

INSTALLATION, COMMISSIONING & OPERATION GUIDE

System

Unless previously agreed, the supplied equipment is only intended for operation at 415V 3 phase 50Hz.

Initial Inspection

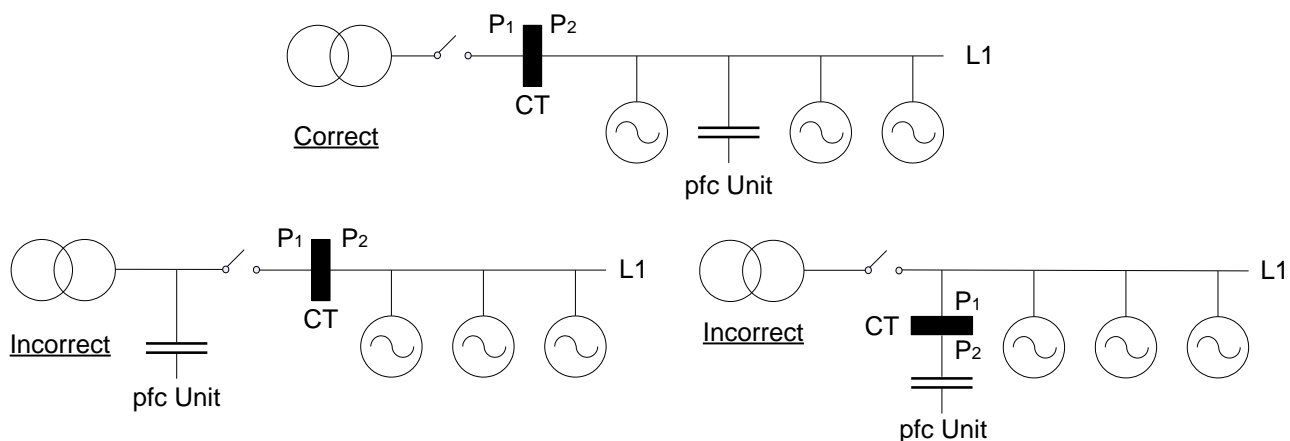
On receipt of the equipment it should be thoroughly inspected. If any components are found to be missing or damaged this should immediately be brought to the attention of PFC Engineering Ltd.

- If the equipment is to be stored, it should be left indoors in an upright position.

Installation Criteria

- Equipment is only intended to be located indoors, unless specifically supplied for outdoor.
- Generally, only the three phase conductors need to be connected to the pfc equipment, there is no need for a neutral connection.
- The ambient temperature should not exceed 45°C.
- Free standing units should be securely fixed to a firm level surface.
- As a minimum, a 50mm air-gap should be provided at the rear of the unit to encourage good ventilation. Additional side ventilation should also be provided wherever possible.
- Connection cables should be rated at 1.5 times nominal capacitor current, and should be co-ordinated with the rating of any disconnection device.

Position of the Current Transformer (CT)



Connection of the Current Transformer

Care should be exercised in the positioning and wiring of the CT. Incorrect positioning and connection of the CT is by far the most common cause of control problems.

- The CT should be positioned on L1 (brown phase) so that it senses the entire load (equipment plus pfc unit), see schematics above, on the load side of the main supply switch.
- Side P₁ should face the incoming supply, and side P₂ should face the load.
- Connection to the pfc equipment should be by 2.5mm² PVC insulated cables.
- Connect to two of the four terminals S₁, S₂, S₃, S₄, selecting the ratio to be as close to the maximum supply loading as possible.

Our multi-ratio CTs typically have the following options:

200/5 (S₂ & S₃) | **400/5** (S₂ & S₄) | **600/5** (S₁ & S₂) | **800/5** (S₁ & S₃) | **1000/5** (S₁ & S₄)

- For on-load alterations, short out terminals S₁ & S₂.
- Never leave the CT circuit open-circuit on-load.
- If the CT is only sensing a proportion of the total load (eg on one cable of two parallel feeders), then the total system current should be used to calculate the control relay settings, eg if a 1000/5 CT is used on only one leg, then the control relay should be set for 2000/5.

Connection to a Summation CT

Used together with two standard CTs.

S₁₊₂ of the first CT should be connected to P₁₊₂ of the summation CT.

S₁₊₂ of the second CT should be connected to P₃₊₄ of the summation CT.

S₁₊₂ of the summation CT should be connected to the pfc equipment.

- Take care to ensure that both CTs monitor current in the same direction, otherwise the currents will tend to cancel out each other.
- The total system current should be used to calculate the control relay settings.

Reminders (before switching on)

- Check that all connections are tight.
- That all swarf and loose conductive materials have been removed from the pfc unit.
- That all provided shrouds are installed.
- That the installation is adequately bonded to earth.

Control Relay Commissioning

The Control Relay should be commissioned in accordance with the manufacturer's instructions (supplied).

Other Considerations

System over-voltage

Although individual capacitors are rated for 110% continuous over-voltage, frequent over-voltage may reduce product life.

Maintenance

Your PFC installation is an investment. If it malfunctions, or is left in a non-operational condition for just half an hour, it is possible to lose availability savings for a whole year. To help prevent this, the equipment should be maintained on an annual basis by a competent person.

PFC Engineering Ltd offer a nationwide low-cost maintenance service and are only too pleased to provide an appropriate quotation.