Primary Current Injection Unit
Usage & Safety Instructions

Please familiarize yourself with the usage and safety instructions contained in this booklet before using the equipment. The following symbols are used: -

Caution – Hazardous Voltages

Additional information regarding safe operation

Equipment Usage

This primary current injection unit is intended for use as part of a calibration and test equipment suite. The purpose of which is to verify correct operation of a DNO metering installation by producing a phantom test current which may be used to simulate a customer load.

This equipment is to be operated ***ONLY*** by competent, trained personnel.

Manufacturer Contact Details

Manufacturer: Quinton Crane Electronics Ltd,

Carnival Way,
Castle Donington,
Derby,
DE74 2HP

Phone: - +44 (0)1332 810955
Fax: - +44 (0)1332 810475

There are no user serviceable parts inside, opening the case whilst connected will expose you to hazardous voltages.

Unit Front Panel

The front panel has a single control which is the mains supply on/off switch. The switch is illuminated red when the unit is powered on.

In addition to the mains switch, there are four off 4mm banana safety sockets which are identified by colour as follows: -

BROWN -	Mains input supply (LIVE) connection
BLUE -	Mains input supply (NEUTRAL) connection
RED -	Auxiliary mains supply output (LIVE) to power analyser equipment
BLACK -	Auxiliary mains supply output (NEUTRAL) to power analyser equipment

The auxiliary supply output sockets are unswitched, and as such will remain live when the unit power switch is in the off position.

The equipment is supplied with a set of test leads to provide connections to both the incoming mains supply and the auxiliary supply to the analyser equipment. The test leads are colour coded to match the front panel sockets, see section on supplied equipment for more details.

Unit Rear Panel

The unit rear panel contains a single 4mm black banana socket which acts as the return connection for the current injection test lead which is physically attached to the unit.

The pre-wired current test lead is made to a specific length and must not be shortened. If the cable has been damaged, then it must be returned for repair.

Supplied Accessory Pack

The unit is supplied with the following test leads which are used to both power the equipment and to provide auxiliary power to additional power analyser equipment.

Two styles of voltage supply lead enclosed with the unit are: -

Type ‘A’ – 4mm Banana Plug to open blade crimp (1 Brown, 1 Blue)
Type ‘B’ – 4mm Banana Plug to Wago 2 pin terminal blade (1 Brown, 1 Blue)

One pair of output voltage leads, 4mm Banana plug to 4mm Banana plug, (1 Red, 1 Black)

Replacement leads can be obtained from the manufacturer, see page 1 for contact details.

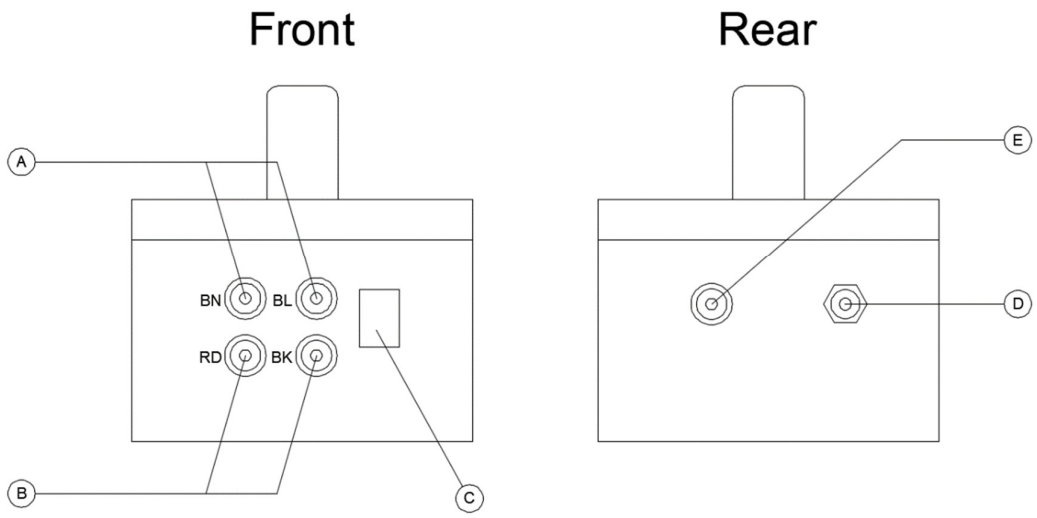
If replacing test leads of your own supply, then they must conform to the following minimum standard.

Tri-rated BS6231 Flexible PVC cable
Cable cross section: 1.5mm²
Voltage Rating: 600/1000 Volts

Usage Instructions

This equipment is used to generate a phantom test current to aid verification and calibration of a metering installation. Only trained competent personnel should carry out such work and as such you should already be familiar with a typical installation and its isolation procedures.

On some sites, it's not always possible to access the primary CT's due to restricted space or internal CT diameter to enable the test current to be injected. In this situation, it is possible to use the single phase 20-amp injection unit to perform a secondary test instead.



Controls

A. Mains 230v AC Supply Input Sockets (BN = Live, Blue = Neutral)
B. Auxiliary 230v AC Mains Supply Output Sockets (RD = Live, BK = Neutral)
C. Power On/Off Switch
D. 20A Output Test Lead
E. 20A Output Test Lead Return Socket

Setting Up

Before beginning any test and calibration work, ensure the immediate area is clear and free of any debris.

Remove the unit from its carry case and place on a level even floor feet first, orientate it so that the front panel of the unit is easily accessible.

Ensure the units power switch (C) is in the OFF position.

Remove the voltage supply leads (Pair of Brown & Blue leads with insulated Banana plug on one end and the required termination type on the other end to suit the test installation) from the carry case, insert the insulated Banana plug end into sockets (A) on the unit's front panel.

The 2 styles of voltage supply lead enclosed with the unit are: -

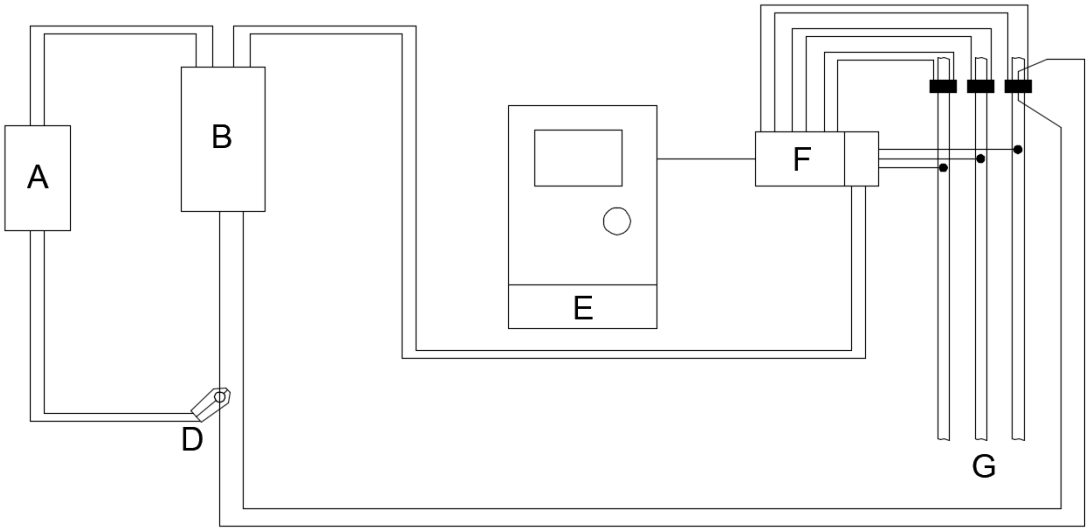
Type 'A' – 4mm Banana Plug to open blade crimp (1 Brown, 1 Blue)
Type 'B' – 4mm Banana Plug to Wago 2 pin terminal blade (1 Brown, 1 Blue)

Select a set of voltage supply leads that best suit the test block you are working on. Insert the insulated Brown/Blue banana plug end of the leads into the Brown/Blue sockets (A) on the unit's front panel.

Make sure the meter test block is accessible and has been isolated safely before making connections using an appropriate set of voltage supply leads (Type A or B). Ensure these are connected phase to neutral and ***NOT*** phase to phase.

If necessary, using the set of output voltage leads (4mm Banana plug to 4mm Banana plug, Red & Black, connect any test equipment (e.g., a power analyser such as a Nanovip or a Chauvin Arnoux CA8220) into the Red/Black sockets (B) on the unit's front panel.

If it is possible to safely access the CT under test, pass the 20A output test lead (E) through the centre of the CT. Each time the 20A output test lead is passed through the CT, 20A will be put onto the primary side of the CT (i.e., 1 Turn=20A, 2 Turns=40A, 3 Turns=60A etc). Plug the 20A output test lead back into the return socket (F) on the unit's rear panel.



A – Power Analyser
B – 20A Injection Unit
D – Analyser Current Clamp
E – Site Meter
F – Site Meter Test Block / Terminals
G – Site Bus Bars

Energise the test block.

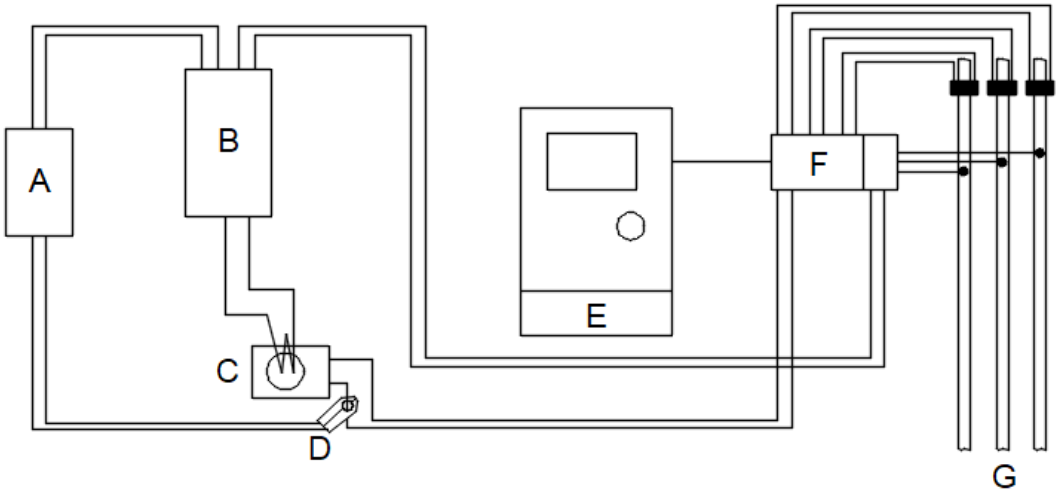
Turn the unit's power switch (C) to the ON position and compare the advance on the meter under test with the test equipment.

The unit is not designed to be operated continuously. Do not operate for longer than 10 minutes, allow a minimum of 5 minutes cool down before reuse.

Once the tests have been completed, turn the unit's main power switch (C) to the OFF position and isolate the test block.

The above test can be repeated on the other phases as required.

If it is not possible to safely access the CT under test, a separate CT can be used to convert the 20A test current from the injection unit to a lower current that can be injected directly into the test meter using the configuration as shown below: -



A – Power Analyser
B – 20A Injection Unit
C – 20/5 Test CT
D – Analyser Current Clamp
E – Site Meter
F – Site Meter Test Block / Terminals
G – Site Bus Bars

Replacement Parts

There are no replacement or user serviceable parts for this unit, if the unit fails to operate then it should be returned for repair. For additional help and support, please contact the manufacturer, details shown on page 1.

Equipment Warning Labels

The equipment carries warning labels affixed to the lid and to the side of the case. The labels indicate "DANGER– Disconnect the mains supply before removing this cover". Never remove the cover whilst connected to the mains supply, there are no user serviceable parts inside.

Potential Hazards

ALWAYS ensure the equipment power switch is in the off position *BEFORE* making or breaking the test current loop connections. Whilst no hazardous voltages are present, undesirable arcing may occur causing damage to test current socket or plug.

Cleaning

If required, the external surfaces of the case may be cleaned with a lightly dampened cloth using water and detergent, do not use other corrosive or abrasive cleaning products.

Adherence to Instructions

The equipment must be used in a manner than conforms to these instructions, failure to do so may impair protection provided by the equipment and place the operator at risk of electrical shock.

Maintenance and Service

Whilst the equipment itself requires very little maintenance; periodic inspection is recommended paying particular attention to the following areas: -

Worn or damaged connectors
Damage to the case itself
Loose components
Damage to the injection current test lead

The product should be returned to the manufacturer for repair or part replacement. The manufacturer would also recommend that the unit be returned on an annual basis for test and calibration.

Technical Specification

Model Number:	PIU_1P20

Electrical

Supply voltage:	230v AC +10% / -6%
Line frequency:	50/60 Hz
Supply current:	0.2 Amps Typical, 1 Amp Maximum.
Output test current:	20 Amps +/- 10%
Isolation:	Double insulated (No safety earth required)
Test Lead Insulation:	600 Volts AC

Physical

Weight:	2.5Kg
Ingress:	IP20
Dimensions:	200mm Deep x 120mm Wide x 90mm High

Fire

Containment of fire:	Case & controls classification V-2 Connectors classification V-0

Environmental

Storage temperature:	0 to 60°C
Operating temperature:	5 to 35°C
Relative humidity:	70%
Operating Cycle:	Continuous run time 10 minutes followed by 5-minute cool down period.