

# 200A-3PH/E 200A-3PH/ED

# 3 phase Current Injection Systems



## Features

- 0-200A 3 phase output
- Accurate true RMS digital metering (200A-3PH/ED)
- Accurate true RMS analogue metering (200A-3PH/E)
- All outputs fully isolated
- Multi-function 1ms resolution timing system
- Auxiliary AC output
- Electronic over-current protection (ED only)

T&R Test Equipment is a market leader in the field of current injection equipment. The range includes single phase units with 100A-6000A output capability and three phase systems up to 200A. All have true RMS metering, a flexible timing system, and an easy to understand user interface.

The 200A-3PH test system provides commissioning and maintenance engineers with a compact, portable and flexible system for the testing and timing of protective relays, circuit breakers and thermal overloads. The unit is equally at home testing solid state or electro-magnetic relays, and has a rating suitable for testing thermal trips.

Two versions of the unit are available: the 200A-3PH/E with analogue metering, and the 200A-3PH/ED with digital metering. In both cases the meters read true RMS and have independently selectable ranges for each channel.

The outputs are isolated and independently variable, and allow the injection of currents up to 200A. The outputs on the digitally metered version are protected by electronic over-current trips and fuses, whereas the analogue unit has fuse protection only.

The timing system on the 200A-3PH is flexible and exceptionally easy to use, allowing trip times to be measured to a high degree of accuracy. Units with auxiliary contacts

may be timed using the NC or NO timer modes, and devices with no auxiliary contacts may be timed using the current operated mode. The unit is ideal for testing the following devices:

- Over and under current relays
- IDMT relays
- Thermal overloads
- Magnetic circuit breakers



The units may also be used in conjunction with the DVS3 digital voltage source to test protection systems requiring three voltages and three currents. Protection that may be tested in conjunction with the DVS3 includes:

- Directional relays
- Distance protection
- Power relays and transducers



*DVS3 Digital voltage source*



# T&R Test Equipment Ltd



## 200A-3PH/E and 200A-3PH/ED Specification

### Main Output

The units have three independently controlled outputs, one for each phase. The output is switched on and off by illuminated pushbuttons, and the current is set using the three control knobs on the front panel. All ranges are continuously variable from zero.

| Range | Continuous | 5 minutes | 1 minute |
|-------|------------|-----------|----------|
| 5V    | 50A        | 100A      | 200A     |

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.

### Auxiliary AC Outputs

A switched, isolated auxiliary 240V 50mA AC supply is available to power auxiliary control circuits. The output is protected by a fuse.

### Analogue Metering: 200A-3PH/E

The output on the 200A-3PH/E is metered by a digital true RMS system with analogue meters. The range for each channel is selected by a switch on the front panel.

### Range Accuracy

|      |                  |
|------|------------------|
| 50A  | 1% of full scale |
| 100A | 1% of full scale |
| 200A | 1% of full scale |

### Digital Metering: 200A-3PH/ED

The output on the 200A-3PH/ED is metered by a digital true RMS system with a 3.5 digit LED display. The range for each channel is independently selected for each channel by a switch on the front panel.

| Range | Resolution | Trip Current | Accuracy     |
|-------|------------|--------------|--------------|
| 10A   | 0.01A      | 11.5A        | ±0.6% rdg+6d |
| 20A   | 0.01A      | 23A          | ±0.6% rdg+6d |
| 100A  | 0.1A       | 115A         | ±0.6% rdg+6d |
| 200A  | 0.1A       | 230A         | ±0.6% rdg+6d |

An electronic current trip is automatically set to 115% of full scale of the selected metering range to protect the device under test.

### Supply Requirements

400V+14%-6% 50/60Hz 3ph 4 wire 3300VA max

A delta-star transformer is available as an optional accessory for operation from a 3 wire supply.

### Temperature Range

|           |               |
|-----------|---------------|
| Storage   | -20°C to 60°C |
| Operating | 0°C to 45°C   |

### Dimensions

|             |                       |
|-------------|-----------------------|
| 200A-3PH/E  | 315mm x 550mm x 300mm |
| 200A-3PH/ED | 315mm x 550mm x 300mm |

### Weight

|      |
|------|
| 35kg |
| 35kg |

### Timing System

The timing system on the 200A-3PH/E/ED is very flexible, allowing a wide range of protective devices to be timed.

|            |   |
|------------|---|
| Range      | 0-999.999s  |
| Resolution | 1ms   |
| Accuracy   | 0.01% rdg +1d (all except current operated mode)<br>0.01% rdg +3d (current operated mode) |

The contact circuit has an open circuit voltage of 24Vdc and a short circuit current of 300mA. The contacts may be connected to volt-free contacts or contacts connected to a DC voltage system (220Vdc maximum).

The following functions are provided:

| Mode             | Timer Start               | Timer Stop                |
|------------------|---------------------------|---------------------------|
| Normally Open    | Press 'ON'                | Contact closes            |
| Normally Closed  | Press 'ON'                | Contact opens             |
| Current operated | Current > 20%<br>of range | Current < 20%<br>of range |
| Off              | Timer inoperative         | Timer inoperative         |

The output is automatically switched off at the end of the test to safeguard the relay under test.

### Protection and Safety

The 200A-3PH/ED is protected by electronic over current trips on the outputs, fuses on the contact input, the mains input and regulators.

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The auxiliary AC output is fuse protected on both units. An earth terminal is provided for connection to a local earth.

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

### Accessories

Operating manual, mains lead, spare fuse set.

### Optional Accessories

200AL/3PH Output lead set, 200A-3PH delta-star transformer.

### Optional Lead Set specifications

The 200AL/3PH lead set includes the following items:

- 6 x 5m 25mm<sup>2</sup> 200A leads terminated in M10 fork crimps
- 1 x 5m 2 core auxiliary lead terminated in 4mm plugs
- 1 x 5m 2 core auxiliary lead terminated bare ends

The lead set is supplied in a reinforced plastic wallet.

