Superintend®

GROUND FAULT MONITORING SYSTEM

NEEL

Monitoring Units

VR-12

Single channel

VRE-10

Single channel

VRE-11A

Single channel

VRE-80

8- channel

VCPU-XX

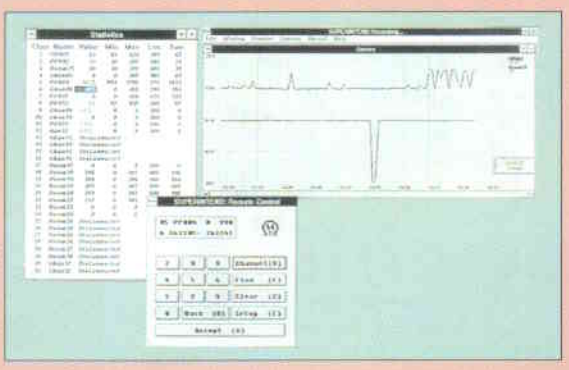
16/32- channel

Benefits:

- The superintend supervising system helps detect faults & generates alarm in case of wiring errors, neutral to ground faults, connection of defective devices, insulation damage, leakage current insufficient to blow a fuse or trip a circuit breaker.
- Can eliminate shock hazards in hospital & health care applications caused due to large voltage differences between ground potential of separate grounding points.
- Can Prevent HF disturbances & transients generated by neutral & ground being connected together. Thus causing malfunction / Break down of computers, CNC M/C & other Digital Equipment.
- Can Prevent Induction of strong magnetic peak fields, harmful in recording studios & areas where accurate magnetic measurements are desired.
- Saves fault locating time & costs. With a multi channel supervising system the average time to trace ground fault is < 10 mins.
- Advanced level software facilitates real time monitoring of total electrical grounding system from central P.C.

Applications:

- Data processing facilities
- Health Care facilities
- Office buildings & hotels
- Automated Industrial Plants
- Telecommunication centres
- Fire hazard areas



Graphical display on window

Superintend Ground Fault Monitoring system, from Neel ensures maximum electrical safety

Power problems due to improper grounding: Good grounding of electrical systems is most important. Most Power Quality problems in electrical systems are due to wiring & grounding problems. A properly grounded electrical system exists when a grounding conductor is connected to the neutral conductor only at the Input transformers. From this point on, the neutral & ground conductors should not be bonded together.

With Advanced Equipment like Computers, CNC M/Cs & other Digitally controlled equipment, the quality of ground & ground currents are of prime importance. Harmonics can also cause large amount of ground currents. It can cause loss of memory, data corruptions or at times system failure. Hence, ensures that the ground currents are within permisssible limits, under all dynamic conditions of load.

Solution :

Superintend is the solution, even for extreme non linear loads. It monitors ground current fluctuations and fault current levels, on Real time Basis.

Magnetic field interferences & large voltage differences caused by fault current & HF disturbances are also detected. The equipments are available in single & multi channels. The advanced software facilitates remote supervision & controls.

Technical Summary :

	VR-12	VRE-10	VRE-11	VRE-80
Supply voltage:	230 V 50 Hz	18 to 24 VAC or	230V 50 Hz	230V 50 Hz
Power consumption:	1.5 VA	1.5 VA	1.5 VA	4.5 VA
Measuring range:	30 mA., 10A	5 mA to 9.99 A	1 mA to 10 A	1 mA to 11 A
Measuring accuracy:				
with closed transformer	+/- 5 %	+/- 5 %	+/- 5 %	+/- 5 %
with split transformer	+/- 10 %	+/- 10 %	+/- 10 %	+/- 10 %
Measuring Cables	max 32 ft	max 300 ft	max 300 ft	max 300 ft
Alarm settings :	30 mA to 10 A	10 mA to 9.5 A	10 mA to 10 A	5 mA to 10 A
Delay time settings:	0.1 to 10 sec.	0.14 to 60 sec.	0.14 to 60 sec.	upto 95 s
Alarm relay :	two potential free change-overcontacts, max 250 VAC 5 A	change-over contact max 150 VAC 1.25 A	two potential free change-over contacts max 250 VAC 5 A	2 pcs change over contacts, max 250 VAC 5 A
Analogue output:			$1mV_{AC} = 1mA_{AC}$	$1mV_{AC} = 1mA_{AC}$
Analogue output range :			1mA to 2.5A	1mA to 2.5A

Technical Summary : VCPU-XX

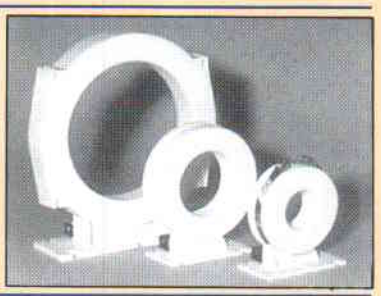
Supply voltage:	230 V 50 Hz
Power consumption:	70 VA
Measuring range:	
Local measuring point	10 mA to 11 A
Remote measuring point	30 mA to 11 A
Measuring length:	
Local channel	max 300 ft
Remote channel	max 3000 ft
Measuring accuracy:	
with closed transformer	+/- 5 %
with split transformer	+/- 10 %
Alarm settings :	30 mA to 9999 mA
Time delay setting:	to 99 sec.
Alarm relay	one relay for 16 channels 2 pcs change-over contacts max 30 VAC 1.25 A

Measuring distances and display

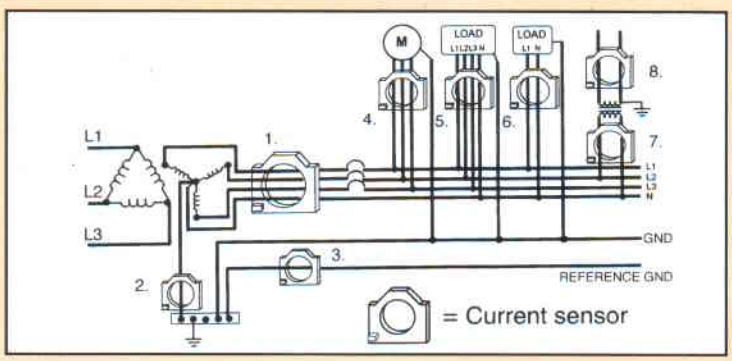
Device	Sensitivity	Display	Max. distance
VR-12	30mA-10A	LED	32 feet
VRE-10	5mA-10A	Digital	300 feet
VRE-11A	1mA-10A	Digital	300 feet
VRE-80	1mA-10A	Digital	300 feet

Maximum conductor sizes and number of power cables

Sum current transformer	I.D.(mm)
VMI(K)-25`	23
VMI(K)-35	35
VMI(K)-60	60
VMI(K)-130`	130
VMI(K)-200	200



Measuring points



1. Sum current measurement of the feeder conductors. This system is sufficient in small networks which have few devices. In large networks the tracing of a fault is laborious and small changes of the leakage current are not detected (e.g. weakening of the insulation level in a network section).

2. Measurement of the conductor between the neutral point of the transformer and the main ground terminal. This measurement is the same as the previous method. The method is more economical because the measurement can be done with a smaller and less expensive transformer.

3. Measurement of the REFERENCE GND conductor. If the system has a separate "reference grounding conductor", also this conductor must be supervised. (This is a separate grounding conductor mainly used for sensitive electronic devices.) This measurement detects, for example, the connections between the cable shields of the communication cable and the grounding conductor (GND). These connections may cause quite large compensation currents in the cable shield. Also other leakage currents and wiring error to the grounding conductor (GND) are detected, as well as the weakening of the insulation level in the conductors and devices connected to the REFERENCE GND.

4. Supervision of a three-phase motor or other three-phase device.

It is possible to monitor the insulation level of a device or a section of the electrical system with the supervision. An alarm is generated due to a degradated insulation even before a circuit breaker or short-circuit protector trips. Consequently unexpected power or process breaks can be avoided.

5. Measurement of a riser circuit or the supply of an individual device.

This is a good method for small networks. The tracing of a wiring error or other fault is difficult in large networks.

6. Supervision of an one-phase system (one branch circuit or an individual device). The tracing of a fault is easy. If it is a question of a branch circuit with several wall sockets or other consuming devices, a sensitive clamp on current meter is often used for the tracing of the fault.

7. Measurement of the primary circuit of a transformer, UPS or other device. This measurement monitors the insulation level or the device.

8. Measurement of the secondary circuit of an isolation transformer or a noise suppression transformer. This method is generally used when measuring programmable controllers or other sensitive electronic devices. This measurement monitors the isolation level or wiring of circuits or devices, which are connected to the secondary circuit. A defective device often disturbs frequently other devices in the same circuit. It is easy to locate the defective device connected to the secondary circuit of the transformer with this measurement- this kind of a fault would be otherwise difficult to locate. When using this measuring point one must make sure that a grounding circuit is formed to the secondary circuit of the transformer, one of two secondary conductors should be grounded.

NEEL

Total Power Solutions And More...

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