Industry

IMD Insulation Monitoring device
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.

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: 690 VAC / 800 VDC
Resistance measurement range: 20kΩ...10MΩ (22kΩ...4MΩ with better than 15% accuracy)
Capacitance measurement range: 100nF...100μF
System frequency: DC, 10Hz - 500Hz
Measuring impedance: 220kΩ
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
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
HVC-72AC 189 x 352 x 130 mm

Weight:
IM-01.IND 0,35 kg
CLT-01 0,08 kg
HVC-16AC 0,24 kg
HVC-40AC 4,10 kg
HVC-72AC 5,90 kg

Case Material: Plastic
Mounting interface: DIN rail clamp or screw mounting
Accessories

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

Principle of connecting high voltage couplers

1 or 3 phase isolation transformer  
IT network to be monitored, maximum voltage 1600VAC, 4000VAC or 7200VAC

IM-01.IND  
HVC-16AC / HVC-40AC / HVC-72AC
Remote Monitoring and Controlling of line insulation

Line insulation monitoring

- IM-01.IND devices (up to 50)
- Modbus/TCP
- ETHERNET SWITCH

Alarm monitoring system

- HMI CONTROLLER
- HMI
- LAN/INTERNET
- Multi-platform remote interface
- WEB SERVER

Coming soon
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