AcuRev 2100

Multi-Circuit Multifunction Power Meter with SnapOn CTs

ISO9001 Certified

AcuRev 2100

Multi-Circuit Multifunction Power Meter with SnapOn CTs

+ Supports up to 18-channels for multi-point energy measurement
+ SnapOn CTs reduce polarity errors for faster, simpler installation
+ One-third more compact compared to AcuRev 2000
+ IEC and ANSI revenue-grade accuracy measurement standard
+ Advanced power quality analysis circuits
+ 8GB onboard memory for data-logging and historical trend analysis
+ Multiple communication protocols for local and remote monitoring
+ Built-In Serial, Dual Ethernet and WiFi Communication
+ Modbus, BACnet IP, SNMP, HTTPs web server, HTTPs and FTP data post
+ 18 digital input pulse counter for water and gas metering
+ 6 digital outputs and 2 relay outputs
+ Optional cloud metering data storage

DESCRIPTION

The AcuRev 2100 Series Power Meter is a compact and robust metering solution to multi-tenant submetering/billing for high-density metering applications with easy SnapOn CT technology. The unit performs real-time metering, measures energy consumption, multi-tariff time-of-use (TOU) and monitors power quality for 18 single-phase circuits or 6 three-phase circuits from a single point. This makes it ideal for multi-point submetering such as office buildings, apartments, mixed-use high-rises, condominiums, shopping malls, data centers and other multi-circuit applications. Advanced WEB2 communication options including Modbus-RTU via RS485, Modbus-TCP, BACnet IP, SNMP and data post via Ethernet and Wi-Fi and I/O to provide for extensive reliable and interoperable data communications.

BENEFITS

The AcuRev 2100 series meter is a complete multi-point sub-metering/billing, power quality analysis and energy management solution for:

+ Single-point monitoring and control in high density multi-point facilities
+ Downtime and error reduction with SnapOn CT technology
+ Highly accurate revenue-grade energy readings for multi-tenant billing
+ Identify cost-saving opportunities by analysing holistic energy usage, tracking power factor, and discovering peak demand windows
+ Monitor historical consumption trend data down to each circuit
+ Measure & verify utility bills with revenue-grade accuracy to avoid overcharge

APPLICATIONS

Submetering in:

+ Commercial Complex/Mall
+ Apartment/Condominiums
+ Hospitals/Public Services
+ Hotels/Office Buildings
+ Tenant Submetering/Billing
+ Branch Circuit Monitoring
+ Energy Management Systems
+ Data Centers
+ LEED Projects

Power Quality:

+ Data Centers
+ University Laboratories
+ Industrial Automation

Electrical Substation

Branch Circuits Monitoring

Energy Management Systems

Railway and Subway Systems

Easy and Flexible Configurations for New or Retrofit Projects:

+ Multiple current input and CT options:
  - High-accuracy split-core CTs are compact and feature user-friendly clamp-on installation. No need to disconnect the conductor or install a shorting block.
  - Best-in-class accuracy and UL2808 certified, solid-core CTs are the idea choice for high-precision applications. No shorting block required.
  - Flexibility for even the most challenging installations, Rogowski CTs offer a versatile solution for large, irregular cables or busbars. No need to disconnect the conductor or install a shorting block.
+ Direct voltage measurement of up to 690Vac L-L or 400Vac L-N for electrical distribution systems
+ Wide range power supply means no control transformer is required
+ Simple connection to existing networks with built-in communication options including RS485, dual Ethernet, and WiFi

AcuRev 2100 Series Meter

Functions and Measurement Parameters

Function		Parameter	AcuRev 2110
Energy	Active Energy	Ep	•
	Reactive Energy	Eq	•
	Apparent Energy	Es	•
Time Of Use	4 Tariffs, 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 circuit	•
	Peak Current Demand	Total and each circuit	•
Real Time Metering	Phase Voltage	V1,V2,V3	•
	Line Voltage	V12,V23,V31	•
	Current	Total and each circuit	•
	Power	Total and each circuit	•
	Reactive Power	Total and each circuit	•
	Apparent Power	Total and each circuit	•
	Power Factor	Total and each circuit	•
	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	•
Time	Real Time Clock *(Year, Month, Date, Hour, Minute, Second)*		•
Alarming	Over/Under Limit Alarming		•
Data Logging	8MB Memory		•
	8GB Memory		Web2 Option
Communication Port	RS485 Modbus®-RTU		•
	Ethernet Modbus®-TCP, HTTP, BACnet-IP, SMTP, SNTP, SNMP		Web2 Option
	WiFi		Web2 Option
I/O Option	18 Digital Inputs with 15Vdc power supply		•
	6 Digital Outputs, Second Pulse, Demand Cycle		•
	2 Relay Outputs		•
Display	LCD		•

**This function not available with the "RCT" current option*

FEATURES

Metering

+ Energy: Active (kWh), reactive (kVARh) and apparent (kVAh).
+ Compliance with ANSI C 12.20 class 0.5; IEC62053-22 Class 0.5s.
+ Real-time RMS Metering: line and phase voltage, current for each circuit.
+ Power and Power Factor: Active (P), Reactive (Q), Apparent (S), Power Factor.
+ Demand and peak demand: Power and current demand for total and each circuits, 0-30 minute configurable window.

Multi-Tariff Time of Use (TOU)

TOU can be used according to different regional billing requirements. AcuRev 2100 series meters support up to 4 tariffs (sharp, peak, valley, normal), 14 schedules, 14 segments, weekends and 10-year holiday settings.

Data Logging

Real-time energy metering, power quality analysis and I/O data can be stored in the non-volatile onboard memory.

For instance, it will take over 100 years to fill the memory if the meter is configured to monitor 100 energy parameters at 5-minute intervals.

Logged information can be retrieved via serial connection or remotely by Ethernet as Excel, CSV and text format for historical trending and system analysis.

Over/Under Limit Alarms

Ten limit alarms can be assigned to draw attention to various conditions. The alarm function is designed to effectively alert and protect systems by triggering notifications, such as a light or buzzer, and automatically shutting down equipment. For example, the alarm can be configured for peak demand, current, or power quality.

Input/Output (I/O)

AcuRev 2100 series meters are built with 18 digital inputs (DI), 6 digital outputs (DO) and 2 relay outputs (RO) to easily integrate other metering data and control in a single unit.

18 Digital Inputs: 18 dry contact inputs are designed to count pulses from water meters, gas meters and other devices with pulse output. This integration provides complete energy data for energy management and information reporting system. Digital inputs can also be configured to monitor switch status.

6 Digital Outputs: Six DOs can be used to send out pulses on energy data if energy management system requires pulse counting for data collection.

2 Relay Outputs: Set up alarms and receive notifications when thresholds have been exceeded.

Power Quality Analysis

Power quality is essential to industrial and commercial electrical distribution systems where monitoring & analyzing sensitive electronic equipment is necessary when protecting a business's capital investment.

AcuRev 2100 series meters provides power quality parameters such as voltage and current THD, individual voltage and current harmonics up to 31st order, voltage crest factor, current K factor, voltage and current unbalance. These parameters are monitored real-time and logged in AcuRev 2100 series meters.

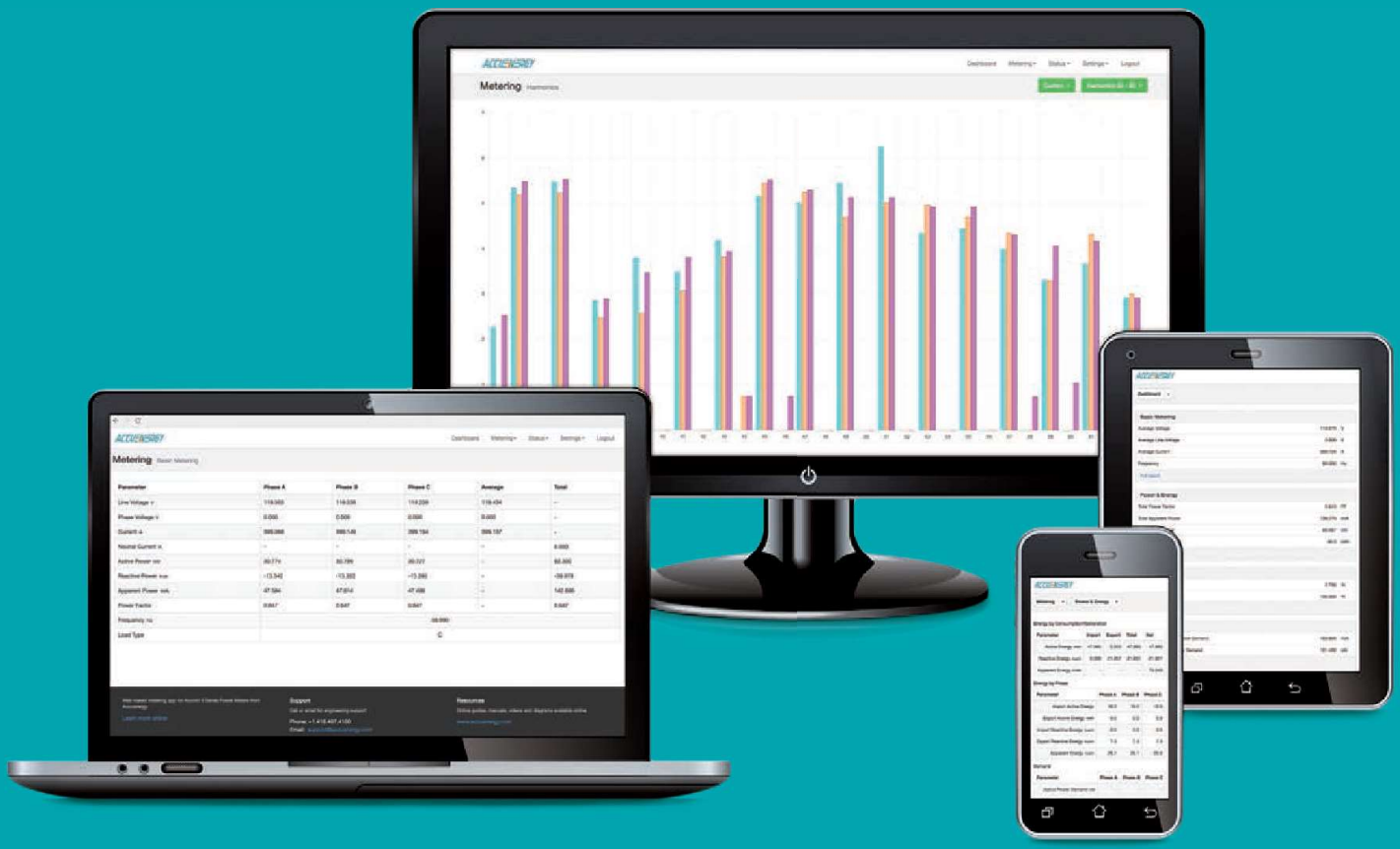
SnapOn CT Technology

Accuenergy has designed an innovative CT technology that allows any 80mA, 100mA or 333mV current transformer to simply plug into the AcuRev 2100 submeter without any wiring configuration. Twenty SnapOn CT connectors are included with the AcuRev 2100. Simply attach the SnapOn CT to a current transformer and then plug it to the AcuRev 2100 meter for a fast and convenient installation experience.

+ 18 single-phase or 6 three-phase channel with SnapOn technology
+ Simply plug in current transformers to setup and configure your metering system
+ Reduce common mistakes and time troubleshooting issues such as reverse polarity errors
+ Increase monitoring uptime during routine maintenance and upgrade
+ 20 SnapOn connector heads are included with the AcuRev 2100, and also works with any third-party CT with secondary rated options 80mA, 100mA, or 333mV

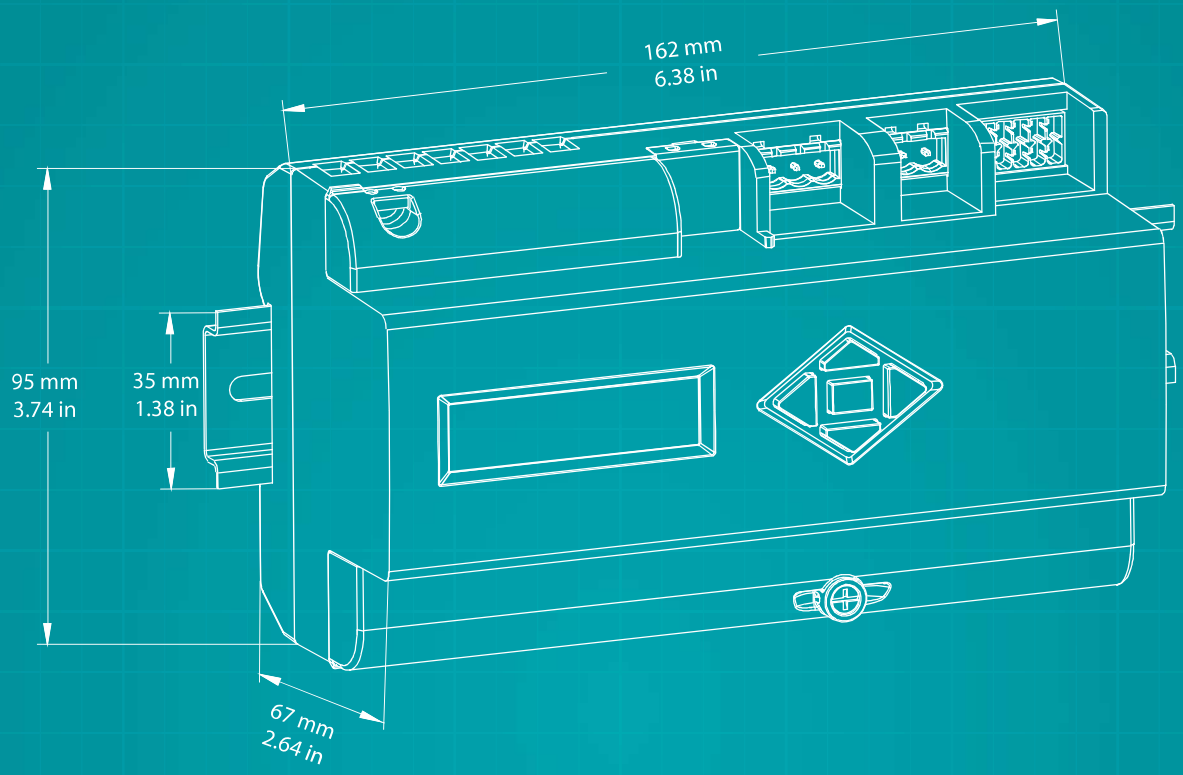
Communication Protocols

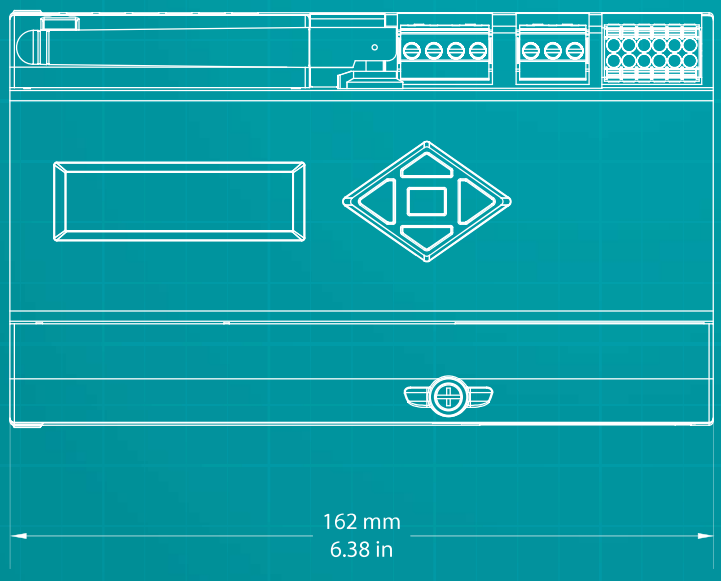
Built-in secure and encrypted HTTPs Webserver provides reading and configuration access from any device

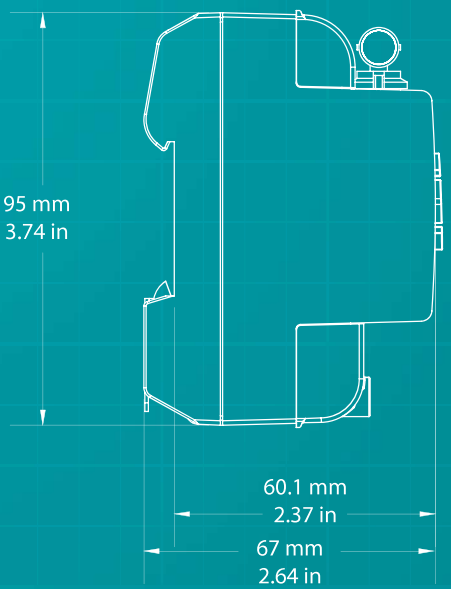


- + Built-in Standard Modbus-RTU via RS485
- + Dual Ethernet
- + WiFi
- + Modbus-TCP/IP
- + HTTPs Webserver
- + HTTP/HTTPs Post
- + BACnet-IP
- + FTP Post
- + SMTP
- + SNMP
- + SNTP
- + MQTT

Dimensions


162 mm
6.38 in
95 mm
3.74 in
35 mm
1.38 in
67 mm
2.64 in


162 mm
6.38 in


95 mm
3.74 in
60.1 mm
2.37 in
67 mm
2.64 in

Specifications

Measure			
Parameter	Accuracy	Resolution	Range
Active Energy	0.5s	0.1kWh	0~99999999.9kWh
Reactive Energy	0.5%	0.1kvarh	0~99999999.9kvarh
Apparent Energy	0.5%	0.1kVAh	0~99999999.9kVAh
Voltage	0.5%	0.1V	10~400V
Current	0.5%	0.001A	5mA~10,000A
Real Power	0.5%	0.1W	4000.0kW
Reactive Power	0.5%	0.1var	4000.0kvar
Apparent Power	0.5%	0.1VA	4000.0kVA
Power Factor	0.5%	0.001	-1.000~1.000
Frequency	0.2%	0.01Hz	45~65Hz
Real Power Demand	0.5%	0.1W	4000.0kW
Reactive Power Demand	0.5%	0.1var	4000.0kvar
Apparent Power Demand	0.5%	0.1VA	4000.0kVA
Current Demand	0.5%	0.001A	5mA~10,000A
Unbalance	1%	0.01%	0~300%
Harmonics	1%	0.01%	0~100%
Meter Running Time		0.01hour	0~999999.9 hours
Temperature Drift	less than 100ppm/°C(0-50°C)		

Input	
Voltage Input	
Nominal Full Scale	400Vac L-N, 690Vac L-L
Input Impedance	2MΩ/per phase
Metering Frequency	45Hz~65Hz
PT Burden	<0.2VA
Current Inputs	
Nominal Current	80mA, 100mA, 333mV

Digital Output	
External Circuit Voltage	5-30Vdc
Output Current (MAX)	5-50mA
Pulse Width (High)	20-100ms, Programmable
Pulse Constant	1-60000imp/kWh, Programmable

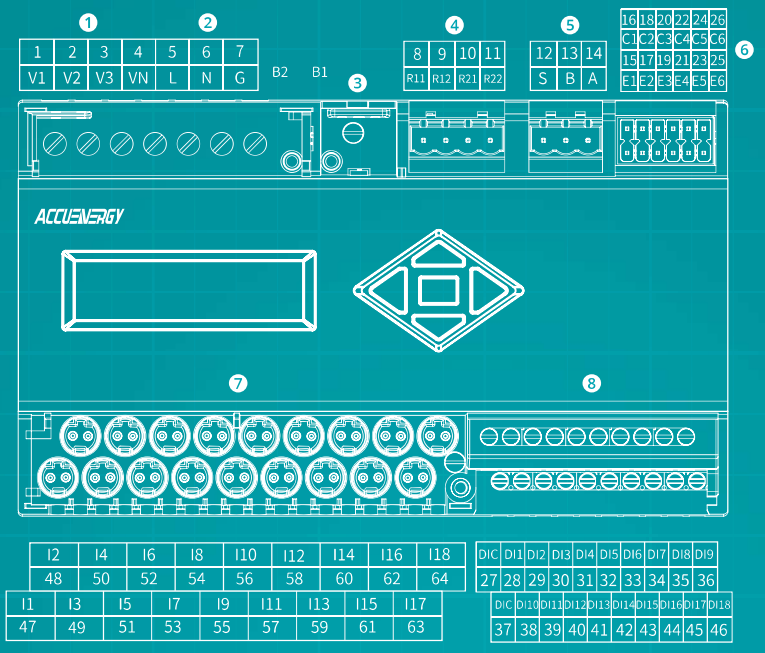
IO	
Digital Input (DI)	
Input Style	Dry Node
Input Current (Max)	2mA
Pulse Frequency (Max)	100Hz, 50% Duty Cycle
SOE Resolution	2ms
Auxiliary Power of DI (15V)	
Output Voltage	15Vdc
Rated Power	1W
Relay Output (RO)	
Load Voltage Range	250Vac, 30Vdc
Load Current	3A
Opening Time	10ms (Max)
Conduction Impedance	100mΩ (Max)
Isolation Voltage	4,000Vac
Mechanical Life	5,000,000 times

Communication with WEB2 Module	
RS485 Baud Rate	1200-38400bps
Protocol	Modbus-RTU Modbus-TCP/IP, BACnet-IP, SNMP SNTP, SMTP MQTT, HTTP/HTTPs Post, FTP, RSTP IPv6

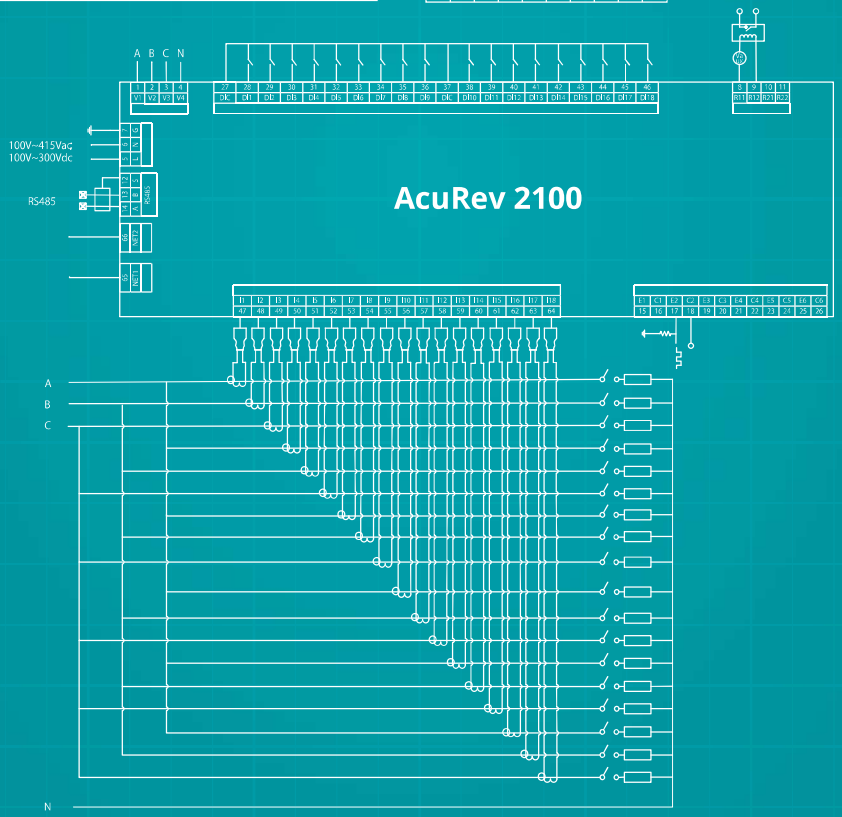
Operating Environment	
Operating Temperature	-25°C ~ 70°C
Storage Temperature	-40°C ~ 85°C
Relative Humidity	5%~95% Non-Condensing

Working Power	
Power Supply	Vac 100~415Vac,50~60Hz; Vdc 100-300Vdc
Power Consumption	5W

Typical Wiring



1. Voltage Input
2. Power Supply
3. Programming and Terminal Tamper-proof Seal
4. 2 Relay Output
5. Serial RS485 Port
6. 6 Digital Output
7. 18 SnapOn CT Connectors
8. 18 Digital Input



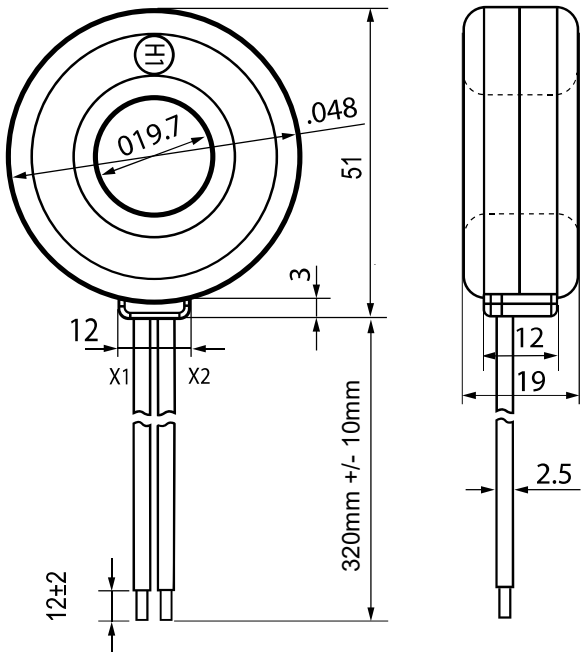
In Three-Phase systems, the relationship between PHASE type and Current shown as per the following table.

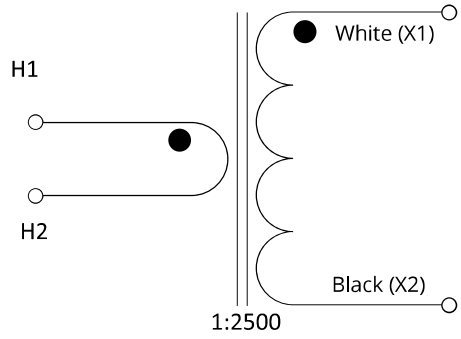
User	Phase A	Phase B	Phase C
User 1	I1	I2	I3
User 2	I4	I5	I6
User 3	I7	I8	I9
User 4	I10	I11	I12
User 5	I13	I14	I15
User 6	I16	I17	I18

AcuCT-S77

CE c UL us LISTED [ENERGY-MONITORING CT] RoHS COMPLIANT

Dimensions





Specifications	
Accuracy/Burden	0.15/B0.005
Impulse Insulation (BIL)	10 kV
Lead Wire	18 AWG UL 1015
Insulation Resistance	50 MΩ
Enclosure Plastic	UL94V-0
UL Listed	UL2808, 61010-1 and CSA 22.2
Measurement Canada Approved	0.15 class
Frequency	50/60Hz
Temperature / Humidity	25° C / 80% C / 80% ~ 90%
Length	1ft (18 AWG UL 1015)

Error Limit	Current	Ratio Error	Phase Shift (min)
(20 ohm burden)	2%	≤ ± 0.1	≤ 6
	20%	≤ ± 0.1	≤ 6
	100%	≤ ± 0.1	≤ 5
	I Max	≤ ± 0.1	≤ 5

Ordering Information

	Model		Current Input Rating		Output Option
Ordering Number	AcuCT-S77	-		-	
Ordering Example	AcuCT-S77	-	200:	-	80mA
			100: 100A		80mA
			200: 200A		100mA

Important: This page contains ordering information for the AcuCT S77 solid-core current transformer with the SnapOn CT connector attached. Current transformers are sold separately.

The AcuRev 2100 comes with twenty SnapOn CT connector heads that can be used to attach a current transformer with an 80mA, 100mA, or 333mV secondary rated option.

Split-Core Current Transformers

The AcuRev 2100 includes 20 SnapOn connector heads with additional units available for order below *(page 13)*.

Listed current transformers do not come with SnapOn connector heads attached and are not included with the AcuRev 2100.

AcuCT 333mV

Ordering Information					
				Rated Input	
Ordering Number	AcuCT	-	075	-	: 333mV
Ordering Example	AcuCT	-	075	- 100	: 333mV
				100: 100A	
				200: 200A	

				Rated Input	
Ordering Number	AcuCT	-	125	-	: 333mV
Ordering Example	AcuCT	-	125	- 400	: 333mV
				300: 300A	
				400: 400A	
				600: 600A	

				Rated Input	
Ordering Number	AcuCT	-	200	-	: 333mV
Ordering Example	AcuCT	-	200	- 800	: 333mV
				600: 600A	
				800: 800A	
				1000: 1000A	
				1200: 1200A	
				1500: 1500A	

				Rated Input	
Ordering Number	AcuCT	-	3050	-	: 333mV
Ordering Example	AcuCT	-	3050	- 1000	: 333mV
				400: 400A	
				600: 600A	
				1000: 1000A	
				1500: 1500A	
				2000: 2000A	
				3000: 3000A	
				5000: 5000A	

AcuCT HINGED

Ordering Information					
				Rated Input	
Ordering Number	AcuCT	-	H040	-	: 333mV
Ordering Example	AcuCT	-	H040	- 20	: 333mV
				5: 5A	
				20: 20A	
				30: 30A	
				40: 40A	
				50: 50A	
				60: 60A	

				Rated Input	
Ordering Number	AcuCT	-	H063	-	: 333mV
Ordering Example	AcuCT	-	H063	- 50	: 333mV
				50: 50A	
				100: 100A	
				150: 150A	

				Rated Input	
Ordering Number	AcuCT	-	H100	-	: 333mV
Ordering Example	AcuCT	-	H100	- 120	: 333mV
				100: 100A	
				120: 120A	
				200: 200A	
				250: 250A	

				Rated Input	
Ordering Number	AcuCT	-	H138	-	: 333mV
Ordering Example	AcuCT	-	H138	- 200	: 333mV
				200: 200A	
				400: 400A	
				600: 600A	

AcuCT R MODELS

Ordering Information					
					Rated Input
Ordering Number	AcuCT	-		-	333mV
Ordering Example	AcuCT	-	075R	- 50	333mV
		-	075R	- 50: 50A	
		-	100R	- 200: 200A	
		-	125R	- 200: 200A	
		-	200R	- 600: 600A	
		-	3135R	- 1000: 1000A	
		-	4161R	- 2000: 2000A	
		-	5170R	- 4000: 4000A	

SnapOn CONNECTOR HEADS

SnapOn CT Connector Kit (SO-SP1); QTY 20; Each SnapOn CT connector is pre-connected to two shorting connectors

(One SnapOn Connector Kit is included with AcuRev 2100 Meter purchase.)

SnapOn Connector Polarity	
North America	White lead is positive. Black lead is negative.
International	Red lead is positive. White lead is negative.

ROGOWSKI COIL CT

Ordering Information			
			Rated Input
Ordering Number	RCT	-	
Ordering Example	RCT16	-	1000A
	RCT16	-	1000A
		-	2500A
		-	5000A
		-	10000A
		-	50000A
	RCT24	-	1000A
		-	2500A
		-	5000A
		-	10000A
		-	50000A
	RCT36	-	1000A
		-	2500A
		-	5000A
		-	10000A
		-	50000A
	RCT47	-	1000A
		-	2500A
		-	5000A
		-	10000A
		-	50000A

ORDERING INFORMATION

AcuRev 2100	Model		Current Input		Communication Option
Ordering Number		-		-	
Ordering Example	2110	-	mV	-	WEB2
	Power Meter with Real-Time Data Logging and Advanced Power Quality		mA: 80mA and 100mA CT Input		485: Serial RS485
			mV: 333mV and Rogowski Coil Input		WEB2: Dual Ethernet, WiFi and Serial RS485

Note: 1. Accuenergy suggests using USB-RS485 converter for configuration, and 3 CTs per three phase circuits.
2. All fields must be completed to create a part number.

ACCUENERGY