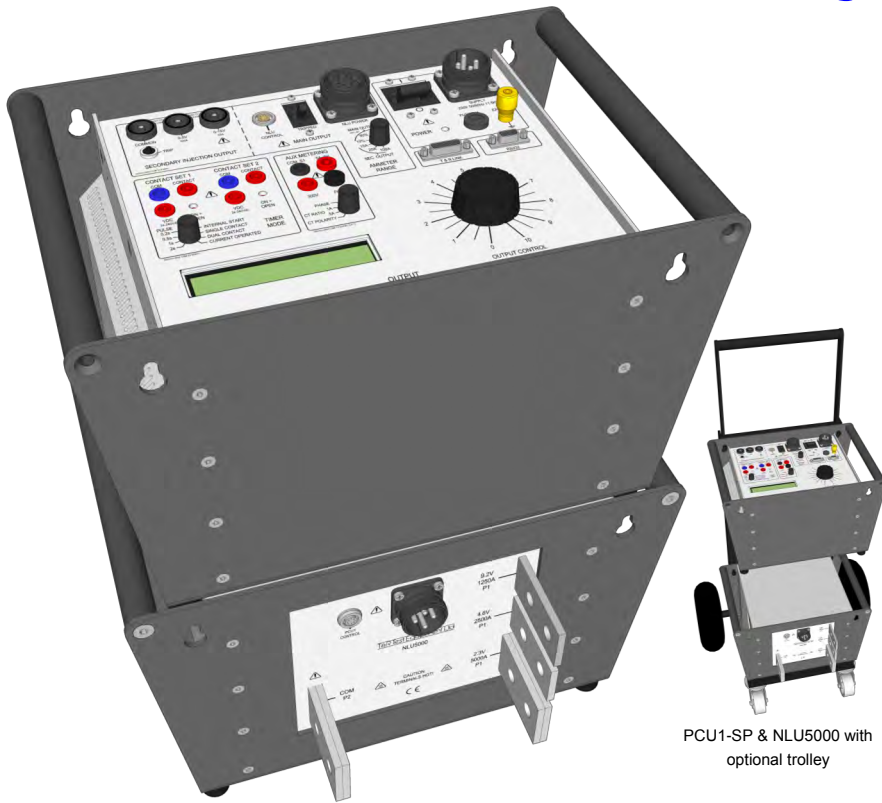


PCU1-SP mk2

PCU1-LT mk2

Primary Current Injection Systems



PCU1-SP & NLU5000 with optional trolley

Features

(PCU1-LT mk2 and PCU1-SP mk2)

- 5kA maximum output current (higher overload currents for 2s)
- Multi-function digital timing system
- True RMS memory ammeter with single cycle capture
- 2000A and 5000A loading units
- Three range outputs on loading units
- Rugged, compact design
- Optional trolley mounting of system

PCU1-SP mk2 Additional Features

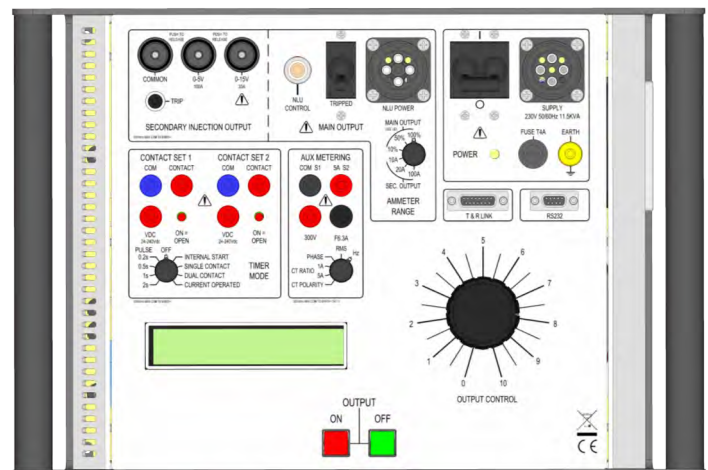
- Secondary injection up to 100A
- Direct reading CT ratio and polarity

The PCU1 series are medium powered primary current injection systems offering output currents up to 5000A. The system consists of a separate control unit containing all metering and control functions and a loading unit that provides the high current output. The PCU1-LT mk2 and PCU1-SP mk2 are ideally suited to primary current injection, stability testing and circuit breaker testing. In addition, the SP version offers direct-reading CT ratio and polarity tests and a 100A secondary injection output. T&R also offer the higher-powered PCU2 system.

The control units are rated at 11.5kVA with a 2 second overload capability of 23kVA using pulse mode. All metering is digital and a memory facility is provided to hold the current reading when the output trips or is switched off. The PCU1 systems have a high accuracy timing system with 1ms resolution. Selection for normally open or normally closed contacts is automatic, and the status of the contacts is shown on the front panel. Timing modes are available for under and over current devices, re-closers, under and over voltage devices, current trips and circuit breakers.

| Feature | PCU1-LT mk2 | PCU1-SP mk2 | PCU2 |
|------------------------|----------------|----------------|----------------|
| Primary injection | ✓ | ✓ | ✓ |
| Max output power | 11.5kVA 40s | 11.5kVA 40s | 20kVA 5 min |
| Secondary injection | ✗ | ✓ | ✗ |
| CT ratio/polarity test | ✗ | ✓ | ✗ |

Two loading units are available, delivering a maximum output current of 2000A or 5000A. Each loading unit has three output taps to allow for a wide range of load impedances. For example, the NLU5000 may be configured to either give a maximum current of 5000A on the 2.3V range, 2500A on the 4.6V range or 1250A on the 9.2V range.



PCU-LT mk2 & PCU1-SP mk2 Specification

Loading Unit Current Metering

The AC output current is metered by a true RMS memory ammeter (acquisition time 200ms) with a liquid crystal display. The current metering has 3 ranges corresponding to 10%, 50% and 100% of the maximum rating of the loading unit. In addition, a 200% metering range is enabled in pulse mode.

NLU2000

| Range | Full scale | Resolution | Accuracy |
|-------|------------|------------|-------------|
| 10% | 200.0A | 0.1A | ±0.5%rdg+5d |
| 50% | 1000A | 1A | ±0.5%rdg+5d |
| 100% | 2000A | 1A | ±0.5%rdg+5d |
| 200% | 4000A | 1A | ±1%rdg+5d |

NLU5000

| Range | Full scale | Resolution | Accuracy |
|-------|------------|------------|--------------|
| 10% | 500.0A | 0.1A | ±0.5%rdg+5d* |
| 50% | 2500A | 1A | ±0.5%rdg+5d* |
| 100% | 5000A | 1A | ±0.5%rdg+5d* |
| 200% | 10kA | 10A | ±1.5%rdg+5d |

*1.5% rdg+5d in pulse mode

Timing System

The PCU1 systems have a flexible timing system with two contact inputs and 5 operating modes. Each contact circuit automatically selects for N/O or N/C contacts, and the status of each contact input is shown by an LED. The timing channels may also be triggered by a dc voltage between 24 and 240V.

| | |
|---------------------|--------------------------------|
| Timer resolution | 1ms |
| Timer full scale | 999.999s |
| Timer accuracy | ±0.01%rdg+2d (4d current mode) |
| Contact O/C voltage | 24V |
| Contact S/C current | 20mA |
| Vdc input range | 24-240Vdc |

| Timer mode | Timer start | Timer stop |
|---------------------|------------------|-----------------|
| Internal Start | 'On' button | Contact |
| Single contact | Contact 1 | Contact 1 |
| Dual contact | Contact 1 | Contact 2 |
| Current operated ** | Current >20% mg | Current <20% mg |
| Pulse mode 0.2s * | 'On button' | 0.2s |
| Pulse mode 0.5s * | 'On button' | 0.5s |
| Pulse mode 1s * | 'On button' | 1s |
| Pulse mode 2s * | 'On button' | 2s |
| Off | Setting position | |

*Pulse mode applies current to the load for a maximum of the specified time. If contact set 1 changes state or the current drops below 20% of the metering range during the pulse time, the timer is stopped. The maximum output current is increased in pulse mode. The maximum obtainable current is set by the impedance of the test object and output leads.

**Current operated mode is used to time circuit breakers with no auxiliary contacts. The timer is started when the current exceeds 20% of the selected metering range (e.g. 100A on the NLU5000 500A range). The timer stops when the current falls.

Secondary Injection Output (PCU1-SP mk2 only)

| Output Range | Continuous current | Intermittent current 5min on* | 1 min on* |
|--------------|--------------------|----------------------------------|-----------|
| 0-5V | 33A | 67A | 100A |
| 0-16V | 10A | 20A | 30A |

*All on times must be followed by an off time of 15 minutes

| Metering Range | Resolution | Accuracy | Current trip |
|----------------|------------|-------------|--------------|
| 10.00A | 0.01A | ±0.5%rdg+5d | 10.5A |
| 20.00A | 0.01A | ±0.5%rdg+5d | 21A |
| 100.0A | 0.1A | ±0.5%rdg+5d | 100A |

Supply Requirements

230V±10%, 45-65Hz 1ph 11.5kVA max (23kVA overload for 2s)

Control Unit Standard Accessories

Mains lead (5m), loading unit power and metering leads (5m), operating manual and spare fuses.

Dimensions

| | Dimensions | Weight |
|---------|----------------------------|--------|
| PCU1-SP | 450(w) x 275(h) x 305mm(d) | 26kg |
| PCU1-LT | 450(w) x 275(h) x 305mm(d) | 23kg |
| NLU2000 | 450(w) x 275(h) x 370mm(d) | 49kg |
| NLU5000 | 450(w) x 275(h) x 370mm(d) | 58kg |

Temperature Range

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

Protection and Safety

The PCU1 series and loading units are CE marked and are designed to meet the requirements of BS EN61010. The system is protected by electronic trips on the outputs, circuit breakers on the mains input, and control unit output. The unit also has a duty cycle trip on the loading unit output and thermal protection.

Optional Loading Unit Specifications

Two loading units are available to provide a range of output currents suitable for different primary injection tasks. Each loading unit has three output taps allowing current injection into a wide range of loads of differing impedances.

NLU5000 Loading Unit Intermittent Ratings

| Output Voltage* | Cont. | Maximum current 5 min | 1 min | 40s |
|-----------------|-------|--------------------------|-------|-------|
| 2.3V | 1500A | 3000A | 4500A | 5000A |
| 4.6V | 750A | 1500A | 2250A | 2500A |
| 9.2V | 375A | 750A | 1125A | 1250A |

NLU2000 Loading Unit Intermittent Ratings

| Output Voltage* | Cont. | Maximum current 5 min | 1 min | 40s |
|-----------------|-------|--------------------------|-------|-------|
| 4V | 600A | 1200A | 1800A | 2000A |
| 8V | 300A | 600A | 900A | 1200A |
| 16V | 150A | 300A | 450A | 500A |

*open circuit voltage at 230V mains

Optional Output Lead Set Specifications

| Type | Length | CSA | Termination |
|-----------|-----------|--------------------|-------------|
| 1000NAL | 1m to 5m | 140mm ² | Copper bar |
| 2000NAL | 1m to 5m | 280mm ² | Copper bar |
| 3000NAL** | 1m to 3hm | 420mm ² | Copper bar |
| 5000NAL** | 1m to 3m | 560mm ² | Copper bar |

**Output currents above 3000A require very short leads, and longer leads will restrict the maximum current available