: 100kΩhm IM-01.IND_40 + HVC-40AC: 500kΩhm IM-01.IND_72 + HVC-72AC: 1000kΩhm	
<b>Test voltage</b>	35Vp 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 measurement	0...20 mA, with current loop transmitter CLT-01
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*	

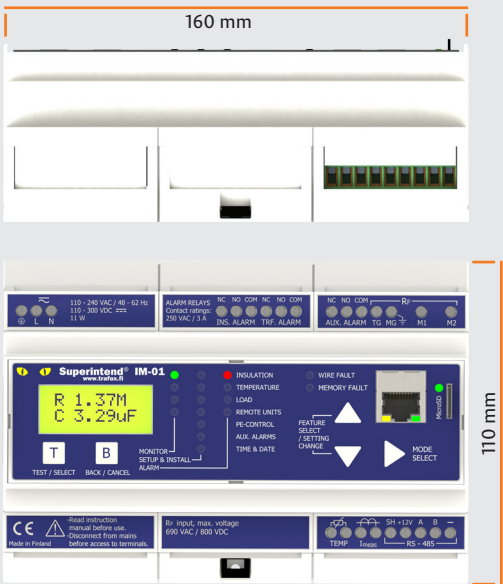
# Standards

Measurements	IEC 61557-8:2014
Safety	IEC 61010-1:2010+AMD1:2016, 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
	HVC-6_9AC	36 x 90 x 58 mm
	HVC-16AC	160 x 110 x 62 mm
	HVC-40AC	189 x 262 x 130 mm
	HVC-72AC	189 x 352 x 130 mm
	CLT-01	36 x 110 x 62 mm
Weight	IM-01.IND*	0,38 kg
	HVC-6_9AC	0,07 kg
	HVC-16AC	0,22 kg
	HVC-40AC	4,5 kg
	HVC-72AC	6,5 kg
	CLT-01	0,08 kg
Case Material	Plastic	
Mounting interface	DIN rail clamp or screw mounting	

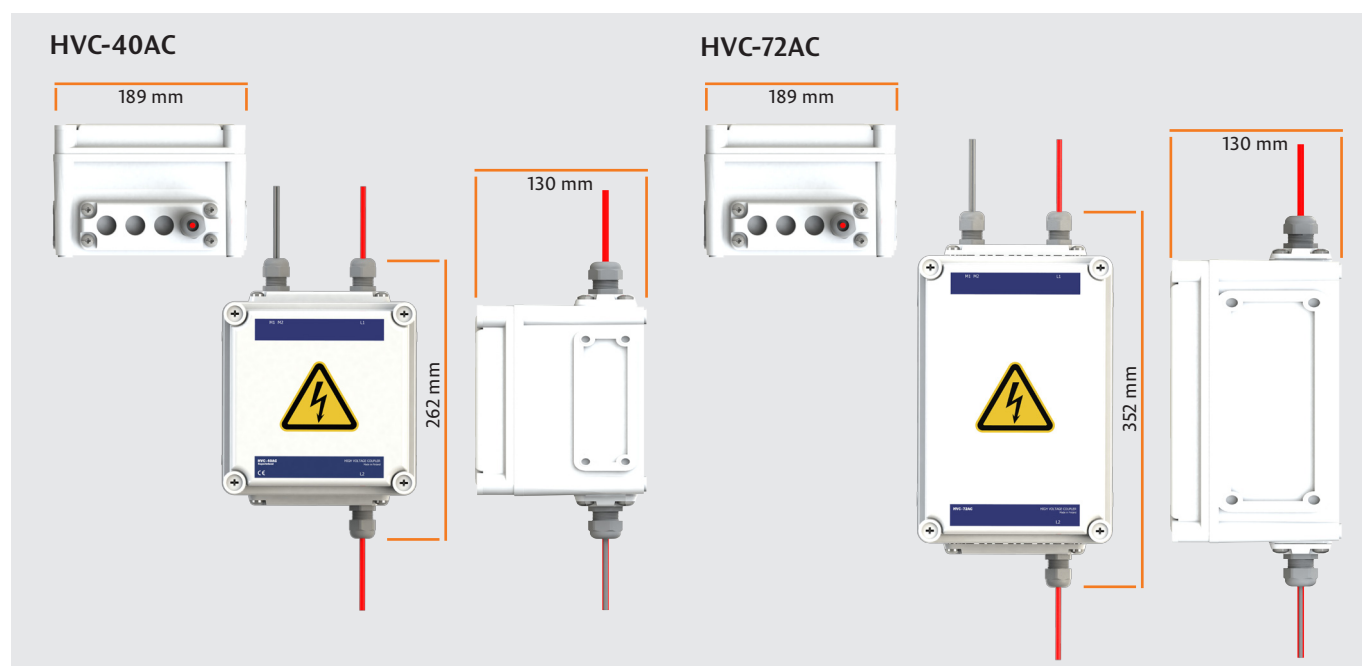
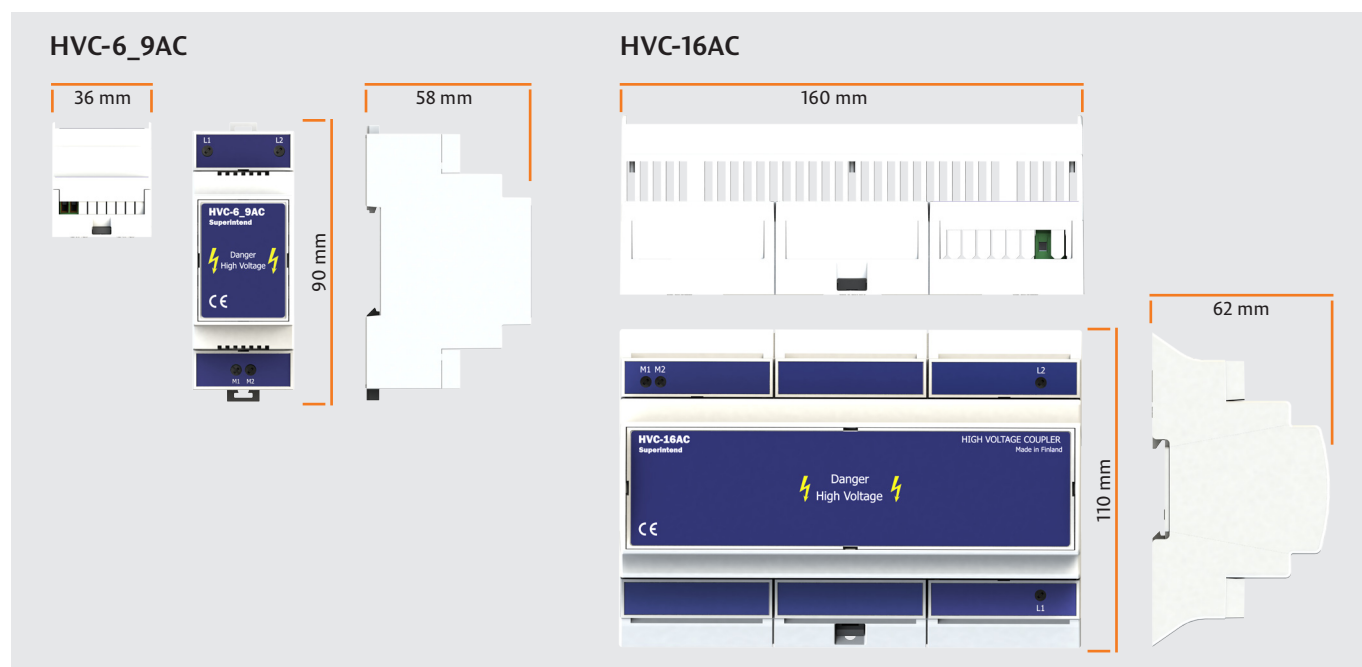
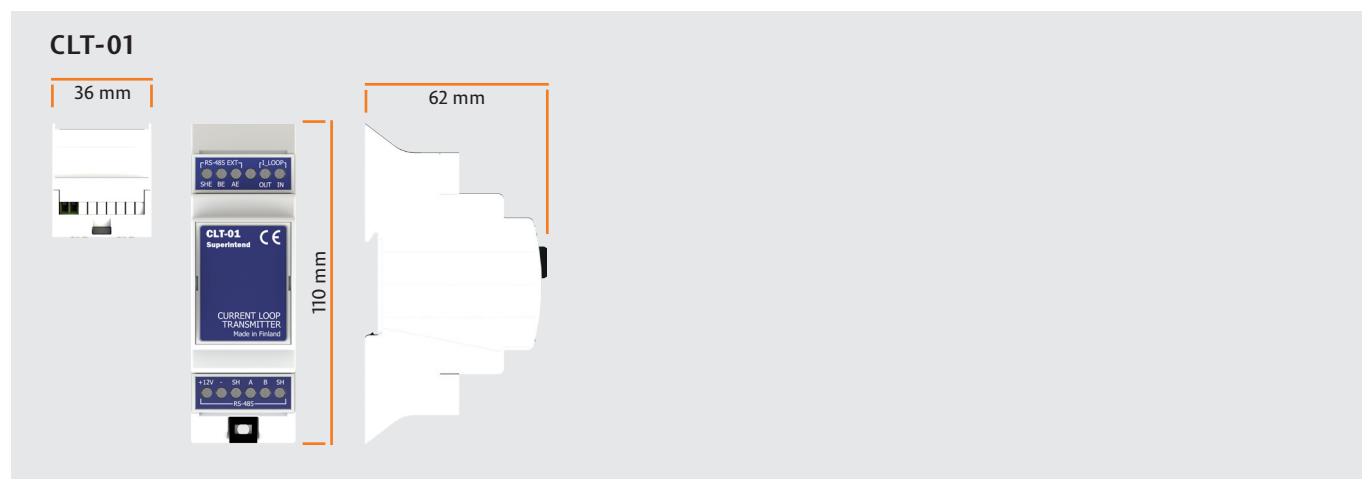
# IM-01.IND\*



## Accessories

Current loop transmitter: CLT-01

High voltage couplers: HVC-6\_9AC, HVC-16AC, HVC-40AC and HVC-72AC

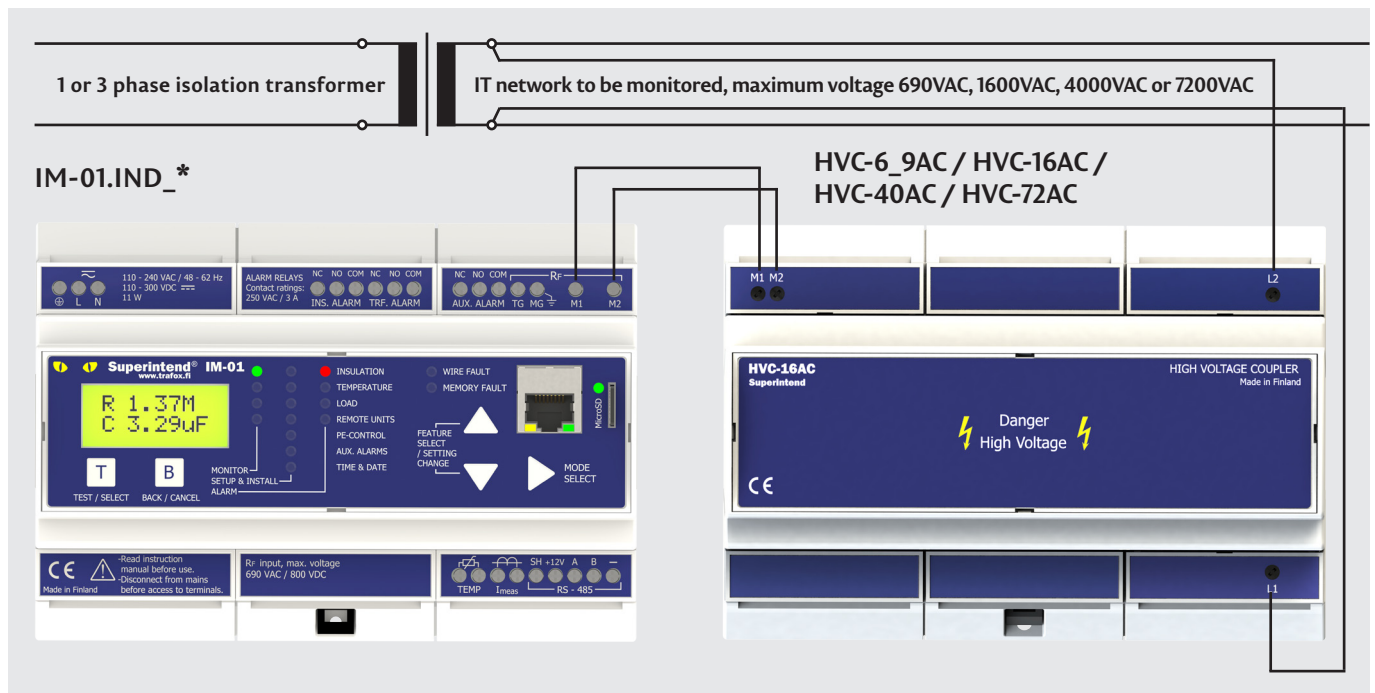




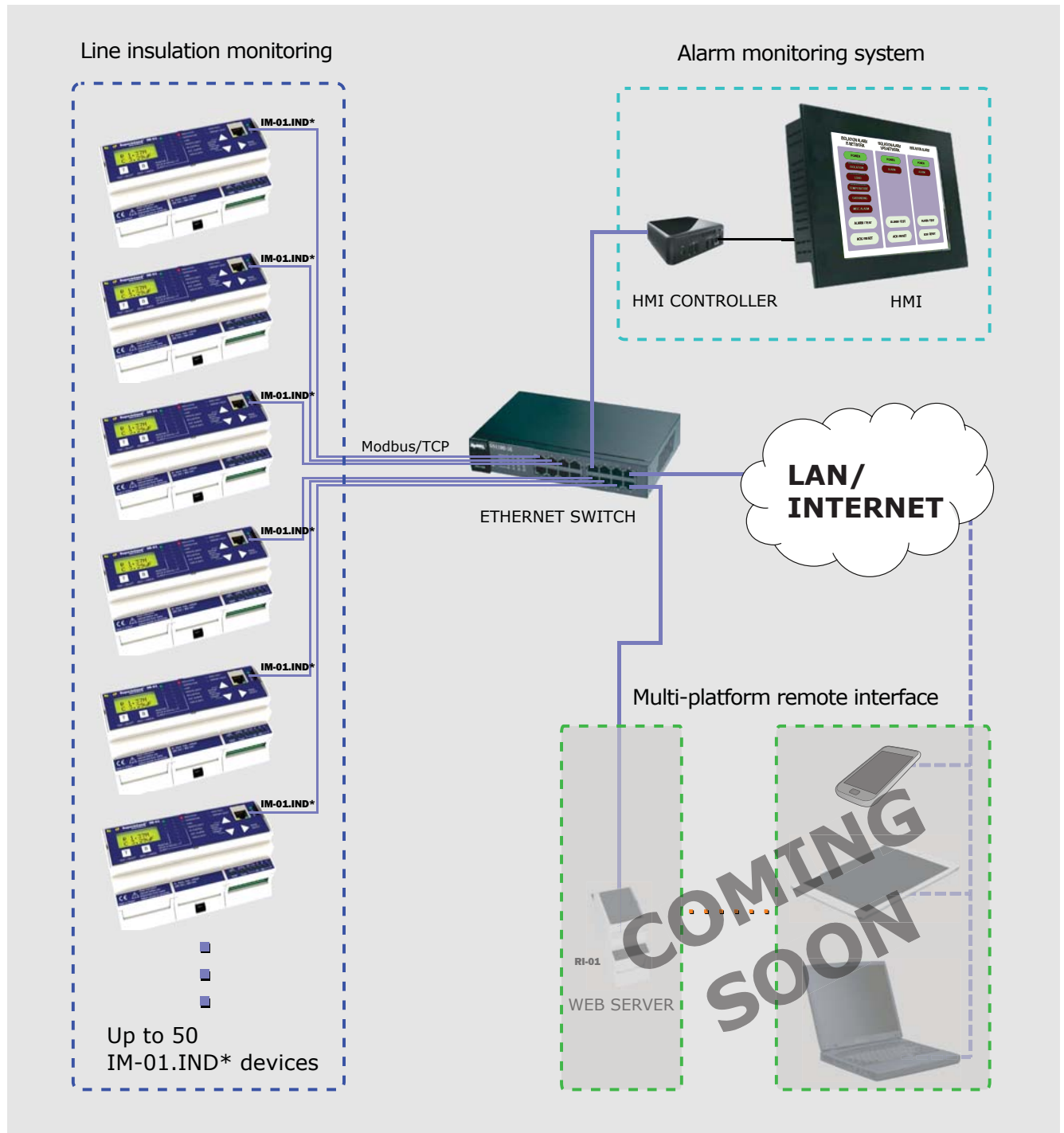
## Principle of connecting high voltage couplers

Notice! IM-01.IND\_\* must always be equipped with HVC-\*AC

With HVC-\*AC couplers, the IM-01.IND\_\* type must match the coupler type, e.g. IM-01.IND\_16 and HVC-16AC



## Remote Monitoring and Controlling of line insulation



## 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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