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Queensland Electricity Metering Manual

Effective from 10 August 2020

Part of Energy Queensland

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Joint document between Energex and Ergon Energy
Energex Limited ABN 40 078 849 055 ■ Ergon Energy Corporation Limited ABN 50 087 646 062

Table of Contents

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FOREWORD

The Queensland Electricity Metering Manual (QEMM) has been compiled in conjunction with Energex and Ergon Energy Network.

Note: Printed versions of the QEMM are “uncontrolled copies” - the latest version is available on the Energex website (https://www.energex.com.au/) or the Ergon Energy website (https://www.ergon.com.au/).

Safety

In all activities undertaken, the safety of our employees, contractors, energy customers and the community is paramount. Safety is our number one value and there is a commitment to ensuring that "safety must come first" to achieve a no injuries workplace. With our member we have developed Policies, Standards and Work Practices that our workers are required to follow to ensure the safety of themselves, other workers, energy customers and the community. We trust that electrical contractors and persons in control of sites will appreciate that our workers will not undertake any work in a situation where there are uncontrolled risks inconsistent with our safe systems of work.

Disclaimer

Whilst the *QEMM* contains material relevant to the *NEM* rules, Queensland electricity industry legislation, codes of practice and standards, it is not intended to provide legal advice on how electrical contractors can meet their own statutory obligations or comply with legislation, codes of practice or industry standards such as AS/NZS 3000 (Wiring Rules).

The *QEMM* does not provide advice for the purposes of section 68 of the *Electrical Safety Regulation 2013*. *The Electrical Safety Act 2002*, *Electrical Safety Regulation 2013* and associated codes of practice establish requirements for electrical safety and place obligations on employers, self-employed persons and others. These documents may be obtained from the Queensland Government website (www.worksafe.qld.gov.au).

Whilst care has been taken in the preparation of the *QEMM*, the distribution entities do not guarantee that the information contained in the *QEMM* is accurate, complete or up to date at time of publication. To the extent permitted by the relevant legislation, the distributor will not be responsible for any loss, damage, cost or expense incurred as a result of any error, omission or misrepresentation in relation to the information contained in the QEMM.

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PURPOSE AND SCOPE

The purpose of this manual is to promote industry uniformity through standardisation of practices throughout Queensland. The document is for use by *Electrical Contractors*, Consulting Engineers, Architects, Distribution Networks, *Metering Providers* and others directly concerned with electrical installations that are connected, or are to be connected, to the respective supply network.

Metering installation compliance and obligations contained in this manual form part of Meter Providers accreditation obligations under the *National Electricity Rules*.

DEFINITIONS, ABBREVIATIONS AND ACRONYMS

Unless otherwise stated, definitions, abbreviations and acronyms used in AS/NZS 3000 (Wiring Rules) and the current Legislation referenced in the *QEMM* have the same meaning when used in this document.

Refer to the Glossary of Terms for general definitions.

Note: Words and terms defined in the Glossary are identified within the text by italicising (e.g. *distributor*).

REFERENCES

The document is to be read in conjunction with the Queensland Electricity Connection Manual (*QECM*) published from time to time by Energex Limited and Ergon Energy Corporation Limited.

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1. IMPORTANT INFORMATION

1.1. Use of this document

This document is to be read in conjunction with the current:

(a) Australian Standards, in particular AS/NZS 3000 (Wiring Rules).

(b) Relevant Legislation and respective Regulations and Codes (see References in *QECM*).

(c) The National Electricity Rules.

(d) The *QECM* and addendums published in relation to specific topics (on and from the date they are published).

Note: The requirements of the Queensland Electricity Legislation are to be considered in the design, installation, operation and maintenance of the customer's electrical installation

This is a self-contained document except where it specifically refers to other related documents and supersedes previous versions of both the Energex and Ergon Energy Electricity Connection and Metering Manuals.

This document applies to all premises connected to Energex and Ergon Networks including all premises connected to an Isolated Power System, or part of the Mt Isa supply network.

1.2. Scope

This document provides guidelines for metering arrangements of a customer's installation.

Where departures from these guidelines may be necessary, prior consultation with the *metering provider* will be required.

1.3. Failure to comply with this manual

Should an installation not satisfy the requirements of these and/or other applicable rules, the installation of metering equipment may be delayed or withheld until such time as the non-compliance(s) has been rectified.

1.4. Exceptional Circumstances

In exceptional circumstances the stated requirements contained within the *QEMM* may be waived and/or modified by the submission of a written request to the relevant *distributor*.

The request for dispensation shall include the following:

(a) A detailed statement of the reasons why non-compliance with this manual is sought.

(b) Full details and diagrams, as necessary, showing the specific aspect of a requested variation to the *QEMM.*

(c) Property location details.

(d) *Metering Provider* details

No action or variation should be undertaken until a written approval from the *distributor*, has been received.

Note: Any variation approval will only apply to the individual property as listed in the request (i.e. it does not cover, or set any precedent, for any other installation).

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Requests shall be made by email to**:**

Energex:	Email	tech.enquiries@energex.com.au
	Write to:	Energex Limited QECM Request
		GPO Box 1461
		BRISBANE Qld 4001
Ergon Energy:	Email:	tech.enquiries@ergon.com.au
	Write to:	Ergon Energy QECM Request
		PO Box 308
		ROCKHAMPTON Qld 4700

A reply will be provided within 10 working days from receipt of the written request.

1.4.1 Request for an QEMM amendment

A request for an amendment of the *QEMM* must be made in writing to the relevant *distributor*. Acknowledgement of receipt of the amendment will be provided within 10 working days from receipt of the written request.

1.5. Advice for Whole and CT Metering

A request for an interpretation of the *QEMM* must be made in writing to the relevant *distributo*r. A reply will be provided by the *distributor* within 10 working days from receipt of the written request.

Contact details for *QEMM* advice or enquiries are:

Energex:	Email:	qecmtechadvice@energyq.com.au
	EC Hotline:	1300 762 397
Ergon Energy:	Email:	qecmtechadvice@energyq.com.aau
	EC Hotline:	1800 237 466

1.6. Historic Buildings

The electrical contractor should consult the owner if the building appears to have historical significance. Historic buildings may require the requirements of this manual be waived and/or modified for meter positions etc.

Similarly, flora protected by a Vegetation Protection Order may require special arrangements for the erection or alteration of overhead or underground services.

Electrical contractors should contact the *distributor* before starting work (See Exceptional Circumstances Clause 1.4).

1.7. Revisions and alterations

Energex and Ergon Energy reserve the right to revise this publication. The current edition of this document is available on the Energex website at www.energex.com.au or the Ergon Energy website at www.ergon.com.au.

1.8. Drawings

All drawings are found at the rear of the document and may be referred to in more than one section.

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2. METERING REQUIREMENTS

2.1. General

This section includes metering requirements, for specific information contact the *metering provider.*

Where a *customer* directs a *retailer* to request metering or tariff changes, any alterations to the *customer's* switchboard installation or meter enclosure shall be the *customer's* responsibility (e.g. removal of asbestos contaminated waste).

Metering equipment deemed to be necessary by the *metering provider* to record electricity consumption shall be supplied and maintained by the *metering provider* and shall remain their property.

Network devices deemed to be necessary to control electricity consumption shall be supplied and maintained by the *distributor* and shall remain their property. All meter and *network device* active terminals shall be connected directly to the Metering Isolation Link or Metering Active Link for *direct connected* installations.

Where it is known that a single tariff two or three-phase supply will be required at the time of initial connection, provision for the metering shall be installed at this time in accordance with the requirements of the *metering provider*. It is anticipated that this will be a polyphase meter. All phases of a service line are required to be connected at the initial connection of the premises.

All metering and control equipment shall be back-wired and mounted on a hinged panel attached to a metering enclosure or a switchboard frame.

For multiple tenancy installations, access to sub boards within tenancies may be required for verification of submains and metering.

Where metering or control equipment is no longer required, the *metering provider* shall be contacted to arrange for its removal.

Customer's ancillary equipment such as surge diverters, voltmeters, phase failure relays etc. shall be connected on the load side of the revenue metering equipment. *Customer* owned current transformers for energy management are permitted on the line side of revenue metering equipment at multiple tenancy installations.

2.2. Metering Determination

Customer's installations other than those approved by the *distributor* will be metered by one of the following methods:

(a) *Direct connected meters*; or

(b) *Current transformer metering*; or

(c) HV *current transformer* - voltage transformer metering. (Refer to *QECM*).

The *customer* (or their *electrical contractor*) is responsible for determining and monitoring the installation's load requirements, and method of metering (i.e. *direct connected* or *current transformer metering*). This applies to new connections and/or alterations or additions. The *customer* may need to consult with the *customer's retailer* at the earliest opportunity in order to determine their metering requirements.

Calculated loads greater than 100 A per phase or measured loads greater than 80 A per phase shall require *current transformer metering*.

2.3. Controlled loads

Where *controlled loads* are required (Controlled Supply/Night Rate tariffs), provision for a separate *network device* shall be made (Refer to Drawing QEMM 01 for cable access drilling details). The *network device* will only be installed when the *customer* has requested *controlled load* as part of the EWR for the installation.

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The *QECM* contains more detail on requirements for connection of controlled loads.

2.4. *Customers* Energy Management Systems

A *customer* requiring an interface with the *metering provider's* facilities should contact the *metering provider*.

2.5. Sealing of Metering Equipment

The *metering provider* will seal all the metering equipment and may seal cubicles or panels which house revenue metering equipment, or *unmetered* sections of a switchboard. It is an offence to break or interfere with any seal unless authorised by the *metering provider*.

Meters, *network devices*, metering isolation links, metering neutral links, metering active links, voltage circuit fuses and contactors associated with the metering, and which are required as a condition of a supply arrangement (e.g. *controlled supply*), are typical of equipment that requires sealing.

The *customer* shall make provision for the sealing of all *current transformer metering* panels, dedicated current transformer and voltage transformer chambers and HV metering panels.

2.6. Metering Isolation

To facilitate the requirements of the *Electrical Safety Act 2002 and Electrical Safety Regulation 2013* for performing electrical work, and the *Electricity Act 1994 and Electricity Regulation 2006,* supply to the revenue metering equipment for each *customer* is to be capable of being individually isolated.

All metering shall be connected with suitable active isolation devices connected to the line side of the metering to allow safe access to the metering equipment.

2.6.1 Isolation of Direct Connected Metering

Direct connected metering shall be installed on the line side of the individual installation's main switches and be capable of being isolated as per the *QECM*

2.6.2 Isolation of Current Transformer Metering

Current Transformer metering shall be capable of being individually isolated by a suitable isolator or main switch. All isolation equipment shall be clearly identified and readily accessible and shall be installed and maintained by the *customer* and be capable of being isolated as per the *QECM*

2.7. Metering Active and Neutral Requirements

Metering Neutral and active links, and appropriate labelling is required as per the QECM.

2.8. Builder's Temporary Service (BTS)

Builder's Temporary Services are required to comply with all metering requirements of the *QEMM* for typical metering installations. These requirements include but are not limited to:

- All metering and control equipment shall be back-wired and mounted on a hinged panel attached to a metering enclosure or a switchboard frame. (Refer to section 2.1).
- A metering isolation link per phase shall be connected to the line side of the metering. (Refer to section 2.6).

Builder's Temporary Services meter panels do not need to be dedicated to revenue metering equipment unless they are intended to be installed in the permanent position.

2.9. Plug-in Metering

Plug-in kilowatt hour meters are only available on existing installations where the plug-in type bases are already installed.

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2.10. Card Operated Metering

In Ergon Energy's Far North Queensland region, card operated meters (COMs) will be supplied for designated remote communities and most isolated generation sites in the Torres Strait Islands.

Card operated meters are supplied as bottom connected meters and do not require the supply and installation of a plug-in socket. Contact *Ergon Energy* to ascertain if a plug-in socket is required.

Commercial installations requiring special tariffs or *current transformer metering* will not use *card operated meters*.

Temporary Builder's Supplies in *card operated meter* areas shall have *card operated meters* installed with commercial tariffs to apply.

Requests for exemptions can be lodged for critical loads (e.g. sewerage pumps, unmanned communications sites etc) so that *card operated meters* are not used (refer to section 1.4).

A metering isolation link is required to be installed on the line side of all *card operated meters*.

In general Ergon Energy will provide one service to a community title scheme or cluster development installation with *card operated meters*.

Where a cluster or community title scheme development with *card operated meters* consists of a number of tenanted buildings a meter position located on common ground for each building may be permitted.

The following meter positions will also be acceptable:

i. The main switchboard located on common ground and all metering equipment installed at this position.

ii. The main switchboard and the first metering point located on common ground and subsequent metering points located either on each building or as otherwise approved by Ergon Energy.

Note: - A single community meter position is preferred, however approval may be granted for an additional community meter where a single position is not practical. Each community meter will be treated as a separate account for billing purposes.

To clarify the required metering type in the remote communities and isolated generation sites in Far North Queensland contact *Ergon Energy Customer* Service.

2.11. Metering and Control Equipment - Accommodation

The *customer* shall provide and maintain at their expense, suitable space, housing, mounting and connecting facilities to accommodate meters and control equipment for each supply arrangement (e.g. general and *controlled supplies*).

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3. DIRECT CONNECTED METERING

3.1. Size of Direct Connected Meter Wiring

The meter wiring for *direct connected metering* shall be PVC insulated copper cable from these standard sizes:

4mm^2	7/0.85
6mm^2	7/1.04
10mm^2	7/1.35
16mm^2	7/1.70

Insulated flexible cables are approved for use for 10, 16 & 25mm^2 provided that one long or two short soft-form un-insulated bootlace pins (end sleeves) are securely crimped snuggly against each other onto each cable tail by the *electrical contractor*. The use of two bootlace pins per cable tail will allow the use of standard length pins while still allowing the required length to maintain secure connection to the meter terminal screws. Upon installation by the *Distributor*, any excess length of pins will be trimmed to suit the depth of the meter being used. An appropriate crimping tool must be used. (Refer to AS/NZS 3000 (Wiring Rules)).

Active and load meter wiring for *direct connected metering* shall not exceed 25mm². Not more than one active conductor may be connected to any one line side terminal of a direct connected meter, except where parallel conductors no larger than 10mm^2 are used.

Compressed (compacted) or hard drawn conductors shall not be used as meter wiring (must be flexible enough to bend into the meter terminals).

Aluminium cables are not permitted for connection directly into meter terminals.

3.2. Metering and Control Equipment – Spacing Requirements

Item A.3 of the "Specification for Metallic Enclosures for Meters in Direct Connected Installations" in *QECM* Appendix A, specifies minimum space requirements for metering equipment on direct connected installations.

Section 4.3.5 specifies minimum space requirements for meter panels for low voltage *current transformer metering*.

Minimum space requirements for mounting of meters and control equipment are shown in TABLE 3.1.

TABLE 3.1

Meter and Network Device Details	Height (mm)	Width (mm)	Depth (mm)	Approx. Weight (kg)
Single Phase Meter	255	150	130	1.5
Polyphase Meter	285	180	135	2.1

A minimum clearance of 25mm is required between any item of metering or control equipment and the edge of the panel.

The minimum clearance around the ends of metering isolation links shall be 40mm minimum.

Exception: Metering isolation links associated with each NMI can be mounted side by side with no clearance between provided the minimum clearance around the ends of metering isolation links is 40mm minimum.

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Energex Limited ABN 40 078 849 055 ■ Ergon Energy Corporation Limited ABN 50 087 646 062

4. CURRENT TRANSFORMER METERING

4.1. General Requirements

The following procedures are to be adopted when assessing the metering requirements, for new installations or additional load for an existing installation, and arranging for the installation of *current transformer metering.*

For all *current transformer metering* (unless an agreement has been negotiated with the *metering provider*), the *electrical contractor* is responsible for the:

(a) Supply of the meter panel.
(b) Supply of CT, metering test block, voltage circuit fuses and fuse sealing block.
(c) Mounting of the meter panel.
(d) Mounting of the current transformers.
(e) Mounting of the voltage fuse block.
(f) Mounting of the test block.
(g) Supply and installation of all secondary wiring between the current transformers, test block and meter, including the voltage supply.
(h) Wiring of the meter panel (surface wiring of meter panels is not permitted).

Where the metering is more complex than a standard installation the *electrical contractor* shall consult with the *metering provider*. The contractor may be required to deliver a suitable metering panel to the *metering provider* for wiring and testing prior to being delivered on site.

Note: Paralleling and summation of *current transformer metering* is not acceptable as it compromises total metering accuracy

4.2. Current Transformer Selection

Current Transformers to be installed in low voltage switchboards that form part of the metering installation, shall be manufactured and type tested to AS60044.1–2007 Class 0.5S with the availability of a Type Test Certificate. Each Current Transformer shall be supplied with an accuracy test report from an accredited NATA or other accredited body that is a signatory to the ILAC MRA and can achieve measurement uncertainty of ±0.1% amplitude and ±0.1crad phase error, based on 95% confidence level. Minimum test points shall include 5%, 20%, 100% and maximum primary rating and secondary unity power factor burden of 25% rated)

The selection of the current transformer shall be based on the load rating in the connection agreement between the *customer* and *distributor*. In general the standard current transformers re E.S.A.A type "S", "T" and "W".

TABLE 4.1 below details the type, ratio and accuracy range of current transformers required.

TABLE 4.1

TYPE OF CT	CT RATIO	CLASS (AS 60044)	ACCURACY RANGE OF CT (AMPS)	MAX. 3 PHASE LOAD (kVA)	MAX. SINGLE PHASE LOAD (AMPS)
S (long range)	200/5	0.5S ext 200%	2 - 400	250	350
T (long range)	800/5	0.5S ext 200%	8 - 1600	1000	1400
W (long range)	1500/5	0.5S ext 200%	15 - 3000	2000	3000

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4.3. Current Transformer Metering - Housing

4.3.1 Dedicated Chamber

On new installations and where major alterations are to be carried out, each set of current transformers and meter voltage fuses are required to be mounted in a separate dedicated metering chamber. This chamber is to enclose only the *metering provider's* equipment. (Refer to Drawing QEMM 07).

In general, each current transformer chamber is a dedicated chamber for one NMI and as such, no other equipment or wiring is permitted in or to pass through the chamber, however, cables enclosed in a continuous metal duct located in a back corner of the current transformer chamber are permitted. (Refer to TABLE 4.3).

4.3.2 Labelling Requirements

Current transformer chambers shall be labelled to indicate the presence of the revenue metering current transformers and access panels shall have provision for sealing. The electrical contractor or switchboard manufacturer shall supply and install labels stating "Revenue Metering Current Transformers" on current transformer chambers.

4.3.3 Insulation of Live Parts

To allow commissioning and testing of *current transformer metering* installations to be performed safely, all live low voltage parts within current transformer chambers are to be individually insulated (insulation must completely cover all live parts). Heat shrink insulation is acceptable for insulating busbars. All bolted busbar or cable connections are to be covered with non-adhesive insulation secured in place by cable ties.

A non-conductive insulated barrier alone (removable cover over CT chamber) is not an acceptable method of insulation.

4.3.4 Access Requirements

To gain access to any current transformer or voltage circuit fuses it shall not be necessary to interrupt supply to a *customer*.

Where a removable cover is used to enclose the dedicated metering current transformer chamber it shall be fitted with a minimum of two handles to allow safe removal without disconnecting supply. This requirement does not apply to hinged covers. Locks are not permitted as a means of securing current transformer chambers due to the difficulty in obtaining access. (Refer to section 2.5 for sealing requirements).

Entry and exit holes in the current transformer chamber for primary wiring and secondary current transformer meter wiring shall be provided with suitable grommets or bushings to protect the conductor insulation or sheathing. Holes shall be sized for the passage of these conductors only. (Refer to AS/NZS 3000 (Wiring Rules)).

4.3.5 Spacing Requirements

The minimum space to mount and gain access to current transformers is shown in TABLE 4.2. Drawing QEMM 07 shows typical arrangements for the equipment within the current transformer chamber.

Fuse blocks may be mounted on the side of the enclosure provided the minimum clearances to busbars and live parts are maintained for safe removal of fuses.

Busbars or cables shall be evenly spaced to facilitate current transformer removal and replacement.

A minimum clearance of 20mm is required around each current transformer with a minimum clearance of 70mm between the CTs and the bolts securing the removable section of busbar.

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TABLE 4.2

Type of CT	In Line Mounting		Staggered mounting	
	Min Width of Opening Dim “a: Dia 1 (mm)	Min. Width of Opening Dim. "b" Dia. 1 (mm)	Min Width of Opening Dim “a: Dia 2 (mm)	Min. Width of Opening Dim. "b" Dia. 2 (mm)
S (200/5)	470	350	385	450
T (800/5)	575	400	495	500
W (1500/5)	650	450	570	550

4.4. Installation Requirements

4.4.1 Mounting

For general dimensions and mounting of current transformers for correct polarity refer to drawing QEMM 08.

Current transformers shall be installed in a manner that facilitates replacement and mounted with suitably sized bolts, nuts and washers (self tapping screws are not permitted). A readily removable section of busbar as shown in Drawing QEMM 07 shall be provided within the current transformer chamber.

The current transformer secondary terminals shall be readily accessible and between 500mm and 1800mm from floor or ground level to allow access to terminals without undue risk to personnel when the switchboard is live.

4.4.2 Voltage Circuit Fuses

Voltage circuit fuses shall be mounted in such a manner that the fuse carriers may be removed, replaced and sealed without undue risk to personnel when the switchboard is live (generally facing the front of the chamber). (Refer to section 4.3.5 and drawing QEMM 2.3).

A sealable fuse mounting block with HRC fuse cartridges shall be used on all new work and when upgrading existing installations. (Refer to drawing QEMM 09).

The voltage circuit fuses shall be connected in such a manner that the energising current of the meter voltage coil will not be registered through the current transformers (i.e. should be connected to line side of the current transformers).

The supply conductors to the voltage circuit fuses shall be as short as practicable, in no case exceed 500mm in length, be separated from bare live busbars and shall originate from within the current transformer chamber. The conductors shall be double insulated and a minimum of 10mm² stranded cable of not more than 7 strands. No joints are permitted in these conductors. Where colour coded cables are unavailable, colour coding shall be provided by the use of appropriate coloured sleeving at both ends with a minimum length of 150mm at each end. (Refer to drawing QEMM 12).

4.5. Meter Panels

4.5.1 General

In general, meter panels for current transformer metering shall be installed remote from the switchboard. A separate meter panel is required for the metering equipment of each NMI.

Exception: Approval will be given for panels to be mounted within switchboards provided the:

(a) Switchboard is readily accessible. and
(b) The meter panel is dedicated for revenue metering equipment for that NMI; and
(c) The meter panel is shielded and/or sufficiently spaced from electromagnetic fields (refer to section 4.6); and

(d) No panels or equipment (including meter panels) shall be mounted in front of the current transformer chamber.

Note: *Direct connected meter* wiring is permitted behind or on a current transformer meter panel provided it is for a secondary supply meter associated with the same *customer* (i.e. for the same *NMI*). All *direct connected meter* wiring behind the meter panel shall be separated and segregated from the current transformer meter wiring by enclosure within an earthed metal conduit, trunking or duct.

Unless specifically approved by the *metering provider* no *customer's* equipment or wiring shall be permitted within the meter panel enclosure. (Refer to drawing QEMM 10).

4.5.2 Panel Requirements

Unless otherwise approved by the *distributor*, a hinged panel with minimum dimensions of 600 mm x 600 mm shall be provided for the mounting of meters and metering test block on the same vertical surface.

Exemption: For single supply current transformer metered installation, meter panels with a minimum dimensions of 600 mm high x 460 mm wide are permitted.

Unless specifically approved by the *distributor* no customer's equipment or wiring shall be permitted within the meter panel enclosure.

The panel shall be hinged on a vertical edge such that the panel can be opened at least 90° with the meters mounted. (A double offset hinged section may be required).

Meter panels shall be constructed of durable, non-conducting fire resistant material with low water absorption properties and shall not contain asbestos.

Meter Panels are required to have provision for sealing.

4.5.3 Clearances Required for *Current Transformer Metering* Panels

The clearance from the back of the meter panel to the back of the enclosure shall be a minimum of 75mm.

Where meters are enclosed, the clearance between the front of the meter panel and the back of the closed door (including any hat section) shall be not less than 175mm.

4.6. Spacing between Meters and Heavy Current Carrying Conductors

The presence of external magnetic fields from nearby heavy current carrying conductors can cause errors in meter registration. To ensure maximum accuracy of the metering installation it is necessary to take adequate precautions against the effects of external magnetic fields.

4.6.1 Grouped Conductors

There are no special requirements for spacing or shielding where the current is carried by a three phase cable or three single core cables in a trefoil formation.

4.6.2 Separated Conductors

Where conductors of a circuit are physically separated, as in spaced single core cables or busbars, meters/meter must be suitably spaced from the conductors to reduce the effect of the magnetic field.

Where spacing alone cannot be achieved, magnetic shielding of suitable thickness may be used to reduce the minimum clearance by enclosing the conductors in a mild steel pipe or duct or enclosing the meters/meter wiring within a mild steel enclosure. Stainless steel, some alloy steels, aluminium, copper and other non-ferrous metals are not suitable materials for magnetic shielding.

The minimum spacing between revenue meters/meter wiring and conductors carrying heavy currents shall be derived from TABLE 4.3 - intermediate points may be obtained by interpolation.

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TABLE 4.3

Conductor Current (A)	Min Spacing (mm)			
	No Shielding	Thickness of Shielding (mm)		
		1.2	2.5	5.0
Up to 150	100	-	-	-
400	500	375	250	125
600	700	525	350	175
1000	900	675	450	225
1500	1200	900	600	300
2000	1400	1050	700	350
3000	1700	1275	850	425
4000	2000	1500	1000	500

Note: Where the above spacing cannot be maintained within the switchboard, it is expected that the meter panel be installed remote from the switchboard. Particular care should be taken when the switchboard is constructed of aluminium or stainless steel.

Under no circumstances shall current transformer meter wiring be grouped with other conductors. Meter wiring run externally to the switchboard enclosure shall be contained within a separate conduit or cable trunking. (Refer to section 4.6.2 and 4.7.1.5).

Each individual set of current transformer meter wiring installed behind a meter panel containing multiple groups of current transformer meters, shall be grouped and separated from the other sets of current transformer meter wiring.

4.7. Current Transformer Metering Test Block

A test block supplied by the *metering provider* shall be incorporated in all installations with *current transformer metering.* (Refer to drawing QEMM 11).

The test block shall be mounted immediately below, and in the same plane as the current transformer meter, such that the voltage connection terminals are on the right hand side when viewed from the front of the test block. (Refer to drawings QEMM 10 and 12).

Connecting wiring shall be enclosed under the test block cover (surface wiring is not permitted).

4.7.1 Wiring to Current Transformers, Test Blocks etc.

4.7.1.1 The connections and colour coding shown in drawing QEMM 12 shall be the standard. Where multi-core cables are used for special site requirements (e.g. armoured cables required) the cores must be individually identified

Where single insulated grey coloured cable is not available one of the following arrangements may be used:

(a) single double insulated (SDI) cable no larger than 6mm² with grey coloured sheathing; or

(b) black single insulated conductors sleeved at both ends with not less than 300mm of grey coloured sleeving.

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4.7.1.2 All voltage and current meter wiring (other than voltage circuit fuse supply conductors referred to in section 4.4.2) shall be PVC insulated stranded cable of no more than 7 strands. No joints are permitted in these conductors.

4.7.1.3 Where 2.5mm^2 conductors are used the bare ends shall be doubled over prior to connection to the current transformers and test block to facilitate a secure connection to the terminals.

4.7.1.4 The insulation on all voltage and current meter wiring should be stripped back 15mm (30mm where doubled up 2.5mm^2 is used) to ensure terminal screws make positive contact with the bare conductor. It is essential that terminal screws are connected securely to the bare conductors and not to the insulation of the wiring.

4.7.1.5 All current transformer wiring shall be enclosed in a continuous conduit, cable trunking or earthed metal duct from the current transformer chamber to the metering enclosure.

4.7.1.6 Current transformer metering secondary wiring shall be earthed as shown in drawing QEMM 12. The earth conductor shall be connected directly to the main earth conductor or earth bar and not to a separate earthed medium such as the switchboard frame.

4.7.1.7 The earthing conductor shall be PVC insulated stranded cable of no more than 7 strands and can be 2.5mm^2 cable for all current transformer metering installations.

4.7.1.8 A meter neutral label shall be attached to the meter neutral conductor adjacent to its connection to the main neutral. (Refer to *QECM* for metering neutral conductor connection details).

4.7.1.9 Cable tails through meter panels should have a minimum length of 150mm to allow for connection into the meters. Current transformer meters will be erected and connected by the *metering provider's* personnel only.

TABLE 4.4

Rated Burden	Max Circuit Length 2.5 mm²	Max Route Length 2.5 mm²	Max Circuit Length 4mm²	Max Route Length 4 mm²	Max Circuit Length 6 mm²	Max Route Length 6 mm²
5 VA	15m	7.5m	25m	12.5m	36m	18m
15 VA	45m	22.5m	80m	40m	—	—
Note: 200/5 ratio CTs are supplied with a rated burden of 5 VA 800/5 and 1500/5 ratio CTs are supplied with a rated burden of 15 VA.						

4.7.1.10 All *current transformer metering*, wiring and installations are to be completed in accordance with the wiring diagrams in this manual.

4.7.1.11 To ensure compliance of the current transformer metering, contractors should use the Electrical Contractor's LV CT Metering Check Sheet. This form can be changed to include the contractor's logo and be part of the contractor's quality system. Additional checks can be included if considered necessary.

4.7.2 Changes to Existing Current Transformer Metering Installations

When all or part of the existing metering installation requires changing (e.g. upgrading of a switchboard, change to the type of supply), it is a requirement the total metering installation, including current transformers, to be upgraded to comply with the requirements of this manual, the *QECM* and the *National Electricity Rules*.

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Electrical Contractor's LV CT Metering Check Sheet			
Address Where CT Metering Installed: **National Metering Identifier (NMI) (If known):**			
Details of Electrical Mechanic Responsible for Testing of CT Installation: **Name: Licence No:**			
Pre-commissioning Checks			
Clause No.	**Checklist**	**Checked**	**Comments**
	Switchboard/CT Chamber		
2.6.2	Lockable isolator on line side of CTs:		
4.3.1	Dedicated CT chamber provided:		
4.3.2	CT chamber correctly labelled:		
4.3.4	Removable CT chamber cover fitted with 2 handles:		
	Current Transformers		
4.2	CT ratio matches expected load:		
4.3.3	No exposed live parts within CT chamber:		
4.4.1	Primary and secondary polarity is correct:		
4.4.1	Removable bus bars allow CTs to be easily replaced:		
4.4.1	CT secondary terminals are accessible:		
	Voltage Circuit Fuses		
4.4.2	Fuses carriers are accessible and easily removable:		
4.4.2	Fuses are connected to the line side of the CTs:		
4.4.2	Cables from bus bars to fuses are ≤ 500mm and a minimum. of 10mm^2 SDI:		
4.4.2	Correct marking of cables from bus bars to fuses (e.g. trace or bell out cables):		
	Meter Neutral & Earthing		
AS/NZS 3000	Test continuity to confirm that cabinets are earthed:		
4.7.1.8	Meter neutral is connected to main neutral and meter neutral label is attached:		
	Meter Panel Wiring & Test Block		
QECM	Meter panel located in suitable location		
QECM	Meter panel size is minimum 600 x 600mm (or 460 x 600mm for single tariff CT installation):		
QECM	Meters are mounted at correct height:		
4.5.2	Meter panel is hinged:		
QECM	Meters and wiring spaced from heavy current carrying conductors:		
4.7	Test block is mounted correctly:		
4.7.1.1	Colour coding is correct:		
4.7.1.2	Meter wiring is correct size for circuit length:		
4.7.1.6	Secondary returns are starred and earthed:		
	Sealing		
2.5	CT chamber, voltage circuit fuses and meter panel are sealable:		

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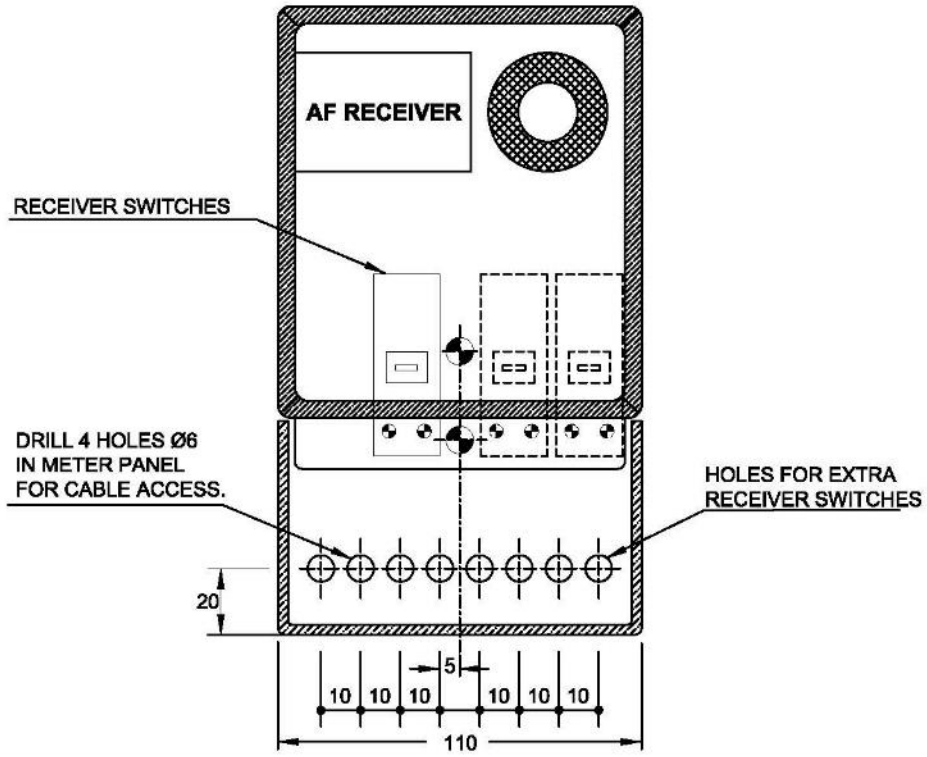

Revision: B	DRILLING DETAILS FOR CABLE ACCESS AF RECEIVER	QEMM 01

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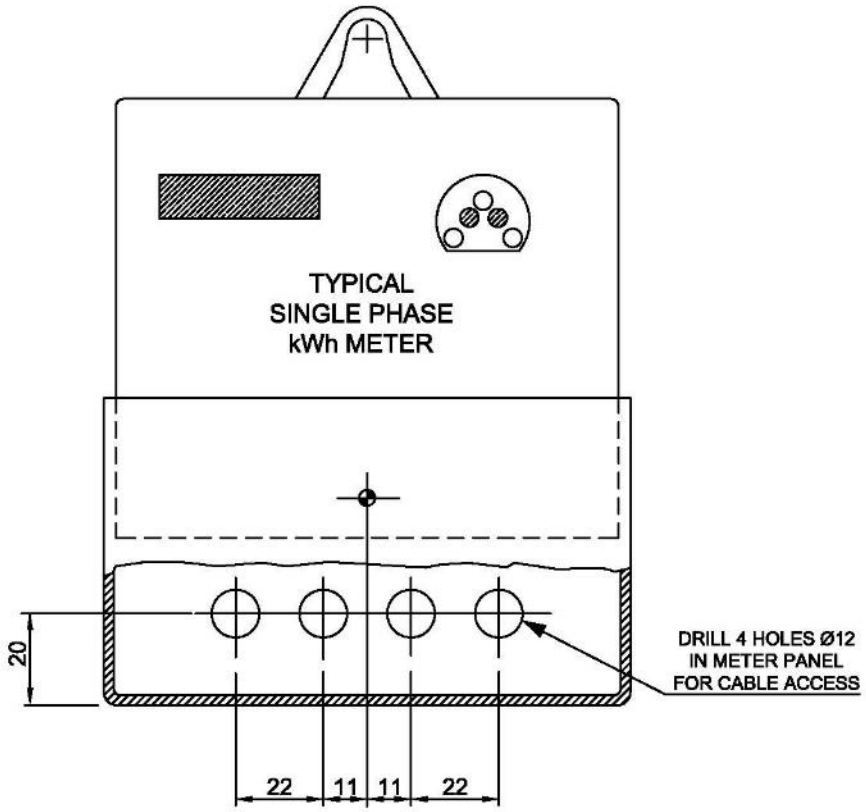

Revision:		
B	DRILLING DETAILS FOR CABLE ACCESS SINGLE PHASE kWh METER	QEMM 02

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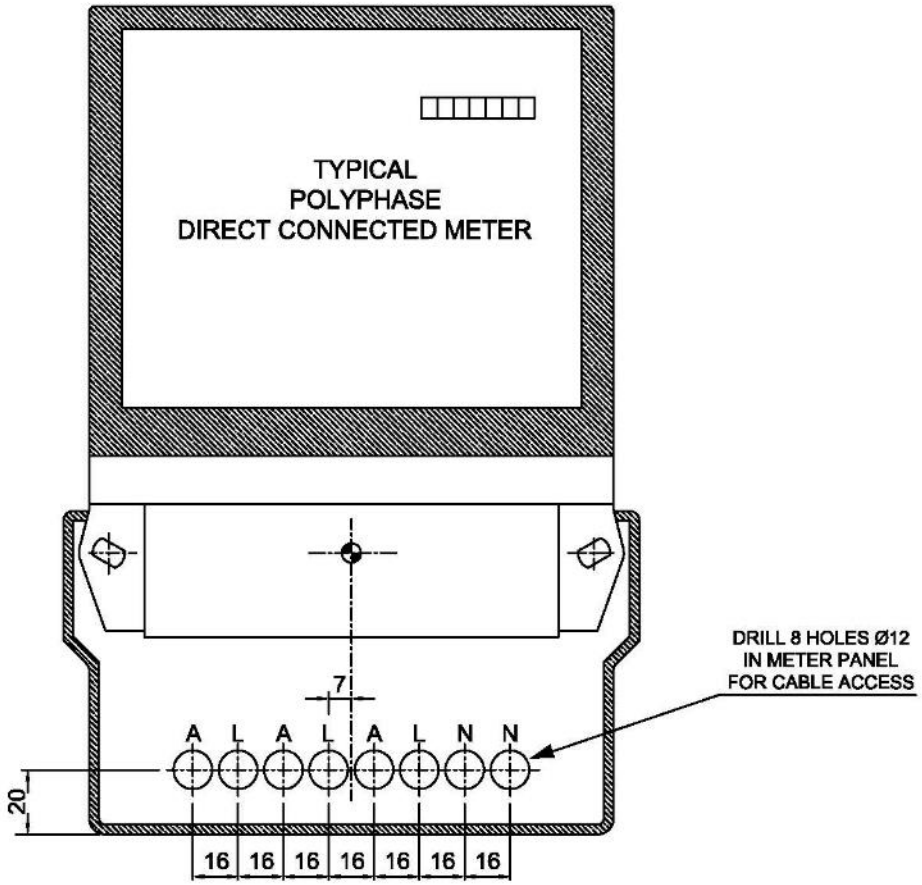
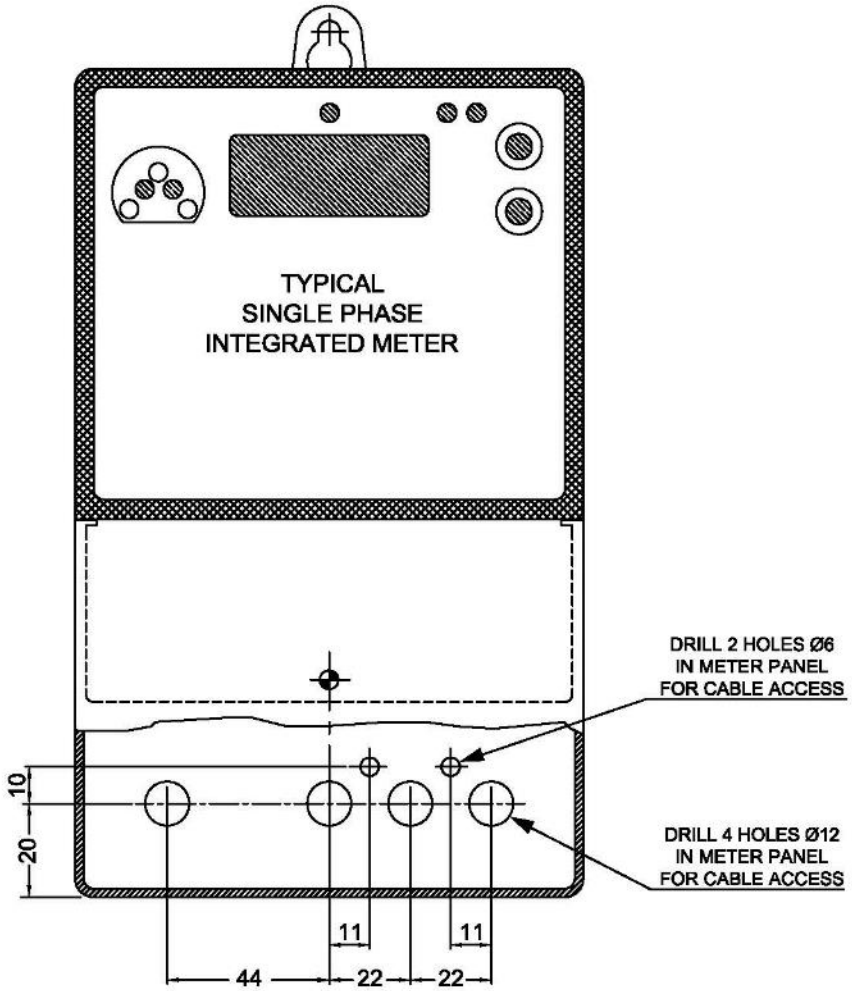


Revision:		
B	DRILLING DETAILS FOR CABLE ACCESS POLYPHASE DIRECT CONNECTED kWh METER	QEMM 03



Revision:	DRILLING DETAILS FOR CABLE ACCESS SINGLE PHASE kWh METER (INTEGRATED)	QEMM 04
B		

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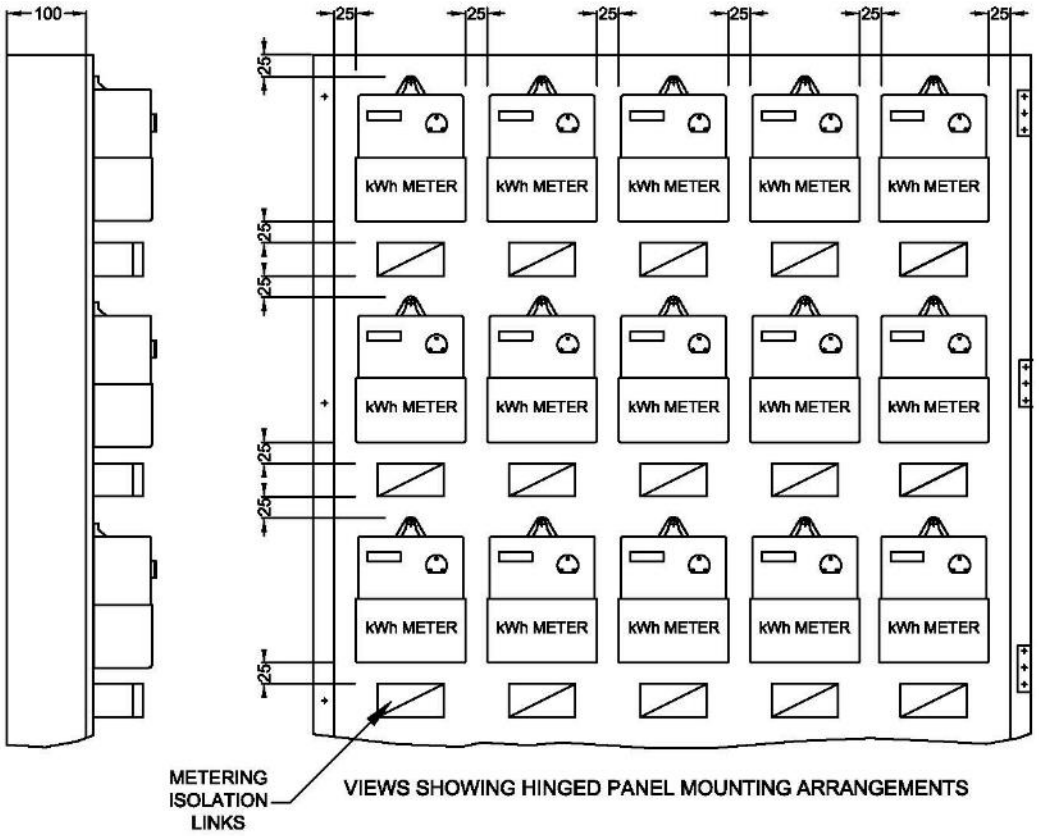
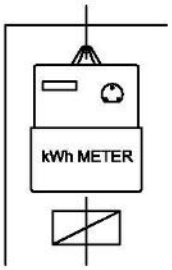


VIEWS SHOWING HINGED PANEL MOUNTING ARRANGEMENTS



(HINGED FRAME FOR INTERNAL USE)

NOTES:
1. ADDITIONAL BRACING MAY BE REQUIRED TO PROVIDE SUFFICIENT STRUCTURAL SUPPORT WHEN PANEL IS OPENED.
2. PANELS ARE TO BE BACK WIRED ONLY.
3. USE ONLY APPROVED METERING ISOLATION LINKS.
4. REFER TO TABLE 3.1 FOR MINIMUM METER SPACE REQUIREMENTS
5. PANEL IS TO BE FITTED WITH SUITABLE HANDLE AT A SUITABLE LOCATION TO FACILITATE OPENING AND CLOSING.

Revision:	TYPICAL PANEL LAYOUT HINGED METER PANEL SINGLE PHASE, SINGLE SUPPLY METERS ONLY	QEMM 05
B		

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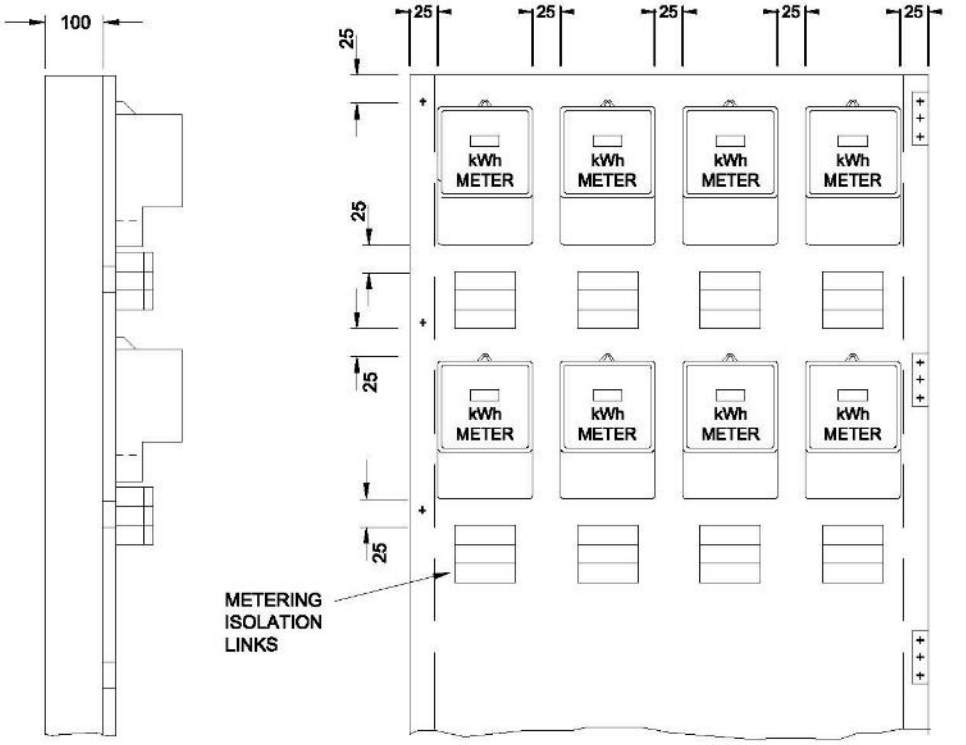
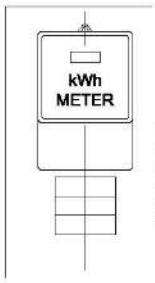


VIEWS SHOWING HINGED PANEL MOUNTING ARRANGEMENTS



NOTE:
LINKS MOUNTED HORIZONTALLY TO FACILITATE SEALING PURPOSES.

(HINGED FRAME FOR INTERNAL USE)

NOTES:
1. ADDITIONAL BRACING MAY BE REQUIRED TO PROVIDE SUFFICIENT STRUCTURAL SUPPORT WHEN PANEL IS OPENED.
2. PANELS ARE TO BE BACK WIRED ONLY.
3. USE ONLY APPROVED METERING ISOLATION LINKS.
4. REFER TO TABLE 3.1 FOR MINIMUM METER SPACE REQUIREMENTS
5. PANEL IS TO BE FITTED WITH SUITABLE HANDLE AT A SUITABLE LOCATION TO FACILITATE OPENING AND CLOSING.

Revision: B	HINGED METER PANEL ARRANGEMENT POLYPHASE METERS ONLY (BACKWIRED) TYPICAL PANEL LAYOUT	QEMM 06

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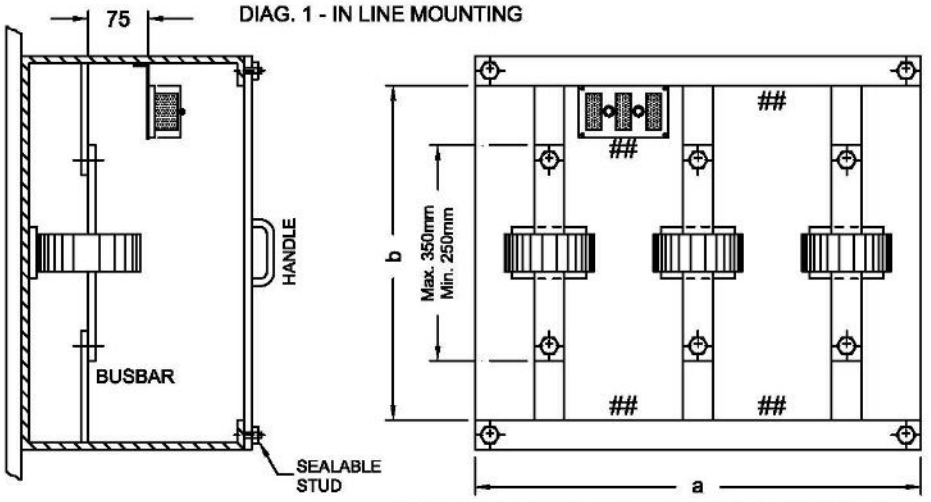
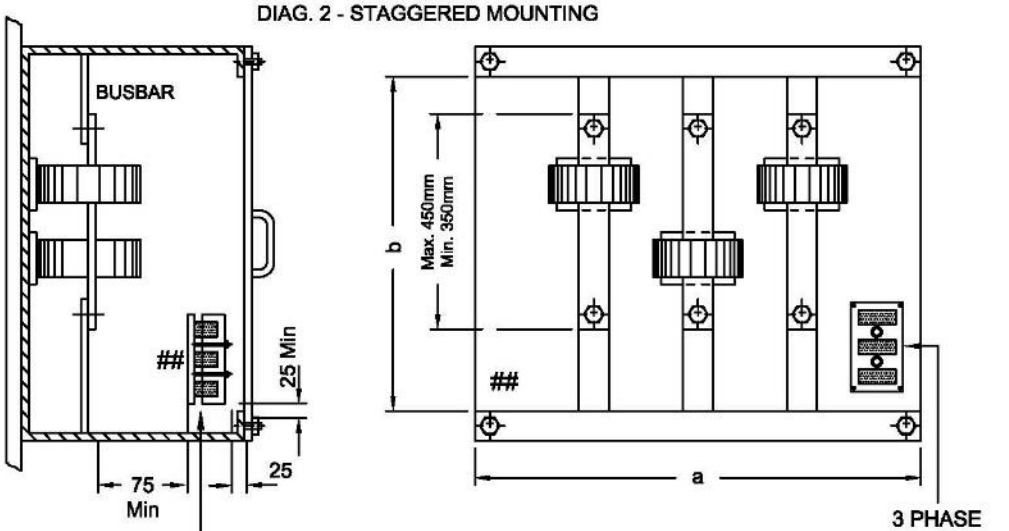
REFER TO TABLE 4.2 FOR DIMENSIONS

DIAG. 1 - IN LINE MOUNTING



FUSES MOUNTED IN THESE POSITIONS MUST ALLOW SAFE ACCESS TO BUSBAR CONNECTIONS AND FUSE CARRIERS.

DIAG. 2 - STAGGERED MOUNTING



FUSES MAY BE MOUNTED HERE ONLY IF THERE IS SUFFICIENT CLEAR SPACE IN FRONT OF FUSES TO ALLOW THE FUSE CARRIERS TO BE REMOVED, REPLACED OR SEALED SAFELY.

NOTES:
1. VOLTAGE FUSE BLOCKS MAY BE MOUNTED ON EITHER FRONT OR SIDE OF ENCLOSURE FOR EACH CT. ARRANGEMENT.
2. ALL LIVE CONDUCTORS TO BE INSULATED - BUSBAR AND CABLE BOLTED CONNECTIONS TO BE COVERED WITH NON-ADHESIVE INSULATION, ADEQUATELY SECURED IN PLACE BY CABLE TIES.

Revision: B	TYPICAL CT. CHAMBER EQUIPMENT ARRANGEMENTS SINGLE CUSTOMER INSTALLATION	QEMM 07

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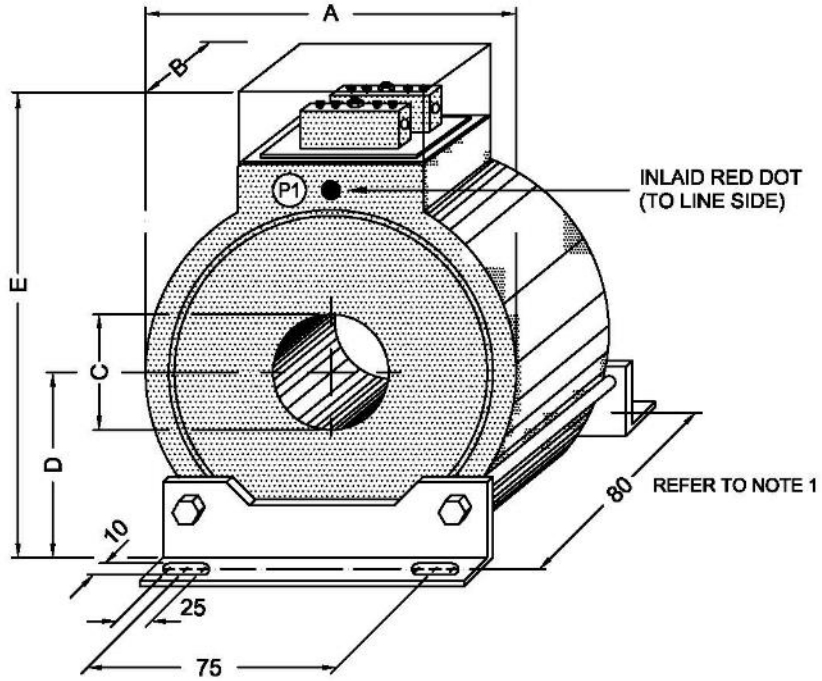
TYPICAL ENCAPSULATED
CURRENT TRANSFORMER
TYPE S, T & W.



C.T. DESIGNATION	MAX. WIDTH A	MAX. THICKNESS B	WINDOW DIAMETER C	POSITION OF WINDOW CENTRE D	MAX. HEIGHT E	CT. RATIO
S	130	70	45	65	180	200/5 0.5S ext 200%
T	165	65	80	85	210	800/5 0.5S ext 200%
W	170	65	112	85	220	1500/5 0.5S ext 200%

NOTES:
1. ERGON 200/5, 85mm DIMENSION REQUIRED

Revision: B	GENERAL DIMENSIONS METERING CURRENT TRANSFORMERS	QEMM 08

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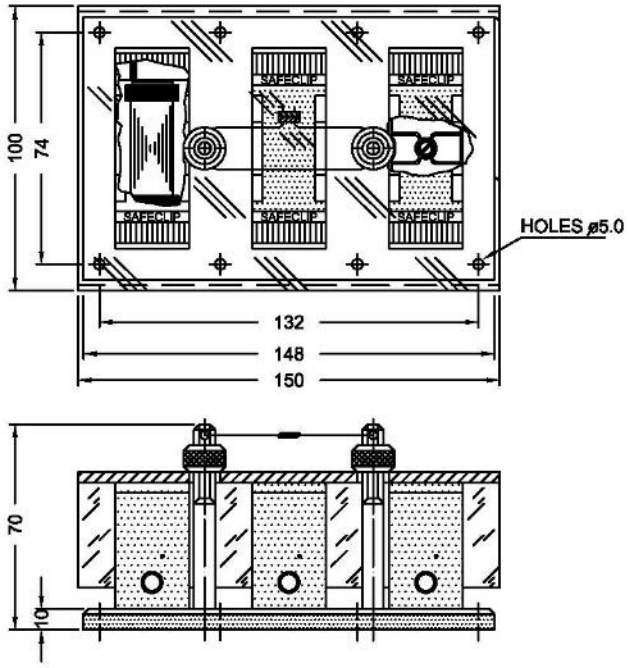
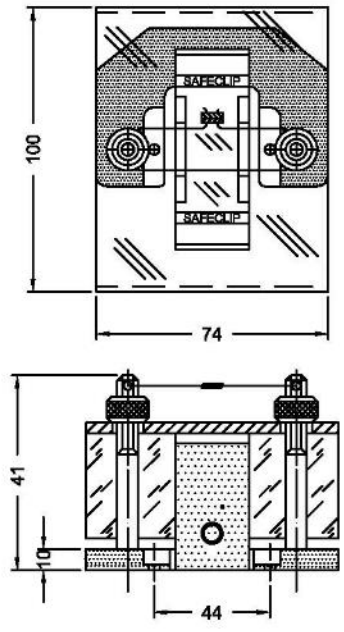
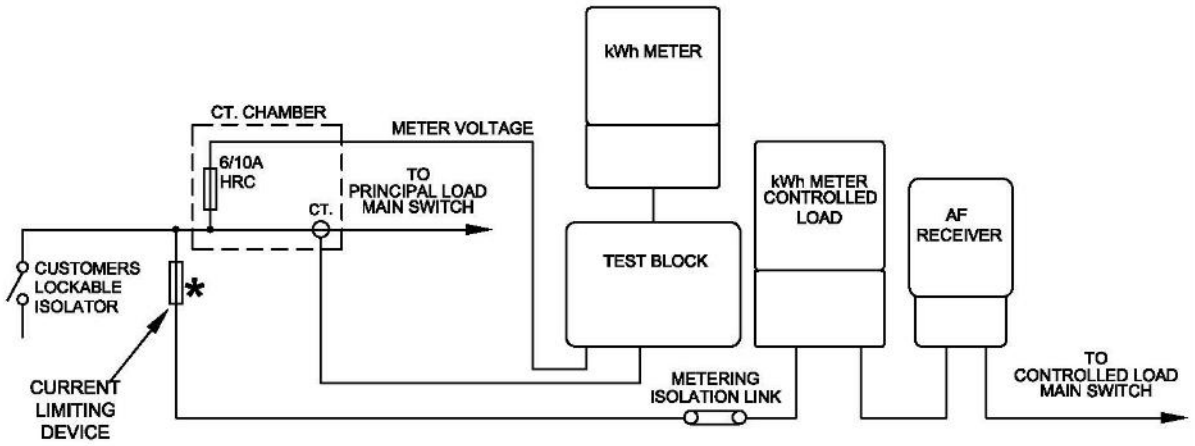
3Ø FUSE SEALING BLOCK



SINGLE FUSE SEALING BLOCK



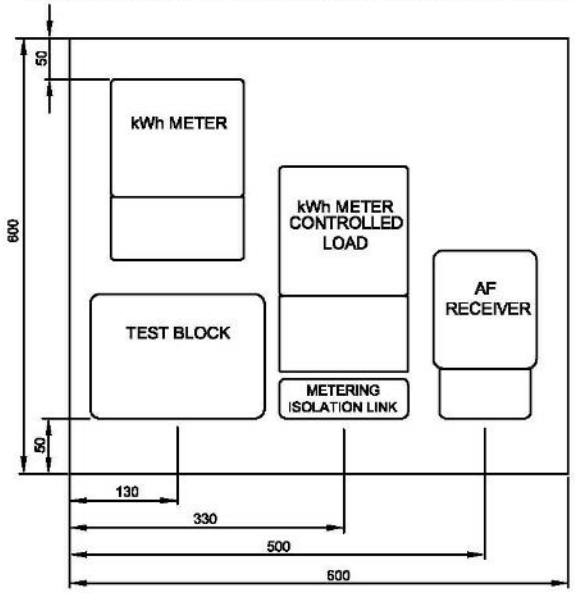
Revision:		
B	GENERAL ARRANGEMENT METERING FUSE SEALING BLOCKS	QEMM 09



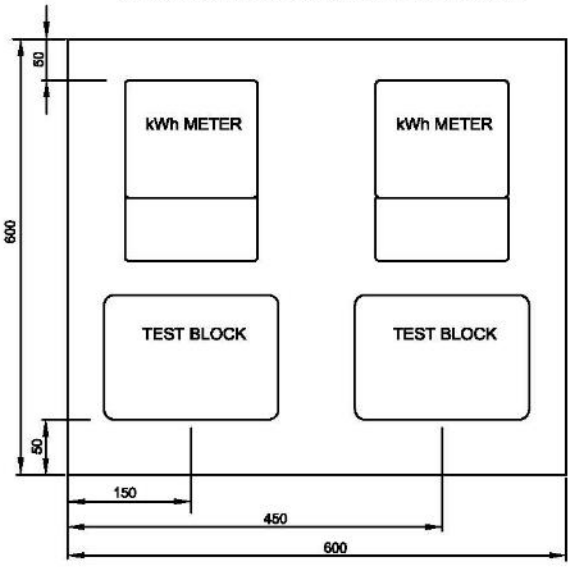
NOTES:

1. * CURRENT LIMITING DEVICES FOR THE PROTECTION OF WHOLE CURRENT METERING CIRCUITS SHALL COMPLY WITH AS/NZS 3000 AND IN NO CASE SHALL BE RATED GREATER THAN A 100A HRC FUSE OR EQUIVALENT.
2. THE METERING PROVIDER MAY USE AN INTEGRATED METER IN PLACE OF THE SEPARATE CONTROLLED LOAD METER AND AF RECEIVER.

TYPICAL LAYOUT OF A CURRENT TRANSFORMER OPERATED METER PANEL INCORPORATING A DIRECT CONNECTED METER FOR A SEPARATE CONTROLLED SUPPLY.



TYPICAL LAYOUT FOR SINGLE NMI CT. METERING



NOTE:
REFER TO CLAUSE 4.5.2.

Revision: B	TYPICAL PANEL LAYOUT & SINGLE LINE DIAGRAM CT. OPERATED METER PANEL	QEMM 10

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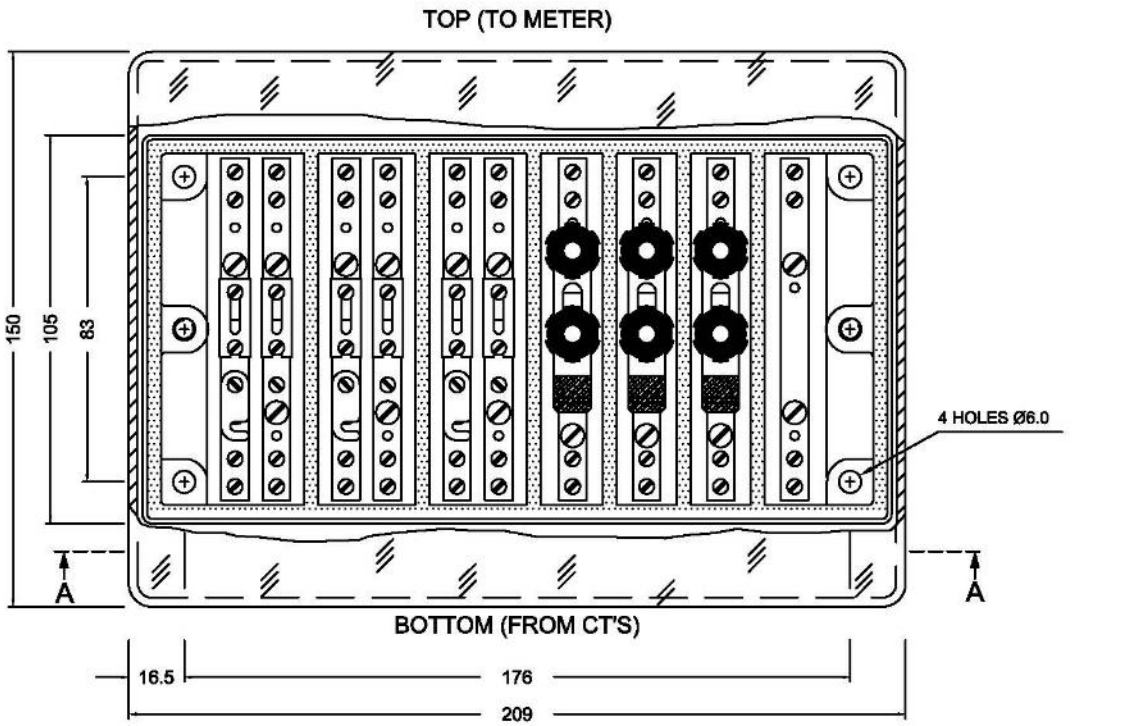

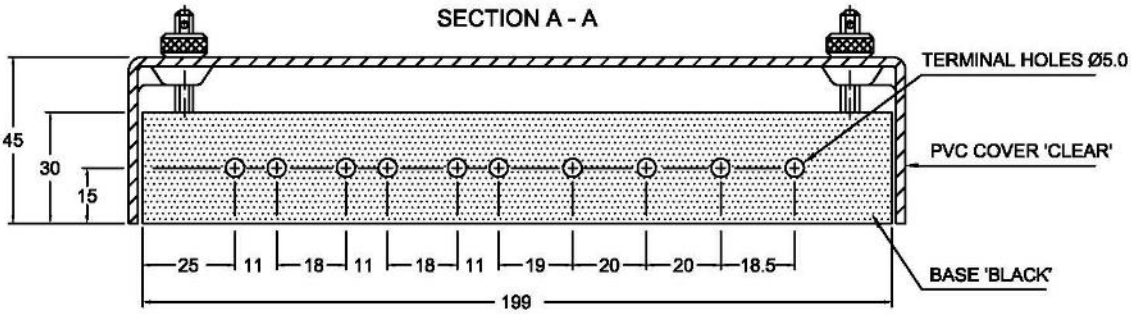

BRIDGING LINK FITTED TO TEST BLOCK
FOR EARTHING OF CURRENT RETURNS WITH C-PHASE.
RETURN CONNECTED TO EARTH.

NOTE:
TEST BLOCK MUST BE MOUNTED WITH VOLTAGE CONNECTION TERMINALS ON RIGHT HAND SIDE.

Revision:		
B	GENERAL DIMENSIONS METERING TEST BLOCK	QEMM 11

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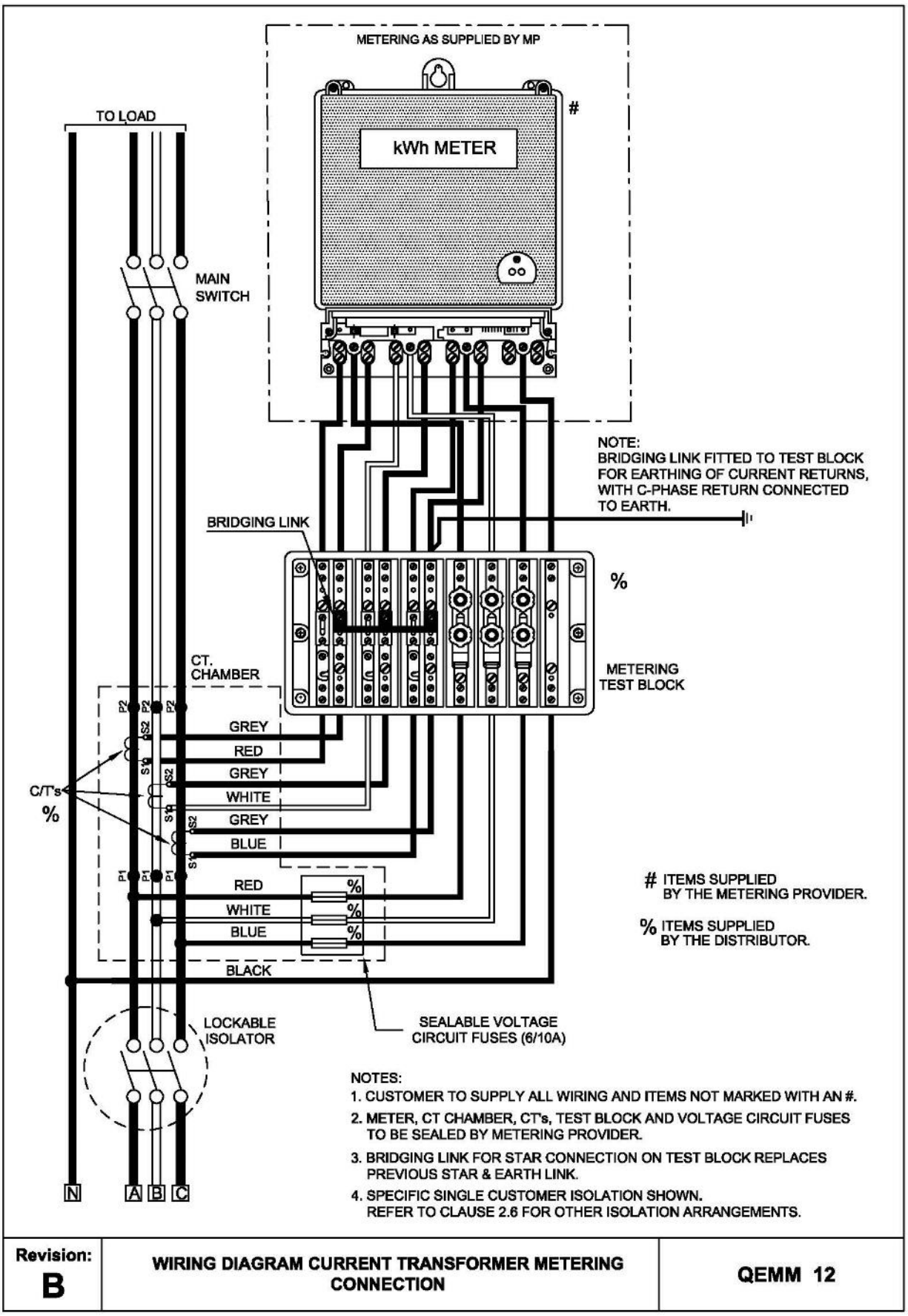

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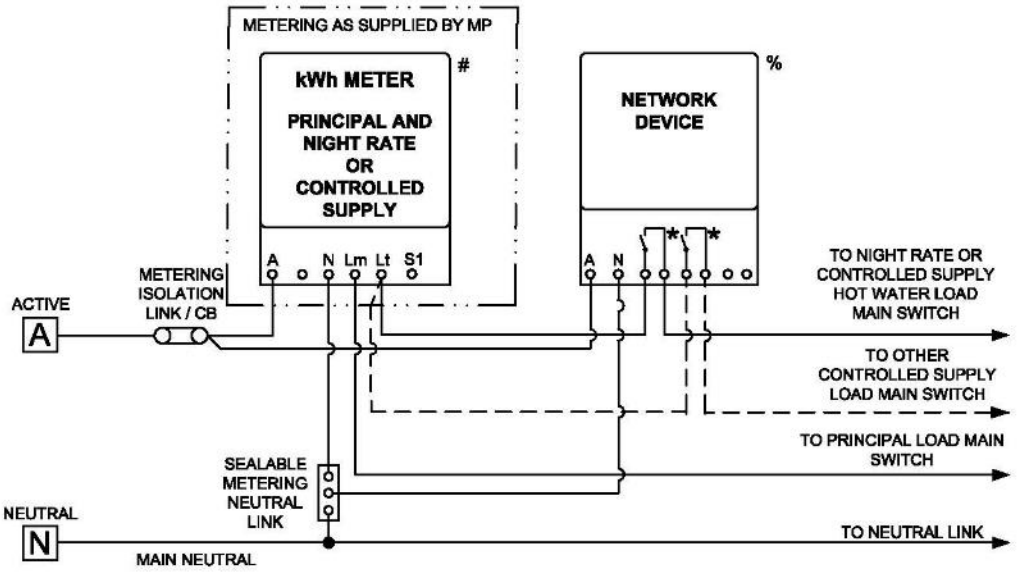

ITEMS SUPPLIED BY METERING PROVIDER.
% ITEMS SUPPLIED BY DISTRIBUTOR.
* SWITCH POSITION AND NUMBER OF SWITCHES DETERMINED BY SUPPLY AND LOAD TYPE.

NOTES:

1. ELEMENT 1 FOR PRINCIPAL SUPPLY ONLY, ELEMENT 2 FOR EITHER NIGHT RATE OR CONTROLLED SUPPLY.

2. CONTROLLED CIRCUIT ASSOCIATED WITH SECONDARY SUPPLY CONNECTED TO UNSWITCHED TERMINALOF TWO ELEMENT METER.

3. SECONDARY SUPPLY SWITCHING IS DONE BY THE NETWORK DEVICE.

4. METERING ARRANGEMENT INDICATIVE FOR PoC AREAS.

Revision:		
B	WIRING DIAGRAM - DIRECT CONNECTED METERING SINGLE PHASE PRINCIPAL SUPPLY PLUS NIGHT RATE OR CONTROLLED SUPPLY	QEMM 13

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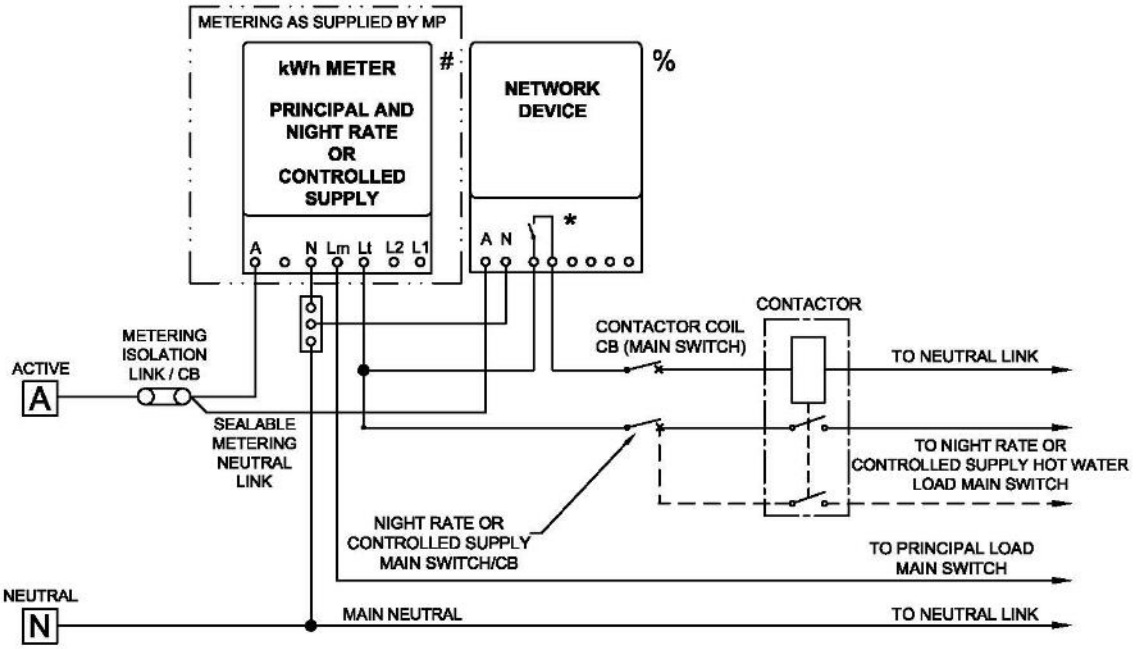

ITEMS SUPPLIED BY METERING PROVIDER.
% ITEMS SUPPLIED BY DISTRIBUTOR.
* SWITCH POSITION AND NUMBER OF SWITCHES DETERMINED BY SUPPLY AND LOAD TYPE.

NOTES:

1. ELEMENT 1 FOR PRINCIPAL SUPPLY ONLY, ELEMENT 2 FOR EITHER NIGHT RATE OR CONTROLLED SUPPLY.

2. CONTROLLED CIRCUIT ASSOCIATED WITH SECONDARY SUPPLY CONNECTED TO UNSWITCHED METER TERMINAL OF TWO ELEMENT METER.

3. SECONDARY SUPPLY CONTACTOR CONTROLLED BY THE NETWORK DEVICE

4. METERING ARRANGEMENT INDICATIVE FOR PoC AREAS.

Revision: B	WIRING DIAGRAM - DIRECT CONNECTED METERING SINGLE PHASE PRINCIPAL SUPPLY PLUS NIGHT RATE OR CONTROLLED SUPPLY WITH CONTACTOR	QEMM 14

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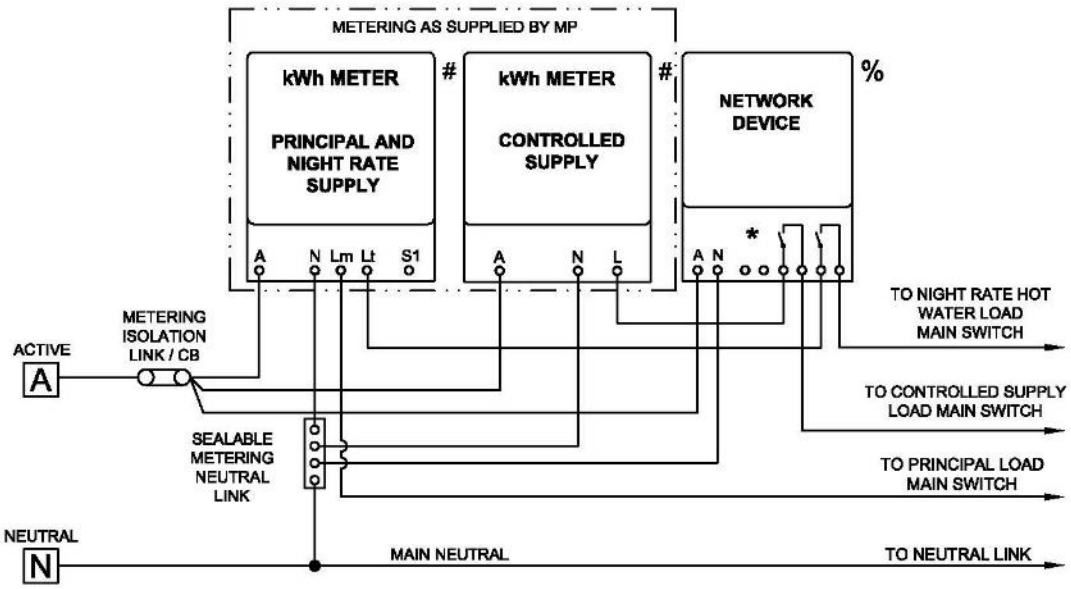

ITEMS SUPPLIED BY METERING PROVIDER.

% ITEMS SUPPLIED BY DISTRIBUTOR.

* SWITCH POSITION AND NUMBER OF SWITCHES DETERMINED BY SUPPLY AND LOAD TYPE.

NOTES:

1. ELEMENT 1 FOR PRINCIPAL SUPPLY ONLY, ELEMENT 2 FOR EITHER NIGHT RATE OR CONTROLLED SUPPLY.

2. CONTROLLED CIRCUIT ASSOCIATED WITH NIGHT RATE SUPPLY CONNECTED TO UNSWITCHED TERMINAL OF TWO ELEMENT METER.

3. SECONDARY SUPPLY SWITCHING IS DONE BY THE NETWORK DEVICE.

4. METERING ARRANGEMENT INDICATIVE FOR PoC AREAS.

Revision: B	WIRING DIAGRAM - DIRECT CONNECTED METERING SINGLE PHASE PRINCIPAL SUPPLY PLUS NIGHT RATE AND CONTROLLED SUPPLIES	QEMM 15

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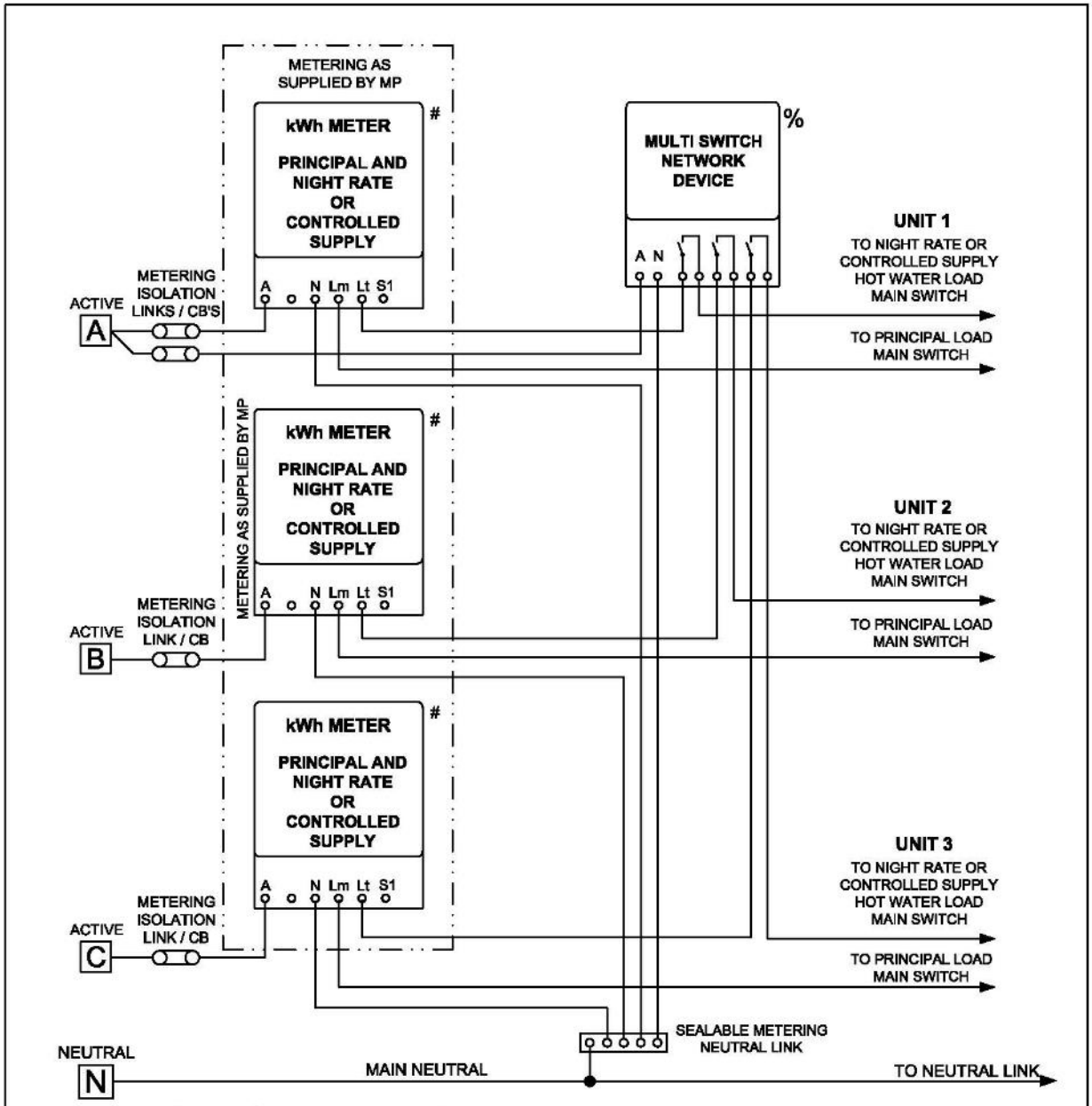

NOTES:

1. TERMINAL CONNECTIONS TO BE MADE ACCORDING TO THE TYPE OF NETWORK DEVICE.
2. WHERE POSSIBLE THE INDIVIDUAL SWITCHES OF EACH MULTI SWITCH NETWORK DEVICE SHOULD BE CONNECTED TO THE SAME PHASE.
3. INSTALL APPROVED BACK WIRED METERING ISOLATION LINKS.
   NOTE: WHERE METER NOT INSTALLED REMOVE SOLID LINK TO ENSURE NO EXPOSED LIVE TAILS.
4. WHERE THE SERVICE FUSES ARE 100 AMPS OR GREATER, THE METERING PROVIDER CAN REPLACE THE METERING ISOLATION LINKS WITH 80 OR 100A HRC FUSE CARTRIDGES AS REQUIRED.
5. AN INSTALLATION ISOLATOR OR LOCKABLE CB MAIN SWITCH IS REQUIRED ON THE LINE SIDE OF THE METERING. REFER TO QECM AND DRAWING QEMM 11
6. METERING ARRANGEMENT INDICATIVE FOR POC AREAS.

Revision:		
B	WIRING DIAGRAM - DIRECT CONNECTED METERING SINGLE PHASE PRINCIPAL SUPPLY PLUS NIGHT RATE OR CONTROLLED SUPPLY MULTIPLE INSTALLATIONS	QEMM 16

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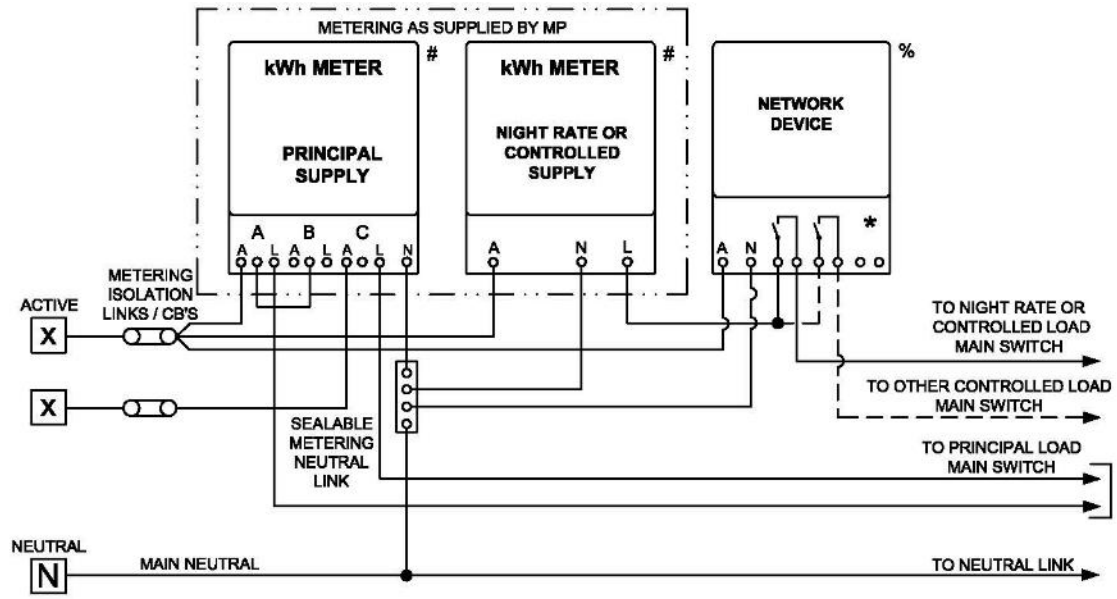

ITEMS SUPPLIED BY METERING PROVIDER.
% ITEMS SUPPLIED BY DISTRIBUTOR.
✱ SWITCH POSITION AND NUMBER OF SWITCHES DETERMINED BY SUPPLY AND LOAD TYPE.

NOTES:
1. METERING ARRANGEMENT INDICATIVE FOR PoC AREAS.

Revision: B	WIRING DIAGRAM - DIRECT CONNECTED METERING TWO PHASE PRINCIPAL SUPPLY PLUS SINGLE PHASE NIGHT RATE OR CONTROLLED SUPPLY	QEMM 17

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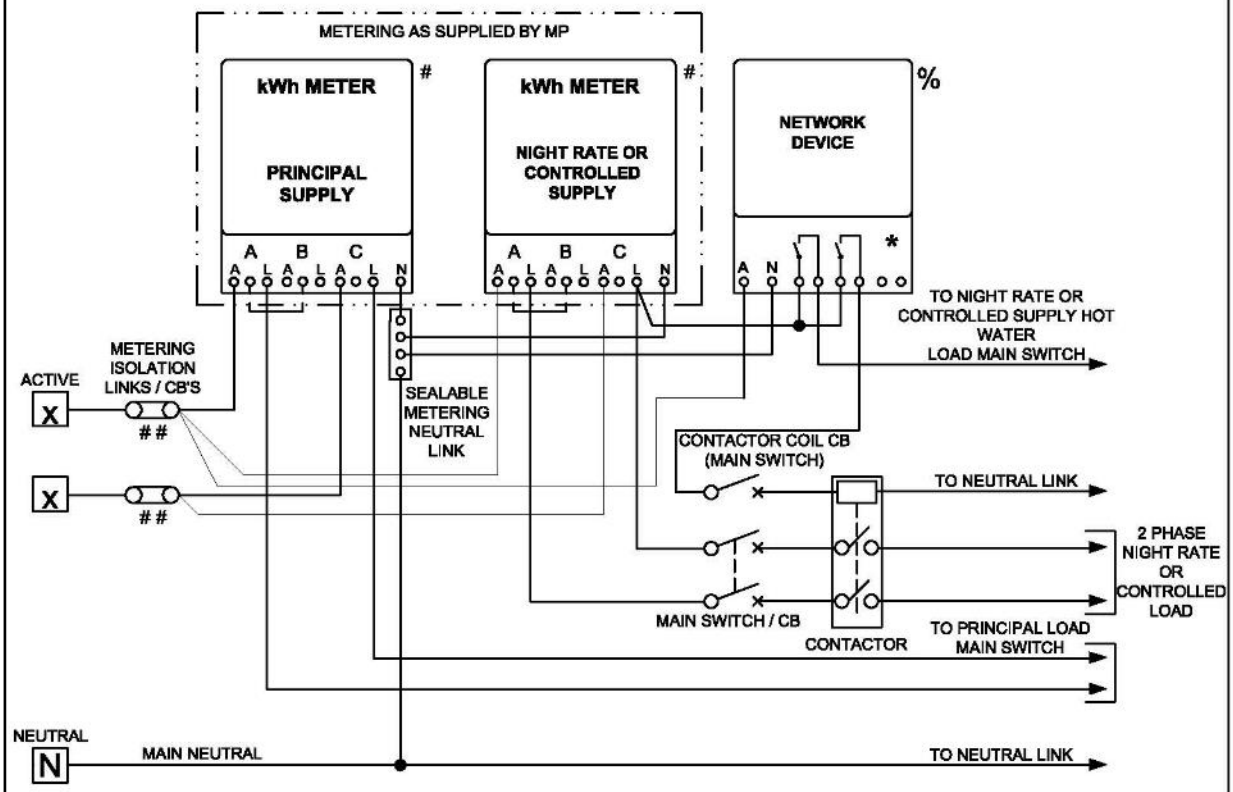

ITEMS SUPPLIED BY METERING PROVIDER.

% ITEMS SUPPLIED BY DISTRIBUTOR.

* SWITCH POSITION AND NUMBER OF SWITCHES DETERMINED BY SUPPLY AND LOAD TYPE.

NOTES:

1. ## CURRENT LIMITING DEVICES FOR THE PROTECTION OF WHOLE CURRENT METERING CIRCUITS SHALL BE NO GREATER THAN A 100A HRC FUSE OR EQUIVALENT (REFER TO QECM).
2. IF THE PRINCIPAL SUPPLY AND CONTROLLED SUPPLY LOAD EXCEED THE METERING ISOLATION LINK RATING, A SEPARATE SET OF METERING ISOLATION LINKS FOR EACH METER SHALL BE PROVIDED.
3. METERING ARRANGEMENT INDICATIVE OF PoC AREAS.

Revision:	WIRING DIAGRAM - DIRECT CONNECTED METERING TWO PHASE PRINCIPAL SUPPLY PLUS TWO PHASE NIGHT RATE OR CONTROLLED SUPPLY	QEMM 18
B		

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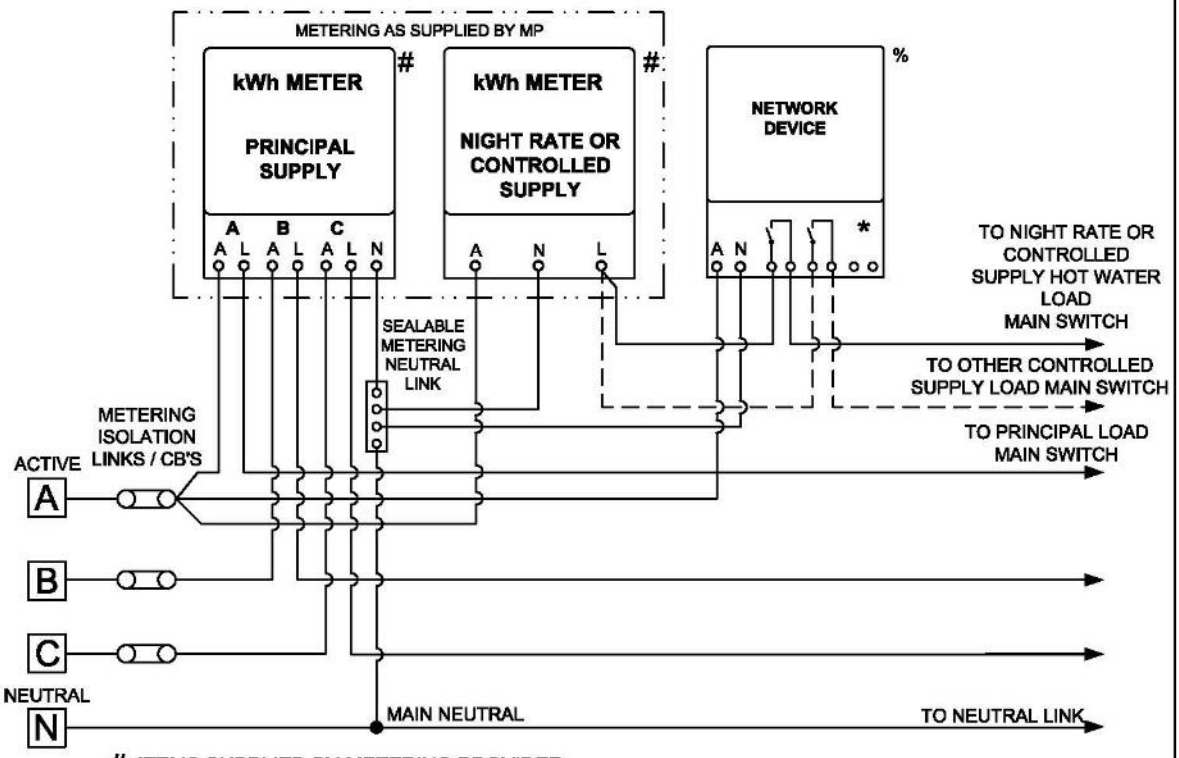

ITEMS SUPPLIED BY METERING PROVIDER.

% ITEMS SUPPLIED BY DISTRIBUTOR.

✱ SWITCH POSITION AND NUMBER OF SWITCHES DETERMINED BY SUPPLY AND LOAD TYPE.

NOTES:

1.OTHER CONTROLLED SUPPLY LOAD CANNOT BE CONNECTED IN CONJUNCTION WITH NIGHT RATE LOAD ON THE ONE METER (REFER TO DRAWING QEMM 15).

2. METERING ARRANGEMENT INDICATIVE FOR PoC AREAS.

Revision: B	WIRING DIAGRAM - DIRECT CONNECTED METERING THREE PHASE PRINCIPAL SUPPLY PLUS SINGLE PHASE NIGHT RATE OR CONTROLLED SUPPLY	QEMM 19

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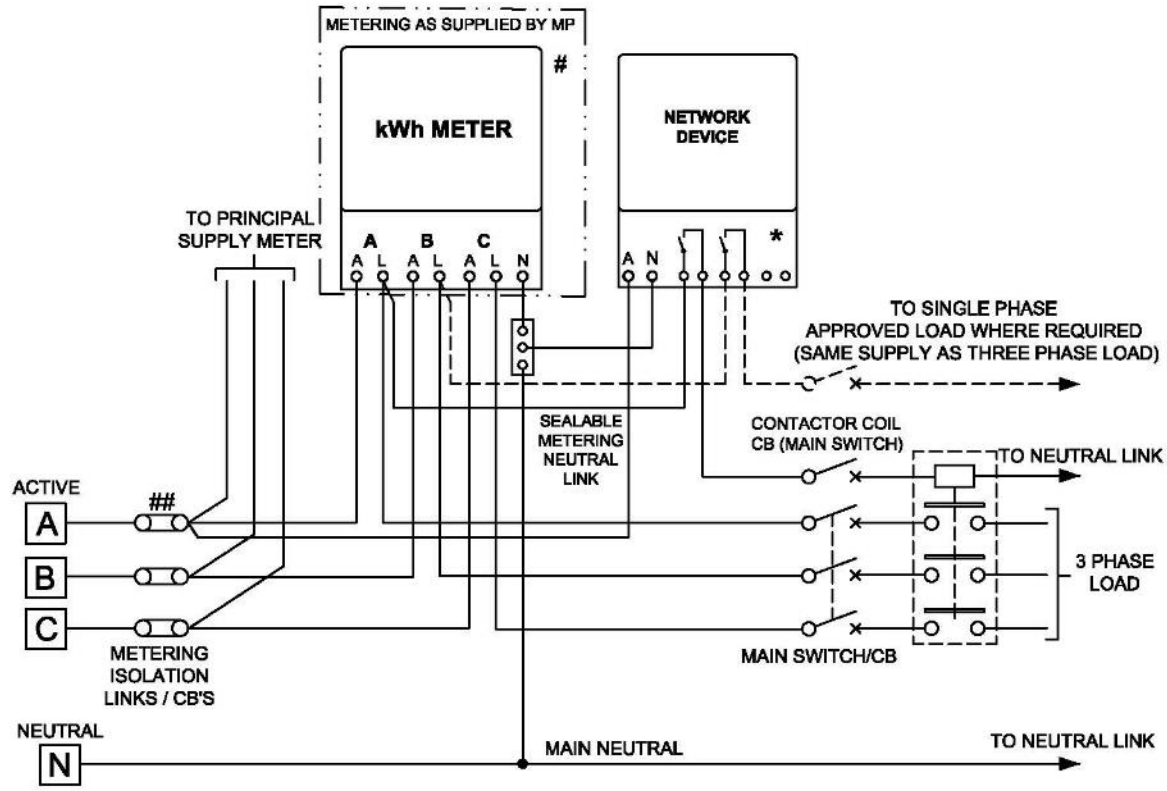

ITEMS SUPPLIED BY METERING PROVIDER.
% ITEMS SUPPLIED BY DISTRIBUTOR.
* SWITCH POSITION AND NUMBER OF SWITCHES DETERMINED BY SUPPLY AND LOAD TYPE.

NOTES:
1. TWO SWITCH NETWORK DEVICE WITH SEPARATE SUPPLY AND SWITCH CIRCUITS IS TO BE USED TO CONTROL CONTACTOR.

2. INSTALL APPROVED BACK WIRED METERING ISOLATION LINKS.
NOTE: WHERE METER NOT INSTALLED REMOVE SOLID LINKS TO ENSURE NO EXPOSED LIVE TAILS.

3. ## CURRENT LIMITING DEVICES FOR THE PROTECTION OF WHOLE CURRENT METERING CIRCUITS SHALL BE NO GREATER THAN A 100A HRC FUSE OR EQUIVALENT.

4. IF THE PRINCIPAL SUPPLY AND CONTROLLED SUPPLY LOAD EXCEED THE METERING ISOLATION LINK RATING, A SEPARATE SET OF METERING ISOLATION LINKS FOR EACH METER SHALL BE PROVIDED.

5. METERING ARRANGEMENT INDICATIVE FOR PoC AREAS.

Revision:	WIRING DIAGRAM - DIRECT CONNECTED METERING THREE PHASE PRINCIPAL SUPPLY PLUS THREE PHASE NIGHT RATE OR CONTROLLED SUPPLY	QEMM 20
B		

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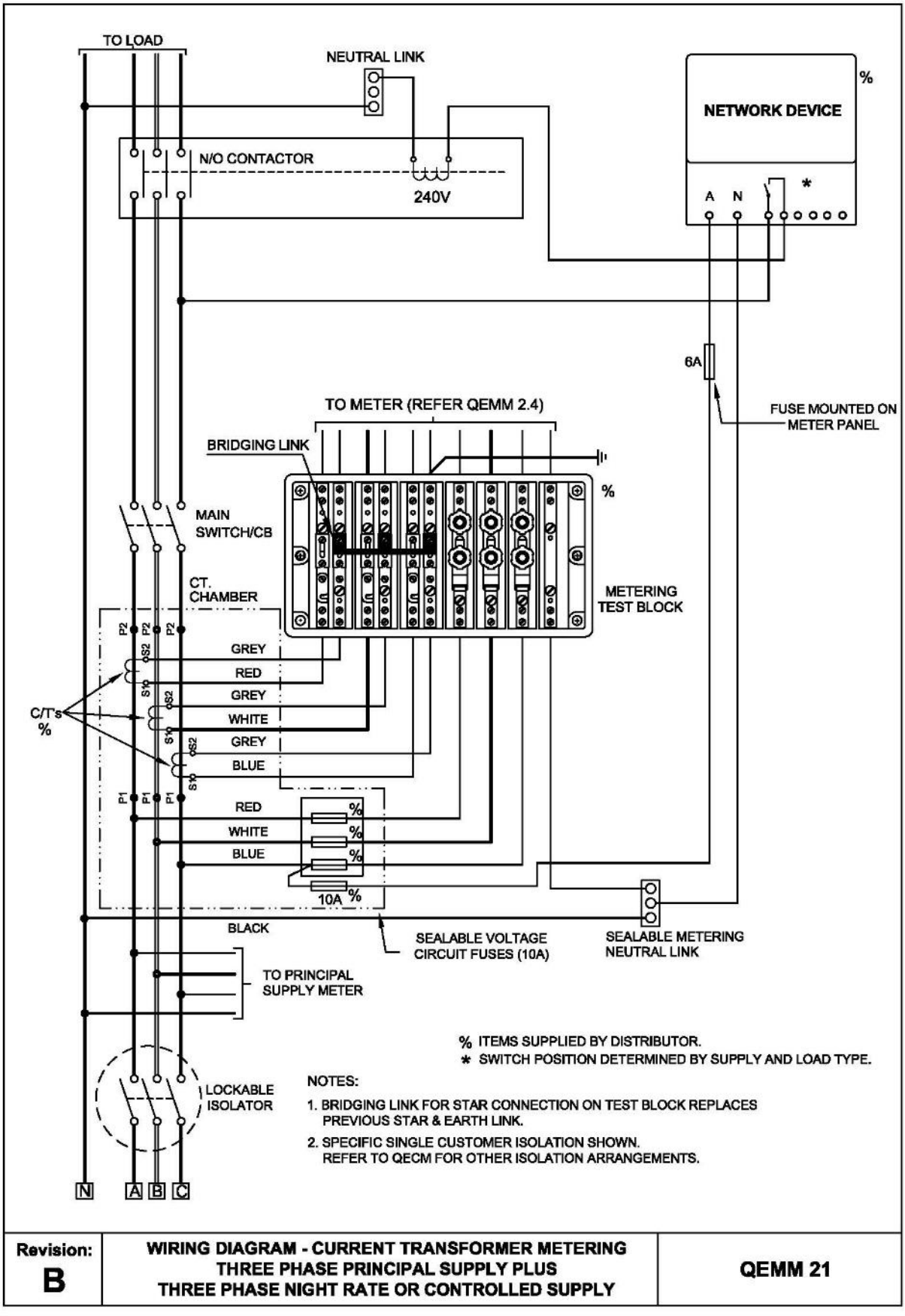

Revision:	WIRING DIAGRAM - CURRENT TRANSFORMER METERING THREE PHASE PRINCIPAL SUPPLY PLUS THREE PHASE NIGHT RATE OR CONTROLLED SUPPLY	QEMM 21
B		

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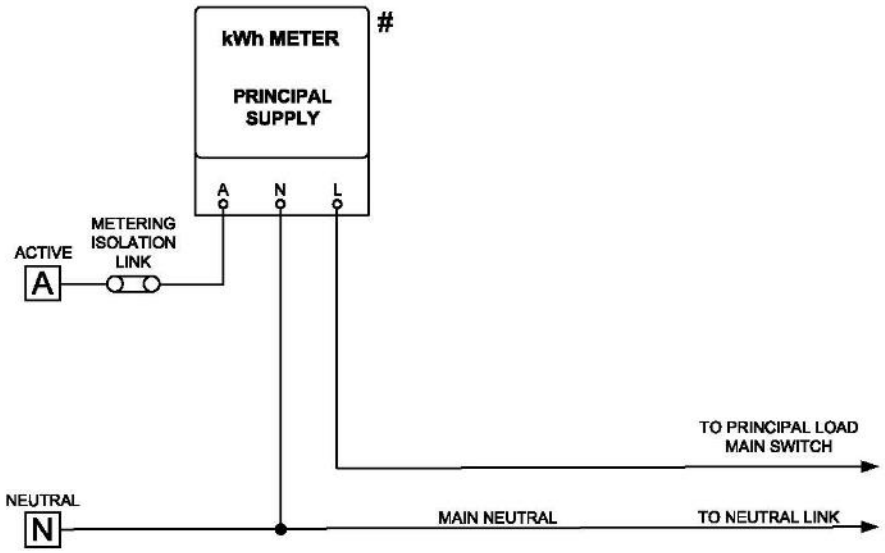

ITEMS SUPPLIED BY METERING PROVIDER.
● SOLDERED CONNECTION.

Revision: B	WIRING DIAGRAM - DIRECT CONNECTED METERING SINGLE PHASE PRINCIPAL SUPPLY ONLY	QEMM 22

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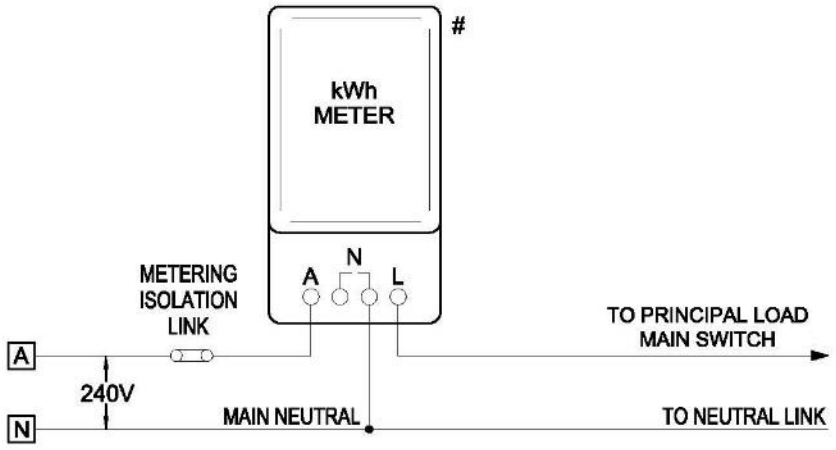
ARRANGEMENT SUITABLE FOR NET IES METERING

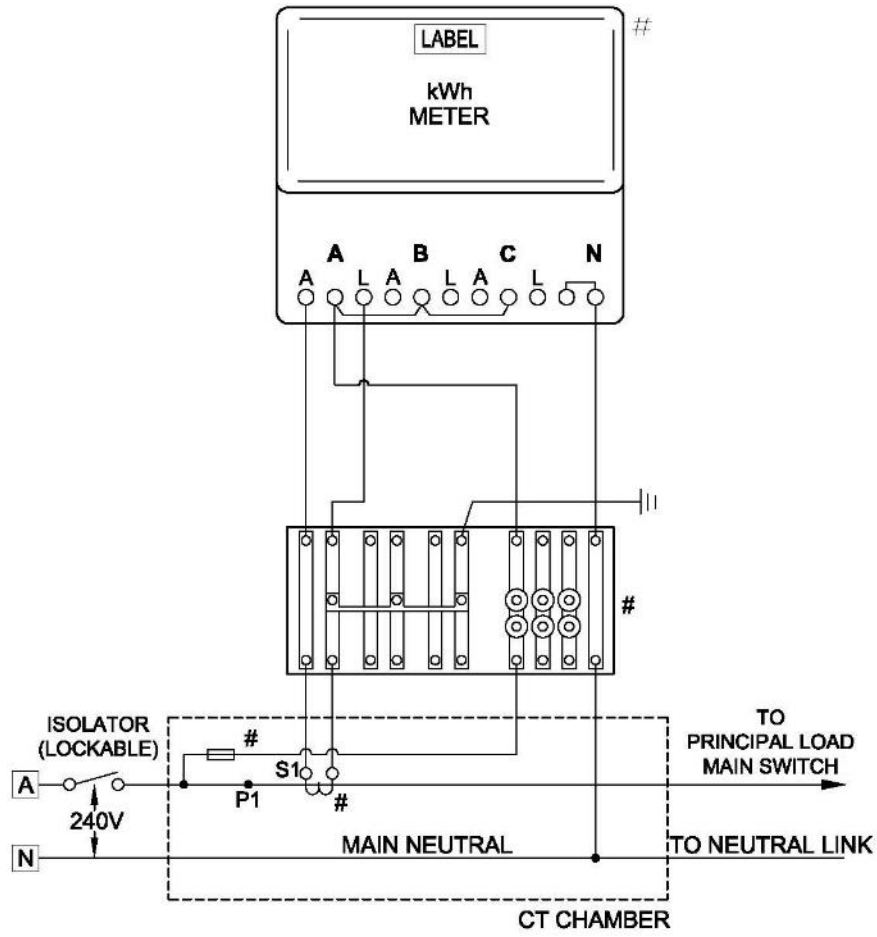


ITEMS SUPPLIED BY METERING PROVIDER

• SOLDERED CONNECTION

Revision:		
B	WIRING DIAGRAM - DIRECT CONNECTED METERING 240 VOLT SWER CONFIGURATION	QEMM 23

ARRANGEMENT SUITABLE FOR NET IES METERING



ITEMS SUPPLIED BY METERING PROVIDER

• SOLDERED CONNECTION

NOTES

1. CT'S TO BE CONNECTED TO 'A' PHASE TERMINALS OF POLYPHASE CT METER.
2. 'B' & 'C' PHASE VOLTAGE TERMINAL OF METER TO BE BRIDGED TO 'A' PHASE VOLTAGE TERMINAL - ERGON ENERGY ONLY.

Revision: B	WIRING DIAGRAM - CURRENT TRANSFORMER METERING 240 VOLT SWER CONFIGURATION	QEMM 24

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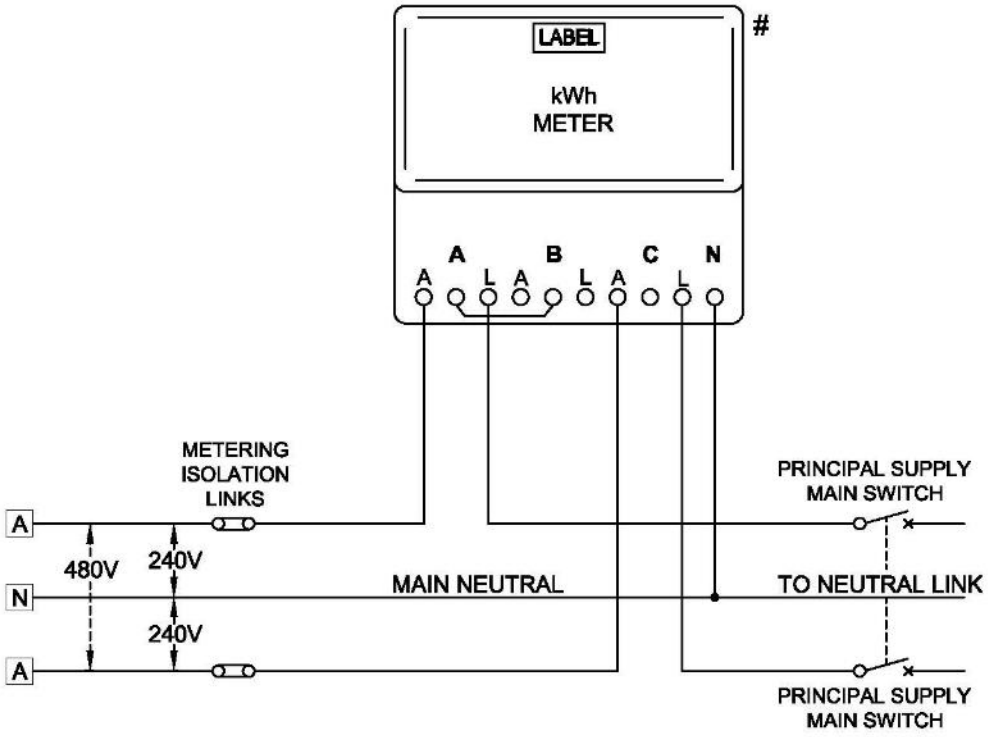
ERGON ENERGY ONLY

ARRANGEMENT SUITABLE FOR NET IES METERING



ITEMS SUPPLIED BY METERING PROVIDER.

• SOLDERED CONNECTION

NOTES:

1. 'B' PHASE VOLTAGE TERMINAL OF METER TO BE BRIDGED TO 'A' PHASE VOLTAGE TERMINAL - ERGON ENERGY ONLY.
2. FOR IES/SOLAR SCHEME APPLICATIONS A BI-DIRECTIONAL METER IS REQUIRED TO RECORD IMPORT/EXPORT ENERGY
3. 480V SUPPLY IS NOT AVAILABLE WITHIN THE ENERGEX DISTRIBUTION AREA.

Revision: B	WIRING DIAGRAM - DIRECT CONNECTED METERING 480 VOLT SWER CONFIGURATION	QEMM 26

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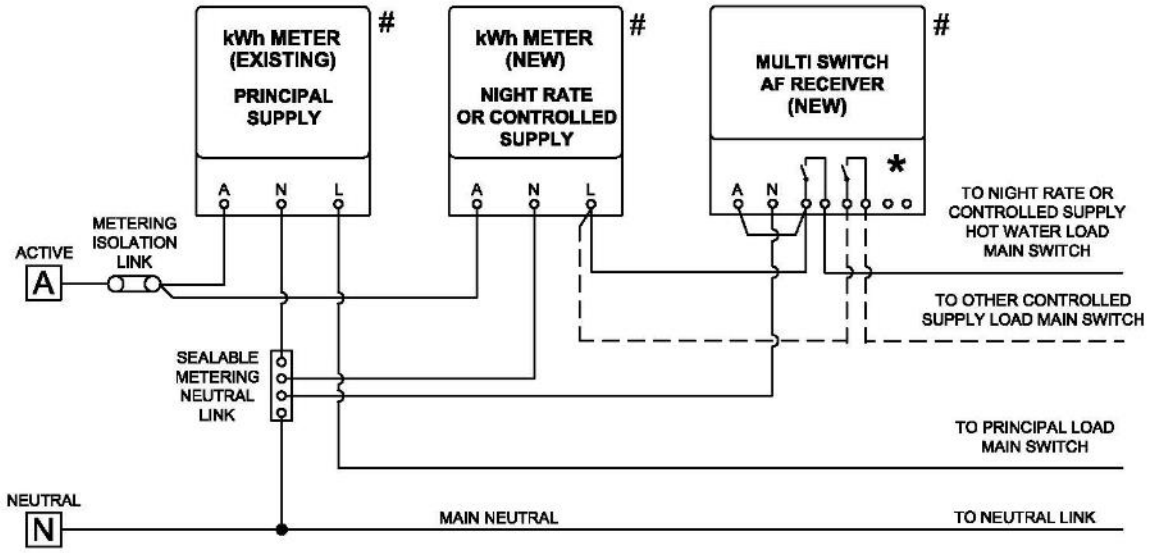
ADDITIONS AND ALTERATIONS ONLY

INCLUDES LOAD, OTHER THAN WATER HEATING LOAD, WHERE THE RESISTIVE LOAD DOES NOT EXCEED 30A OR WHERE RESISTIVE AND INDUCTIVE LOAD DOES NOT EXCEED 20A



\# ITEMS SUPPLIED BY METERING PROVIDER.

* SWITCH POSITION DETERMINED BY SUPPLY AND LOAD TYPE.

● SOLDERED CONNECTION.

NOTES:

1. FOR CONTROLLED SUPPLY LOADS, WHERE RESISTIVE LOAD EXCEEDS 30A OR WHERE RESISTIVE AND INDUCTIVE LOAD EXCEEDS 20A, A CONTACTOR SHALL BE USED. SEE DRAWING QEMM 34.
2. APPLIANCES CONNECTED TO THE CONTROLLED LOAD CIRCUITS MUST BE PERMANENTLY CONNECTED, AND FOR APPLIANCES SUCH AS DISHWASHERS THE INSTALLATION OF AN ISOLATING SWITCH WITH NEON INDICATOR IS RECOMMENDED.
3. OTHER CONTROLLED SUPPLY LOAD CANNOT BE CONNECTED IN CONJUNCTION WITH NIGHT RATE LOAD ON THE ONE METER (REFER TO DRAWING QEMM 32).

Revision:		
B	WIRING DIAGRAM - DIRECT CONNECTED METERING SINGLE PHASE PRINCIPAL SUPPLY PLUS NIGHT RATE OR CONTROLLED SUPPLY (ADDITIONS AND ALTERATIONS ONLY)	QEMM 27

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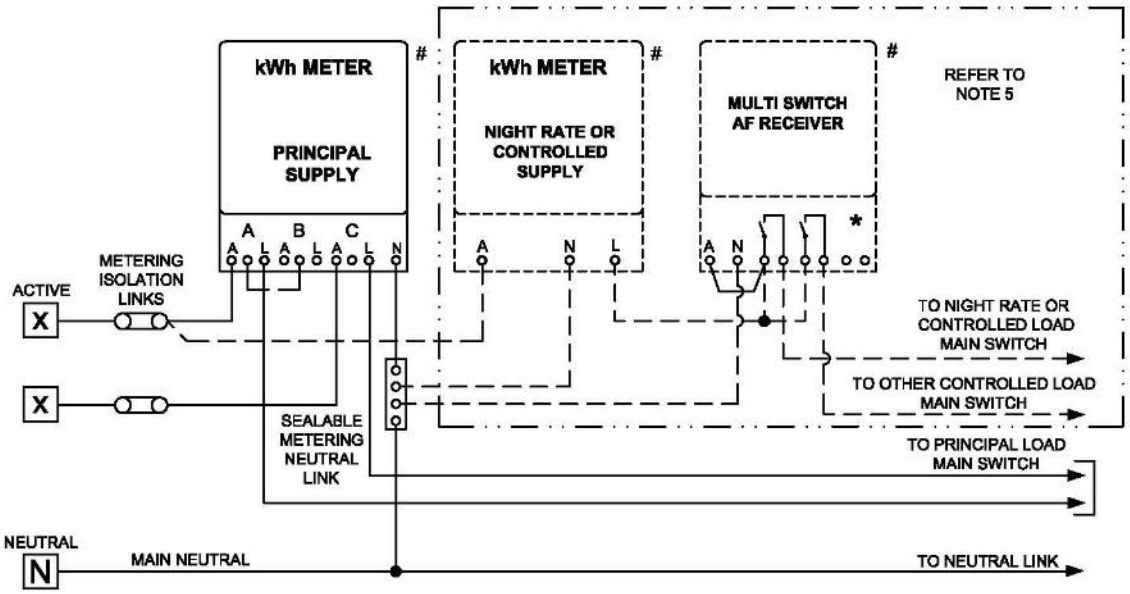
TWO PHASE SUPPLY/SERVICE
WITH OPTIONAL LOAD CONTROL



ITEMS SUPPLIED BY METERING PROVIDER.
* SWITCH POSITION DETERMINED BY SUPPLY AND LOAD TYPE.
● SOLDERED CONNECTION.

NOTES:

1. FOR CONTROLLED SUPPLY LOADS, WHERE RESISTIVE LOAD EXCEEDS 30A OR RESISTIVE AND INDUCTIVE LOAD EXCEEDS 20A, A CONTACTOR SHALL BE USED. SEE DRAWING QEMM 34

2. 'A' PHASE VOLTAGE TERMINAL OF METER TO BE BRIDGED TO 'B' PHASE VOLTAGE TERMINAL -ERGON ENERGY ONLY.

3. TWO PHASE SUPPLY CONNECTED TO 'A' AND 'C' PHASE TERMINALS OF POLYPHASE METER.

4. IN NON-RIPPLE CONTROL AREAS, THE SINGLE kWh METER/AF RECEIVER COMBINATION TO BE REPLACED WITH A 2 ELEMENT METER. SEE DRAWING QEMM 29.

5. DOTTED LINES INDICATE VARIOUS CONTROL OPTIONS.

Revision:		
B	WIRING DIAGRAM - NET METERING SCHEMES TWO PHASE SERVICE PRINCIPAL SUPPLY PLUS OPTIONAL LOAD CONTROL	QEMM 28

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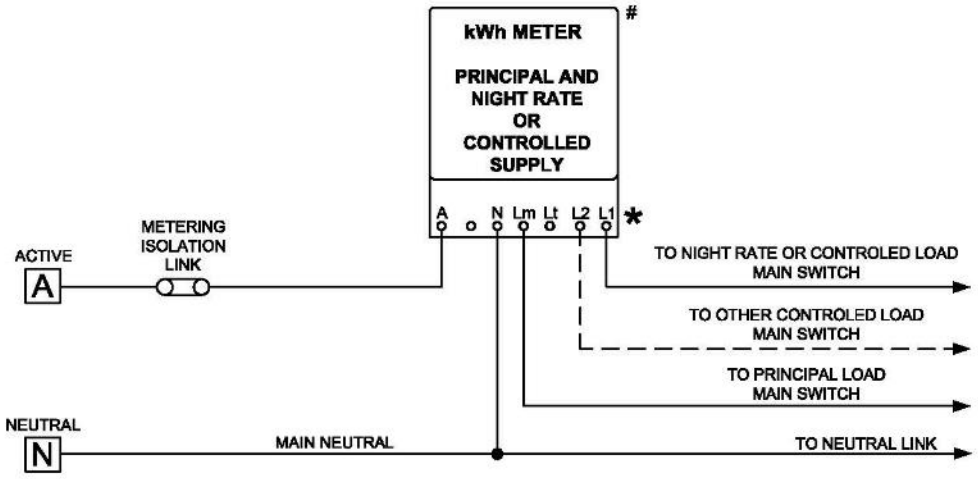
NON-RIPPLE CONTROL AREAS ONLY



\# ITEMS SUPPLIED BY METERING PROVIDER.

* SWITCH POSITION DETERMINED BY SUPPLY AND LOAD TYPE.

● SOLDERED CONNECTION.

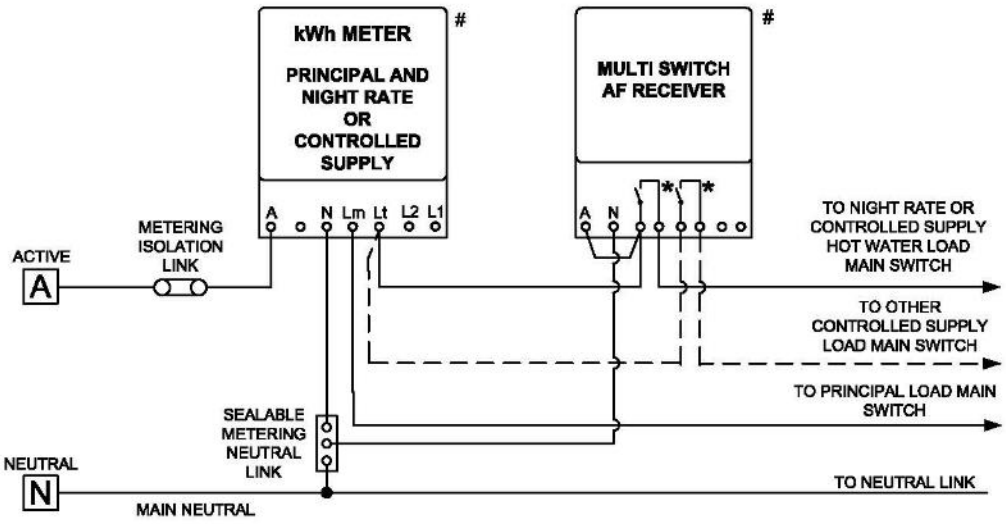
NOTES:

1. THIS ARRANGEMENT APPLIES TO NON-RIPPLE CONTROL AREAS
2. WHERE RESISTIVE LOAD EXCEEDS 30A OR WHERE RESISTIVE AND INDUCTIVE LOAD EXCEEDS 20A, A CONTACTOR SHALL BE USED. SEE DRAWING QEMM 35..
3. CONTROLLED CIRCUIT ASSOCIATED WITH SECONDARY SUPPLIES CONNECTED TO SWITCHED TERMINALS L1/L2 OF TWO ELEMENT METER.
4. TWO ELEMENT METER TERMINAL DESCRIPTION.

1	A - ACTIVE IN
3	N - NEUTRAL IN
4	Lm - ELEMENT 1 (MAIN)
5	Lt - ELEMENT 2 (UNSWITCHED)
6,7	L1 & L2 ELEMENT 2 (SWITCHED)

Revision:		
B	SINGLE PHASE 2-ELEMENT METER DIRECT CONNECTED METERING PRINCIPAL & CONTROLLED SUPPLIES (TYPICAL WIRING DIAGRAM) (NON-RIPPLE CONTROL AREAS ONLY)	QEMM 29

INITIAL CONNECTION AND LIMITED SPACE USE



\# ITEMS SUPPLIED BY METERING PROVIDER.
* SWITCH POSITION DETERMINED BY TARIFF AND LOAD TYPE.
● SOLDERED CONNECTION

NOTES:

1. FOR CONTROLLED SUPPLY LOADS, WHERE RESISTIVE LOAD EXCEEDS 30A OR WHERE RESISTIVE AND INDUCTIVE LOAD EXCEEDS 20A, A CONTACTOR SHALL BE USED. SEE DRAWING QEMM 36.

2. ELEMENT 1 FOR PRINCIPAL SUPPLY ONLY, ELEMENT 2 FOR EITHER CONTROLLED OR NIGHT RATE SUPPLIES.

3. SECONDARY TARIFF SWITCHING IS DONE BY AF RECEIVER.

4. CONTROLLED CIRCUIT ASSOCIATED WITH SECONDARY SUPPLY CONNECTED TO UNSWITCHED TERMINAL Lt.

5. TWO ELEMENT METER TERMINAL DESCRIPTION.

1	A - ACTIVE IN
3	N - NEUTRAL IN
4	Lm - ELEMENT 1 (MAIN)
5	Lt - ELEMENT 2 (UNSWITCHED)
6, 7	L1 & L2 - NOT USED IN RIPPLE AREAS

6. A METERING ISOLATION CIRCUIT BREAKER MAY BE USED IN LIEU OF A METERING ISOLATION LINK. (REFER TO QECM).

7. ELEMENT 1 FOR PRINCIPAL SUPPLY LOAD ONLY, ELEMENT 2 FOR EITHER NIGHT RATE OR CONTROLLED SUPPLY LOAD.

8. OTHER CONTROLLED SUPPLY LOAD CANNOT BE CONNECTED IN CONJUNCTION WITH NIGHT RATE LOAD ON THE ONE METER (REFER TO DRAWING QEMM 2.36).

Revision:		
B	WIRING DIAGRAM - DIRECT CONNECTED METERING SINGLE PHASE PRINCIPAL SUPPLY PLUS NIGHT RATE OR CONTROLLED SUPPLY (INITIAL CONNECTION AND LIMITED SPACE USE)	QEMM 30

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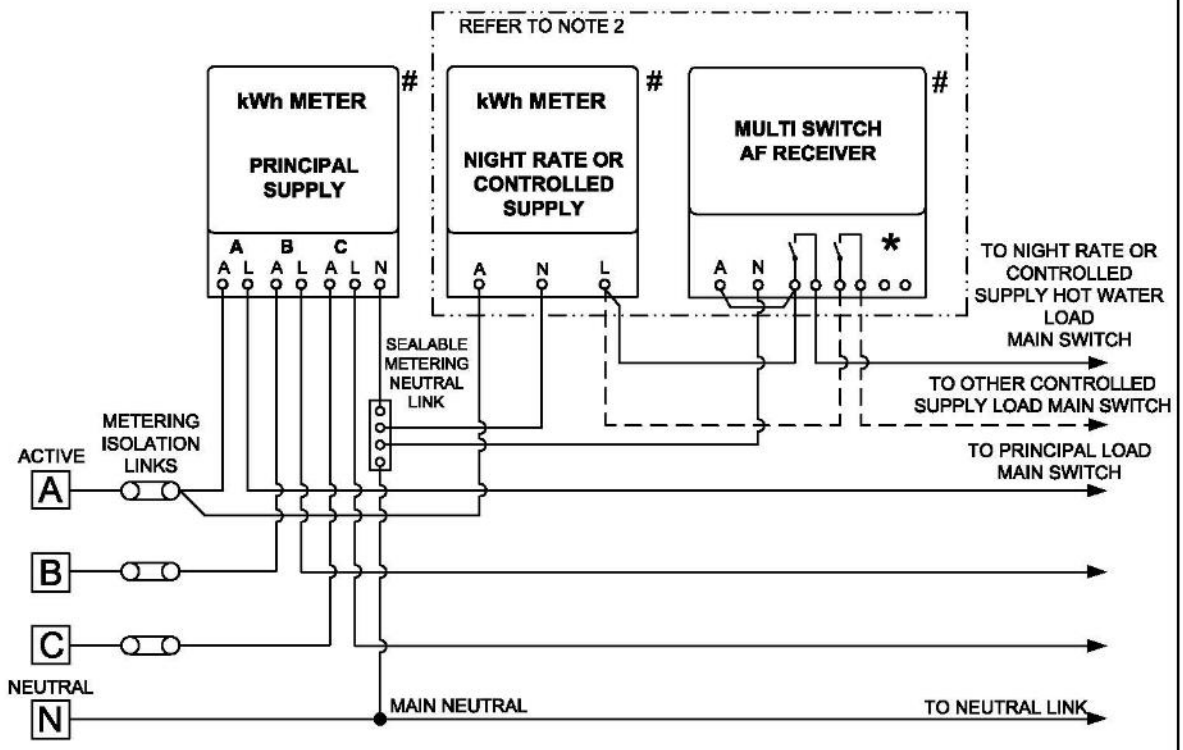

ITEMS SUPPLIED BY METERING PROVIDER.

* SWITCH POSITION DETERMINED BY SUPPLY AND LOAD TYPE.

● SOLDERED CONNECTION.

NOTES:

1. FOR CONTROLLED SUPPLY LOADS, WHERE RESISTIVE LOAD EXCEEDS 30A OR WHERE RESISTIVE AND INDUCTIVE LOAD EXCEEDS 20A, A CONTACTOR SHALL BE USED.
2. DOTTED LINES INDICATE VARIOUS SUPPLY OPTIONS.
3. A METERING ISOLATION CIRCUIT BREAKER MAY BE USED IN LIEU OF THE METERING ISOLATION LINK REFER TO QECM.
4. IN NON-RIPPLE CONTROL AREAS, THE SINGLE ELEMENT kWh METER / AF RECEIVER COMBINATION TO BE REPLACED WITH A 2 ELEMENT METER. SEE DRAWING QEMM 29.
5. OTHER CONTROLLED SUPPLY LOAD CANNOT BE CONNECTED IN CONJUNCTION WITH NIGHT RATE LOAD ON THE ONE METER (REFER TO DRAWING QEMM 32).

Revision: B	WIRING DIAGRAM - DIRECT CONNECTED METERING THREE PHASE PRINCIPAL SUPPLY PLUS SINGLE PHASE NIGHT RATE OR CONTROLLED SUPPLY	QEMM 31

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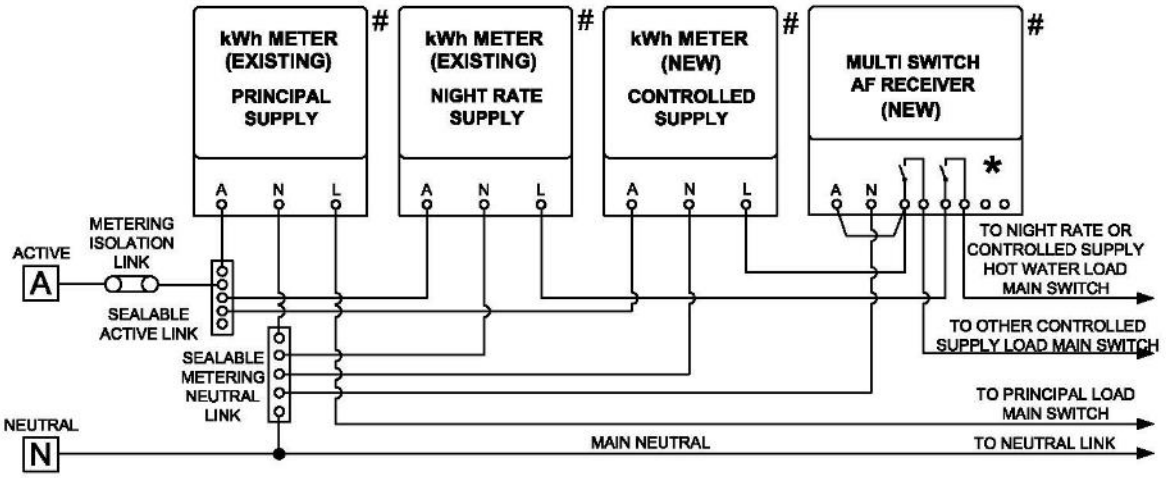
ADDITIONS AND ALTERATIONS ONLY

INCLUDES LOAD OTHER THAN WATER HEATING LOAD WHERE
RESISTIVE LOAD DOES NOT EXCEED 30A OR
RESISTIVE AND INDUCTIVE LOAD DOES NOT EXCEED 20A



ITEMS SUPPLIED BY METERING PROVIDER.

* SWITCH POSITION DETERMINED BY SUPPLY AND LOAD TYPE.

● SOLDERED CONNECTION.

NOTES:

1. FOR CONTROLLED SUPPLY LOADS, WHERE RESISTIVE LOAD EXCEEDS 30A OR WHERE RESISTIVE AND INDUCTIVE LOAD EXCEEDS 20A, A CONTACTOR SHALL BE USED. (SEE DRAWING QEMM 34).

Revision: B	WIRING DIAGRAM - DIRECT CONNECTED METERING SINGLE PHASE PRINCIPAL SUPPLY PLUS NIGHT RATE AND CONTROLLED SUPPLIES (ADDITIONS AND ALTERATIONS ONLY)	QEMM 32

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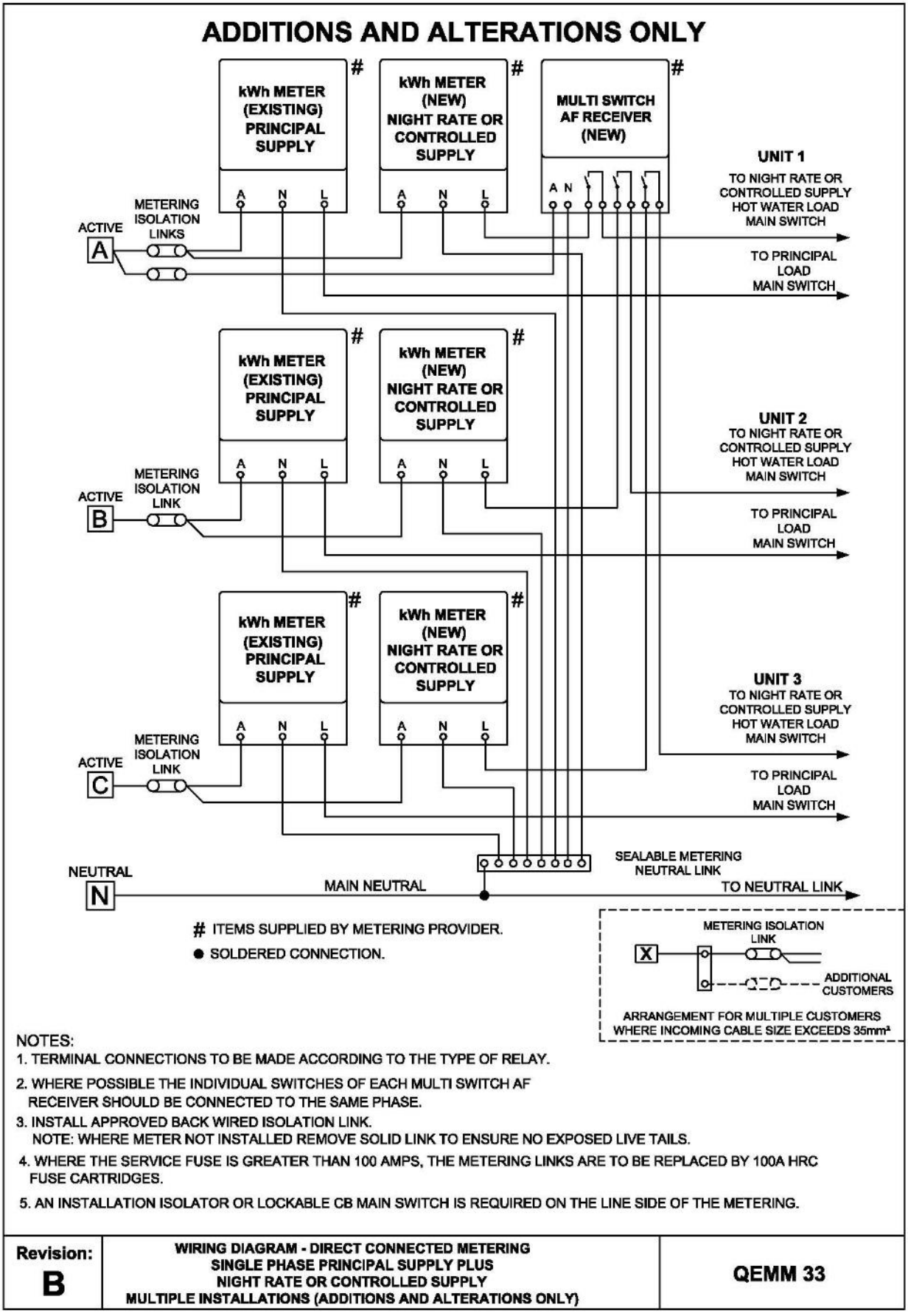

NOTES:

1. TERMINAL CONNECTIONS TO BE MADE ACCORDING TO THE TYPE OF RELAY.
2. WHERE POSSIBLE THE INDIVIDUAL SWITCHES OF EACH MULTI SWITCH AF RECEIVER SHOULD BE CONNECTED TO THE SAME PHASE.
3. INSTALL APPROVED BACK WIRED ISOLATION LINK.
   NOTE: WHERE METER NOT INSTALLED REMOVE SOLID LINK TO ENSURE NO EXPOSED LIVE TAILS.
4. WHERE THE SERVICE FUSE IS GREATER THAN 100 AMPS, THE METERING LINKS ARE TO BE REPLACED BY 100A HRC FUSE CARTRIDGES.
5. AN INSTALLATION ISOLATOR OR LOCKABLE CB MAIN SWITCH IS REQUIRED ON THE LINE SIDE OF THE METERING.

Revision:	WIRING DIAGRAM - DIRECT CONNECTED METERING SINGLE PHASE PRINCIPAL SUPPLY PLUS NIGHT RATE OR CONTROLLED SUPPLY MULTIPLE INSTALLATIONS (ADDITIONS AND ALTERATIONS ONLY)	QEMM 33
B		

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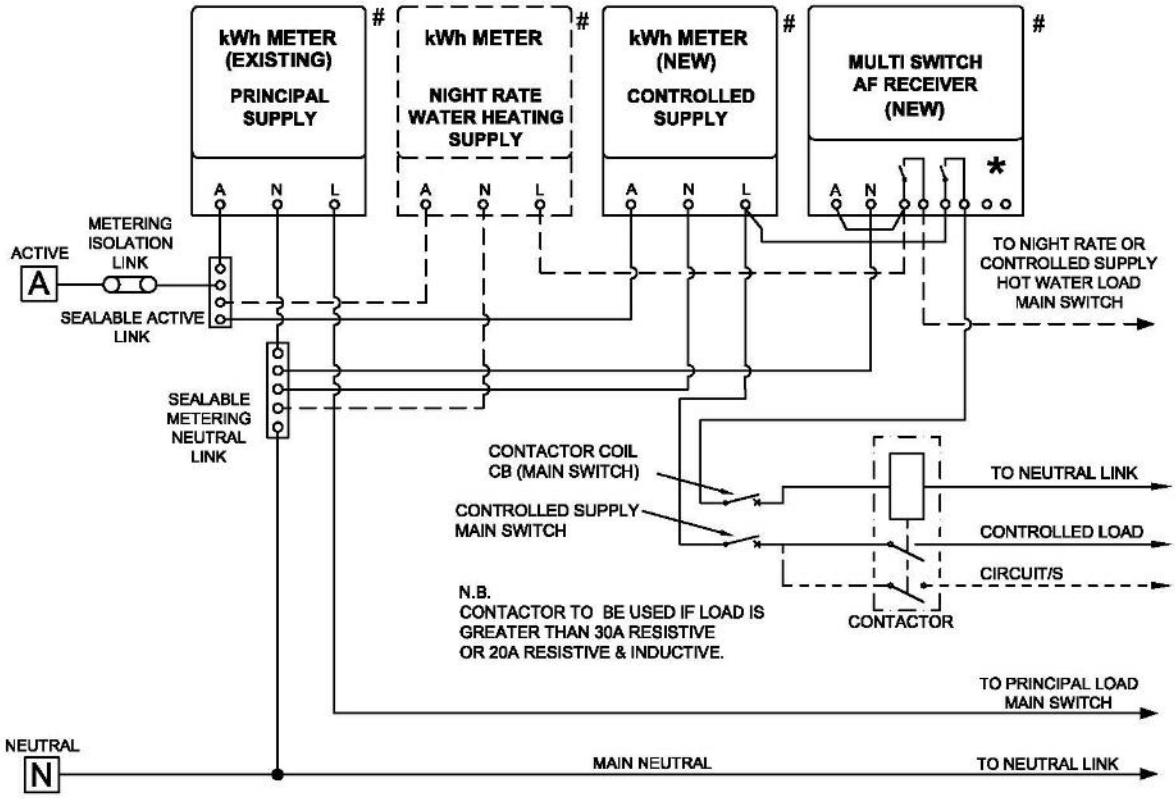
ADDITIONS AND ALTERATIONS ONLY

AF RECEIVER MULTI SWITCH CONTROL
DIRECT CONNECTED 1 PHASE METERING FOR PRINCIPAL SUPPLY WITH OPTIONAL NIGHT RATE HEATING AND OTHER CONTROLLED LOAD SWITCHED VIA CONTACTOR



ITEMS SUPPLIED BY METERING PROVIDER.
* SWITCH POSITION DETERMINED BY SUPPLY AND LOAD TYPE.
● SOLDERED CONNECTION.

NOTES:
1. CUSTOMER TO SUPPLY CONTACTOR AND ALL ITEMS NOT MARKED WITH AN "#".
2. DOTTED LINES INDICATE VARIOUS SUPPLY OPTIONS.

Revision:		
B	WIRING DIAGRAM - DIRECT CONNECTED METERING SINGLE PHASE PRINCIPAL SUPPLY PLUS NIGHT RATE OR CONTROLLED SUPPLY WITH CONTACTOR (ADDITIONS AND ALTERATIONS ONLY)	QEMM 34

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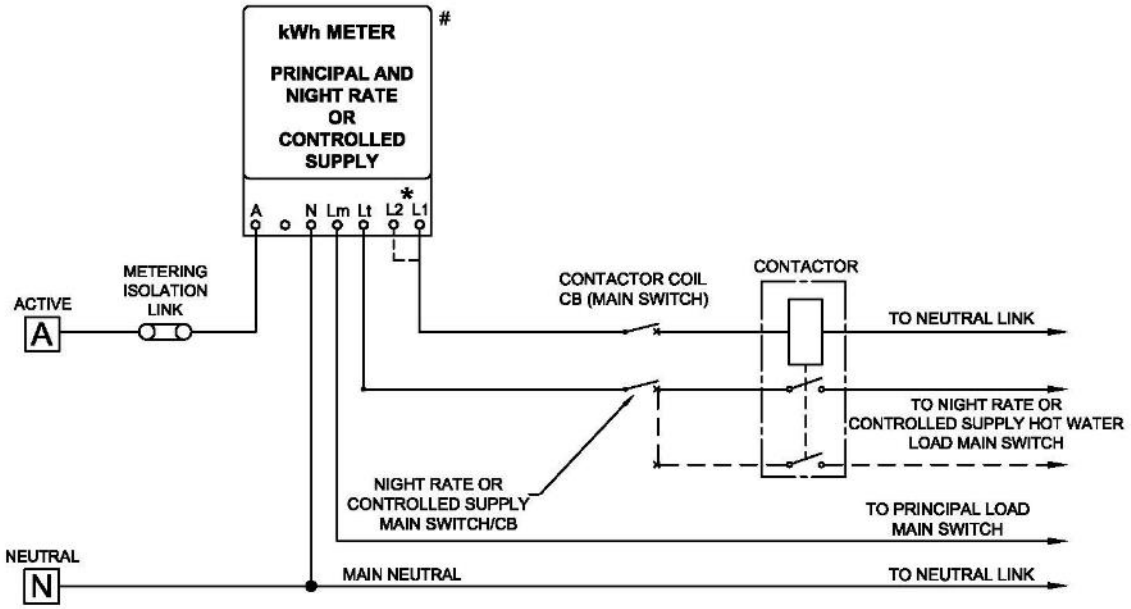
NON RIPPLE CONTROL AREAS ONLY



\# ITEMS SUPPLIED BY METERING PROVIDER.
* SWITCH POSITION DETERMINED BY SUPPLY AND LOAD TYPE.
● SOLDERED CONNECTION.

NOTES:

1. THIS ARRANGEMENT APPLIES TO NON-RIPPLE CONTROL AREAS

2. CUSTOMER TO SUPPLY CONTACTOR ALL WIRING AND ALL ITEMS NOT MARKED WITH "#".

3. CONTACTOR CONTROL CIRCUIT ASSOCIATED WITH SECONDARY SUPPLIES CONNECTED TO SWITCHED TERMINAL L1 OR TERMINAL L2.

4. SECONDARY SUPPLY LOADS CONNECTED VIA CONTACTOR TO UNSWITCHED METER TERMINAL Lt.

5. ELEMENT 1 FOR PRINCIPAL SUPPLY ONLY, ELEMENT 2 FOR EITHER NIGHT RATE OR CONTROLLED LOAD.

6. TWO ELEMENT METER TERMINAL DESCRIPTION.

1	A - ACTIVE IN
3	N - NEUTRAL IN
4	Lm - ELEMENT 1 (MAIN)
5	Lt - ELEMENT 2 (UNSWITCHED)
6/7	L1 & L2 ELEMENT 2 (SWITCHED)

7. ELEMENT 1 FOR PRINCIPAL SUPPLY LOAD ONLY, ELEMENT 2 FOR EITHER NIGHT RATE OR CONTROLLED SUPPLY LOAD.

Revision:		
B	WIRING DIAGRAM - DIRECT CONNECTED METERING SINGLE PHASE PRINCIPAL SUPPLY PLUS NIGHT RATE OR CONTROLLED SUPPLY WITH CONTACTOR (NON RIPPLE CONTROL AREAS ONLY)	QEMM 35

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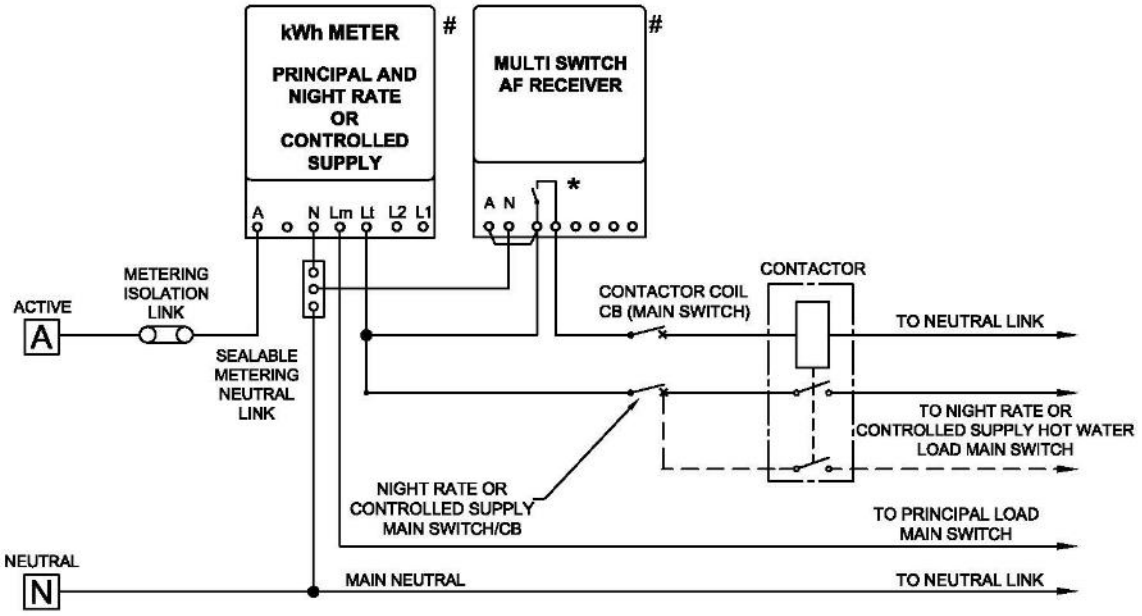
INITIAL CONNECTION AND LIMITED SPACE USE



ITEMS SUPPLIED BY METERING PROVIDER.
* SWITCH POSITION DETERMINED BY SUPPLY AND LOAD TYPE.
● SOLDERED CONNECTION.

NOTES:

1. CUSTOMER TO SUPPLY CONTACTOR ALL WIRING AND ALL ITEMS NOT MARKED WITH "#".
2. SECONDARY SUPPLY LOADS CONNECTED TO UNSWITCHED METER TERMINAL Lt.
3. ELEMENT 1 FOR PRINCIPAL LOAD ONLY, ELEMENT 2 FOR EITHER NIGHT RATE OR CONTROLLED LOAD.
4. SECONDARY SUPPLY CONTACTOR CONTROLLED VIA AF RECEIVER.
5. TWO ELEMENT METER TERMINAL DESCRIPTION.

1	A - ACTIVE IN
3	N - NEUTRAL IN
4	Lm - ELEMENT 1 (MAIN)
5	Lt - ELEMENT 2 (UNSWITCHED)
6, 7	L1 & L2 NOT USED IN RIPPLE AREAS

6. ELEMENT 1 FOR PRINCIPAL SUPPLY LOAD ONLY, ELEMENT 2 FOR EITHER NIGHT RATE OR CONTROLLED SUPPLY LOAD.

Revision:		
B	WIRING DIAGRAM - DIRECT CONNECTED METERING SINGLE PHASE PRINCIPAL SUPPLY PLUS NIGHT RATE OR CONTROLLED SUPPLY WITH CONTACTOR (INITIAL CONNECTION AND LIMITED SPACE USE)	QEMM 36

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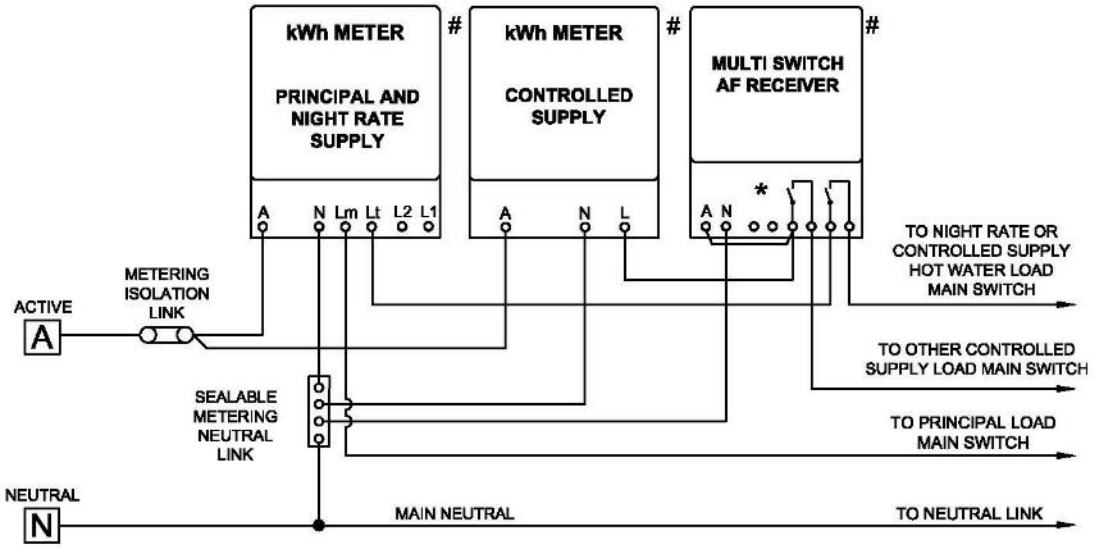
INITIAL CONNECTION AND LIMITED SPACE USE



ITEMS SUPPLIED BY METERING PROVIDER.
* SWITCH POSITION DETERMINED BY SUPPLY AND LOAD TYPE.
● SOLDERED CONNECTION.

NOTES:

1. FOR CONTROLLED SUPPLY LOADS, WHERE RESISTIVE LOAD EXCEEDS 30A OR WHERE RESISTIVE AND INDUCTIVE LOAD EXCEEDS 20A, CONTACTOR SHALL BE USED. (SEE DRAWING QEMM 36). A

2. SECONDARY SUPPLY SWITCHING IS DONE BY AF RECEIVERS.

3. CONTROLLED CIRCUIT ASSOCIATED WITH NIGHT RATE SUPPLY CONNECTED TO UNSWITCHED TERMINAL Lt OF TWO ELEMENT METER.

4. TWO ELEMENT METER TERMINAL DESCRIPTION.

1	A - ACTIVE IN
3	N - NEUTRAL IN
4	Lm - ELEMENT 1 (MAIN)
5	Lt - ELEMENT 2 (UNSWITCHED)
6, 7	L1 & L2 NOT USED IN RIPPLE AREAS

5. ELEMENT 1 FOR PRINCIPAL SUPPLY LOAD ONLY, ELEMENT 2 FOR EITHER NIGHT RATE OR CONTROLLED SUPPLY LOAD.

Revision: B	WIRING DIAGRAM - DIRECT CONNECTED METERING SINGLE PHASE PRINCIPAL SUPPLY PLUS NIGHT RATE AND CONTROLLED SUPPLIES (INITIAL CONNECTION AND LIMITED SPACE USE)	QEMM 37

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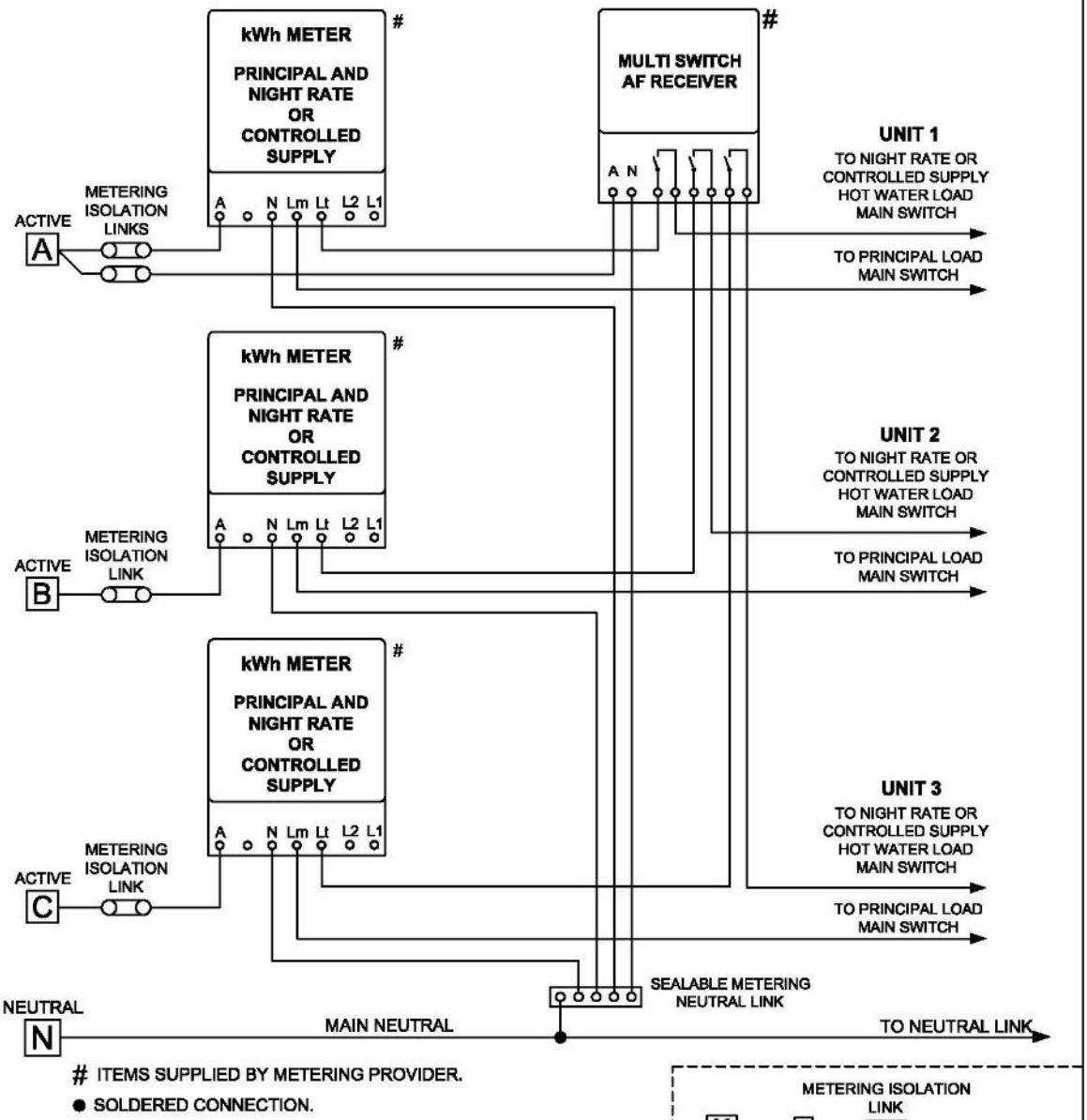
INITIAL CONNECTION AND LIMITED SPACE USE



NOTES:

1. TERMINAL CONNECTIONS TO BE MADE ACCORDING TO THE TYPE OF RELAY.
2. WHERE POSSIBLE THE INDIVIDUAL SWITCHES OF EACH MULTI SWITCH AF RECEIVER SHOULD BE CONNECTED TO THE SAME PHASE.
3. INSTALL APPROVED BACK WIRED METERING ISOLATION LINKS.
   NOTE: WHERE METER NOT INSTALLED REMOVE SOLID LINK TO ENSURE NO EXPOSED LIVE TAILS.
4. WHERE THE SERVICE FUSE IS GREATER THAN 100 AMPS, THE METERING LINKS ARE TO BE REPLACED BY 100A HRC FUSE CARTRIDGES.
5. METERS, METERING ISOLATION LINKS, METERING NEUTRAL LINK, AF RECEIVERS AND ACTIVE/NEUTRAL LINKS ARE TO BE SEALED BY METERING PROVIDER/DISTRIBUTOR.
6. AN INSTALLATION ISOLATOR OR LOCKABLE CB MAIN SWITCH IS REQUIRED ON THE LINE SIDE OF THE METERING.

Revision:	WIRING DIAGRAM - DIRECT CONNECTED METERING SINGLE PHASE PRINCIPAL SUPPLY PLUS NIGHT RATE OR CONTROLLED SUPPLY MULTIPLE INSTALLATIONS (INITIAL CONNECTION AND LIMITED SPACE USE)	QEMM 38
B		

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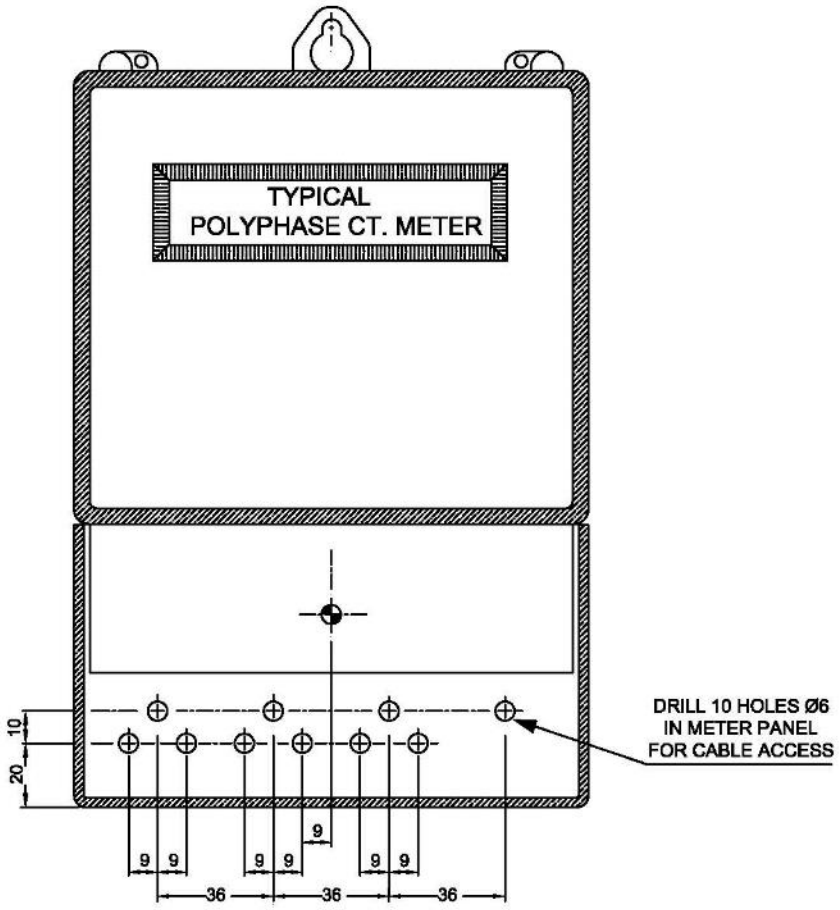

Revision: B	DRILLING DETAILS FOR CABLE ACCESS POLYPHASE CT. kWh METER	QEMM 39

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APPENDIX A - GLOSSARY OF TERMS

Accredited Auditor

A person appointed under section 129 of the *Electrical Safety Act 2002* to audit high voltage or hazardous area installations before connection to supply.

Further information may be obtained from the Electrical Safety Office.

AEMO

'Australian Energy Market Operator' is responsible for the day to day management of wholesale and retail energy market operations and emergency management protocols; on-going market development required to incorporate new rules, infrastructure and participants; and long term market planning through demand forecasting data and scenario analysis.

AF Receiver

See "Network Device"

Capital Contribution

A contribution towards costs associated with a standard control service, such as any necessary augmentation of connection assets at the connection point, dedicated network extension or augmentation of the shared distribution network to accommodate the connection/modification. A capital contribution will only be levied where there is a difference between the cost to provide the connection service and the revenue that will be earned by the *distributor* from the connection service.

Card Operated Meter

A meter that contains control equipment that switches on and off in accordance with the amount of credit stored in the meter.

Common Property

Common property means so much of a parcel as from time to time is not comprised in any lot. *Building Units and Group Titles Act 1980*

Connection Point, Point of Supply

The agreed point of supply established between Network Service Provider(s) and another Registered Participant, Non-Registered *Customer* or franchise *customer*.

Connection Policy

The *distributor's* connection policy provides an outline of connection services, when connection charges may be payable by *customers* and how those charges are calculated.

Consumer Mains

The conductors between the *connection point* and the main switchboard.

Consumer's Terminals

Note (1): AS/NZS 3000 refers to the '*Connection Point*' as the '*Point of Supply*'. Previous editions of AS/NZS 3000 referred to the '*Connection Point*' as the '*consumer's terminals*'.

Note (2): The *Queensland Electricity Regulation 2006* uses the definition '*consumer's terminals'*.

Note (3): The *National Electricity Rules* uses the definition '*connection point'*.

Note (4): This is the point which differentiates the responsibilities of the Network Service Provider and the application of AS/NZS 3000.

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Controlled Load, Controlled Supply	Those loads that are wired separately from other appliances, are controlled by means of frequency injection receiver or time clock, and are separately metered from the remaining load at the metering point.
Current Transformer Metering	A metering arrangement where electricity flow is measured by a meter using current transformers (CTs).
Customer	A person, including a relevant body corporate, who receives, or wants to receive, a supply of electricity for a *premises* from an electricity entity or special approval holder.
Direct Connected Meter	A meter where the electricity flow is directly measured by the meter i.e. the current under measurement passes through the meter itself.
Distribution Entity, Distributor	A distribution entity is a person who holds a distribution authority that authorises its holder to supply electricity using a supply network within its distribution area. See sections 37, 38 and 39 of the *Queensland Electricity Act 1994.* (Refer to definition for Relevant Distribution Entity).
Electrical Contractor (EC)	A person licensed under the *Electrical Safety Act 2002* to conduct a business or undertaking that includes the performance of electrical work.
Electrical Work Request (EWR)	The request from the *customer's* electrical contractor to a *distributor* to perform a distribution service e.g. (i) Energex - Form 2*; or* (ii) Ergon Energy - Form A - *Request for Initial Connection, Metering Change or Service Alteration*
Energex	Energex Limited - ABN 40 078 849 055
Enhanced Metering	A scheme, which is not normally considered to be part of standard metering as described in this manual (e.g. has pulse inputs, outputs, or remote communications). Additions that are above and beyond the metering provided in this manual.
Ergon Energy	Ergon Energy Corporation Limited ABN 50 087 646 062
EVSE	Electric Vehicle Supply Equipment as defined in AS/IEC 62196
Excluded Customer	A *customer* who cannot choose their *retailer*. For example, *customers* connected to isolated power systems.
Gross Energy Scheme	The *Gross Energy Scheme* separately meters the full energy output of the *MEGU*. The energy consumed at the *premises* is metered normally.
High Voltage Metering	A high voltage metering arrangement where electricity flow is measured by a meter using current transformers and voltage transformers.

Isolated Power System	A supply network that does not form part of and is not connected to the national grid and may include an isolated feeder.
Large Customer	A *customer* whose annual consumption is equal to, or greater than, 100MWh, and is connected to the distributor's network.
Large Non-market Customer	A *large non-market customer*, for *premises*, is a *large customer* for the *premises* who is also a non-market *customer* for the *premises*.
MEGU	A grid connected Micro Embedded Generating Unit (also referred to as Inverter Energy System or IES) as defined in AS 4777.
Metering Coordinator	A person who has been registered by AEMO under Chapter 2 of the *National Electricity Rules* to engage in the coordination and provision of metering services at a connection point in accordance with Chapter 7 of the *National Electricity Rules*.
Metering Data Agent	An agent appointed by *AEMO* to undertake the collection, processing and transfer of metering data to *AEMO* and other registered participants.
Metering Data Provider	A person who meets the requirements listed in schedule 7.3 of the *National Electricity Rules* and has been accredited and registered by AEMO to undertake the collection, processing, storage and delivery of metering data and the management of NMI Standing Data.
Metering Provider (MP)	A person who meets the requirements listed in schedule 7.2 of the *National Electricity Rules* and has been accredited and registered by AEMO to undertake the provision, installation and maintenance of metering installations. **Note:** The *distributor* is the *metering provider* in *non-NEM areas*.
Micro Embedded Generating Unit	A generator that is compliant with AS4777, that is, an inverter system to be connected to the low voltage distribution network.
NATA	The National Association of Testing Authorities.
National Electricity Rules	The rules under which the National Electricity Market operates.
National Metering Identifier (NMI)	A *National Metering Identifier* (*NMI*) is a unique national identifier that relates to the metering installation at a *customer's premises.*
Net Energy Scheme	The *Net Energy Scheme* provides for the separate measurement of the energy supplied from the LV network to the *customer's* installation in excess of the *MEGU* generation, and the excess energy supplied to the LV network from the *premises* by the *MEGU* Small IES after the energy needs at the *premises* are met.

Network Device, AF Receiver	Apparatus or equipment that: (a) enables a *distributor* to monitor, operate or control the network for the purposes of providing network services, which may include switching devices, measurement equipment and control equipment; and (b) is located at or adjacent to a metering installation at the connection point of a *customer*.
NMI Classification	Small - annual consumption less than 100MWh Large - annual consumption equal to, or greater than 100MWh.
Point of Attachment	The point at which aerial conductors of a *service line* or aerial *consumer's mains* are terminated on a *customer's* structure.
Point of Entry	The point at which the *consumer's mains* or the underground service cable enters a structure.
Premises	*Premises* includes - (a) a building or other structure; and (b) a part of a building or other structure; and (c) land where a building or other structure is situated. *Premises*, of a *customer*, means *premises* owned or occupied by the *customer*. *Queensland Electricity Act 1994*
QECM	Queensland Electricity Connection Manual
QECMM	Queensland Electricity Connection and Metering Manual. On 24th August 2018 the QECMM content was separated into two new documents, the QECM and the QEMM and the QECMM was withdrawn.
QEMM	Queensland Electricity Metering Manual
Relevant Distribution Entity, Distributor	The *relevant distribution entity* for a *premises*, means the *distribution entity* to whose supply network the *premises* are, or will be, connected. **Note:** For the purposes of this document the relevant *distribution entity* will be referred to as the '*distributor*'.
Relevant Retail Entity, Retailer	The *relevant retail entity* for a *premise*, means the retail entity who, under a retail contract, supplies or has agreed to supply electricity to the *premises*. **Note:** For the purposes of this document the *relevant retail entity* will be referred to as the '*retailer*'.
Retail Entity	A person who holds a retail authority to sell electricity and retail services (a 'retail authority' authorises its holder to provide *customer* retail services under the terms of the authority).
RPEQ	Registered Professional Engineer Queensland.

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Rural/Isolated Area	A *rural/Isolated area* is defined as one with a density of less than 5 lots per hectare (i.e. would generally have a dedicated supply transformer). **Note:** This definition is only applicable within the *Ergon Energy* distribution area.
Service Line	An electric line that- (a) forms part of the works of an electricity entity; and (b) connects *consumer terminals* to - (i) other parts of the works of the electricity entity; or (ii) the works of another electricity entity. Schedule 9 of the *Queensland Electricity Regulation 2006*.
Small Customer	A *customer* who consumes less than 100MWh per annum and is connected to the *distributor's* network.
Small IES	Micro-embedded generators of the kind contemplated by Australian Standard AS/NZS 4777 (Grid connection of energy system via inverters) up to 30kVA for which a Small IES EG Connection is appropriate.
Small IES Embedded Generation Connection	A connection between *Small IES* and a distribution network.
SOR	Service Order Request - This is a request from a *Retailer* to a *Distributor* to perform a distribution service (e.g. New Connections, Metering Alterations and Service Upgrades). It is also referred to as a B2B request.
Suitable Mains Connection Box	A mains connection box that is deemed to be compliant with the *distributor's* technical specifications. Details are available by contacting the *distributor* via the methods listed on page 1
Two element Meter	A single phase two element device which includes both metering and load switching within one meter.
Type 1-7 Metering Installation	As defined in the National Electricity Rules
Unmetered Supply	A Type 7 metering installation classification (*NER*) where a metering installation does not require a meter to measure the flow of electricity in a power conductor and accordingly there is a requirement to determine by other means the energy data that is deemed to flow in the power conductor and managed by the relevant Distribution Entity.
Urban	A residential area with a system of street lighting.

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APPENDIX B – AMENDMENT RECORD

Please Note: It is not possible to cover all of the changes in the following list, nor can the changes be covered in the detail and context as they appear within the manual. As an Electrical Contractor it is the responsibility of you and your endorsees to be fully conversant with the content and requirements of the Queensland Electricity Metering Manual.

Date 05/08/2020 Previous Version: Version 2 of the *QEMM*

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ergon.com.au
energex.com.au

PO Box 1090, Townsville QLD 4810
GPO Box 1461, Brisbane QLD 4001

Ergon Energy Network
ABN 50 087 646 062
Energex is the trading name of
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ABN 40 078 849 055

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