

# 50A-3PH<sub>mk2</sub>

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

## Features

- Clear and simple user interface
- Three 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 3 $\phi$  or 400V 3 $\phi$  supply options\*
- 115V-440V 3 wire supply with optional supply transformer

\*See supply requirements overleaf

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 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
- Power relays
- Tripping relays
- Thermal relays
- Miniature circuit breakers



*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.*

## 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.

Range	Continuous	5 minutes	1 minute
3.5V	16A	32A	50A
18V	4A	8A	12A

The above intermittent on times must be followed by an off time of 15 minutes, 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.

Range	Resolution	Trip current	Accuracy
5.000A	0.001A	5.25A	$\pm 0.6\% \text{rdg} + 5\text{d}$
20.00A	0.01A	21A	$\pm 0.6\% \text{rdg} + 5\text{d}$
50.00A	0.01A	52.5A	$\pm 0.6\% \text{rdg} + 5\text{d}$

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.

Setting	Range	Resolution	Accuracy
Volts AC	270.0V	0.1V	$\pm 0.7\% \text{rdg} + 5\text{d}$
Volts AC	270.0V	0.1V	$\pm 0.7\% \text{rdg} + 5\text{d}$
Amps AC	5.000A	1mA	$\pm 0.7\% \text{rdg} + 5\text{d}$
Phase	$\pm 180^\circ$	0.1°	$\pm 3^\circ$
Frequency	20-1000Hz	0.1Hz	$\pm 0.2\% \text{rdg} + 1\text{d}$

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

### Auxiliary Output

A single phase isolated 110Vac 300mA/220Vac 150mA auxiliary output is provided.

### Lead Set Specifications

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

**6 x 3m 4mm<sup>2</sup> output leads with 4mm plugs**

**2x3m 2x0.5m 2.5mm<sup>2</sup> auxiliary leads with 4mm plugs**

### 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.

## 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 3 $\phi$  supply or 220V 3 wire 3 $\phi$  supply. The optional delta-star supply transformer allows the 400V unit to operate from other supply voltages.

**Option 1:** 400V-10%+14% 50/60Hz 3ph 1kVA

**Option 2:** 220V-6%+14% 50/60Hz 3ph 1kVA

### Timing System

**Range** 0-999.999s **Resolution** 1ms

**Accuracy** 0.01%rdg+2d (+4d current operated mode)

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:

Mode	Timer Start	Timer Stop
Internal start	Press 'ON'	Contact 1
Single contact	Contact 1	Contact 1
Dual contact	Contact 1	Contact 2
Current operated	Current > 10% of range	Current < 10% of range

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

### Dimensions

560 x 456 x 265mm

### Weight

24.9k

### Accessories

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

### Optional Accessories

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

### 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  $\pm 10\%$

**3 wire 3 phase 1500VA max**

**3 $\phi$  output:** 400V 4 wire 600VA 1 min on/15 min off

**1 $\phi$  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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