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 phantom test currents 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

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

Unit Front Panel

The front panel contains all the unit controls and test connections, these are described below.

Power supply cable, this is fixed to the unit and enters the front panel via a strain relief gland. The cable contains 4 connections, 3 phase supply and neutral.

Above the power supply cable is the protective earth terminal post, the protective earth cable supplied in the accessory kit must be attached to this post and the crocodile clip on the other end of the cable attached to a suitable protective earth point on the test installation.

To the left of the power and earth connections is a large power switch, which connects/disconnects the three-phase supply to the equipment.

Above the power switch are 3 indicator neon's which are lit when the power to the equipment is live irrespective of the power switch position. If any single neon remains unlit, this indicates a loss of power on the associated phase.

Above the neon's are 3 input fuse carriers, which provide protection to the equipment input circuits. These may be replaced by the user but must only be replaced with the correct type.

Above the input fuses are 3 output fuse carriers, which provide protection to the equipment output circuits. These may be replaced by the user but must only be replaced with the correct type.

To the right of the panel are 6 test current connectors, two per phase and are identified in pairs by phase colour.

The equipment is supplied with a set of test leads to provide connections to the current injection test loops as well as a protective earth cable and clip, see section on supplied equipment for more details.

Supplied Accessory Pack

The equipment is supplied with the following test leads.

One protective earth cable, colour Green/Yellow, with a ring crimp on one end and a large crocodile clip on the other end.

Three current test lead, one of each phase colour Brown, Black and Grey. Each lead fitted with a 4mm banana plug at each end.

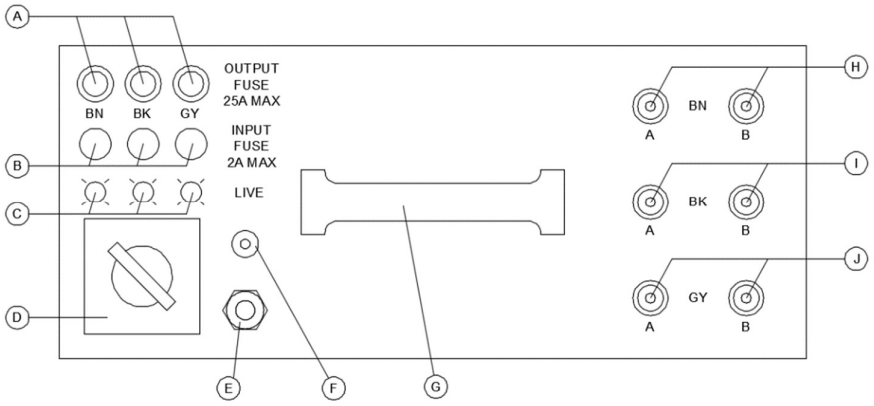
Replacement leads can be obtained from the manufacturer, see page 1 for contact details.

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

Tinned copper class 5 silicone rubber Flexible cable
Conductor resistance to BS EN 60228
Cable cross section: 2.5mm²
Voltage Rating: 300/500 Volts

Usage Instructions

This equipment is used to generate 3 phantom test currents to aid verification and calibration of a 3-phase 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.



Controls

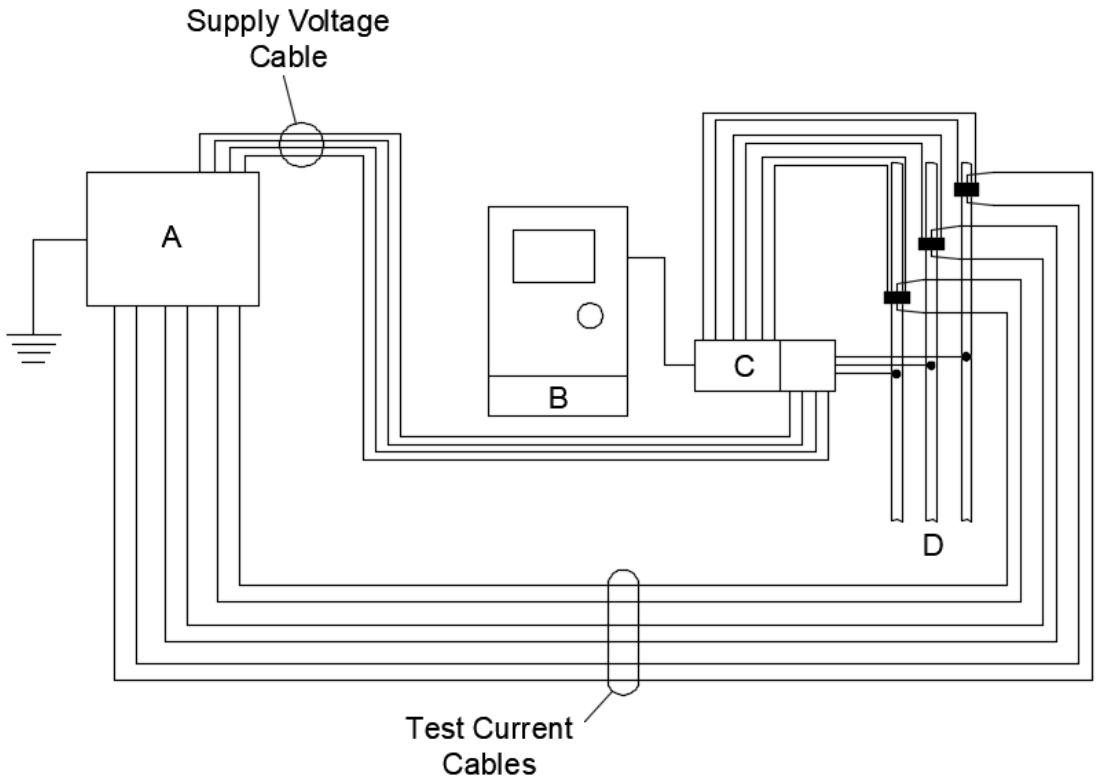
A. Output Fuses 25A Maximum
B. Input Fuses 2A Maximum
C. Phase Live Lamps
D. Main Power Switch
E. Input Power Cable
F. Earth Post
G. Carry Handle
H. Output Current Sockets for Brown Phase
I. Output Current Sockets for Black Phase
J. Output Current Sockets for Grey Phase

The equipment must *NEVER* be operated without the safety earth connection, terminal post (F) in place. Failure to make this connection could render the equipment in a dangerous state in the event of a fault.

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.



A – 20A Injection Unit
B – Site Meter
C – Site Meter Test Block / Terminals
D – Site Bus Bars

Remove the protective earth cable (Green / Yellow cable fitted with a large crocodile clip) from the carry case, unscrew the top from the earth post (F) on the unit front panel, attach the earth cable, secure the top of the earth post, finger tight. Attach the crocodile clip to a suitable metallic earth point.

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

Connect the voltage supply lead (grey cable) (E) located on the unit's front panel as follows: -

Make sure the meter test block is accessible and has been isolated safely before making connections to the voltage supply cable, pay attention to the correct phase and neutral colours: -

L1 = Brown
L2 = Black
L3 = Grey
N = Blue

Locate the meter current transformers (CT's) and ensure the installation is isolated and the bus bars are volt free.

Remove the BROWN phase test cable from the carry case, connect one end to connector 'A' of the brown phase test sockets (H). Take the other end of the cable and make as many passes through the brown phase CT as necessary to perform the test, then insert the cable free end into socket 'B' of the brown phase test sockets (H).

Remove the BLACK phase test cable from the carry case, connect one end to connector 'A' of the black phase test sockets (I). Take the other end of the cable and make as many passes through the black phase CT as necessary to perform the test, then insert the cable free end into socket 'B' of the black phase test sockets (I).

Remove the GREY phase test cable from the carry case, connect one end to connector 'A' of the grey phase test sockets (J). Take the other end of the cable and make as many passes through the grey phase CT as necessary to perform the test, then insert the cable free end into socket 'B' of the grey phase test sockets (J).

The unit is now connected and ready to begin tests.

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.

Replacement Parts

Replacement fuses may be fitted, but must be of the following types: -

Output Fuse (A): 6.3 x 32mm 25A 230V Fast (F) Glass
Input Fuse (B): 5 x 20mm 2A 230V Fast (F) Ceramic

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 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 (D) 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 leads

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.

Safety Instructions

The equipment is fitted with 6 off front panel fuses which protect both input and output circuits of the equipment. If the equipment fails to operate, check each of the fuses to ensure they are intact, but *ONLY* fit replacements of the same type, see section on replacement parts. If a fuse blows repeatedly, then the unit should be returned for inspection and repair.

The Brown, Black and Grey test current leads are made to a specific length and must not be shortened. If a cable has been damaged, then it must be replaced.

Technical Specification

Model Number:	PIU_BC20

Electrical

Supply voltage:	400v AC +10% / -6% 3 Phase & Neutral
Line frequency:	50/60 Hz
Supply current:	0.2 Amps Typical, 1 Amp Maximum per phase.
Output test current:	20 Amps +/- 10%
Test Lead Insulation:	300 Volts AC

Physical

Weight:	6Kg
Ingress:	IP20
Dimensions:	140mm Deep x 312mm Wide x 234mm High

Fire

Containment of fire:	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.