



**AcquiSuite™**

**Ally 12 & 48**

**Advanced Multi-Circuit Meter**



**Install Guide**

**DANGER****HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

- Turn off all power supplying equipment before working on or inside the equipment.
- Follow safe electrical work practices. See NFPA 70E in the USA, or applicable local codes.
- This equipment must only be installed and serviced by qualified electrical personnel.
- Read, understand and follow the instructions before installing this product.
- Product may use multiple voltage/power sources. Be sure all sources of power have been disconnected before servicing.
- Use a properly rated voltage sensing device to confirm power is off.
- DO NOT DEPEND ON THIS PRODUCT FOR VOLTAGE INDICATION
- Only install this product on insulated conductors.
- Failure to follow these instructions will result in death or serious injury.

**CAUTION**

This product is not intended for life or safety applications.

- Do not install this product in hazardous or classified locations.
- The installer is responsible for conformance to all applicable codes.
- Mount this product inside a suitable fire and electrical enclosure.

*A qualified person is one who has skills and knowledge related to the construction and operation of this electrical equipment, and the installation, and has received safety training to recognize and avoid the hazards involved. NEC2011 Article 100 No responsibility is assumed by Leviton for any consequences arising out of the use of this material.*



DO NOT EXCEED 346V Line to Neutral or 600 volts Line to Line. This meter is equipped to monitor loads up to 346V L-N. Exceeding this voltage will cause damage to the meter and danger to the user. Always use a Potential Transformer (PT) for voltages in excess of 346V L-N or 600 volts line to line. The VerifEye™ is a 600 Volt Over Voltage Category III device.

For use in a Pollution Degree 2 or better environment only. A Pollution Degree 2 environment must control conductive pollution and the possibility of condensation or high humidity. Consider the enclosure, the correct use of ventilation, thermal properties of the equipment, and the relationship with the environment.

Installation category: CAT II or CAT III

Provide a disconnect device to disconnect the meter from the supply source. Place this device in close proximity to the equipment, and within easy reach of the operator, and mark it as the disconnecting device. The disconnecting device shall meet the relevant requirements of IEC 60947-1 and IEC 60947-3 and shall be suitable for the application. In the US and Canada, disconnecting fuse holders can be used. Provide overcurrent protection and disconnecting device for supply conductors with approved current limiting devices suitable for protecting the wiring. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the device may be impaired.

*For the complete safety information for this product, see the full user guide.*

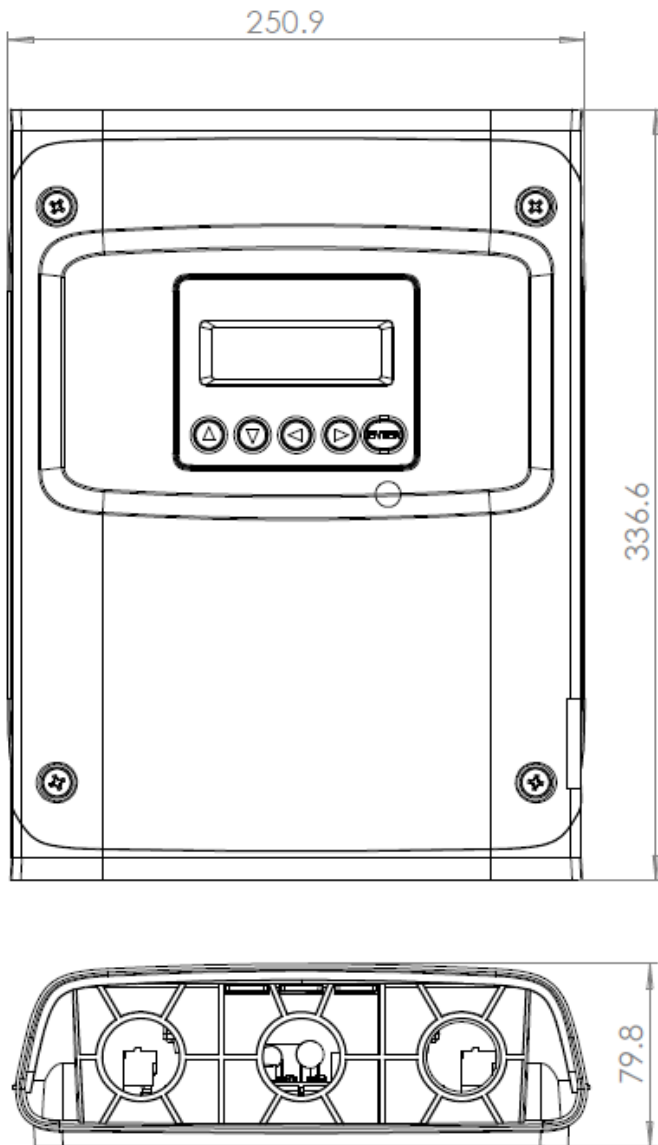
## Technical Specifications

Specification	Description
<b>Service Types</b>	Single Phase, Split Phase, Three Phase-Four Wire (WYE), Three Phase-Three Wire (Delta)
<b>Voltage Channels</b>	90-346 Volts AC Line-to-Neutral, 600V Line-to-Line, CAT III. Two independent voltage reference inputs
<b>Current Channels</b>	48 channels, 0.525 VAC max, 333 mV CTs, 0-4,000+Amps depending on current transducer
<b>Maximum Current Input</b>	150% of current transducer rating (mV CTs) to maintain accuracy. Measure up to 4000A with RōCoil CTs.
<b>Measurement Type</b>	True RMS using high-speed digital signal processing (DSP) with continuous sampling
<b>Line Frequency</b>	50-60 Hz
<b>Power</b>	From L1 Phase to L2 Phase. 90-600VAC RMS CAT III 50/60Hz, 500mA AC Max Use of 12 volt auxiliary output requires 100 VAC minimum input voltage.
<b>AC Protection</b>	0.5A Fuse 200kA interrupt capacity
<b>Power Out</b>	Unregulated 12VDC output, 200 mA, self-resetting fuse
<b>Waveform Sampling</b>	1.8 kHz
<b>Parameter Update Rate</b>	1 second
<b>Measurements</b>	Volts, Amps, kW, kVAR, kVA, aPF, dPF, kW demand, kVA demand, Import (Received) kWh, Export (Delivered) kWh, Net kWh, Import (Received) kVAh, Export (Delivered) kVAh, Net kVAh, Import (Received) kVARh, Export (Delivered) kVARh, Net kVARh, THD, Theta, Frequency. All parameters for each phase and system total.
<b>Accuracy</b>	0.2% ANSI C12.20-2010 Class 0.2
<b>Resolution</b>	Values reported in IEEE-754 single precision floating point format (32 bit).
<b>Indicators</b>	4-line display, tri-color backlight (PhaseChek™)
<b>Pulse Input</b>	AMC12 – 4 inputs, AMC48 – 2 inputs
<b>Alarm Output</b>	Voltage Phase Loss Alarm (SPDT Relay - 30 VDC) ( only)
Communication	
<b>Hardware</b>	RS-485, Ethernet, & USB (for configuration only)
<b>Supported Protocols</b>	Modbus RTU or BACnet Master Slave Token Passing protocol (MS/TP) Modbus (using SunSpec IEEE-754 single precision floating point model) BACnet MS/TP Modbus TCP BACnet IP
<b>Max Communication Length (RS485)</b>	1200 meters total cable length, with Data Range of 100K bits/second or less
<b>RS-485 Loading</b>	1/8 unit

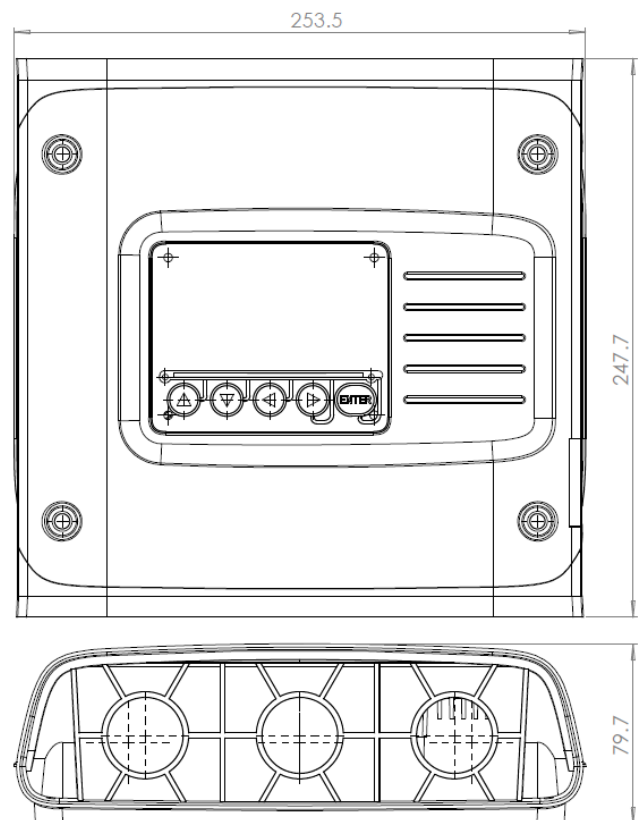
<b>Communication Rate (baud)</b>	Modbus: 9600 (Default), 19200, 38400, 57600, 76800, 115200 BACnet: 9600 (Default), 19200, 38400, 76800
<b>Data Bits</b>	8
<b>Parity</b>	None, Even, Odd
<b>Stop Bit</b>	2, 1
<b>Termination</b>	None provided
Mechanical	
<b>Wire Connections</b>	12-22 AWG 600 VAC, Voltage connection must be #14 AWG or larger & 600 VAC rated
<b>Mounting</b>	Enclosure or Panel Mount
<b>High Voltage Cover</b>	IP40 (embedded version)
<b>Operating Temperature</b>	-20 to + 60° C (-4 to 140° F)
<b>Humidity</b>	5% to 95% non-condensing
<b>Enclosure</b>	ABS Plastic, 94-V0 flammability rating, connections sized for 1-inch EMT conduit
<b>Dimensions</b>	(L) 33.7cm x (W) 25.2cm x (H) 8.0 cm (13.3" x 10" x 3.1") (no enclosure version) (L) 24.7cm x (W) 25.2cm x (H) 8.0 cm (9.8" x 10" x 3.1") (no enclosure version)
<b>PCBA Dimensions</b>	(L) 21.6cm x (W) 21.6.0cm x (H) 6.4 cm (8.5" x 8.5" x 2.5")
Obvius Ally Configuration Console™ Minimum System Requirements	
<b>Operating System</b>	Windows® 7, Windows® 8, Windows® 10
<b>Communications Port</b>	USB or Ethernet connectivity
Safety	
<b>FCC Compliance</b>	This device has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at user's own expense.
<b>Serial/Ethernet Meters</b>	The following are UL Recognized: <b>AMC12-B-y-z, -P-y-z, AMC48-B-y-z, -P-y-z</b> The following are UL Listed: <b>AMC12-C-y-z, AMC48-C-y-z</b> Conforms to UL Std 61010-1, 3rd Edition, UL 61010-2-30:2010 Certified to CSA Std C22.2 No. 61010-1, 3rd Edition

## Mechanical Specifications & Mounting

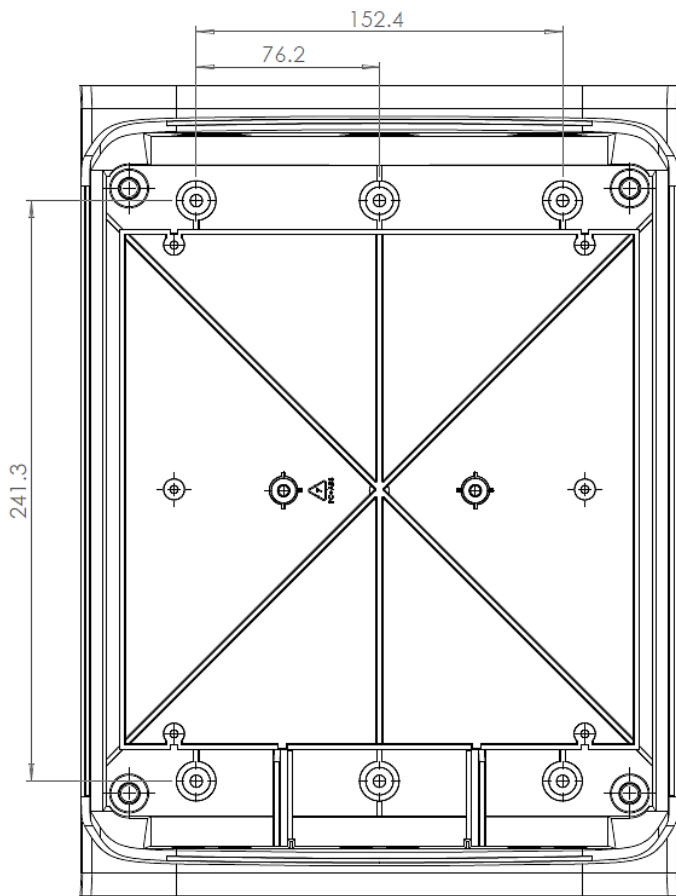
Series AMC48 - Enclosure



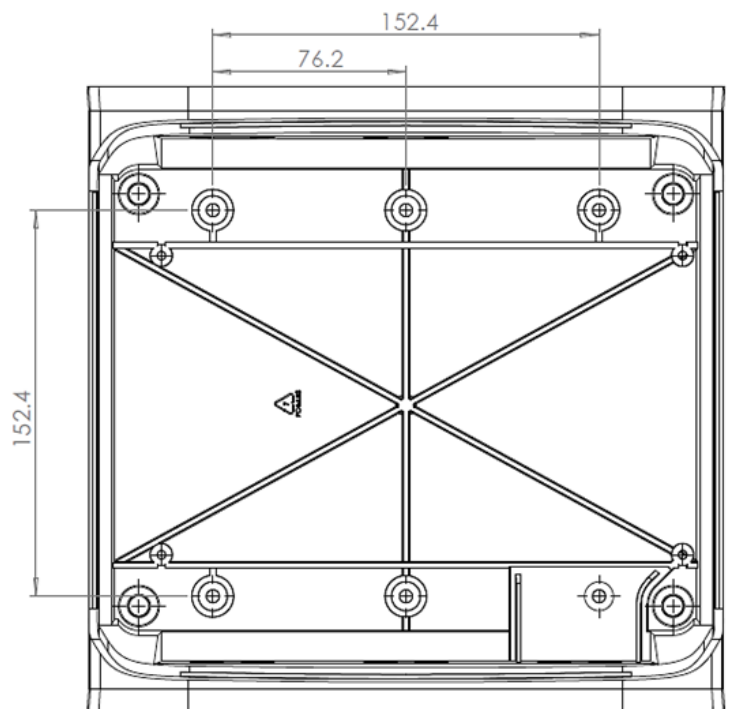
Series AMC12 - Enclosure



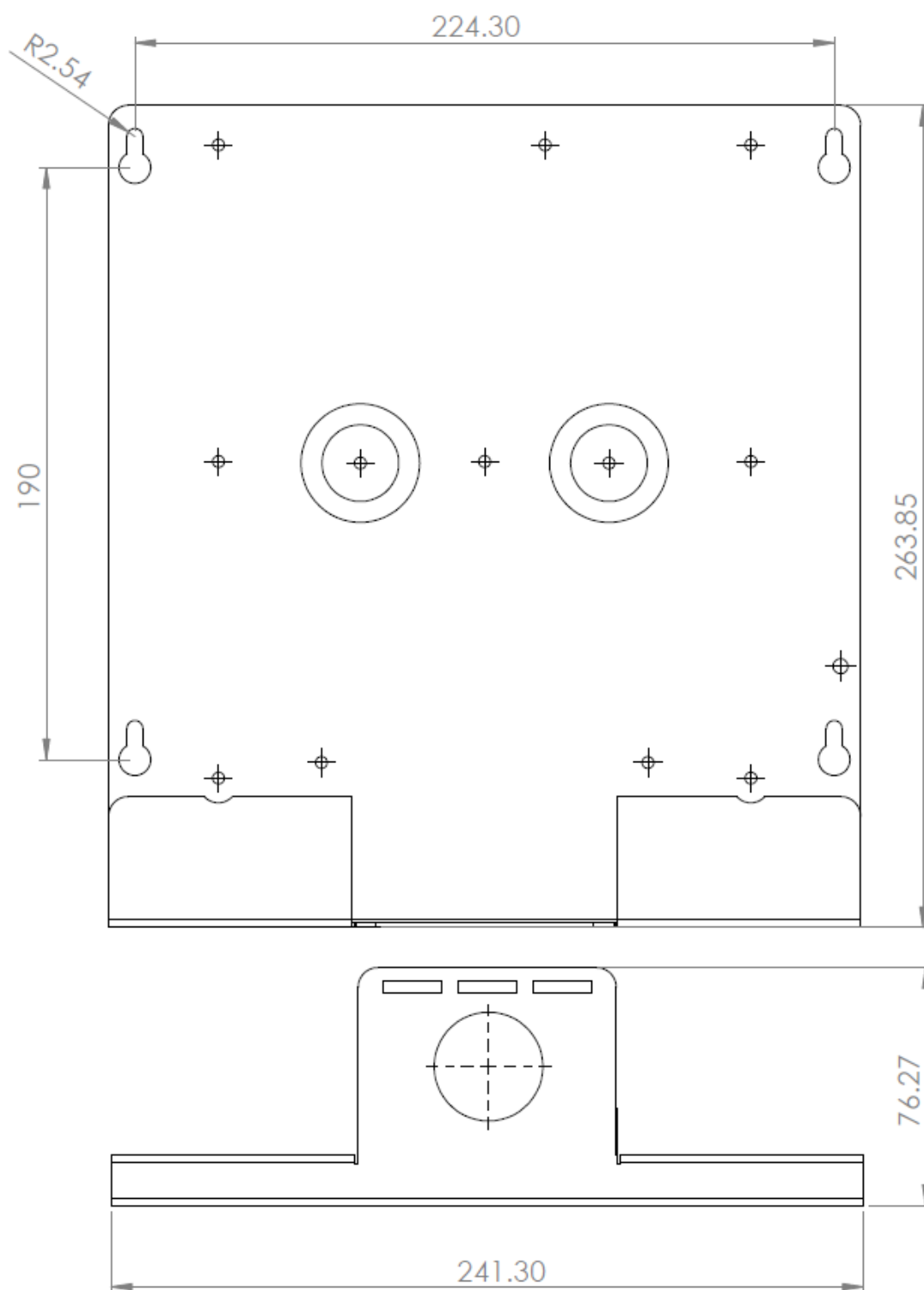
Series AMC48 – Enclosure Drill Pattern



Series AMC12 – Enclosure Drill Pattern

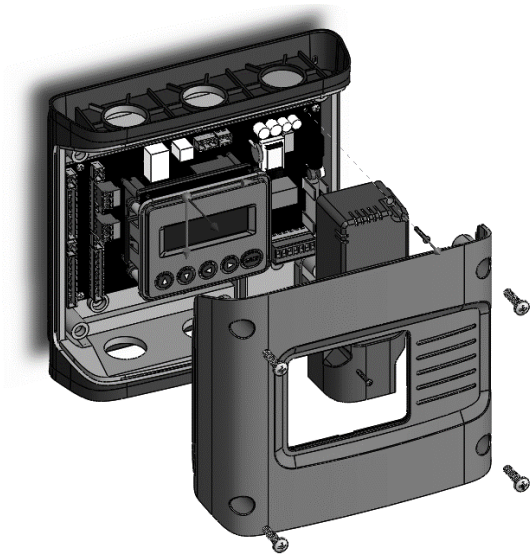


## Series AMC48 – Mounting Plate Template



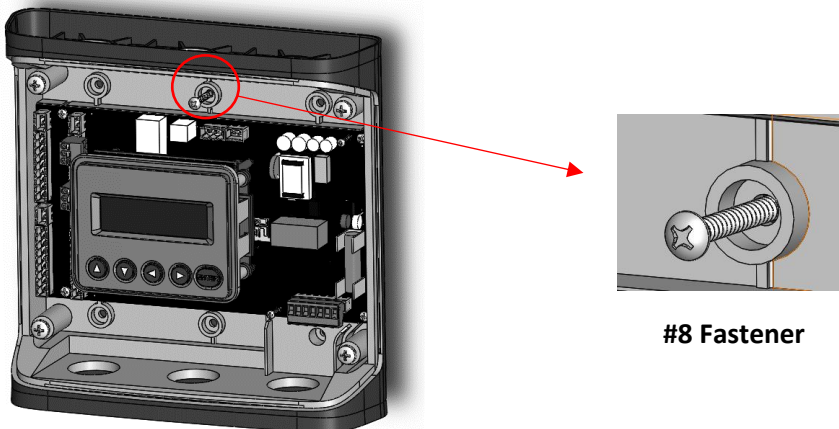
The following section illustrates the 12 channel model. The mounting components are slightly different, but follow the same procedure.

**STEP 1)** Remove top cover screws (4x) and high voltage cover screws (2x) – provided



**STEP 2)** Locate, mark, and drill wall mounting points (2x–6x—customer supplied)

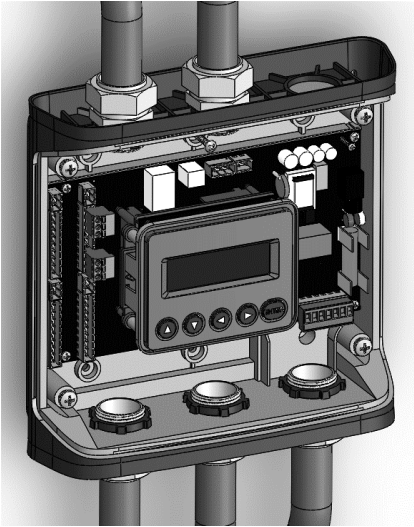
The plastic enclosure itself can be used as a template for marking the drill locations on the wall.



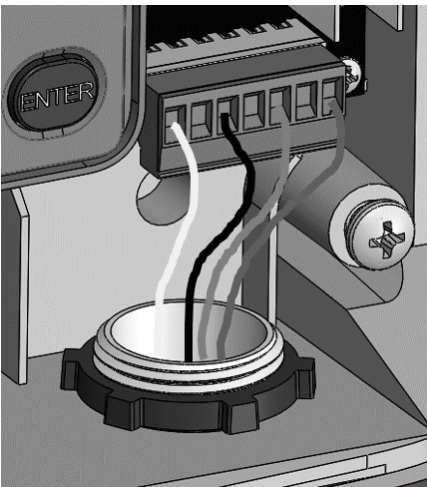
If the meter is not available for use as a drill template, a drawing indicating the spacing between mounting holes can be found in the appendix. The centerline holes are intended for fastening to wall studs. If hollow wall fasteners are used, the outer 4 mounting points are recommended.

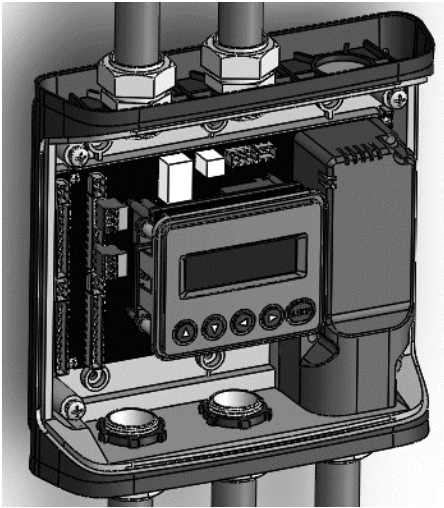


**STEP 3)** Mount conduit fittings, conduits, and blanking plugs



**STEP 4)** Connect voltage leads

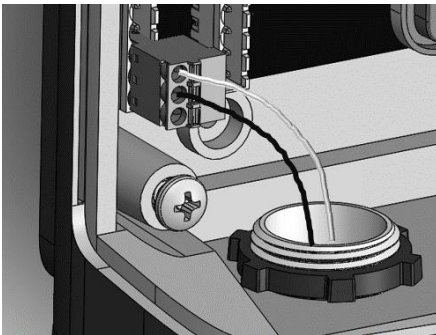


**STEP 5)** Attach high voltage cover

**IP30**



TOUCH SAFE (with internal cover installed)

**STEP 6)** Connect CT and Communications Wiring**Connecting Voltage**

Connect the voltage leads (L1, L2, L3, and N, as necessary) to the meter through a dedicated disconnect or circuit breaker. A voltage lead of **14 AWG THHN Minimum 600VAC rating** (or equivalent) is required.

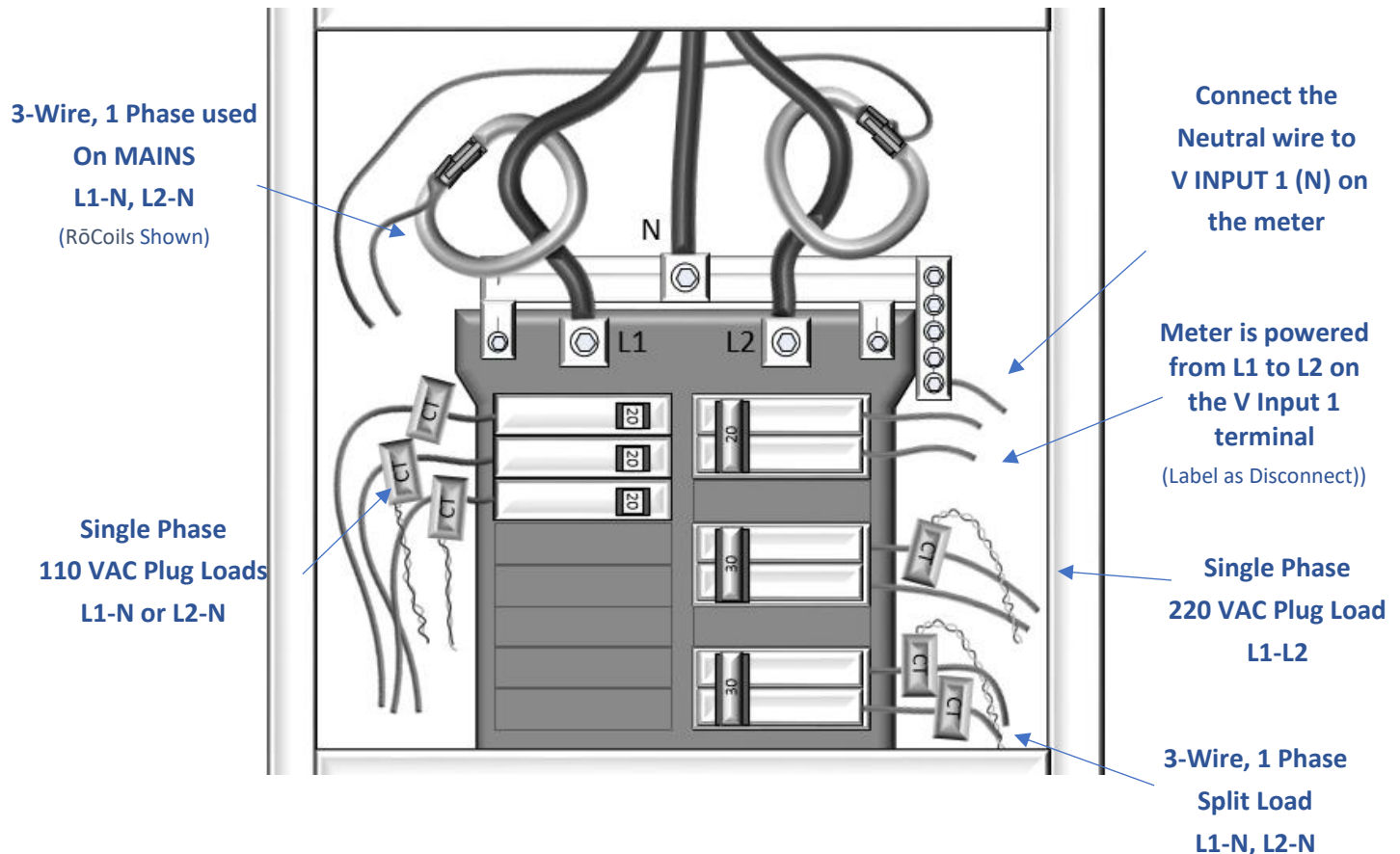


**IMPORTANT:** Verify the circuit breaker is marked as the disconnect breaker for the meter.

## Wiring the *AcquiSuite™ Ally* Meter in a 3-wire, Split $\phi$ Service Panel



High voltage MAY BE PRESENT. Risk of electric shock. Life threatening voltages may be present. Qualified personnel only.



Illustrating the intended wiring configuration for each of the Service Types available in the Service drop-down list under “Meter Setup”

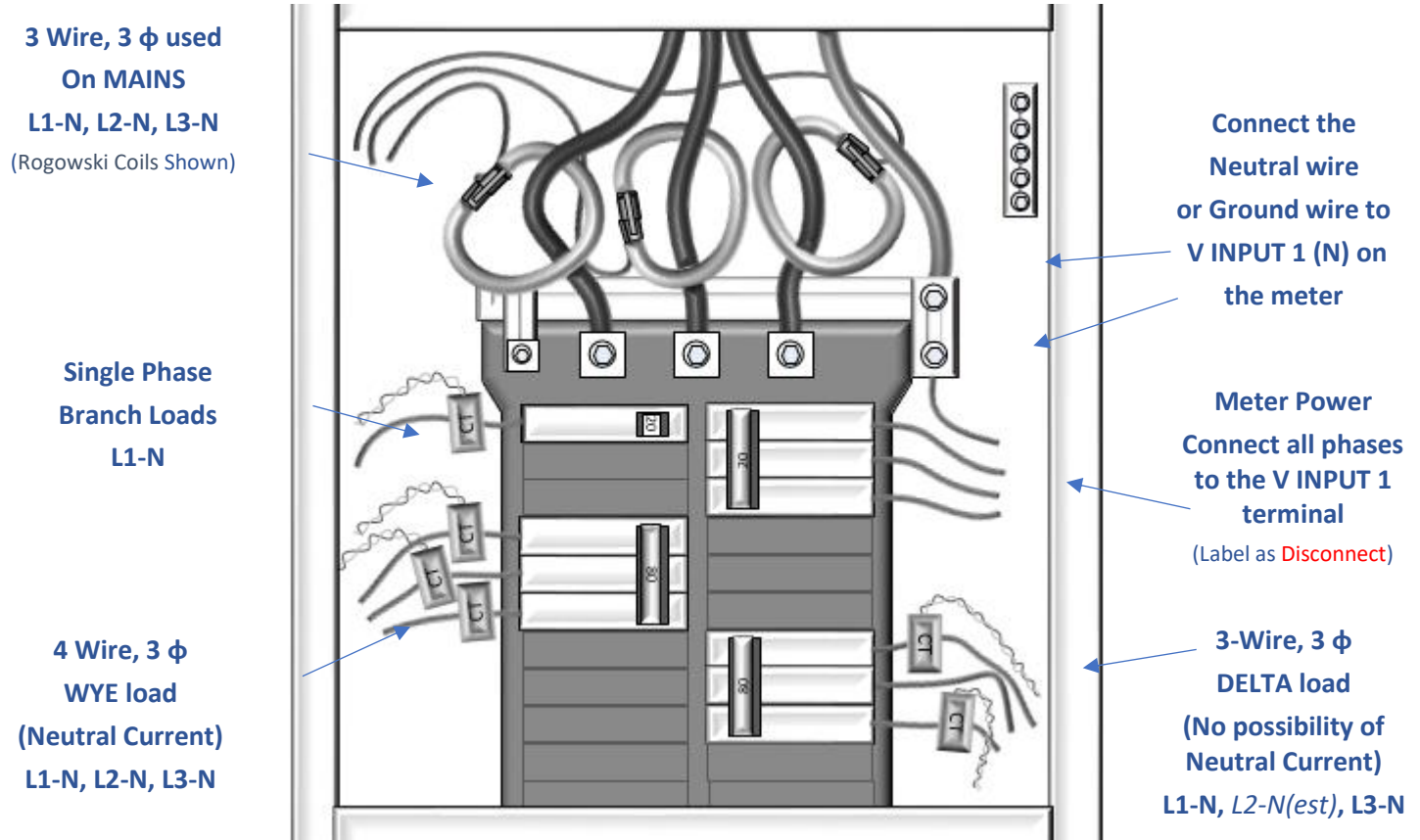
### EXAMPLE LOADS:

**Single Phase L1-N or L2-N 110 VAC:** Lighting, Appliance, Living Zone

**Single Phase L1-L2 220 VAC:** Water Heater, Clothes Dryer, Equipment with no neutral wire.

**Split Phase L1-L2 220 VAC:** Service Entrance, Equipment with neutral wire.

## Wiring the *AcquiSuite™* Ally Meter in a 4-wire, 3 $\phi$ Service Panel



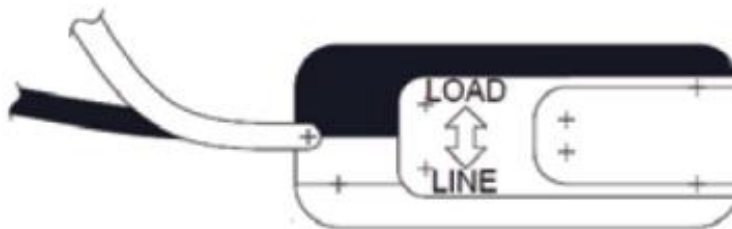
**Illustrating the intended wiring configuration for each of the Service Types available in the Service drop-down list under “Meter Setup”**

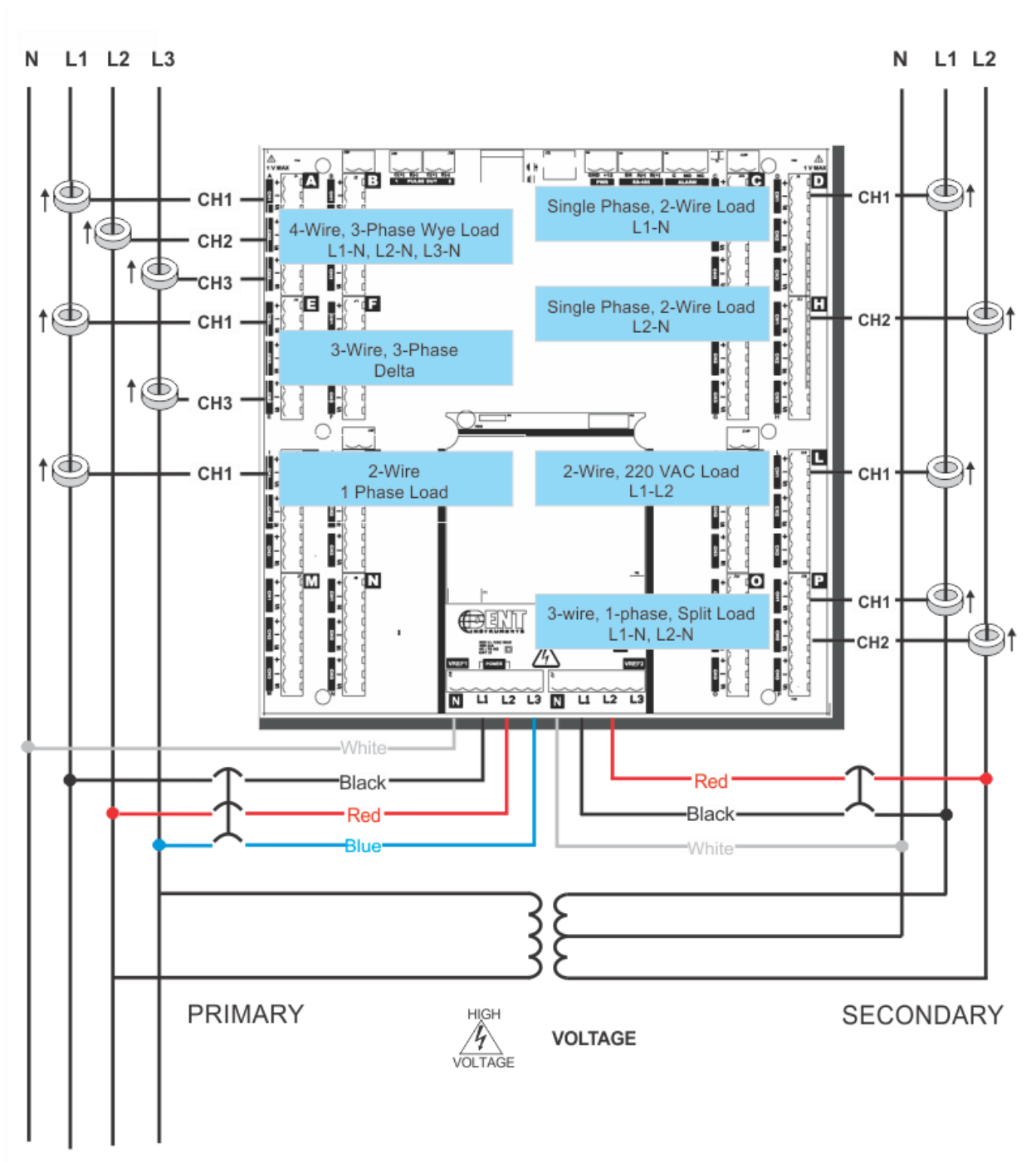
**Note:** The *AcquiSuite™* Ally Meter Series uses the “Neutral” Terminal as a voltage reference. For systems without a neutral conductor, Leviton suggests connecting a ground wire to this terminal. If the neutral terminal is left open, L-L measurements will be accurate, but L-N measurements may not be symmetric. If a ground wire is connected to the Neutral terminal, <2mA will flow into the ground wire.

### Wiring the CTs to the *AcquiSuite™ Ally* Meter

The image below is the counterpart to the service panel illustration and indicates how to connect CTs to the input terminals on the *AcquiSuite™ Ally*, for each service type. For service types that are not specifically listed, it is recommended to choose “single phase” service and configure each channel individually. Three phase loads are illustrated on the left and split phase loads on the right as an example only. Elements are fully interchangeable on the meter.

- Current and voltage inputs must be installed ‘in phase’ for accurate readings (e.g. CT1 on Line 1, CT2 on Line 2) **Orientation is critical:** Ensure that all CTs are properly oriented with the line and load, as marked. Failure to install CTs in the correct orientation and on the correct phase will lead to inaccurate meter readings.



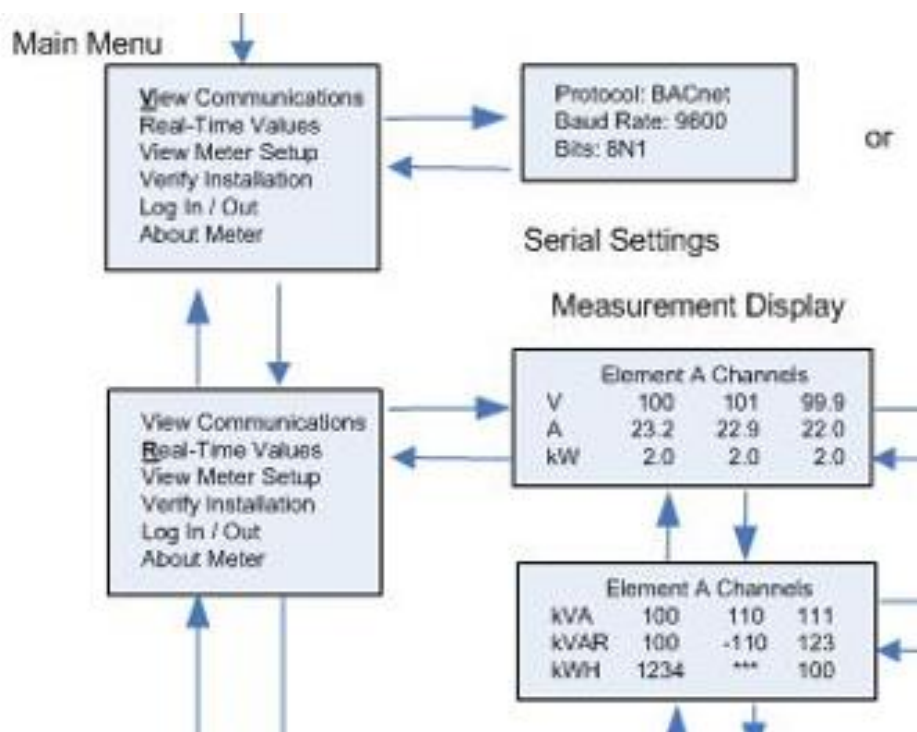


## Communication Verification



Verification includes confirmation of BOTH the physical interface settings (Serial or Ethernet) and the protocol (Modbus or BACnet) settings.

The LCD User interface can be used to quickly confirm the settings required for each combination of interface and protocol. The interface is intuitive and groups together commonly associated registers. The complete interface is presented in Appendix A as a navigational map. Arrows indicate how to move from one menu display to the next. A **Reverse Contrast** entry in the documentation indicates the active menu item in a list which corresponds to a blinking character in the physical LCD. The ENTER button is used to select a property and up / down buttons are used to select among the values supported by the meter. Note that changes to the meter configuration are limited to the communication interface using the LCD. If additional changes (such as CT type) are required they must be made using a software interface.



**Example LCD Navigation**

## AcquiSuite™ Ally Configuration Console / Web Application

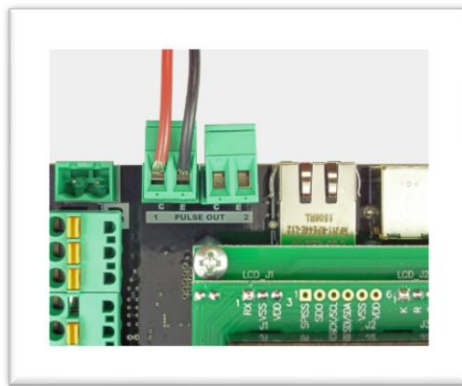
If your AcquiSuite™ Ally model does not include the LCD user interface or if you prefer to verify the installation using software, then verification is facilitated through the AcquiSuite™ Ally



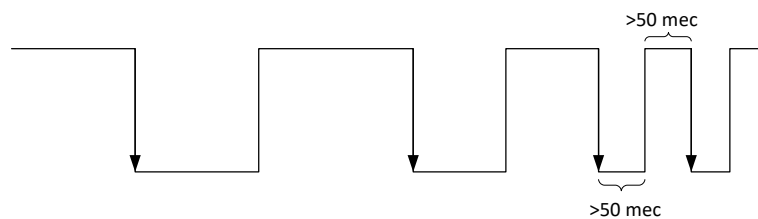
Configuration Console PC application or the Web App which shares a common design. Refer to the section on Configuration Details in the full user manual, or the *AcquiSuite™* Ally Web App.

## Pulse Inputs

Ally ACM12 meters are equipped with 4 pulse inputs and Ally ACM48 meters (hardware version I) are equipped with 2 pulse inputs. Pulse counting supports accumulation of consumption data from any external meter using a dry contact (Form A Relay) or open collector outputs. The AcquiSuite Ally pulse inputs are compatible with “low speed” meters. The pulse duration must exceed 50mS in both the logic low and high state allowing for a maximum input frequency of 10 Hz.



Pulse scaling, resetting and accumulated values are accessed through registers and are “system” in scope. Refer to the register list, Obvius Ally Configuration Console, or videos for more information.



**Typical Pulse Sequence**