Application note: 075
Right first time – guide for CT meter installation

Summary

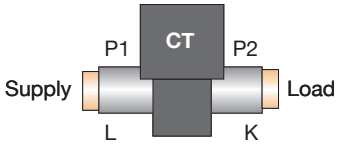
This guide was written after years of experience in installing Current Transformer (CT) metering. It shows the range of different symbols you may come across, and colours for the wiring. Following these recommendations, you should get it right first time.

1. Set the CT ratio of the meter

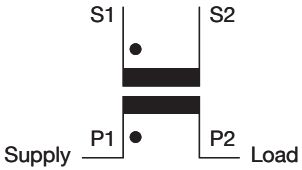
- This must match the CT.
- Some meters set the ratio (eg 100A:5A CT gives ratio 100/5 = 20)
- Other meters (eg Northern Designs) set the 5A level instead (eg 100A:5A CT gives CT level = 100)
- Other meters (eg ABB) set the Primary and Secondary levels

2. Fit the CT the right way round – it matters

CT view



Datasheet view



3. Wire from the CT to the meter

What wire?

If you have to extend the wire from a CT, use this rule of thumb;

Up to 5m length – 2.5mm2
Up to 10m length – 4.0mm2
Call SHM if you need longer extensions.

Which colour connections?

Screw or Tab mounted

S1 (Secondary 1): S1
S2 (Secondary 2): S2

SHM Miniclip SCCT-1

S1 (Secondary 1): Brown
S2 (Secondary 2): Blue

SHM Miniclip SCCT-2

S1 (Secondary 1): Black !!
S2 (Secondary 2): Red !!

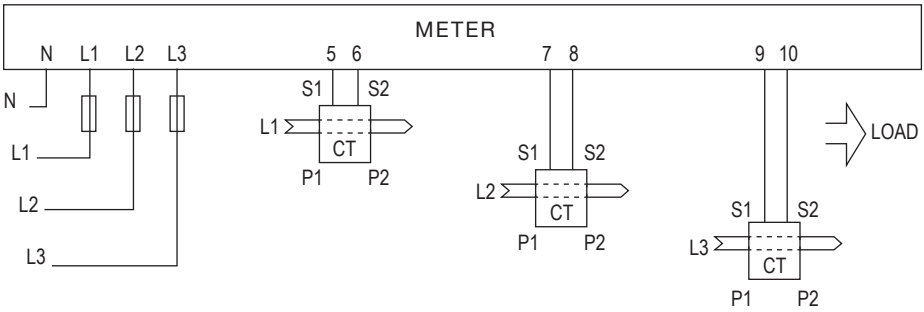
Hobut

S1 (Secondary 1): Red
S2 (Secondary 2): Black

Meter terminals (look on the meter or in the terminal covers)

Example meter makers	**S1** (Secondary 1)	**S2** (Secondary 2)
ABB or Socomec	S1	S2
Northern Designs	+	–
Carlo Gavazzi	▲	▼
Circuitor	1, 3, 5	2, 4, 6
SHM MMU or XMP	5, 7, 9	6, 8,10

Example (SHM MMU or XMP panels)



Checking

The right tests depend on the features of the meter. This ranges from full feature meters allowing view of all install values, to simply a kWh display – the hardest to troubleshoot. Here a few pointers. But first – again check the CT setting of the meter.

Features	**Check**	**Result**
kWh only	With a clamp meter, read the typical Amps for each of the 3 phases. kW = 3 x 230V x (L1 + L2 + L3)	Check the meter advances in line with the check. ANY errors in CT wiring ALWAYS result in lower kWh than expected.
kWh and flashing LED	Check the number of flashes with a stopwatch – the meter label will tell you what the flash means.	If the LED does not flash, it suggests that the CTs are installed the wrong way round – i.e. negative kW.
A and kW shown	Compare current with clamp meter, if looking OK, check for kW. If any or all of the meter's kW are negative either you are generating energy or the CTs are not wired correctly.	If kW or kWh is 1/3 of expected, then usually one CT is the wrong way round – one subtracts another.

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