50A-3PH 3 Phase Current Injection System

T&R Test Equipment is a market leader in the field of current injection equipment. The range includes secondary injection units with 50A output capability up to 6000A primary injection systems. All have true RMS metering, a flexible timing system, and an easy to understand user interface.

The 50A-3PH mk2 is a three phase injection system providing commissioning and maintenance engineers with a flexible system for testing protective systems. It has an easy to understand panel layout and a simple user interface. The status of every function can be seen at a glance, and there are no complex menus to navigate.

The back-lit display on the 50A-3PH mk2 is bright and clear with a wide viewing angle. The results of a test can be seen here as they appear on the display.

The unit is designed to comply with BSEN61010, and is CE marked.

An auxiliary metering input is provided and can measure voltage, current, frequency, and the phase between any of the current outputs and an external voltage or current.

The timing system is very flexible without compromising ease of use, allowing trip times, reset times and reclose times to be quickly measured to a high degree of accuracy. Two independently isolated contact inputs are provided, and the timing system may also be used as a stand-alone timer.

The unit has a range of outputs allowing injection of currents as low as a few mA and as high as 50A. Voltages up to 18V are available on the main outputs. Three true RMS metering ranges are provided, allowing the full scale of the meter and trip level to be set independently of the selected output. Industry standard safety connectors are used on all inputs and outputs for convenience, reliability and safety.

The 50A-3PH mk2 is protected by electronic over current and duty cycle trips on the outputs, thermal monitoring on the power components, and fuses on the input and regulator. An earth terminal is provided for connection to a local earth.

The 50A-3ph mk2 can be used to test many types of single and three phase secondary protection including:

- Over and under current relays
- IDMT relays
- Auto-reclosers
- Time delay relays
- Earth fault relays
- Miniature circuit breakers
- Power relays
- Tripping relays
- Thermal relays

Features
- Clear and simple user interface
- 3 phase current output
- 0-50A per phase output current
- True RMS digital metering
- Memory ammeter
- Multi-function timing system
- Auxiliary metering input
- Large back-lit liquid crystal display
- Thermal and over-current protection
- Compact and portable
- 220V 3φ or 400V 3φ supply options*
- 115V-440V 3 wire supply with optional supply transformer

*See supply requirements overleaf
50A-3PH mk2 Specification

Main Output
The main output on the unit has two taps, allowing the selection of output voltages up to 18V and output currents up to 50A.

<table>
<thead>
<tr>
<th>Range</th>
<th>Continuous</th>
<th>5 minutes</th>
<th>1 minute</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.5V</td>
<td>16A</td>
<td>32A</td>
<td>50A</td>
</tr>
<tr>
<td>18V</td>
<td>4A</td>
<td>8A</td>
<td>12A</td>
</tr>
</tbody>
</table>

The above intermittent on times must be followed by an off time of 15 minutes, and are based on an ambient temperature of 25°C.

Metering
The output is metered by a digital true RMS system with a memory ammeter - whenever the timer stops and the output is switched off, the current reading is held on the display. The currents for each phase are displayed simultaneously.

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Trip current</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.000A</td>
<td>0.001A</td>
<td>5.25A</td>
<td>±0.6%rdg+5d</td>
</tr>
<tr>
<td>20.00A</td>
<td>0.01A</td>
<td>21A</td>
<td>±0.6%rdg+5d</td>
</tr>
<tr>
<td>50.00A</td>
<td>0.01A</td>
<td>52.5A</td>
<td>±0.6%rdg+5d</td>
</tr>
</tbody>
</table>

A current trip is automatically set to 105% of full scale of the current metering range to protect the device under test.

Auxiliary Metering Inputs
An auxiliary metering input is provided which is able to measure RMS voltage or current. In addition the frequency of the external input may be measured, and the phase measured between any of the phase outputs and the auxiliary metering input.

<table>
<thead>
<tr>
<th>Setting</th>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volts AC</td>
<td>270.0V-0.1V</td>
<td>±0.7%rdg+5d</td>
<td></td>
</tr>
<tr>
<td>Amps AC</td>
<td>5.000A1mA</td>
<td>±0.7%rdg+5d</td>
<td></td>
</tr>
<tr>
<td>Phase</td>
<td>±180°</td>
<td>0.1°</td>
<td>±3°</td>
</tr>
<tr>
<td>Frequency</td>
<td>20-1000Hz</td>
<td>0.1Hz</td>
<td>±0.2%rdg+1d</td>
</tr>
</tbody>
</table>

The current input is protected by a F6.3A fuse.

Auxiliary Output
A single phase isolated 110V/230V/380V 150mA auxiliary output is provided on the 50A-3PH mk2.

Lead Set Specifications
The 50A-3PH is supplied with a lead set including:

- 6 x 3m 4mm² output leads terminated in 4mm plugs.
- 2x3m, 2x0.5m, 2.5mm² auxiliary leads terminated in 4mm plugs.

Supply Requirements
The supply voltage requirements for the unit must be specified at the time of ordering. The unit is available for operation from either a 400V 4 wire 3φ supply or 220V 3 wire 3φ supply. The optional delta-star supply transformer allows the 400V unit to operate from other supply voltages.

**Supply option 1:**
- 400V-10%+14% 50/60Hz 3ph 10000VA

**Supply option 2:**
- 220V-6%+14% 50/60Hz 3ph 10000VA

RS232 and T&R Link
An RS232 port is provided to allow connection of a printer or PC and the T&R link output provides a phase lock reference for a DVS3 phase-shifting voltage source.

Timing System

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.999.999s</td>
<td>1ms</td>
<td>±0.6%rdg+5d</td>
</tr>
</tbody>
</table>

The contact circuit has an open circuit voltage of 24VDC and a short circuit current of 20mA. Each contact circuit will auto-select for normally open or normally closed contacts. A DC voltage of 24-240Vdc may also be used to trigger either timer channel. The output is automatically switched off at the end of the test to safeguard the relay under test.

The following functions are provided:

<table>
<thead>
<tr>
<th>Mode</th>
<th>Timer Start</th>
<th>Timer Stop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal start</td>
<td>Press ‘ON’</td>
<td>Contact 1</td>
</tr>
<tr>
<td>Single contact</td>
<td>Contact 1</td>
<td>Contact 1</td>
</tr>
<tr>
<td>Dual contact</td>
<td>Contact 1</td>
<td>Contact 2</td>
</tr>
<tr>
<td>Current operated</td>
<td>Current &gt; 10% of range</td>
<td>Current &lt; 10% of range</td>
</tr>
</tbody>
</table>

Pulse mode is used for setting the current level in devices sensitive to heating, and allows current to be injected for 500ms and the current recorded. Current operated mode operates on one output phase (selectable).

Temperature Range
Storage: -20°C to 60°C  Operating: 0°C to 45°C

Accessories
Operating manual, output lead set, mains lead, spare fuse set

Optional Accessories
Delta-Star supply transformer, filter unit, printer, leadset carry case.

Dimensions
560 x 456 x 265mm

Weight
24.9kg

Optional Delta-Star Supply Transformer
The optional delta-star supply transformer allows operation from 115V, 230V, 400V, and 440V 3 wire supplies, selected by a switch on the unit. An auxiliary single phase output is also provided to supply power to a DVS3 voltage source.

**Input:**
- 115V, 230V, 400V, 440V ±10% 3 wire
- 3 phase 1500VA max

**3φ output:**
- 400V 4 wire 600VA
- 1 min on/15 min off

**1φ output:**
- 230V 300VA
- 5 min on/15 min off

Note: Due to the company’s continuous research programme, the information above may change at any time without prior notification. Please check that you have the most recent data on the product.

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