Trafox Superintend®



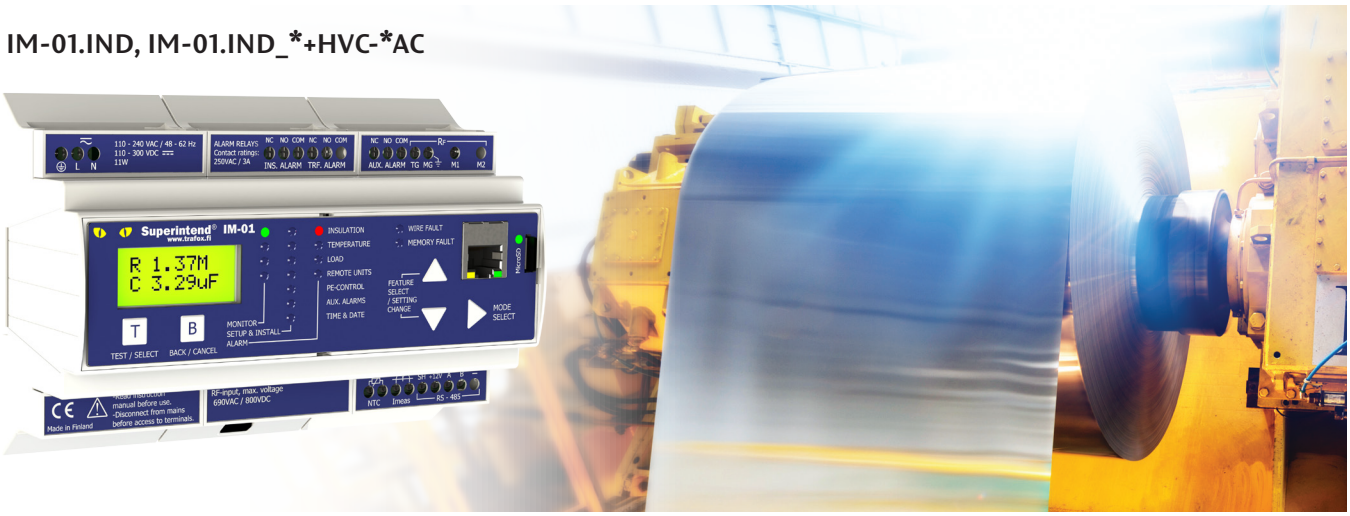
Industry

IMD Insulation Monitoring device

Line Insulation Monitoring System

TRAFOX SUPERINTEND®

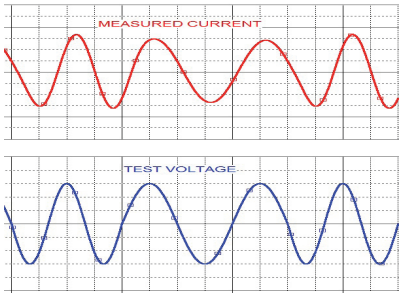
IM-01.IND, IM-01.IND_*+HVC-*AC



- 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.

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 input voltage 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 / 1000 VDC IM-01.IND_40 + HVC-40AC: 4000 VAC IM-01.IND_72 + HVC-72AC: 7200 VAC	
Resistance measurement range	10kΩ...10MΩ
Capacitance measurement range	≤ 1000uF
System frequency	DC, 10Hz - 500Hz
Measuring impedance IM-01.IND: 150kOhm IM-01.IND_6_9 + HVC-6_9AC: 100kOhm IM-01.IND_16 + HVC-16AC: 100kOhm IM-01.IND_40 + HVC-40AC: 500kOhm IM-01.IND_72 + HVC-72AC: 1000kOhm	
Test voltage	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*	

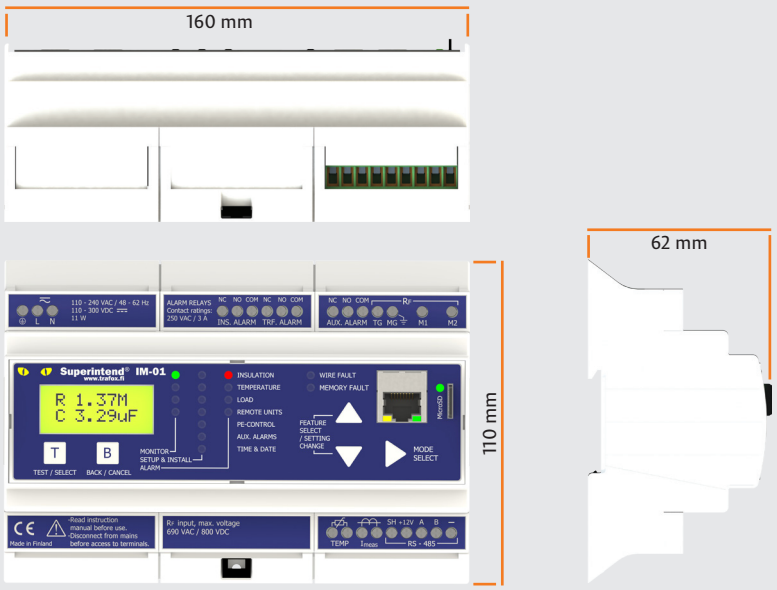
Standards

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	

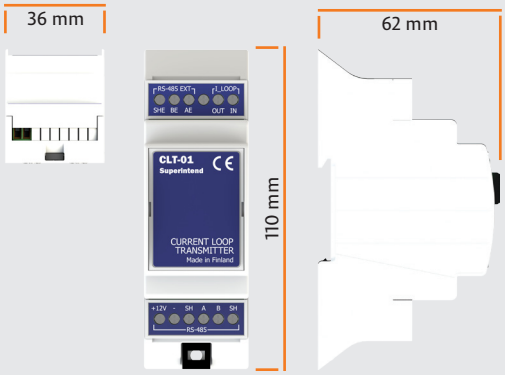
IM-01.IND*



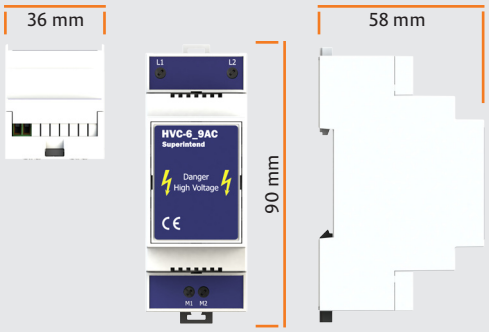
Accessories

Current loop transmitter: CLT-01
High voltage couplers: HVC-6_9AC, HVC-16AC, HVC-40AC and HVC-72AC

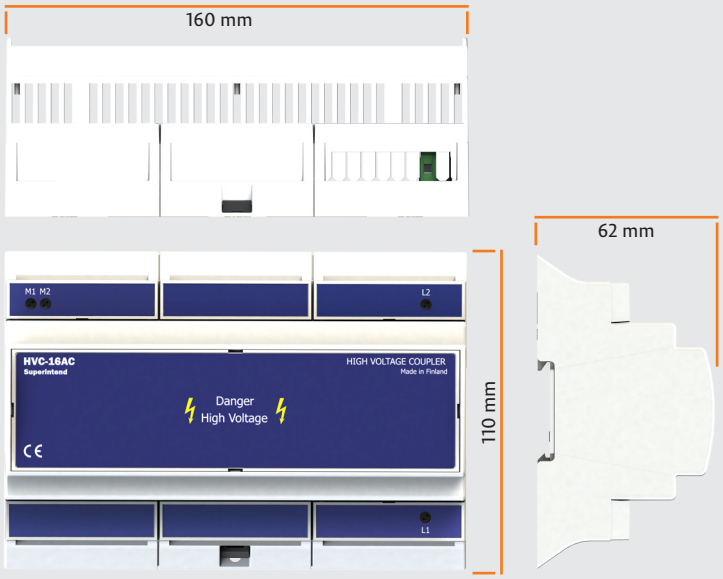
CLT-01



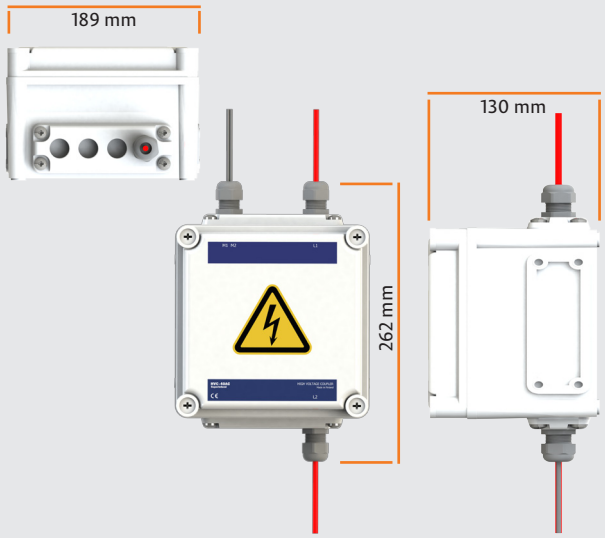
HVC-6_9AC



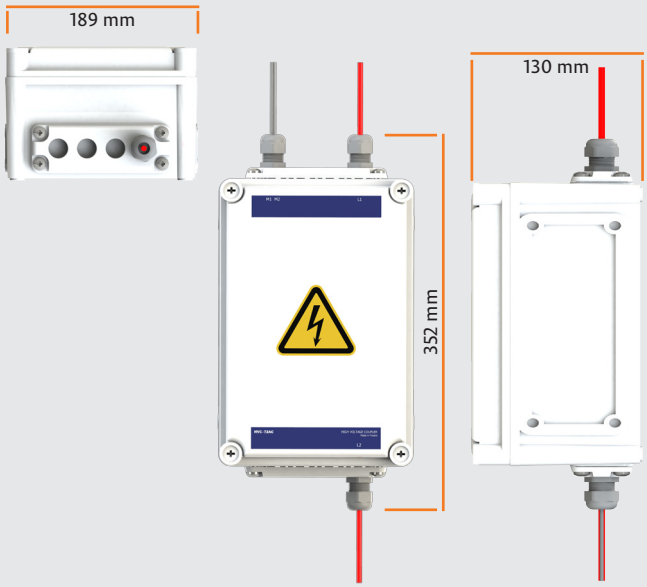
HVC-16AC



HVC-40AC

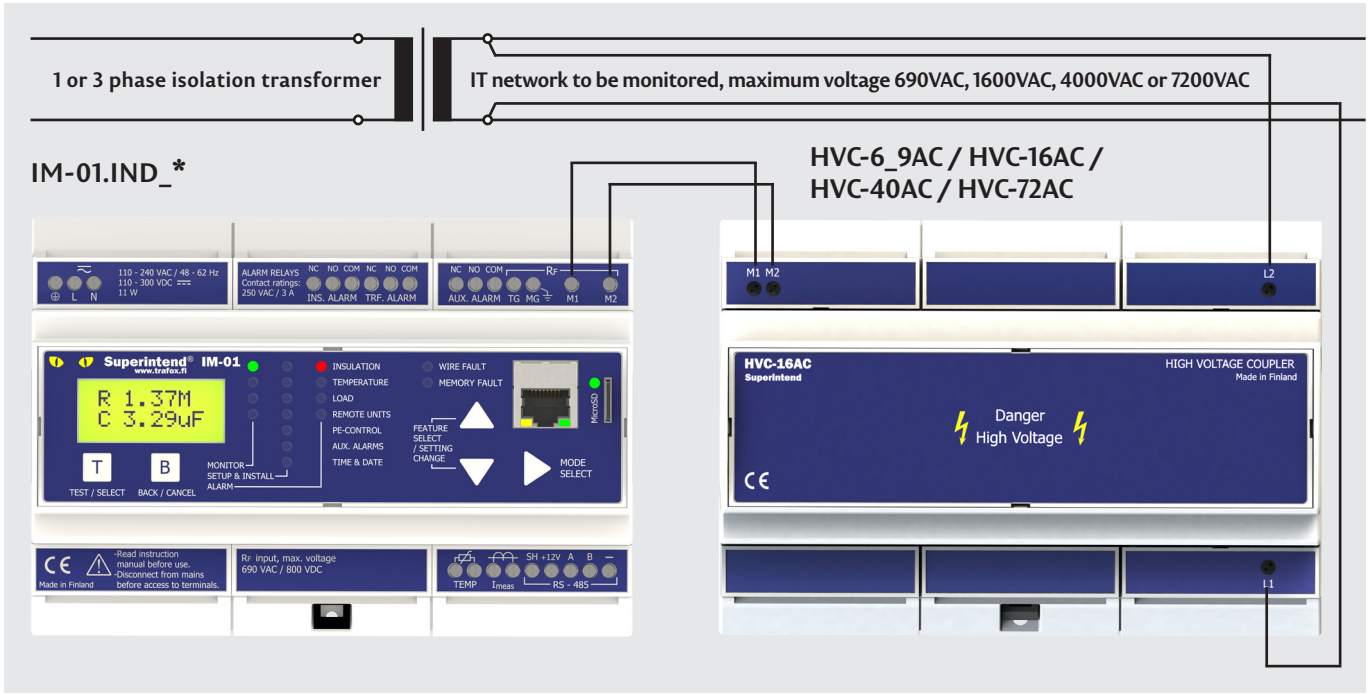


HVC-72AC



Principle of connecting high voltage couplers

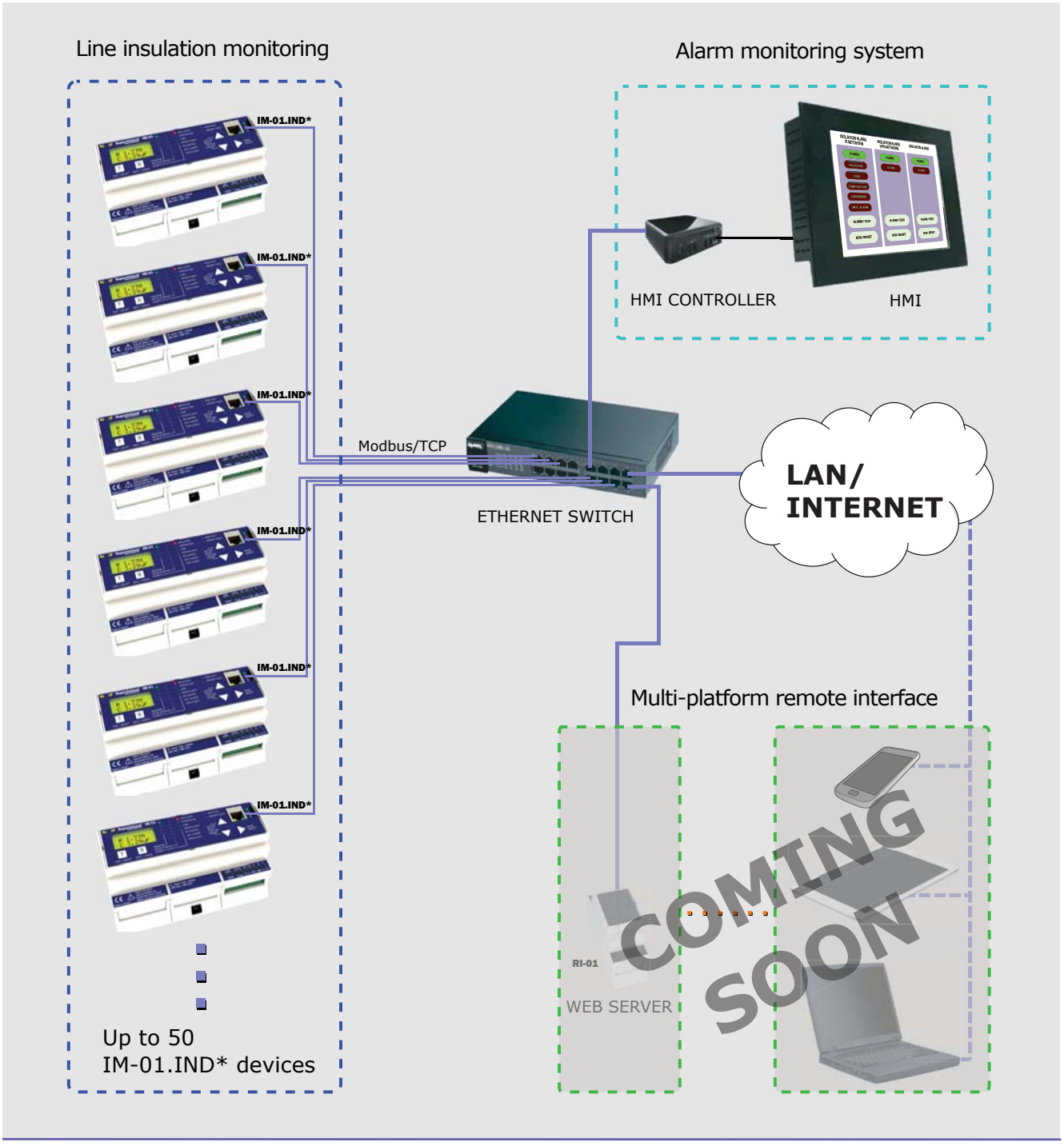
Notice! IM-01.IND_* must always be equipped with HVC-*AC
With HVC-*AC couplers, the IM-01.IND_* type must match the coupler type, e.g. IM-01.IND_16 and HVC-16AC





TRAFOX SUPERINTEND® / IMD, TYPE IM-01.IND

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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CERTIFIED ISO 9001

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VTO-11-00-1210 REV13 10/2026