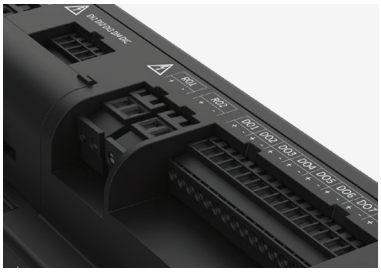
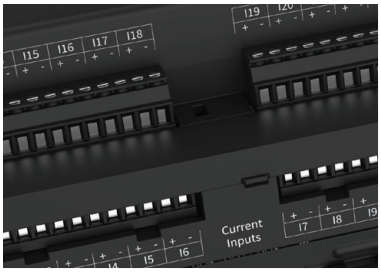
AcuRev 4100

Multi-Channel Branch Circuit Submeter Datasheet









DESCRIPTION

The AcuRev 4100 Series is a leading-edge revenue-grade multi-channel submeter designed for high-density tenant billing and branch circuit monitoring. It includes up to 24 current inputs for multi-point monitoring of single-phase and three-phase electrical systems while delivering ANSI C12.20 Class 0.2 and IEC 62053-22 Class 0.2S accuracy.

Designed for real-time energy consumption monitoring and high-precision power quality analysis, the AcuRev 4100 Series provides reliable performance across commercial, industrial, and residential facilities.

FEATURES

+ Measurement compliant with ANSI C12.20 Class 0.2 and IEC 62053-22 Class 0.2S standards.
+ Measures up to 24 single-phase, 12 two-phase, 8 three-phase circuits, or custom service configurations.
+ Dual Ethernet ports provide connectivity with RSTP support and RS485 daisy-chained network configurations.
+ 3 data loggers and 1 trend logger that can be independently configured for periodic measurement logging.
+ Power quality event detection with waveform capture up to 128 samples per cycle, recording 2560 total samples pre- and post-trigger.
+ Multi-protocol communication support to connect seamlessly via Modbus, BACnet.
+ Optional WEB2 supports 32GB memory, additional protocols, Wi-Fi and Cloud access via AcuCloud.
+ LCD display for real-time data visualization and device configuration.

KEY FEATURES

Flexible Multi-Circuit Measurement

+ Measure and verify utility bills with revenue grade-accuracy: ANSI C12.20 Class 0.2 and IEC 62053-22 Class 0.2S standards for active energy.
+ Supports 24 current inputs, configurable for 24 single-phase, 12 two-phase, 8 three-phase circuits, as well as custom service configuration.
+ Software-configurable current mapping allows current transformer inputs to be assigned to logical channels, simplifying installation and wiring corrections.
+ Flexible current configurations make it easier to correct input connections in forward or reverse direction. Each current input can be paired with any voltage input (Va, Vb, Vc, Vab, Vbc, Vca) for flexible power calculation and energy accumulation.
+ Supports current inputs of 80mA, 100mA or a 333mV, 120mV from a Rogowski Coil Input.

Power Quality Monitoring

+ Power quality event detection and trigger-based waveform capture, configurable up to 128 samples per cycle, with a total of 2560 samples captured before and after the trigger. Supports ITIC/CBEMA curve analysis for voltage tolerance evaluation. Critical for protecting electronic equipment for monitoring of parameters such as Total Harmonic Distortion and Individual Harmonics up to the 31st order, Current K Factor, Current Unbalance, Voltage Crest Factor and Voltage Unbalance.

Wiring Diagnostics

+ Verify voltage and current input wiring after installation to detect missing, reversed, or phase-shifted connections. Accessible through the AcuHMI or Acuview 2 software.

Multi-Tariff Time of Use (TOU)

+ AcuRev 4100 Series supports up to 4 tariffs (sharp, peak, valley, normal) with 12 Seasons, 14 schedules, 14 segments, weekend settings, and a 10-year holiday calendar for regional billing.

Data Logging

+ Includes 3 data loggers and 1 trend logger that can be independently configured for periodic measurement logging. It tracks real-time parameters such as Phase Voltage, Line Voltage, Current, Power, Frequency, and Power Factor which helps to log Active, Reactive and Apparent Power and Energy.
+ Optional single WEB2 module acts as a gateway and supports 32GB of non-volatile memory to aggregate energy and power quality data from up to 4 individual meters, supporting 96 channel inputs.

Alarm and Event Monitoring

+ Configures up to 20 alarm groups and stores 200 alarm logs, monitoring 40 different parameters with logic combinations. AcuRev 4100 logs events with 2ms resolution during the SOE recording.

Integrated I/O Functions

+ Includes 4 digital inputs configurable for status monitoring, SOE logging, or pulse input. It also supports 8 digital outputs and 2 relay outputs. Digital and relay outputs are configurable for event, alarm triggering and relay control.

Multi-Protocol Communication Support

+ Built-in RS485 interface for Modbus RTU and BACnet MS/TP, along with dual Ethernet ports for Modbus TCP communication.
+ Optional WEB2-D and WEB2 modules provide dual Ethernet and protocol support including Modbus TCP, BACnet/IP, EtherNet/IP, HTTPS, FTP, SFTP, NTP, MQTT, SMTP, SNMP, with AcuCloud, AWS IoT, Azure IoT, Remote Access, and Waveform Post features; the WEB2 additionally supports Wi-Fi for wireless connectivity.

Custom Register Read

+ Groups up to 120 register addresses for selected parameters into a custom block, enabling data retrieval in a single Modbus read.

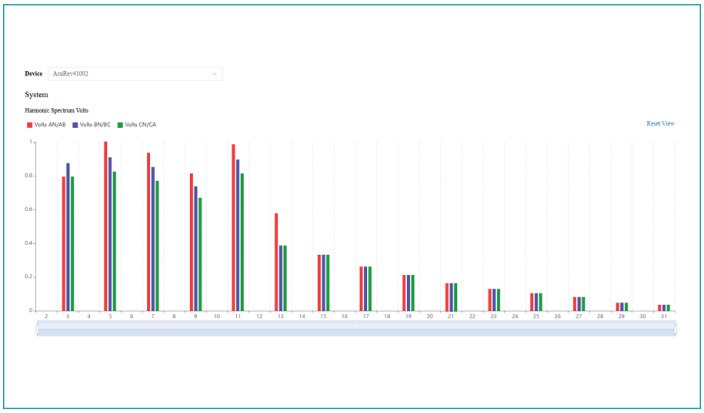
APPLICATIONS

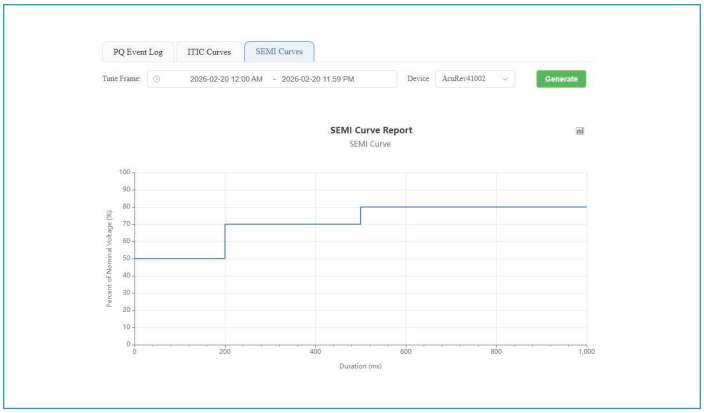
+ Energy Management in Industrial and Commercial Buildings
+ Submetering for Tenant Billing
+ Data Center and Power Distribution Units (PDU)
+ Power Quality Monitoring
+ Integration with Building Management Systems (BMS)
+ Distributed Energy Resources (DER) Monitoring
+ Railway and Subway Systems
+ Industrial and Utilities Applications

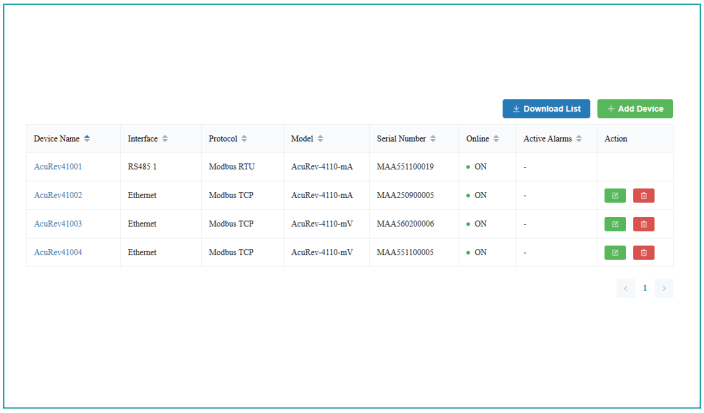


WEB2 INTERFACE

Connecting a single WEB2 module provides centralized access for up to four AcuRev 4100 meters through one IP address to monitor real-time readings, configure settings, and manage data logging for all connected meters, reducing network complexity.









SPECIFICATIONS

Metering

PARAMETERS	ACCURACY	RESOLUTION	RANGE
Voltage	0.1%	0.001V	60~830VAC (L-L)
Current	0.1%	0.001A	0.005A~10000A
Active Power	0.2%	0.001kW	10000kW
Reactive Power	0.2%	0.001kvar	10000kvar
Apparent Power	0.2%	0.001kVA	10000kVA
Power Factor	0.2%	0.001	-1.000~1.000
Frequency	0.002 Hz	0.001Hz	42.5Hz~69Hz
Active Energy	0.2%	0.1kWh	0~99999999.9kWh
Reactive Energy	0.2%	0.1kvarh	0~99999999.9kvarh
Apparent Energy	0.2%	0.1kVAh	0~99999999.9kVAh
Active Power Demand	0.2%	0.001kW	10000 kW
Reactive Power Demand	0.2%	0.001kvar	10000 kvar
Apparent Power Demand	0.2%	0.001kVA	10000 kVA
Current Demand	0.2%	0.001A	0.005A~10000A
Unbalance	1%	0.001%	0~150%
Harmonics	1%	0.001%	0~100%
Meter Running Time		Second	0~4294967295

Control Power

Operating Range	100V-300VAC, 50Hz/60Hz; CAT III 100V-480VAC, 50Hz/60Hz; CAT II
Power Consumption	<6W
Withstand	3600VAC, 50/60Hz for 1 minute

Input

VOLTAGE INPUT *(1 CHANNEL)*

Nominal Full Scale	60-480VAC L-N/ 60-830VAC L-L, CAT III
Withstand	4kVRMS 1Min
Pickup Voltage	10V
Accuracy	0.1%

CURRENT INPUTS *(EACH CHANNEL)*

Nominal Current Options	mA model: 80mA, 100mA mV model: 333mV, 120mV Rogowski Coil
Range	mA model: 0-120mA mV model: 0-400mV
Pickup	mA model: 0.06mA mV model: 0.25mV
Max Voltage	1.2V
Accuracy	0.1%

Communications

RS485

Type	9600-115200bps
Protocols	Modbus RTU, BACnet MS/TP

ETHERNET

Type	10/100Mbps
Protocols	Modbus TCP

I/O Options

DIGITAL INPUTS *(DI)*

Input Type	Dry Node
External Power Supply	20~30VAC / 20~60VDC
Pulse Frequency (Max)	50Hz with a 50% Duty Cycle (10ms ON, 10ms OFF)
SOE Resolution	2ms
On-State Voltage	15V
Off-State Voltage	5V
Isolation Voltage	2500VAC

DIGITAL OUTPUTS *(DO) (PHOTO-MOS)*

Voltage Range	0~30VAC / 0~60VDC
Max Load Current	100mA
Maximum Frequency	25Hz with 50% duty cycle (20ms ON, 20ms OFF)
Isolation Voltage	2500VAC

RELAY OUTPUTS *(RO) (NO, FORM A)*

Load Current	5A at 250VAC 3A at 30VDC
Set Time	10ms
Contact Resistance	100mΩ (Max)
Max Switching Voltage	250VAC CAT II, 30VDC
Isolation Voltage	2500VAC

Mechanical Characteristics

IP Degree of Protection	IP54: Panel mount front and touchscreen display IP30: Panel mount rear, DIN rail mount, I/O modules

SPECIFICATIONS

Standard Compliance & Certifications	
Measurement Standard	ANSI C12.20 Class 0.2, IEC 62053-22 Class 0.2S
Safety Standard	IEC UL 61010-1, IEC 61010-2-30, LVD (EN61010-1), IEC 62052-31
Certifications	CE, CTEP, Measurement Canada Approved
EMC Standard	EN61326-1, FCC Part 15 Class B[1], and CISPR 32 Class B[2]

Operating Environment	
Location	Indoor
Pollution Degree	2
Operating Temperature	-25 °C to +70 °C -13 °F to +158°F
Operating Humidity	0 % to 75 % RH
Storage and Shipping Temperature	-40 °C to +85 °C -40 °F to +185°F
Storage and Shipping Humidity	0 % to 95 % RH
Altitude	0 to 2000m

Note: 1. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

2. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to CISPR 32. These limits are designed to provide reasonable protection against harmful interference in a residential environment.

FUNCTION LIST

ENERGY	Parameters	AcuRev 4110
Active Energy	Ep	•
Reactive Energy	Eq	•
Apparent Energy	Es	•
TIME OF USE		
4 Tariffs, 12 Seasons,14 Schedules	TOU	•
POWER DEMAND		
Active Power Demand	Demand_P	•
Reactive Power Demand	Demand_Q	•
Apparent Power Demand	Demand_S	•
Peak Power Demand	Demand_P_max	•
CURRENT DEMAND		
Current Demand	Total and Each Channel	•
Peak Current Demand	Total and Each Channel	•
REAL TIME METERING		
Phase Voltage	V1, V2, V3	•
Line Voltage	V12, V23, V31	•
Current	Total and Each Channel	•
Power	Total and Each Channel	•
Reactive Power	Total and Each Channel	•
Apparent Power	Total and Each Channel	•
Power Factor	Total and Each Channel	•
Frequency	F	•
POWER QUALITY		
Total Harmonic Distortion	THD	•
Individual Harmonics	2nd ~ 31st (Voltage and Current)	•
Current K Factor	KF	•
Voltage Crest Factor	CF	•
Voltage Unbalance	U_unbl	•
Current Unbalance	I_unbl	•
WAVEFORM		
Waveform Recording (Manual / PQ Event / DI Trigger), Configurable Sample Rate & Pre-, Post- Trigger		•

FUNCTION LIST

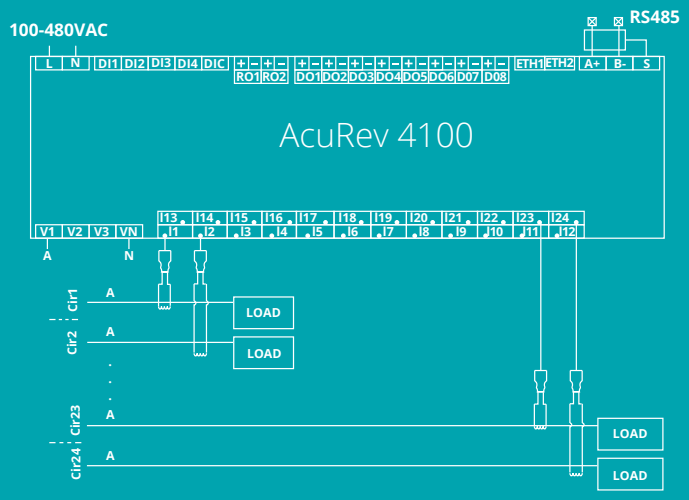
PQ EVENT	Parameters	AcuRev 4110
Voltage Sag		•
Voltage Swell		•
Voltage Interruption		•
Current Swell		•
WIRING DIAGNOSTICS		
Detect Missing, Reversed, or Phase-Shifted Voltage and Current Wiring Errors after Installation		•
CUSTOM READ		
User-Configurable Block of up to 120 Register Addresses Read in a Single Modbus Request		•
TIME		
Real Time Clock (Year, Month, Date, Hour, Minute, Second)		•
ALARM		
Over/Under Limit Alarming		•
DATA LOGGING		
110 MB Memory		•
STORAGE MEMORY		
128 MB Memory		•
32 GB Memory		WEB2 Option
COMMUNICATION PORTS		
RS485 Modbus RTU, BACnet MS/TP		•
Ethernet Modbus TCP		•
Ethernet Modbus TCP, SNMP, MQTT, NTP, SMTP, HTTPS, FTP, SFTP		WEB2 Option
Wi-Fi		WEB2 Option
INPUT/OUTPUT OPTION		
4 Digital Inputs		•
8 Digital Outputs		•
2 Relay Outputs		•
DISPLAY		
LCD		•

COMMUNICATION MODULES

	AcuRev 4100	ACM-41-WEB2	ACM-41-WEB2-D
			
Modbus RTU	•		
Modbus TCP	•	•	•
BACnet MS/TP	•		
BACnet/IP		•	•
EtherNet/IP		•	•
RS485	•		
Ethernet	2	2	2
HTTPS		•	•
FTP		•	•
MQTT		•	•
NTP		•	•
SFTP		•	•
SMTP		•	•
SNMP		•	•
Wi-Fi		•	
Acucloud		•	•
AWS IoT		•	•
Azure IoT		•	•

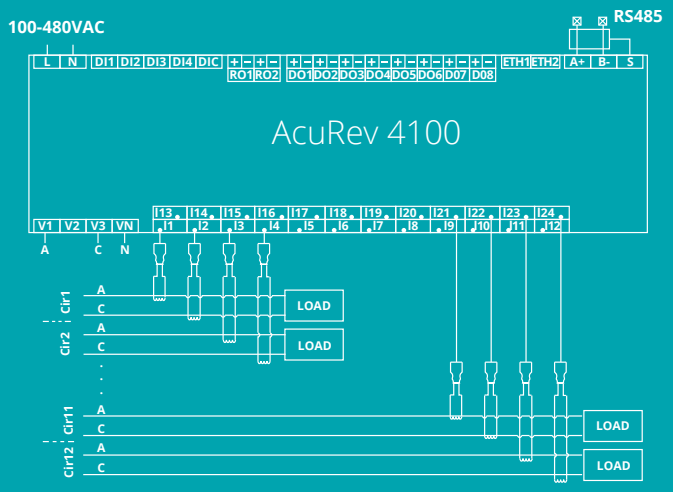
WIRING DIAGRAMS

1 ELEMENT 2 WIRE



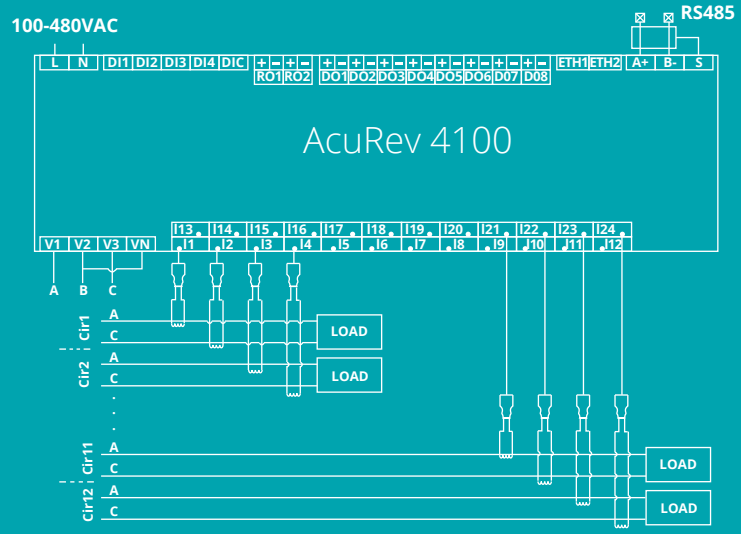
Input Channel	Phase A	Input Channel	Phase A
Channel 1	I1	Channel 13	I13
Channel 2	I2	Channel 14	I14
Channel 3	I3	Channel 15	I15
Channel 4	I4	Channel 16	I16
Channel 5	I5	Channel 17	I17
Channel 6	I6	Channel 18	I18
Channel 7	I7	Channel 19	I19
Channel 8	I8	Channel 20	I20
Channel 9	I9	Channel 21	I21
Channel 10	I10	Channel 22	I22
Channel 11	I11	Channel 23	I23
Channel 12	I12	Channel 24	I24

2 ELEMENT 3 WIRE 1 PHASE



User Channel	Phase A	Phase C
Channel 1	I1	I2
Channel 2	I3	I4
Channel 3	I5	I6
Channel 4	I7	I8
Channel 5	I9	I10
Channel 6	I11	I12
Channel 7	I13	I14
Channel 8	I15	I16
Channel 9	I17	I18
Channel 10	I19	I20
Channel 11	I21	I22
Channel 12	I23	I24

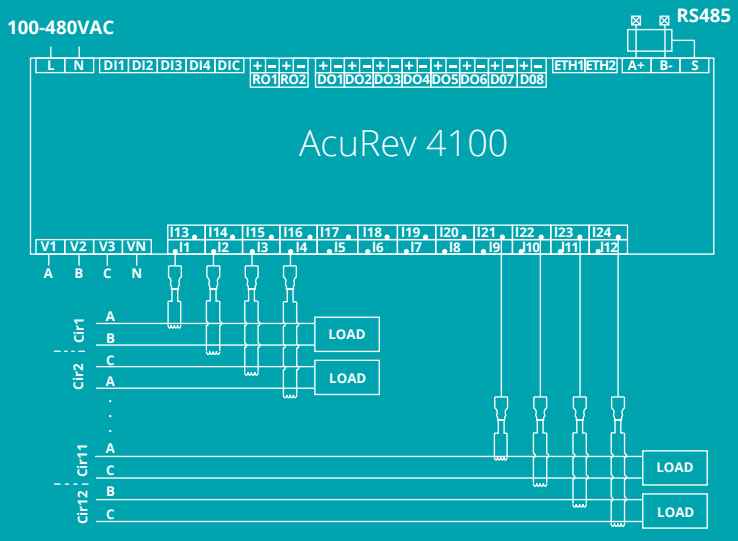
2 ELEMENT 3 WIRE DELTA



User Channel	Phase AB	Phase BC
Channel 1	I1	I2
Channel 2	I3	I4
Channel 3	I5	I6
Channel 4	I7	I8
Channel 5	I9	I10
Channel 6	I11	I12
Channel 7	I13	I14
Channel 8	I15	I16
Channel 9	I17	I18
Channel 10	I19	I20
Channel 11	I21	I22
Channel 12	I23	I24

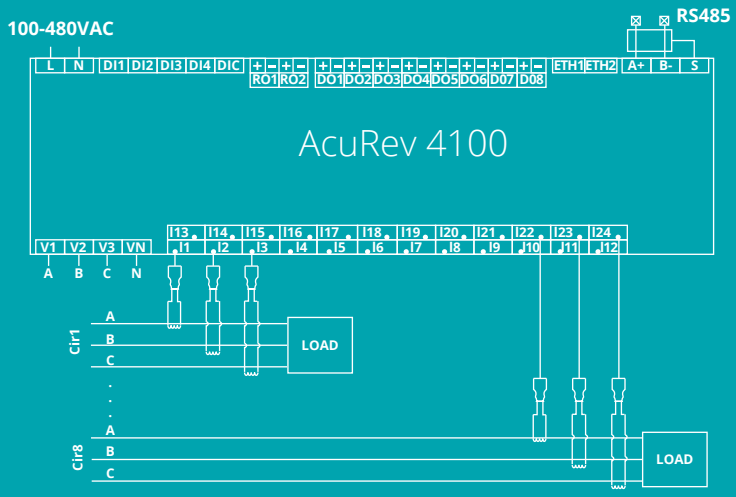
WIRING DIAGRAMS

2 ELEMENT 3 WIRE NETWORK



User Channel	Phase A	Phase B	Phase C
Channel 1	I1	I2	
Channel 2	I4		I3
Channel 3		I5	I6
Channel 4	I7	I8	
Channel 5	I10		I9
Channel 6		I11	I12
Channel 7	I13	I14	
Channel 8	I16		I15
Channel 9		I17	I18
Channel 10	I19	I20	
Channel 11	I21		I22
Channel 12		I23	I24

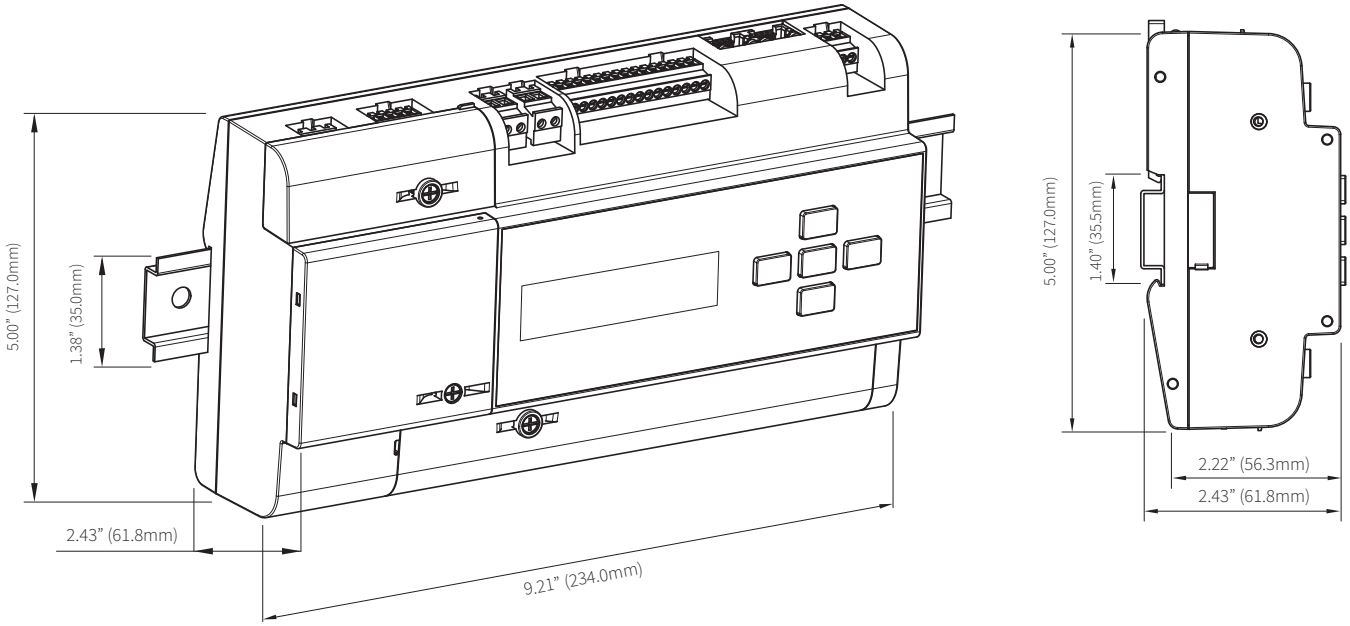
3 ELEMENT 4 WIRE WYE



User Channel	Phase A	Phase B	Phase C
Channel 1	I1	I2	I3
Channel 2	I4	I5	I6
Channel 3	I7	I8	I9
Channel 4	I10	I11	I12
Channel 5	I13	I14	I15
Channel 6	I16	I17	I18
Channel 7	I19	I20	I21
Channel 8	I22	I23	I24

DIMENSIONS

AcuRev 4100 Dimensions



ORDERING INFORMATION

Model	Current Input
AcuRev-4110: Multi-Channel Submeter	**mA:** 80mA and 100mA CT Input
	mV: 333mV and 120mV Rogowski Coil Input
Ordering Example:	**AcuRev-4110-mA**
	AcuRev-4110-mV

MEASUREMENT CANADA ORDERING INFORMATION

Model	Current Input	Certification
AcuRev-4110	**mA:** 80mA and 100mA CT Input	**MC:** Measurement Canada Approved
Ordering Example:	**AcuRev-4110-mA-MC**	

CALIFORNIA TYPE EVALUATION PROGRAM (CTEP) ORDERING INFORMATION

Model	Current Input	Certification
AcuRev-4110	**mV:** 333mV and Rogowski Coil Input	**CP:** CTEP Certified
Ordering Example:	**AcuRev-4110-mV-CP**	

COMMUNICATION MODULE *(OPTIONAL)*

Module	Model	Features
ACM: Accuenergy Communications Module	**41:** AcuRev 4100	**WEB2:** Wi-Fi, Dual Ethernet, Modbus TCP, HTTPS, FTP, SFTP, NTP, SMTP, SNMP, MQTT, BACnet/IP, EtherNet/IP, AcuCloud, AWS IoT, Azure IoT, Waveform Post, Remote Access.
		WEB2-D: Dual Ethernet, Modbus TCP, HTTPS, FTP, SFTP, NTP, SMTP, SNMP, MQTT, BACnet/IP, EtherNet/IP, AcuCloud, AWS IoT, Azure IoT, Waveform Post, Remote Access.
Ordering Example:	**ACM-41-WEB2**	
	ACM-41-WEB2-D	

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ACCUENERGY

ISO 9001, 14001 & 45001 Certified

ISO 27001 & 50001 Certified

BBB ACCREDITED BUSINESS