

FOR MAXIMUM SAFETY

Current inputs on all Northern Design CT operated Meters are fully isolated from each other and from all other parts of the circuit

Northern Design 3 ϕ meters are manufactured with fully isolated current inputs. Although this adds to the cost of the instrument, this ensures safe installation and provides considerable benefits to the user.

The Company is aware of a number of accidents - luckily none fatal - which have occurred where non-isolated meters have been fitted, and which would not have occurred had the meters been fully isolated.

Safety

- CT wiring is fully isolated from the system voltages, thus ensuring maximum safety, essential in the case of phase or neutral faults
- The user can earth the CT wiring, thus ensuring maximum safety
- CT shorting blocks are at earth potential, and not at some unknown potentially dangerous voltage dependant on the system, the installation and fault status

Convenience

- The Meter can be used as a *Direct Connected* 3 ϕ meter for currents up to 5 Amp when operated under 'Installation Category II' (IEC 61010-1).
- Other instruments can be connected in series with the current inputs of the Meter without affecting performance and accuracy (so long as the burden rating of the CTs is not exceeded).
- The CTs may be earthed (for extra safety) if required with no effect on the performance of the Meter.
- The connection scheme, between the Meter and the CTs, will not affect the operation or accuracy of the Meter. The CTs may be connected individually, may be Star connected (with the star point earthed or not) or may be Delta connected.
- There are no issues concerning the problems of multiple earth paths or earth loops.

Guaranteed Accuracy

- Where the current inputs of a Meter are NOT fully isolated from the voltage inputs, an internal failure - not detectable to the user - can leave the Meter seemingly fully operational but reading erroneously.

With non-isolated meters, earthing of CTs is only possible if it can be *guaranteed* that both Earth and Neutral are at *exactly* the same potential, or if the Neutral is earthed at the meter itself. A guarantee may be valid at time of installation, but what about the future? Should the Neutral voltage rise, the only fault path may be through the Meter thus causing a total or partial failure of the Meter (see Guaranteed Accuracy above). On the other hand, if the Neutral has to be earthed at each meter, this is not only onerous but can lead to circulating Earth Currents.

This does not apply to Meters supplied as Retro-fit Kits with split current sensors. Special precautions are taken in the design of these meters to ensure operator safety

These types of current sensors have a voltage output, are quite safe if left open circuit and must not be earthed