Line Isolation & Overload Monitor

E05 Series

Installation Instructions
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1.0 Description

The E05 Line Isolation and Overload Monitor in conjunction with the E14 Series Isolation Transformer, forms the basis of an isolated supply system which provides electrocution and overload protection as detailed in AS/NZS 3003 ‘Electrical Installations – Patient treatment areas of hospitals and medical and dental practices.’

An isolated supply is a continuous supply. The isolation transformer isolates the power from earth therefore a fault on both lines of the secondary transformer winding needs to occur before a fault current flows. A fault on only one line and earth will not cause a fault current to flow.

The E05 Line Isolation and Overload Monitor (LIOM) enables the integrity of an isolated power supply system to be continuously monitored. The LIOM is able to detect when one fault occurs therefore is able to warn of a potentially hazardous situation before any fault actually flows. The first fault is known as Prospective Hazard Current (PHC). The LIOM displays the PHC on an LCD bargraph display and when 5 mA PHC is reached a mutable alarm sounds along with a flashing LED indicator labelled ‘PHC Warning.’

If a PHC alarm condition arises, the medical staff can, in light of the seriousness of the patient’s condition, choose to continue with the procedure. In this situation, the surgeon is relying on a second fault not occurring that would turn the PHC into a real flow of current. During this time measures can be taken to rectify the fault condition by, for example, disconnecting all non-essential equipment.

In addition to the LIOM’s monitoring isolation, it also warns of impending overload, thus averting problems which could result from a loss of supply. When the overload level is reached a mutable alarm sounds along with a ‘Overload Warning’ flashing LED indicator.
2.0 Wiring Instructions

The E05 must be installed by a qualified electrician in accordance with the detailed instructions here and the requirements of AS/NZS 3003 & AS/NZS 3000.

Connect the E05 and associated electrical components as per the wiring diagram, making sure to take into consideration the following installation guidelines.

- Long runs of cable between the transformer and the LIOM and/or long runs between the LIOM and the outlets should be avoided. Due to capacitive coupling between cables and between cables and conduit, runs longer than 50m can result in high standing PHC (ie, >2 mA).

- Parallel runs of cables from two or more isolated supplies should also be avoided. The ‘crosstalk’ between parallel cable may cause rhythmic fluctuations on the units’ displays. Where parallel wiring cannot be avoided, wiring should include an earth (eg, TPS). The earth conductor should be earthed only at one end of its run. While running cable in this manner will lessen crosstalk problems, it may increase standing PHC.

- Due to the LIOM’s monitoring the load current ‘on line’ the LIOM must be the first item connected to the secondary winding of the isolation transformer. All items to be powered from the isolated supply must connect back to the terminals of the LIOM labelled ‘Active 1 Out’ and ‘Active 2 Out.’ Failure to do this will result in incorrect measurements of the load current.

- In some installations there might be a high inrush current when power is first applied to the isolation transformer therefore a suitable circuit breaker needs to be chosen. It is recommended to use a Heinemann Electric CF series circuit breaker.
3.0 Operating Instructions

1. Check power is connected to the E05 LIOM by confirming the power indicator is on, which is located at the bottom of the LCD bargraph display.

2. Monitor the level of Prospective Hazard Current (PHC) using the LCD bargraph display. A correctly functioning system should display little or no PHC. When a PHC of at least 5 mA is detected the E05 will alarm both audibly and visually (PHC Warning Indicator) but the supply will not be interrupted. When this alarm condition arises the surgeon can, in light of the seriousness of the patient’s condition, choose to continue with the procedure. In this situation the surgeon is relying on a second fault not occurring that would turn the PHC into a real current flow. During this time measures can be taken to rectify the fault condition by, for example, disconnecting all non-essential equipment.

3. Monitor when the load current rating of the isolation transformer has been exceeded by monitoring the Overload Warning indicator. When the E05 detects that the load current rating has been exceeded the E05 will alarm both audibly and visually (Overload Warning indicator).

4. If required to mute the audible alarm then press the Mute button. The PHC Warning indicator or Overload Warning indicator will remain on until the fault is removed.

5. Test the PHC monitoring function of the unit by pressing the Test button. In the test mode the E05 should display approximately 7.5 mA PHC on the LCD bargraph display. The E05 should also go into Audible Alarm, and the PHC Warning indicator should turn on.
## 4.0 Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational Voltage</td>
<td>240Vac, 50Hz</td>
</tr>
<tr>
<td>Prospective Hazard Current Display</td>
<td>LCD Bargraph (1 to 9mA)</td>
</tr>
<tr>
<td>Prospective Hazard Current Alarm Point</td>
<td>5mA</td>
</tr>
<tr>
<td>Overload Alarm Point</td>
<td>15A (3.6 kVA), 20A (4.8kVA), or 30A (7.2 kVA)</td>
</tr>
<tr>
<td></td>
<td>Factory set to either of the above</td>
</tr>
<tr>
<td>Audible Alarm</td>
<td>82dB typical at 1 metre</td>
</tr>
<tr>
<td>Remote Alarm Contacts</td>
<td>Volt free, changeover, 5A relay contacts</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>10° C to 35°C</td>
</tr>
<tr>
<td>Standard Finishes</td>
<td>Surface Mount stainless steel</td>
</tr>
<tr>
<td></td>
<td>Flush Mount stainless steel</td>
</tr>
<tr>
<td></td>
<td>Duct Mount powder coated (Sand)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>Surface Mount 220 x 275 x 90mm (H x W x D)</td>
</tr>
<tr>
<td></td>
<td>Flush Mount 220 x 275 x 70</td>
</tr>
<tr>
<td></td>
<td>Duct Mount 221 x 200 x 70</td>
</tr>
<tr>
<td></td>
<td>Panel Mount 198 x 190 x 70</td>
</tr>
</tbody>
</table>
5.0 Two-Year Warranty

Warranty Statement

The benefits conferred herein are in addition to, and in no way shall be deemed to derogate, either expressly or by implication, any or all other rights and remedies in respect to the Clipsal product, which the consumer has under the Commonwealth Trade Practices Act or any other similar State or Territory Laws.

The warrantor is Clipsal Australia Pty Ltd. With registered offices in all Australian States.

This Clipsal product is guaranteed against faulty workmanship and materials for a period of two (2) years from the date of installation.

Clipsal Australia Pty Ltd reserves the right, at its discretion, to either repair (free of parts and labour charges), replace or offer a refund, in respect to any article found to be faulty due to materials, parts or workmanship.

This warranty is expressly subject to the Clipsal product being installed, wired, tested, operated and used in accordance with the manufacturer's instructions.

All costs of a claim shall be met by Clipsal Australia Pty Ltd, however should the product that is the subject of the claim be found in good working order, all such costs shall be met by the claimant.

When making a claim the consumer shall forward the Clipsal product to the nearest office of Clipsal Australia Pty Ltd with adequate particulars of the defect within 28 days of the fault occurring. The product should be returned securely packed, complete with details of the date and place of purchase, description of load, and circumstances of malfunction.
Clipsal and Moduline - a winning combination!

Moduline is the company behind the Medilec brand. Offering an extensive range of premium electrical products to suit hospital and other medical applications, the Medilec team includes some of Australia’s leading designers and manufacturers of hospital grade electrical safety equipment. The range includes high quality residual current devices that provide high levels of protection against electric shock and electrocution.

Clipsal and Moduline have now teamed up to provide the best hospital electrical solutions available on the Australian market. Backed by Clipsal, and with more than 80 years combined experience it is easy to see why a team like Moduline and Medilec are clear market leaders in providing innovative hospital electrical solutions.

Please contact Moduline for all your Medilec electrical solutions needs on 1300 196 565 or visit moduline.com.au