

GRID GEAR

GRIDGEAR SOLUTIONS LTD



1610 DERWENT WAY #14
DELTA, BC V3M 6W1



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SINGLE CHANNEL SOLID STATE kWh METER FOR SUBMETERING

PRODUCT CODE: GG

GG INSTALLATION INSTRUCTIONS

GridGear's GG is a flexible, low cost, revenue grade meter, for the residential, commercial, and institutional market. The meter is UL listed (E489079), ANSI C12.20, 0.5 accuracy class as tested by UL, and designed to provide accurate measurement and verification of electricity consumption.

Prior to commencing the installation of the GG Single Channel Digital Meter please note that it is intended to be connected by a qualified electrical professional as per the codes and laws of the local governing entities. Please ensure that all related circuits are de-energized before beginning the installation and take the time to read the installation instructions as well as plan out all of the appropriate connections. If the device is used, mounted or connected in a manner that is not specified by GridGear Solutions or local electrical code, the protection provided by the equipment may be impaired.

MARKINGS



Indicates danger of an electric shock hazard, make sure all related circuits are de-energized before proceeding.



Please consult manual and ensure that all circuits are de-energized before handling



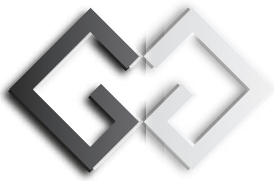
If ambient temperature of the installation environment under normal conditions reaches more than 40° C(104° F), please ensure that the wire being used is rated for at least 60° C(140° F)



LOCATIONS AND MATERIALS

The meter should be installed in an adequately ventilated area (as per the temperature rating on page 2) near a UL listed fuse (in-line or terminal), breaker or switch being used for the supply lines that connect to the Voltage terminals or leads. Please ensure that the fuse, breaker or switch is appropriately labeled or visibly traceable to the meter connections and the mounted enclosure does not impede it's operation. The wire being used must be 18 AWG min., 600 V min. insulated wiring for Line voltages and Neutral to the appropriate locations in the breaker panel per the specifications of the fuse, or the breaker manufacturer and the local electrical code. GridGear recommends a 1A fuse for the the line voltage reference conductors.

If replacing or extending the supplied conductors, please ensure that the alternate or added conductor is also certified as per local electrical code requirements.



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ENCLOSURE

The GG Single Channel Digital Meters can be mounted into different UL listed enclosures as long as the environmental conditions are met and the external enclosure also meets local electrical code. The enclosures below are tested, recommended and supplied by GridGear for this installation:

- Surface Mount Unit - BUD Industries NBF-32410 Plastic Outdoor NEMA Box with Clear Door, 5.9" x 5.9" x 3.54", Light Gray Finish (UL Listing # E194432)
- Flush Mount Unit - F103 Arlington 3-Gang Non-Metallic Outlet Box (UL Listing # E170558)
- Multi-Meter Unit (MMU) for 2-28 meter applications; UL approved, NEMA electrical enclosure (UL Listing #E178096)



Flush Mount Unit



Multi-Meter Unit (MMU)



Surface Mount Unit

If cutting or drilling wire feedthroughs on site, please ensure that the hardware and installation methods being used are certified as per local electrical code requirements and the manufacturers specifications.

CURRENT TRANSFORMERS

The GG Single Channel Digital Meters are to be installed with UL Listed Energy Monitor Current Transformers' (XOBA). GridGear supplies a line of UL Listed Energy Monitor Current Transformers' (XOBA) rated for use with the GG Single Channel Digital Meter. For more information, please contact GridGear at info@gridgear.ca

QUICK SUMMARY OF METERING CONVENTIONS

Electrical energy is calculated by the GG using inputs of I(Current) and V(Voltage). The Voltage inputs (protected with a breaker) must be connected to the main supply lines that feed the load being metered.

Important: Voltage terminal "A" must always be connected as it supplies power to the meter.

The Current inputs use Current Transformers(donuts) which are installed around the main conductors of the load being metered. A CT is not required on the Neutral. Ensure that the CTs are rated for the peak current of the primary and that the secondaries cannot exceed 100 mA. The current transformers may not be installed in a panel where they exceed 75% of the wiring space of any cross-sectional area with the panel.

Important: Both inputs(V, I) must come off the same phase leg and when using the GG current transformers, the red arrow on the installed CTs must point towards the load. The input leads or wires of the CT's must also be connected to the corresponding color on the meter terminal blocks.

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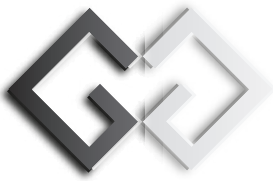
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QUICK SUMMARY OF METERING CONVENTIONS CONT'D

The "Pulse Output" and "3.3 V"(25 mA max) terminals on the GG Meter are intended for the connection of 3rd party pulse recording equipment.

Important: Before connecting to the "3.3V" terminal, ensure that the "N"(Neutral) Voltage input on the meter is wired correctly (not live), as there is potential for 120V from the terminal to ground if miswired. In order to maintain the UL certification, any wires or hardware that are connected to the "3.3V" terminal **MUST BE CONTAINED** within the enclosure that the meter is installed into.

Once all of the connections are made and the meter is operational, it is recommended that a seal is used by the installer to lock the lid to the main enclosure in order to protect it from tampering. We have supplied a led crimp seal and some stranded wire for this step, however, you may use your own method as long as it is tamper resistant and conforms to local regulations.

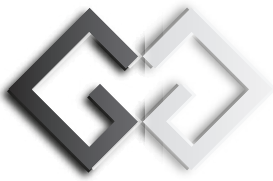
Please refer to the connection diagram for different service configuration and do not hesitate to contact us with any questions or inquiries.

RATINGS AND ENVIRONMENTAL CONDITIONS

- ANSI C12.20, 0.5 accuracy class as tested by UL
- California State Approval (CTEP); New York State Approval
- UL listed (E489079) as an open style meter for use with different enclosures
- 120V(Line to Neutral) Single Phase 2 Wire
- 120V(Line to Neutral) / 240V(Line to Line) Single Phase 3 Wire
- 120V(Line to Neutral) / 208V(Line to Line) 3 Phase 4 Wire Wye
- Rated for 50 or 60 Hz systems
- Rated for 100mA max on CT secondary leads
- Indoor Use
- Altitude up to 2000 meters
- 10 year warranty on GridGear products when installed according to installation instructions
- Temperature: -20° to 50° C, 0° to 120° F
- Rated Relative Humidity: 80%
- Rated Pollution Degree: 2
- Evaluated to Measurement Category III
- Supply Power: 24 VA
- Screw terminal torque values: 0.4Nm min - 0.5Nm max

MAINTENANCE AND TROUBLESHOOTING

If the product has been properly installed, it should not require any maintenance or service. When the meter is not functioning as it should, please contact GridGear Solutions at support@gridgear.ca



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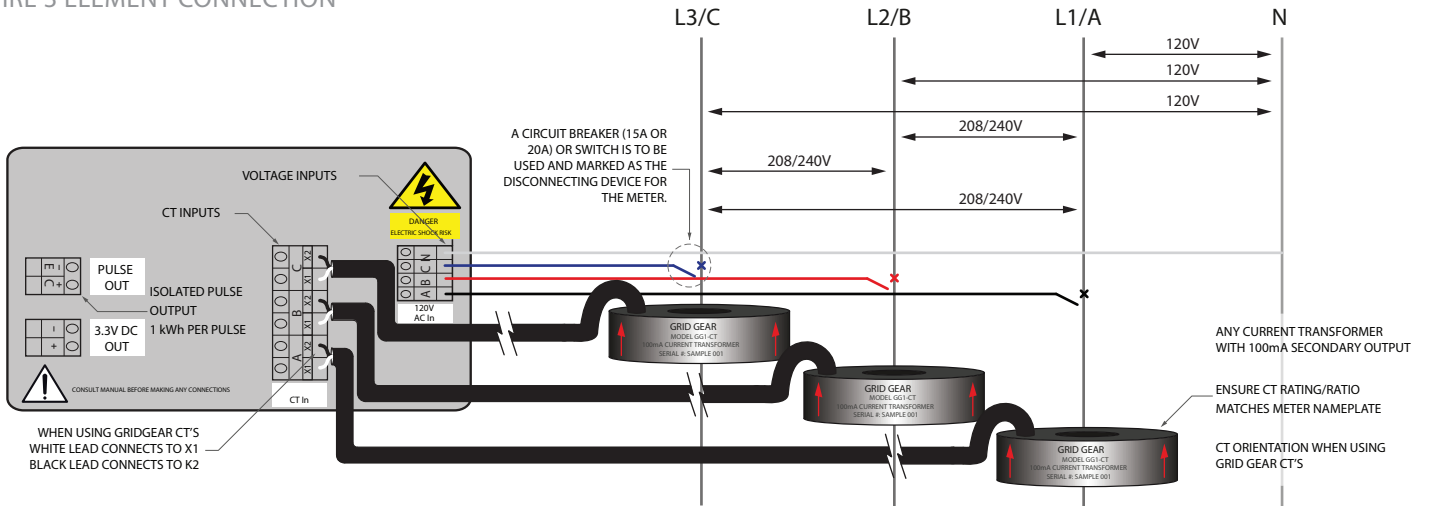
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CONNECTION DIAGRAMS

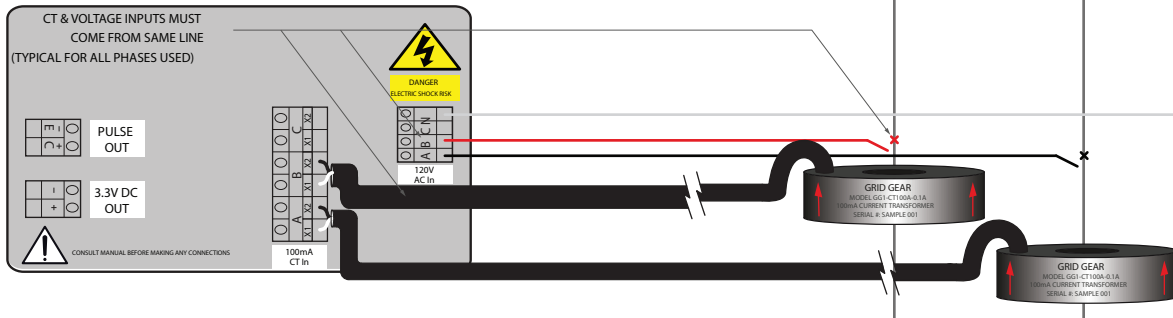
****VOLTAGE INPUT "A" POWERS METER****

LOAD SIDE

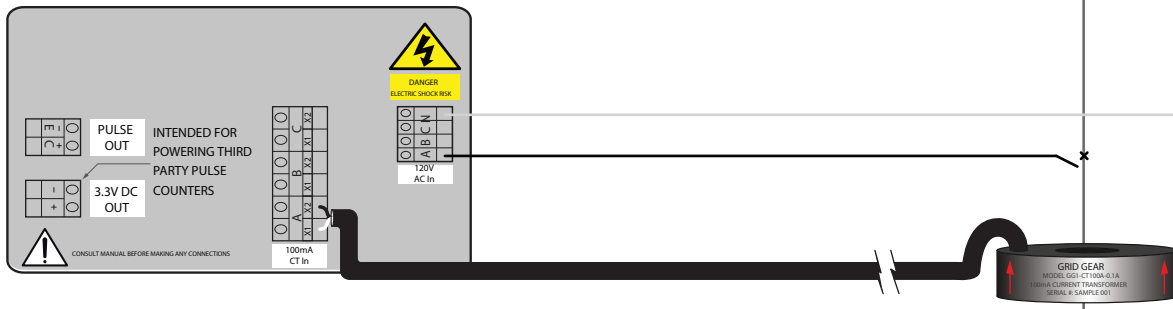
4 WIRE 3 ELEMENT CONNECTION



3 WIRE 2 ELEMENT CONNECTION



2 WIRE 1 ELEMENT CONNECTION



SUPPLY SIDE
120V LINE TO NEUTRAL, 208/240V LINE TO LINE
1 or 3 PHASE 2,3,4 WIRE