

## Do you need **INSTRUMENTS** for measuring electrical parameters?

Here is THE cost effective instrument for monitoring insulation leakage resistance on electric motors

# SURETECH MOTOR INSULATION MONITOR

The SURETECH Motor Insulation Monitor measures insulation resistance to earth of electric motors when the motor stops. Motors running from mains (380 / 220V) and higher voltages up to 6.6kV can have their insulation continuously monitored.

### General Features:

- ✓ Insulation resistance is displayed and output as a 1-10V analog signal, and is also available on RS232 for direct input to a PLC or SCADA
- ✓ Analog and RS-232 outputs are isolated from measuring circuits
- ✓ Each motor can be individually monitored
- ✓ Standard operations:
  - ✓ threshold relay output has normally closed contact to connect in motor start circuit
  - ✓ insulation resistance threshold is pre-settable by means of a rotary potentiometer between 10kohm to 10Mohm
  - ✓ motor starting is inhibited when insulation resistance is below the pre-set threshold
- ✓ Standard K125 enclosure for individual MIM
- ✓ Standard Euro card PC board size 160mm x 100mm are also available for simultaneous monitoring of multiple motors (up to 4 motors)
- ✓ Standard DIN41612 connector for Euro card plug in board
- ✓ Transient suppression on inputs and outputs
- ✓ Wide range of auxiliary Power Supply options available, including 110Vac, 220Vac, and 24Vdc battery supplies
- ✓ Inputs, outputs, and auxiliary power supply are galvanically isolated
- ✓ Motor can be running while MIM is connected
- ✓ Backup to provide you support for design, application, installation, and maintenance information



### Why should you use a MIM?

- Cost of production stoppage and production restart due to motor failure
- Cost of loss of production due to motor failure
- Cost of motor rewind vs possible minor motor repair
- Cost of destroyed motor repair from blow-up vs cost of appropriate repair only (when a motor fails, it can often cause flash-over, and mechanical damage due to high forces involved resulting in bearings being over-stressed, and motor support structures being bent etc.)
- MIM facilitates planned scheduling of plant outage for general repairs
- Production stoppages can normally be eliminated completely motor failures
- MIMs can be directly networked into a PC, or PLC or SCADA system for better plant management

## Motor Insulation Monitor operational description:

Parameter	Determined By	Analog Accuracy	Digital Accuracy
AC Motor	<ul style="list-style-type: none"> <li>Only one connection to the motor is necessary to be monitored, any leakage to earth on any phase is measured</li> <li>AC voltage on cable is filtered out from DC measuring signal</li> <li>Leakage resistance is converted to a voltage using analog signal processing</li> <li>Signal is Analog to digital converted</li> <li>Signal is optically isolated before feeding to a microcontroller</li> <li>Signal is digitally processed (DSP) to determine the leakage resistance</li> </ul>	<ul style="list-style-type: none"> <li>Calibrated to 0.1%</li> <li>ADC resolution 16 bit</li> <li>Isolation level 1000V (higher if necessary)</li> <li>Voltage ref tempco 100ppm per °C</li> </ul>	<ul style="list-style-type: none"> <li>Update rate 3.25 seconds</li> <li>Dynamic range 10kohm to 10Mohm (1000 : 1)</li> <li>Accuracy 5% of log scale</li> <li>Digital filtering is available to improve accuracy, then settling time increases</li> <li>Output 1V = 10kohm</li> <li>Output 10V = 10Mohm</li> </ul>

## MIM Specifications: Measuring Circuit

Measuring voltage 1 or 5V dc

Measuring current

- 100 nano A to
- 3 micro A

Internal DC resistance

- 330k ohms

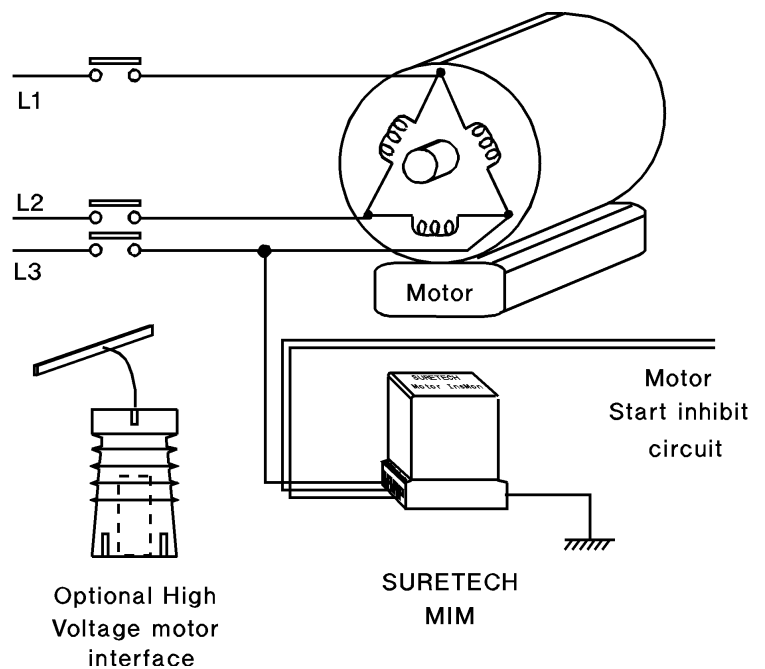
## Outputs

Analog output: Voltmeter indicating Resistance

- +1Vdc ... 10 k ohm
- +10Vdc ... 10 M ohm
- galvanically isolated from sensing circuits

NC / NO relay contact: 5A / 220VAC

RS232 Optional



## Environmental Conditions

Ambient temperature, during operation 0°C ... +50°C

Storage temperature range -20°C ... +60°C

## Insulation Monitor Configuration options:

Description	User Specified Options	
Insulation Monitor 220 / 380 Vac OR 525Vac	<ul style="list-style-type: none"> <li>Aux PSU: 220Vac standard (optional 110Vac and 24V battery)</li> <li>RS232 output</li> </ul>	
Insulation Monitor Medium Voltages up to 6.6kV (enquire for higher voltages)	<ul style="list-style-type: none"> <li>Smart insulator contains medium voltage protection circuits. User to specify operating voltage</li> </ul>	

15 April 2004



**SURE Engineering CC**

PO Box 63, Steenberg, Cape Town 7947

South Africa

Reg CK 87/11172/23

Website: <http://www.suretech.co.za>

email: [info@suretech.co.za](mailto:info@suretech.co.za)

Tel: +27-21-712-1328 Fax: +27-21-712-3508

Cell: +27-83-555-0149