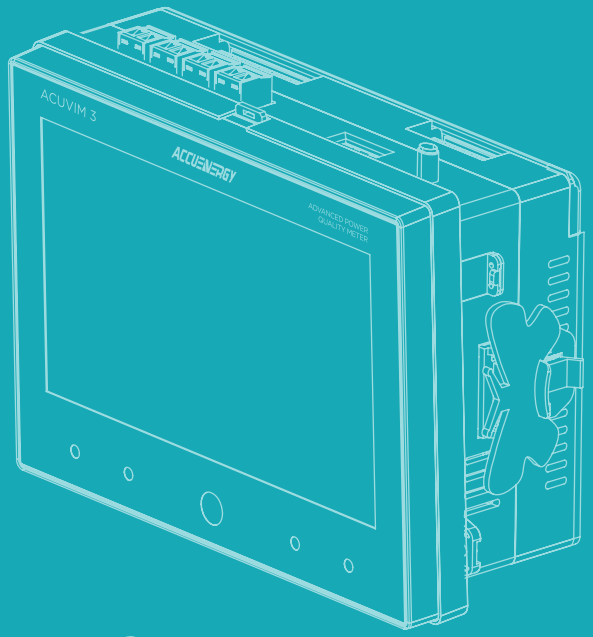
Acuvim 3

Advanced Power Quality Meter

QUICK SETUP GUIDE



IEC 61000-4-30 Certified

EN55011

C12.20 .1 CLASS

Modbus DNP3 BTL MV90 COMPATIBLE Wi Fi ACCUENERGY

Table of Contents

Important Safety Notice

Read this document and the following symbols carefully before the installation, operation and maintenance of the Acuvim 3 series meter.

Accuenergy is not responsible or liable for any damages or injuries caused by improper meter installation and/or operation.

- Prior to maintenance and repair, the equipment must be de-energized and grounded.
- A switch or circuit breaker must be included in close proximity to the equipment and operator.
- All maintenance work must be performed by qualified professionals with formal training and experience in high voltage/current.
- Meter must be installed in an NRTL-certified enclosure to provide suitable protection.

The following symbols can be found either in this document or on the product.

ELECTRIC HAZARD: Indicates information about procedures which must be followed to reduce the risk of electric shock and danger to personal health.

WARNING ALERT: Indicates a hazardous circumstance which may result in severe injury or death.

INFO: Provides additional information before an action shall be taken by the user.

Legal Notice

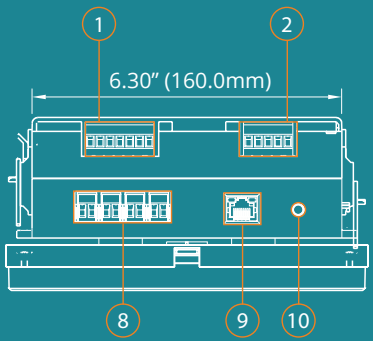
This Acuvim 3 quick setup guide provides informational and operational guidance regarding the use of the meter. While effort has been made to ensure the accuracy, reliability, and completeness of the information at the time of publication, Accuenergy assumes no responsibility for any errors, omissions, or misunderstandings in this document and reserves the right to modify its content at any time without prior notice.

Users should verify with Accuenergy or their authorized local representative that the document in use is the latest version and strictly adhere to the installation, operation, and maintenance procedures specified herein. Accuenergy shall not be held liable for any damages or consequences resulting from improper use or failure to comply with the provisions of this document. This quick setup guide may not be altered or reproduced in whole or in part by any means without the expressed written consent of Accuenergy.

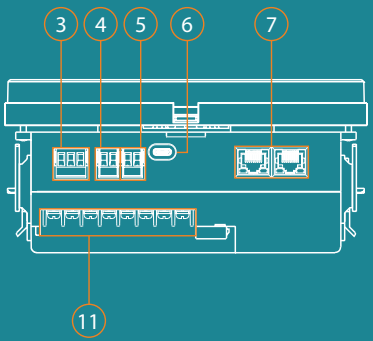
1. Appearance and Dimensions

PART NAME	DESCRIPTION
1. Voltage input	Three voltage input terminals
2. Power Supply	Control power input
3. RS485 Port	Modbus RS485 communication port
4. IRIG-B Port	Single PMU time synchronization port
5. Digital Output Terminal	Single digital output
6. USB-C Port	Modbus RTU Connection
7. Dual Ethernet Ports	Two RJ45 connectors
8. Digital Input	Four digital input terminals
9. Remote Display Port	RJ45 to connect to remote display. Cannot be used as Ethernet port.
10. Antenna Input	2.4 GHz Wi-Fi interface
11. Current Input Terminals	Four current input terminals
12. Touchscreen HMI Display	7-inch LCD touchscreen
13. Display Controls	Home key and LEDs to indicate status, alarm, energy

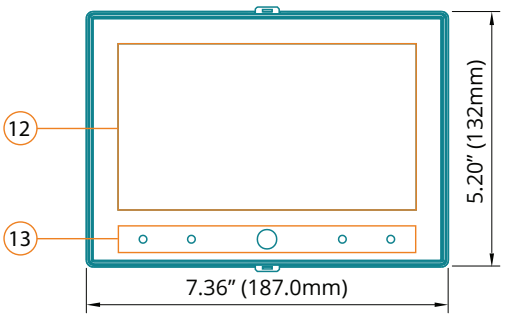
TOP



BOTTOM

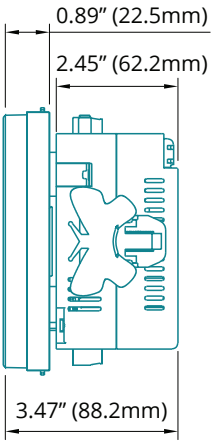


FRONT VIEW

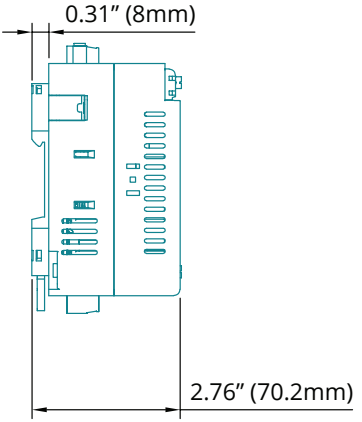


SIDE VIEW

Panel Mount Side View



DIN Rail Side View



2. Operating Environment

Ensure the following conditions are met before installation. Installation must be performed by qualified personnel in accordance with local electrical codes at a dry, dust free location. At the installation location, avoid direct heat, radiation, and excessive electromagnetic interference. Failure to do so may affect measurement accuracy, impair system function, damage hardware, or pose safety risks.

Location	Indoor
Operating Temperature	-25°C to 70°C (-13 °F to +158°F)
Relative Humidity	5% - 95% RH, Non-Condensing
Altitude	<3000 m

Ensure a reliable Protective Earth (PE) connection is available before wiring.

3. Installation Steps

The Acuvim 3 installation consists of three main stages:

Mechanical Installation

- Select the appropriate mounting method.
- Mount the meter according to the selected installation method.

Electrical Wiring

- Connect the control power.
- Wire the voltage inputs.
- Wire the Current Transformers (CTs) for current inputs.

Communication Setup

- Apply power and verify the display.
- Connect to the meter through Wi-Fi, Ethernet, or RS485.
- Configure the meter settings.

Detailed instructions for each step are provided in the subsequent sections.

4. Mechanical Installation

The Acuvim 3 is available in two mounting options:

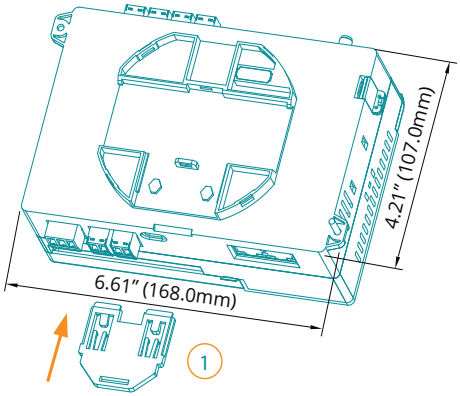
- DIN rail mount
- Panel mount

Refer to the following diagrams for mounting dimensions and required panel cut-out sizes.

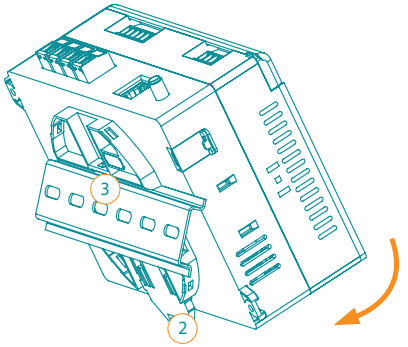
4.1 DIN Rail Installation

The Acuvim 3 can be mounted on a standard 35mm DIN rail. Follow the steps below for installation.

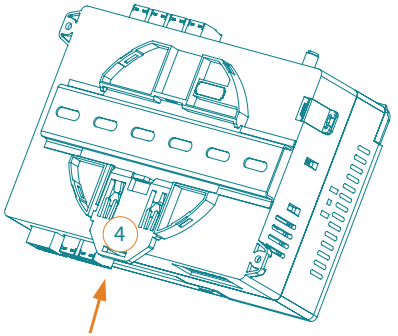
1. Attach the DIN rail clip to the rear of the meter as show in ① (skip if pre-installed).



2. Pull down the DIN rail clip slightly to allow clearance as shown in ② and place the top of the meter onto the DIN rail as indicated in ③. Rotate the bottom inward until Acuvim 3 is fully seated.



3. Release the DIN rail clip to lock the meter in place as depicted in ④.

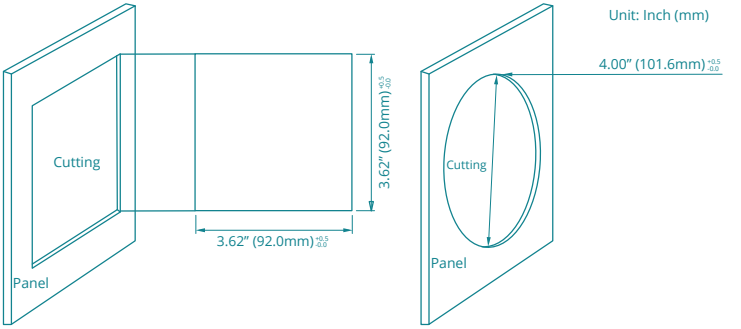


4. Verify the meter is securely fastened and ensure the meter cannot move vertically once installed.

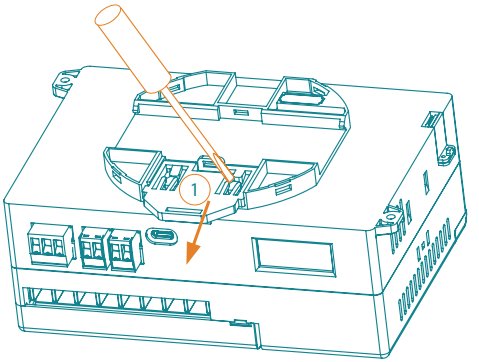
4.2 Panel Mount Installation

The Acuvim 3 supports panel installation using the following standard cut-out configurations:

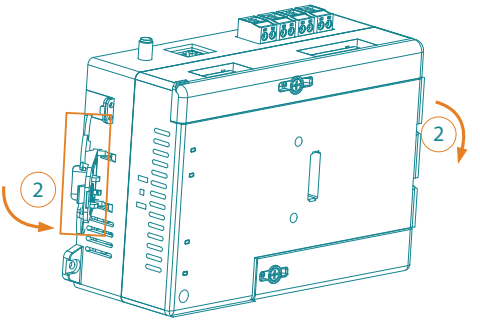
- ANSI C39.1 (4-inch round)
- IEC 92 mm DIN (square) panel cut-outs



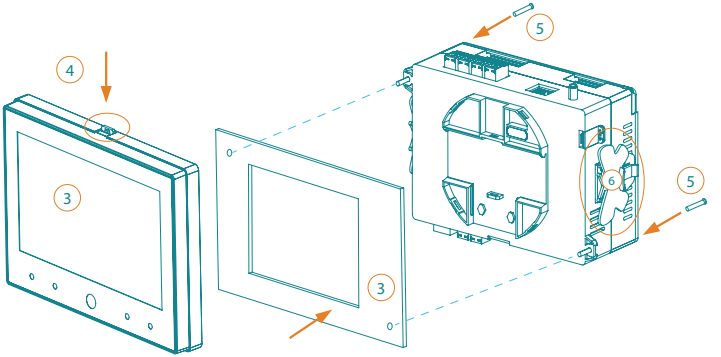
1. If installed, remove the DIN rail clip using a flat screwdriver.



2. Attached the butterfly clips to both sides of the meter.



3. Align the panel between the meter and screen as indicated in ③ and insert the meter through the panel.
4. Click the top clips on the display screen and push until locked to attach the screen as shown in ④.
5. Secure the assembly using two M3 x 13mm screws as shown in ⑤.
6. Press the butterfly clips inward against the panel to lock the meter.



7. Confirm the meter is firmly seated and flush with the panel surface.

5. Electrical Wiring

ELECTRIC HAZARD

Disconnect all power sources before wiring. Improper wiring may result in equipment damage or personal injury.
Ensure a reliable Protective Earth (PE) connection is installed before energizing the meter.
Appropriate safety wear is mandatory to ensure safe wiring.

5.1 Control Power Options

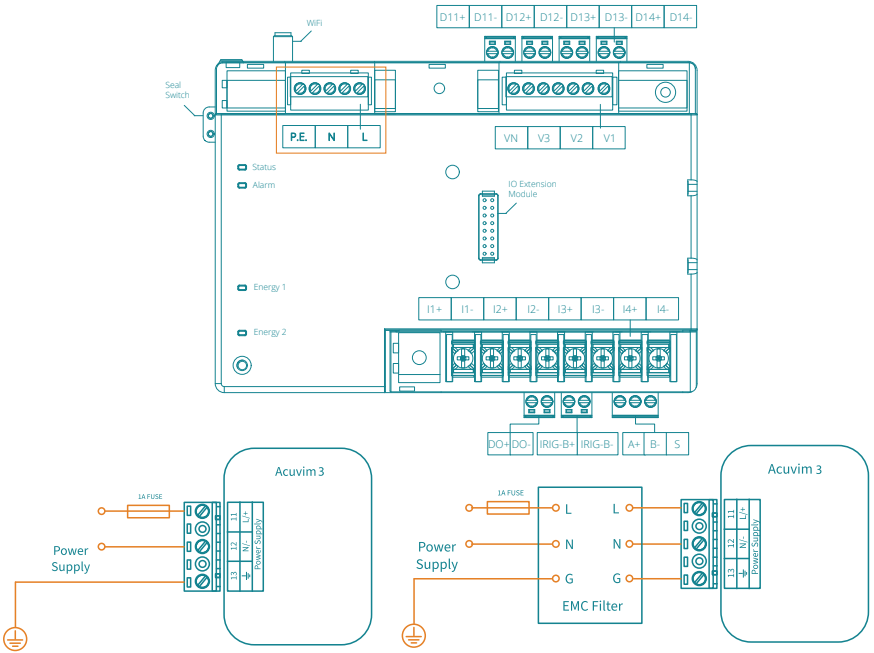
WARNING ALERT

Before energizing the meter, please refer to the meter's label and specifications.
The selected power option must match the product ordering information.

The Acuvim 3 supports two control power options:

OPTION	VOLTAGE RANGE
AC (P1)	100 - 415 VAC, 50/60Hz; 100 - 300 VDC
DC (P2)	20 - 60 VDC

Power consumption is typically low and connections are made using the terminals L, N and PE. A 1 A/500 VAC fuse is recommended. Install a disconnect device near the equipment and connect a PE to the switchgear grounding point. For unstable power conditions, use a UPS or regulated supply. An EMC filter should be used in the control power supply loop if there is a power quality problem in the power supply.



5.2 Voltage Input Wiring

Connect the voltage input to the V1, V2, V3, VN terminal. Recommended wire size is AWG 12 – 28. Depending on application, use fuse or circuit breakers for the voltage wiring. The fuses or circuit breakers must be rated for the installation voltage and sized for the available fault current. The maximum rating for the wiring is mentioned in the table below:

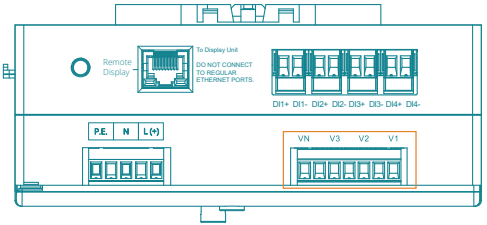
SYSTEM TYPE	MAXIMUM INPUT
Three-phase	400 V L-N / 690V L-L RMS
Single-phase	400 V L-N RMS

WARNING ALERT

For voltage systems higher than the maximum input, Potential Transformer (PTs) are required.

PT Wiring Guidelines

Typical PT Secondary Voltage	100 V or 120 V
Star-Connected PTs	Connect the PT primary to the phase-to-neutral voltage of the system
Delta-Connected PTs	Connect the PT primary to the line-to-line voltage of the system
PT Protection	Ground the PT secondary at one point only and never short-circuit the PT secondary



Depending on the wiring method used, voltage input wiring varies as shown in the current input wiring diagrams below.

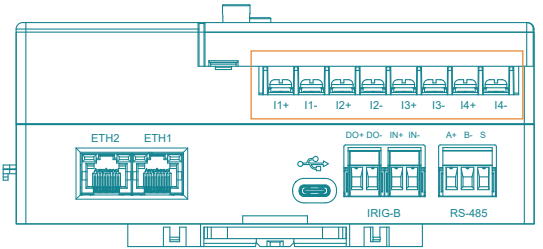
5.3 Current Input Wiring

WARNING ALERT

- Never open-circuit an energized CT secondary.
- Do not install fuses or switches in CT secondary circuit loops.
- Ground one side of the CT secondary for 5A or 1A CTs only.
- Keep CT lead length as short as practically possible to ensure measurement accuracy

The Acuvim 3 supports multiple current input options, including 5 A or 1 A CT, 333 mV current sensor, and Rogowski Coil CTs. Recommended CT performance is accuracy ≤ 0.5% and burden ≥ 3 VA. Recommended wire size is AWG 12 - 22. Connect the current inputs according to the phase terminals below:

PHASE	TERMINALS
Phase A	I1+ / I1-
Phase B	I2+ / I2-
Phase C	I3+ / I3-
Neutral	I4+ / I4-

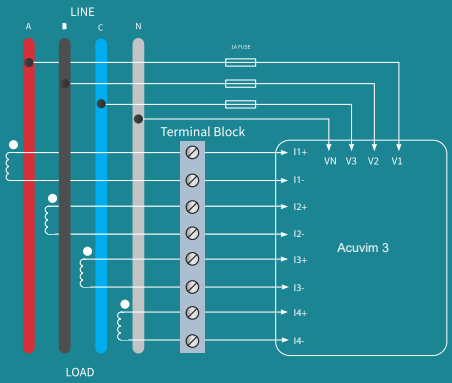


The Acuvim 3 supports multiple wiring methods as indicated in the images below

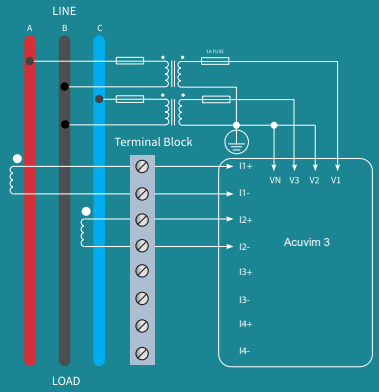
INFO

Wiring configuration must match the system type selected in the meter setup.

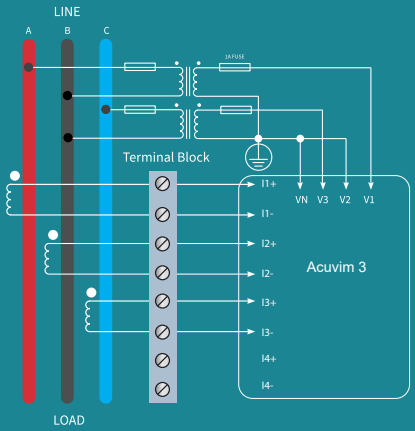
The wiring configurations below depict connections for mV or RCT connections. For 5A or 1A CT wiring configuration, pls refer the Acuvim 3 user manual by visiting www.accuenergy.com/acuvim-3-manual.



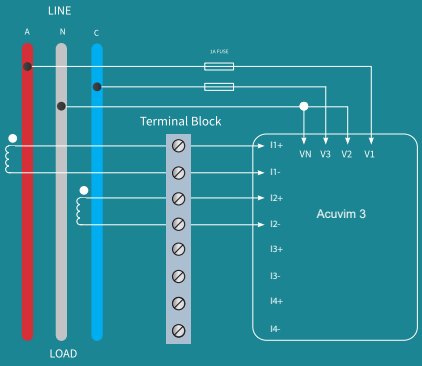
3 Element 4 Wire Wye (3LN-3CT)



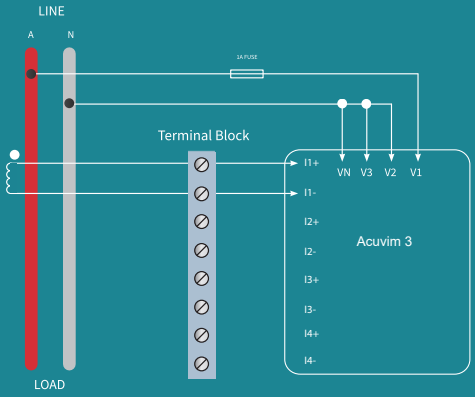
2 Element 3 Wire Delta – 2CT



2 Element 3 Wire Delta 3 CT



2 Element 3 Wire 1 Phase



1 Element 2 Wire (1LN-1CT)

6. Communication Setup

INFO

The quick setup guide covers basic connections. Refer to the Acuvim 3 User Manual by visiting www.accuenergy.com/acuvim-3-manual for advanced configuration.

The Acuvim 3 provides multiple communication options, including RS485 Modbus RTU, BACnet MS/TP, dual Ethernet ports, and optional Wi-Fi.

6.1 RS485 Communication

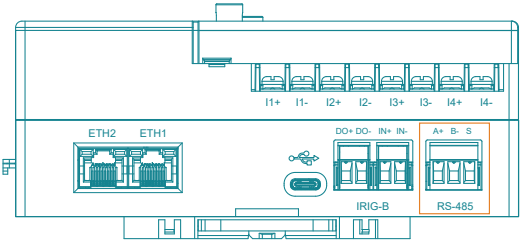
The Acuvim 3 operates as a Modbus RTU slave. Connect the RS485 communication wiring to the corresponding terminal labels on the meter. Terminal A to RS485+, terminal B to RS485-, and terminal S is used for the cable shield.

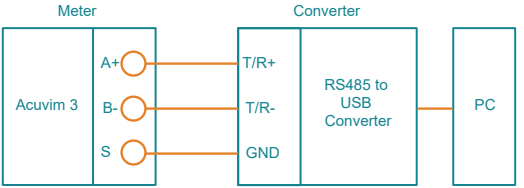
RS485 Wiring Guidelines

- Connect up to maximum 32 devices on a single RS485 bus.
- Maximum cable length for connection is 1200m.
- Use shielded twisted-pair cable (≥ AWG 22).
- Avoid star or T-type topologies.
- Install a 120-300Ω terminating resistor at the last device if needed.

Default Modbus Settings

SETTING	DEFAULT
Modbus Slave ID	1
Baud Rate	19200
Parity	None1 (No parity, one stop bit)





6.2 Ethernet Communication

INFO

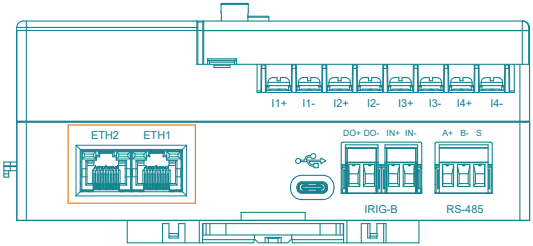
Ethernet supports standard TCP communication. For pin definitions and protocol settings, refer to the Acuvim 3 user manual by visiting www.accuenergy.com/acuvim-3-manual.

The Acuvim 3 features two RJ45 Ethernet ports for network communication. The Ethernet port LEDs indicate connection status:

- Yellow LED indicates a 100Mbps link and when off it indicates a 10Mbps.
- Green LED indicates network link and activity status.

Default Ethernet Port Settings

SETTING	DEFAULT
ETH1	
DHCP	Manual
IP Address	192.168.1.254
Subnet Mask	255.255.255.0
Gateway	192.168.1.1
DNS1	8.8.8.8
DNS2	8.8.4.4
ETH2	
DHCP	Auto



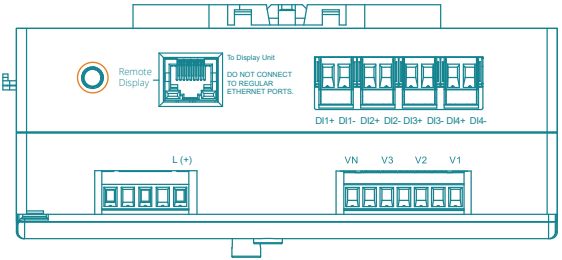
6.3 Wi-Fi Communication (Quick Access)

By default, the Acuvim 3 operates in Access Point (AP) mode with connections steps described below:

1. Connect to the Acuvim-3-WIFI network.
2. Open a browser and enter the IP **192.168.100.1.**
3. Log in using default credentials as mentioned in the table below.

Default Wi-Fi Settings

SETTING	DEFAULT
Wi-Fi SSID	Acuvim-3-WIFI (serial number)
Password	accuenergy
IP Address	192.168.100.1
Web Interface Username	admin
Web Interface Password	admin



7. I/O Options

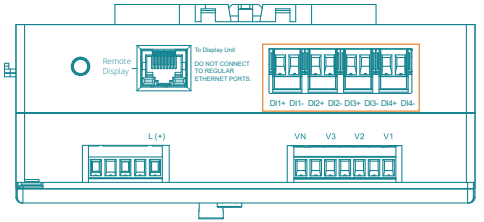
The Acuvim 3 includes built-in digital I/O and supports optional expansion modules for additional monitoring and control functions.

7.1 On-Board I/O

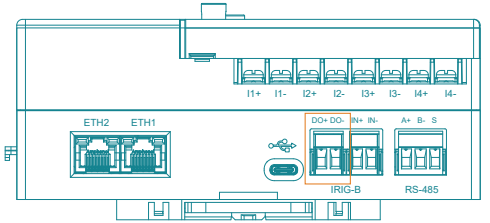
INFO

Refer to the Acuvim 3 User Manual at www.accuenergy.com/acuvim-3-manual for detailed I/O configuration and instructions.

The onboard Digital Inputs (DI) provide four isolated inputs for status monitoring or pulse counting. The inputs support an external power supply range of 20 - 160 VAC or VDC.



The onboard Digital Output (DO) can be used for energy pulse output or alarm output signaling. Please note only one function can be active at a time.

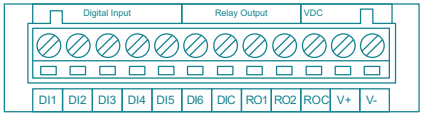


7.2 Expansion I/O Modules

The Acuvim 3 supports up to three expansion I/O modules per meter, with the following limitations:

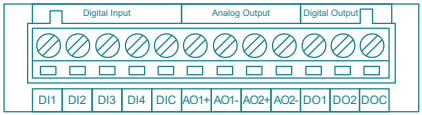
1. A maximum of two identical I/O modules can be used with one meter.

Options for I/O modules include:



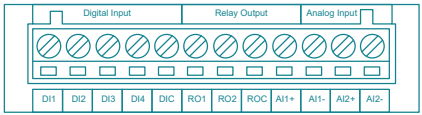
AXM-IO1

6 DI, 2 RO, 1 power supply for DI



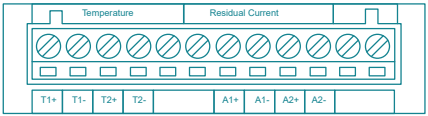
AXM-IO2

4 DI, 2 DO, 2 AO



AXM-IO3

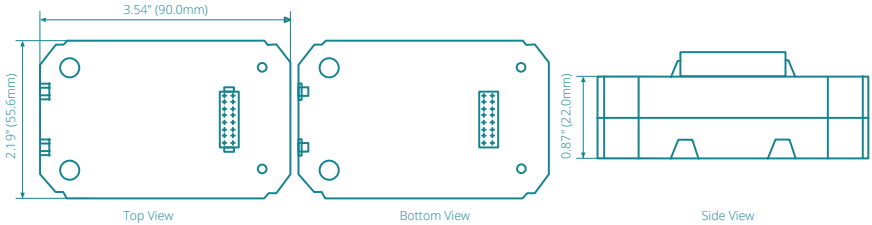
4 DI, 2 RO, 2 AI



AXM-IO4

2 RCM, 2 RTD

7.2.1 I/O Module Appearance and Dimensions

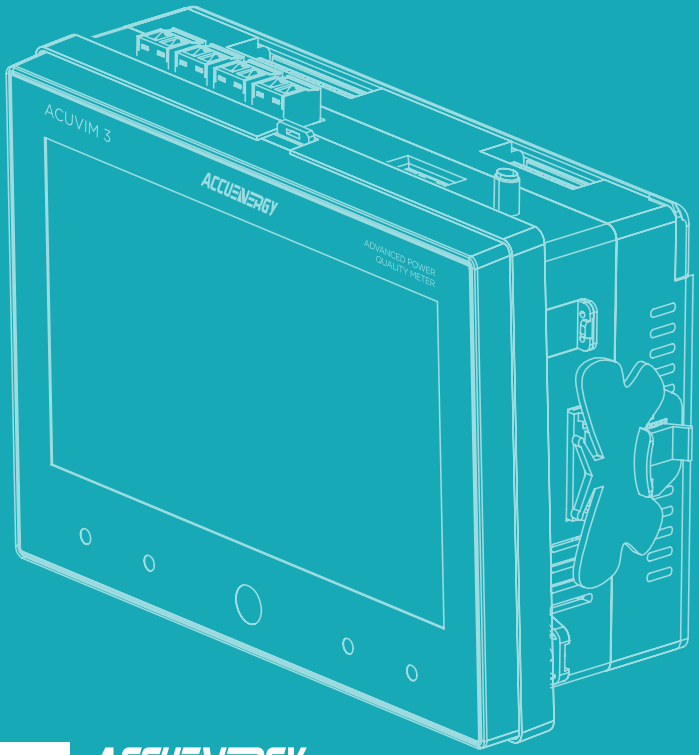


8. Specifications

AC/DC CONTROL POWER	
Operating Range	P1: 100~415 VAC, 50/60Hz; 100~300 VDC (±10%) P2: 20~60 VDC (±10%)
Burden	P1: 15 W, 25 VA P2: 5 W
Withstand Capacity	3600 VAC, 50/60Hz for 1 minute
Overvoltage Category	CATIII
Pollution Degree	II
Altitude	< 3000 m
Temperature	-25 to 70 °C (-13°F to 158 °F)
Relative Humidity	5~95% RH Non-Condensing
Location	Indoor

VOLTAGE INPUT	
Nominal Full Scale	10-400 VAC L-N, 690 VAC L-L (+20%)
Withstand	1500 VAC continuous 2500 VAC, 50/60 Hz for 1 minute
Input Impedance	2MΩ per phase
Metering Frequency	45Hz ~ 70Hz
Pickup Voltage	5 VAC
Accuracy	0.1% of Reading

CURRENT INPUTS (EACH CHANNEL)	
Nominal Current	① 5A, ② 1A, ③ 333mV, ④ Rogowski Coil,
Metering Range	① 0-10A, ② 0-2A, ③ 0-400mV, ④ 0-400mV
Pickup Current	① 0.5mA, ② 0.5mA, ③ 0.25mV, ④ 0.25mV
Withstand	20 A RMS continuous 50 A RMS @10 sec / hr 500 A RMS @1 sec / hr
Burden	0.05VA (Typical) @ 5A RMS
Accuracy	0.1% of Reading



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