

Welcome to our “e-REW Express”. Subsequent to the ‘metering requirements of direct connected meter installation’ introduced in the last issue, we would like to highlight the metering requirements of Current Transformer (C.T.) Operated meter installation in this new issue of “e-REW Express”.

We hope you will find the information useful and handy. If you have any suggestion, please send an email to us at mail@hec.com.hk or contact our Customer Installation Section at 2887 3455 so that we can further improve our service.

Metering Requirements of Current Transformer Operated Meter Installation

All installations connected to, or intended to be connected to HK Electric’s supply of electricity must comply with HK Electric’s Supply Rules, the Electricity (Wiring) Regulations and other relevant Government Ordinances and Regulations.

Same as the direct connected meter installation, tariff metering equipment of C.T. meters are important to HK Electric and customers in the determination of electricity consumption. They shall be installed in a clean and dry indoor location which is not exposed to weather, mechanical damage, vibrations, extremes of temperature or dampness, etc. The meter room shall be under conditions which are suitable for meter installation, reading and maintenance. The meter room and meter board shall comply with the relevant requirements as stipulated in the last issue, i.e. the metering requirements of direct connected meter installation.

Meter seals shall not be removed or tampered with by customer/Registered Electrical Contractor (REC)/Registered Electrical Worker (REW). However, if rewiring of a customer’s installation requires removal of the seals, prior consultation with HK Electric shall be made.

1. C.T. Operated Meter

C.T. operated meters (as shown in Figures 1 & 2) shall be installed for 3-phase 4-wire LV installation with main switch rating exceeding 125A.



Figure 1 – Electro-mechanical Meter



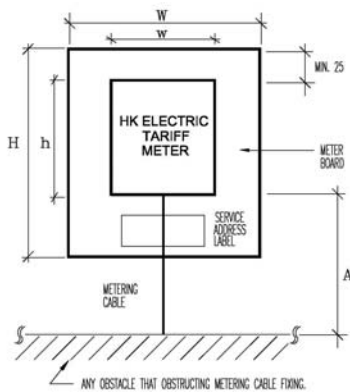
Figure 2 – Electronic Meter

2. Metering Position

- a. The C.T.s. of HK Electric’s LV meter shall be installed electrically at a position immediately after the customer's main switch.
- b. The metering point of an installation shall be at a position as close to the origin of the supply source as practicable.

3. Meter Boards Requirements

Space requirement for C.T. operated meter shall comply with Figure 3. Meter boards and its clearance for more than one C.T. operated meter shall be of dimensions in multiples of unit per Figure 3.



METER TYPE	MAIN SWITCH RATING (Amp)	METER LEADS/ TAILS SIZE (Sq.mm)	MINIMUM CLEARANCE FOR METER TERMINATION			TARIFF METER DIMENSION			METER BOARD DIMENSION	
			A	h	w	d	H	W		
3-Ø	>125	4	250	330	200	170	480	300		

NOTES: 1. RECOMMENDED SIZE OF ADDRESS LABEL : 120 x 60 mm².
 2. UNLESS OTHERWISE STATED, ALL DIMENSIONS ARE IN mm.

Figure 3 - Meter Board Requirements

4. C.T. Chamber Requirements

- a. For main switch rating exceeding 125A 3-phase and up to 400A 3-phase:
 - (i) HK Electric shall provide a C.T. cum link box free of charge (as shown in Figure 4). The dimensions of the box are 305mm x 375mm x 175mm (H x W x D) or,
 - (ii) REW shall provide a C.T. chamber as per Figure 5 to be fitted into the customer switchboard cubicle. The dimensions of the C.T. chamber are 400mm x 500mm x 300mm (H x W x D).



Figure 4 – C.T. Cum Link Box

- b. For main switch rating exceeding 400A 3-phase, the C.T. chamber as per Figure 5 is required to be fitted into the customer switchboard cubicle. The recommended dimensions of C.T. chamber are 400mm x 650mm x 300mm (H x W x D).

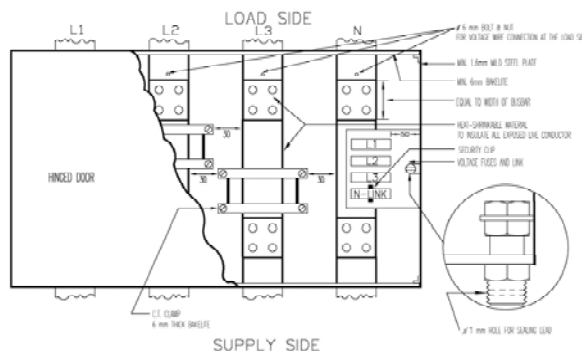


Figure 5 – Requirement of C.T. Chamber

- c. The dimensions of the C.T. are listed below:

<u>C.T. Ratio</u>	<u>Min. Inner Diameter (mm)</u>	<u>Max. Outer Diameter (mm)</u>	<u>Max. Thickness (mm)</u>
200/5A	60	110	80
400/5A	60	110	80
1000/5A	120	180	40
2000/5A	130	180	40

- d. C.Ts. shall be generously spaced between busbars. They shall be rigidly supported and insulated from live parts. Bare busbars shall be insulated by heat-shrinkable materials and phase colour coded (as shown in Figure 6).



Figure 6 – Bare Busbars inside C.T. Chamber Insulated by Heat-shrinkable Materials

- e. Voltage fuses and link shall be provided to protect and isolate voltage supply to metering equipment (as shown in Figure 7).



Figure 7 – Voltage Fuses and Link Inside C.T. Chamber

- f. Rigid supports shall be provided for mounting of conductor/busbar inside the chamber.
- g. The sealable screw shall conform to diagram on Figure 5.
- h. The requirement for cable mounted C.T. chamber shall be similar to that of HK Electric's C.T. cum-link box.

- i. For new installations of C.T. operated meters with a main switch rating of 600A or above, located inside the customer switchboard, a Cat. 5e cable (as shown in Figure 8) shall be supplied and installed by the customer with mechanical protection from the meter to the Tariff Meter Communication (TMC) Termination Box (as shown in Figure 9) in the customer switchroom. Each end of the mechanical protection shall be terminated with a junction box inside which there should be at least 1m spare length of the Cat. 5e cable. The junction boxes shall be within 0.5m of the meter and the TMC Termination Box. This requirement should also apply for refurbishments of customer switchboards that contain C.T. operated meters with main switch rating of 600A or above.



Figure 8 – Cat. 5e Communication Cable

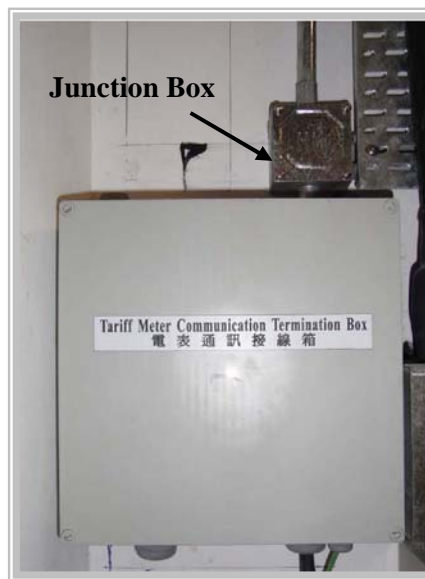
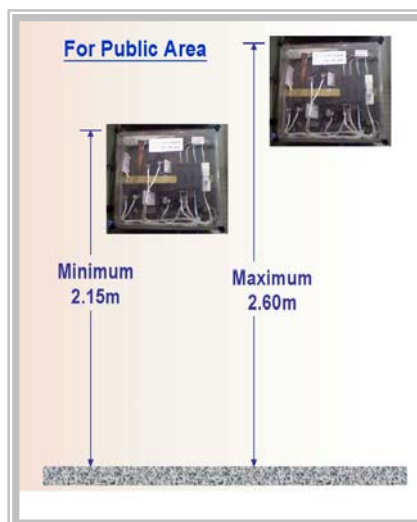
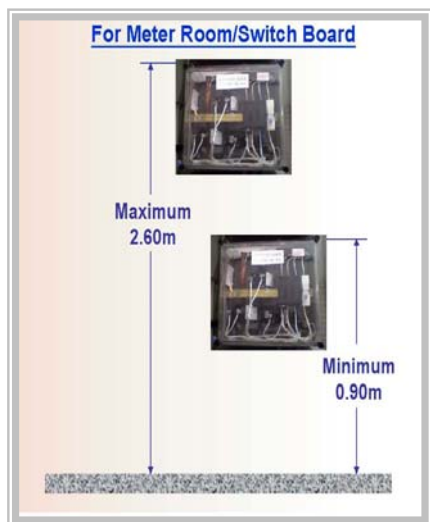


Figure 9 – Junction Box for the TMC Termination Box

5. Fixing Height of C.T. Cum Link Box / C.T. Chamber

Fixing height of C.T. Cum link box or C.T. chamber (measured from the top of C.T. Cum link box or C.T. chamber to the floor) shall be as follows:



6. C.T. Chamber / C.T. Cum Link Box Inside Meter Ducts/Rooms Requirements

- If C.T. Cum link box / C.T. chamber is installed inside a meter duct with no free working space inside, the distance between C.T. Cum link box / C.T. chamber surface to the hinged door of the meter duct at closed position shall be maximum 600mm and minimum 200mm. Please refer to Figure 10 for illustration.
- Minimum working space in front of the C.T. Cum link box / C.T. chamber (full door swing) is 900mm.
- Minimum 100mm clearance is required by the two sides of the C.T. Cum link box / C.T. chamber for sealing work.

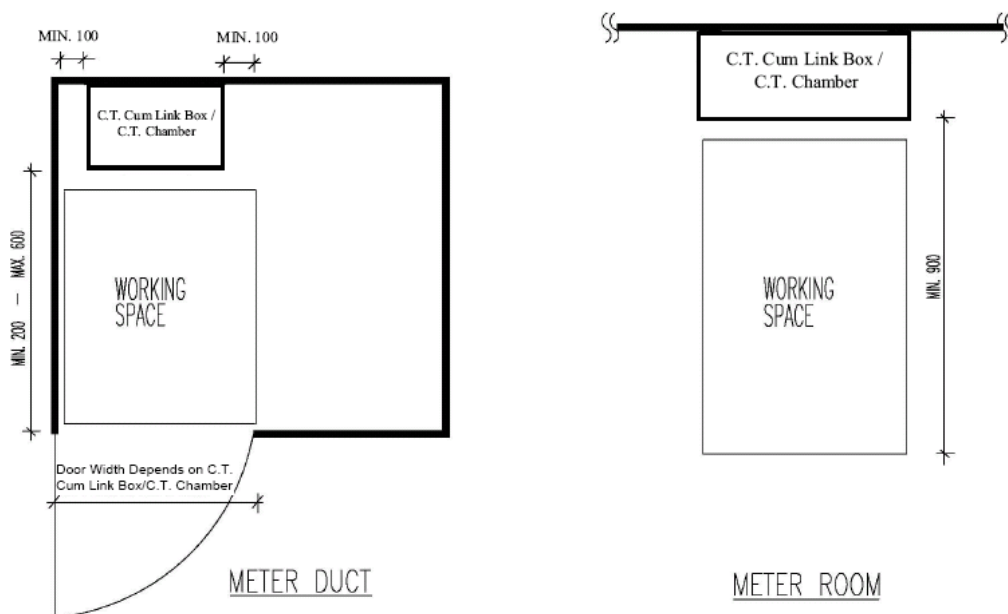


Figure 10 – Minimum Space Requirements for C.T. Chamber / C.T. Cum Link Box inside Meter Duct / Room

7. Installation of C.T. Operated Meter

- Where a meter installation is necessary before connection of supply, the meter will normally be installed immediately upon satisfactory inspection of the electrical installation.
- REC / REW shall make advance appointment with us at 2887 3455 to collect the following metering equipment from the Customer Centre at 9/F., Electric Centre, 28 City Garden Road, North Point, Hong Kong and install them properly before installation inspection.

- C.T. cum link box



- Cable gland for 12-core cable



- HRC fuse link carriers and bases



- Tariff metering CTs



- 12-core cable connecting C.T. terminals and tariff meter terminals. The maximum length is 10 metres and separate 1 metre for voltage wires.

- c. The voltage wires, which are tee off from the load side of the customer’s busbars / single core cables and connect to the voltage fuse link carriers, shall be installed before installation inspection. The core No.7 to core No. 10 of the 12-core multi-core cable shall be used for voltage wire connection. The designation for voltage wires is as below:

Customer’s Busbar / Single Core Cables Using New Cable Colour Code	Tee-off Voltage Wire to HRC Fuse Link Base			
	Brown (L1)	Black (L2)	Grey (L3)	Blue (N)
Core No. of 12-core Multi-core Cable	7	8	9	10

- d. Termination of other multi-core cables for the meter will be done by HK Electric.