

CT INSTALLATION GUIDE

Elcomponent offers a wide range of digital kWh and multi-parameter meters, which provide excellent accuracy under a wide range of operating conditions, even at low loads, and on supplies where power quality is poor.

However, the meters can only be as accurate as the input data they receive, and with regard to current measurement the choice and installation of current transformers (CTs) is critical. All Elcomponent meters measure current indirectly via a CT or set of CTs, and these must be correctly specified and installed for the meter to provide the expected performance.

CT SIZING:

CTs must be sized so that their primary rating is equal to the rating of the supply. The output value should be 5 Amps in all cases.

Example: 400A Supply - select 400/5A CT

CT TYPE:

CTs should always be specified as suitable for use with meters. This is generally referred to as 'Metering Quality' and avoids the use of protection CTs for metering purposes, which is not recommended.

Whether standard resin coated ring, moulded case, or split core types are specified is purely an application issue. Briefly, the closed types (ring or moulded case) are the same device packaged differently, and are effectively interchangeable. Mounting details differ, and this will often be the deciding factor. Of course, because these CTs are 'closed' or 'ring' types, conductors must be disconnected before they can be fitted. Split core types, as their name implies, are in two parts which are clamped together over the conductor. This is often the only option where CTs are to be retro-fitted to busbar systems, and they can of course also be used on flexible conductors if required.

Note that split CTs are much bulkier than closed types of similar rating. Care should be taken to ensure that they will fit in the space available. Elcomponent can usually supply custom made CTs of all types for applications where space is at a premium.

CT POWER RATING:

The output rating of CTs is measured in VA. Elcomponent product is generally of a 5VA or higher rating. However certain low ratio and split core types may have a lower output rating. This should be checked carefully before installation as the maximum length of cable run between the CT and the meter is proportional to the CT output. (See table below).

CT ACCURACY:

All CTs supplied by Elcomponent are of Class 1 accuracy with a very few exceptions. This is the preferred choice for all meters. Greater accuracy can be obtained if Class 0.5 or better CTs are employed, but there is a severe cost penalty for this. This is only an issue if the application demands very high levels of accuracy in a defined load range.

CT INSTALLATION:

The physical mounting of CTs is not covered by this document, as it is dependant on the specific details of the installation location. However, the following points should be borne in mind.

- i) CTs should, wherever possible be securely mounted to a flange or plate of insulating material. Where this is not possible, cable ties or insulated wedges may be employed to secure the CTs to the conductors.
- ii) Care should be taken to ensure that the output terminals cannot come into contact with any conducting material, or each other on adjacent CTs.
- iii) CTs should be located taking into consideration the cable run to the instrument, with a view to keeping this as short as possible.
- iv) CTs should be installed on the 'load side' of the isolator controlling the supply. If this is not done, the CTs cannot be isolated without shutting down the next isolator 'up the line'. In all cases CTs should be wired through terminal blocks that allow the secondaries (outputs) to be shorted out. This is necessary to prevent the CTs becoming 'open circuit' should the meter require replacement in the future without shutting down the supply.

CABLE TYPES AND DISTANCES:

The following table should be used to determine cable type and maximum recommended distance from CT to meter. Connections should be made with a conductor of a minimum size of 2.5mm²

METER TYPE	CT OUTPUT RATING	MAX CABLE RUN	
		Tri-Rated 2.5mm ²	Tri-Rated 4.0mm ²
AEM33 / AEM32	1.5 VA	1.5m	2.25 m
	2.5 VA	4.0 m	6.5 m
	5.0 VA	11.0 m	17.5 m
	10.0 VA	24.0 m	39.0 m
	15.0 VA	38.0 m	65.0 m

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