

Acuvim II Series Intelligent Power Meter (Web Accessible)



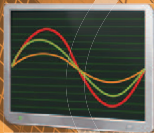
Email



Real Time Metering



TOU



Waveform Capture



Data Logging



Max & Min Record



- Revenue Grade with Data Logging
- Waveform Capture
- DNP 3.0
- BACnet



ISO9001 Certified

ACCUENERGY

DESCRIPTION

The Acuvim II series are high-end multifunction power and energy meters manufactured by Accuenergy. They are the ideal choice for the monitoring and controlling of power distribution systems. Some of the features and electrical power parameters available on the Acuvim II series are:

- True-RMS Measuring Parameter
- ANSI C12.20 (0.2 Class) and IEC 62053-22 (0.2S Class)
- 16 MB Onboard Memory
- Power Quality Analysis
- Over/Under Limit Alarm
- Multiple Communication Ports (E.g: Ethernet, RS485)
- Supports Modbus RTU, DNP 3.0, BACnet IP, BACnet MS/TP
- Web Server and Email Sending, SNMP, SNTIP
- Switch Status Monitoring
- Waveform Capture
- Measure Individual Harmonics from 2nd to 63rd

- Physical Anti-Tampering Seal
- 50/60Hz, 400Hz and 800Hz Rated Frequency Metering
- Modular Design
- Data Logging
- TOU, 4 Tariffs, 12 Seasons, 14 Schedules
- Class Leading Warranty

The Acuvim II series may be used as data gathering devices for intelligent power distribution systems or plant automation systems. All monitored data is available via a digital RS485 communication port running Modbus RTU and DNP 3.0 protocols, additional communication options include: Ethernet, Profibus DP, and BACnet.

With its flexible, modular I/O and communication options, the Acuvim II series is the most versatile and cost-effective metering solution on the market.

Acuvim II Series Meters

● Function; ○ Option; Blank NA

CATEGORY	ITEM	PARAMETERS	Acuvim II	Acuvim IIR	Acuvim IIE	Acuvim IIW	
METERING	REAL TIME METERING	Phase Voltage	V1, V2, V3, Vlnavg	●	●	●	●
		Line Voltage	V12, V23, V31, Vllavg	●	●	●	●
		Current	I1, I2, I3, In, Iavg	●	●	●	●
		Power	P1, P2, P3, Psum	●	●	●	●
		Reactive Power	Q1, Q2, Q3, Qsum	●	●	●	●
		Apparent Power	S1, S2, S3, Ssum	●	●	●	●
		Power Factor	PF1, PF2, PF3, PF	●	●	●	●
		Frequency	F	●	●	●	●
		Load Features	Load Features	●	●	●	●
	ENERGY & DEMAND	Four Quadrant Powers	Four Quadrant Powers	●	●	●	●
		Energy	Ep_imp, Ep_exp, Ep_total, Ep_net	●	●	●	●
		Reactive Energy	Eq_imp, Eq_exp, Eq_total, Eq_net	●	●	●	●
		Apparent Energy	Es	●	●	●	●
		Demand	Dmd_P, Dmd_Q, Dmd_S, Dmd_I1, Dmd_I2, Dmd_I3	●	●	●	●
TOU	TIME OF USE	Energy/Max Demand	TOU, 4 Tariffs, 12 Seasons, 14 Schedules			●	
	DAYLIGHT SAVING TIME	Two Adjustable Formats	Month/Day/Hour/Minute Month/Week/First Few Weeks/Hour/Minute			●	
MONITORING	POWER QUALITY	Waveform Capture	Voltage and Current Waveform	Trigger, Manual, DI Change, Sag/Dips, Swell, Over Current			●
		Voltage Unbalance Factor	U_unbl	●	●	●	●
		Current Unbalance Factor	I_unbl	●	●	●	●
		Voltage THD	THD_V1, THD_V2, THD_V3, THD_Vavg	●	●	●	●
		Current THD	THD_I1, THD_I2, THD_I, THD_Iavg	●	●	●	●
		Individual Harmonics	Harmonics 2 nd to 63 rd	●	●	●	●
		Voltage Crest Factor	Crest Factor	●	●	●	●
		TIF	THFF	●	●	●	●
	Current K Factor	K Factor	●	●	●	●	
	STATISTICS	MAX with Time Stamp MIN with Time Stamp	Each phase of V & I; Total of P, Q, S, PF & F; Demand of P, Q & S; Each phase THD of V & I; Unbalance factor of V & I	●	●	●	●
OTHERS	ALARM	Over/Under Limit Alarm	V, I, P, Q, S, PF, V_THD & I_THD Each Phase and Total or Average; Unbalance Factor of V & I; Load Type; Analog Input of Each Channel	●	●	●	●
	POWER QUALITY EVENT LOGGING	Sag/Dips, Swell	Voltage				●
	DATA LOGGING	Data Logging 1 Data Logging 2 Data Logging 3	F, V1/2/3/Iavg, V12/23/13/Iavg, I1/2/3/n/avg, P1/2/3/sum, Q1/2/3/sum, S1/2/3/sum, PF1/2/3, PF, U_unbl, I_unbl, Load Type, Ep_imp, Ep_exp, Ep_total, Ep_net, Eq_imp, Eq_exp, Eq_total, Eq_net, Es, THD_V1/2/3/avg, THD_I1/2/3/avg, Harmonics 2 nd to 63 rd , Crest Factor, THFF, K Factor, Sequence and Phase Angles, DI Counter, AI, AO, Dmd P/Q/S, Dmd I1/2/3		●	●	●
	ONBOARD MEMORY SIZE	Memory	Bytes	—	8MB	8MB	16MB
	COMMUNICATION	RS485 Port, Half Duplex, Optical Isolated	Modbus®-RTU Protocol/DNP3.0 Option	●	●	●	●
	TIME	Real Time Clock	Year, Month, Date, Hour, Minute, Second	●	●	●	●
	OPTION MODULE	I/O OPTION	Switch Status (DI)	Digital Input (Wet)	○	○	○
Power Supply for DI			24 Vdc	○	○	○	○
Relay Output (RO)			NO, Form A	○	○	○	○
Digital Output (DO)			Photo-MOS	○	○	○	○
Pulse Output (PO)			By Using DO	○	○	○	○
Analog Input (AI)			0(4)~20mA, 0(1)~5V	○	○	○	○
COMMUNICATION		Analog Output (AO)	0(4)~20mA, 0(1)~5V	○	○	○	○
		Ethernet	10M/100M, Modbus-TCP, HTTP Webpage, Email	○	○	○	○
		Profibus-DP	Profibus-DP/V0	○	○	○	○
		BACnet	IP or MS/TP	○	○	○	○
RS485 Module	Additional Modbus RTU	○	○	○	○		

I/O Module (Option)

Module Name	Digital Input (DI)	Power Supply For DI (24V)	Digital Output (DO)	Relay Output (RO)	Analog Input (AI)	Analog Output (AO)
AXM-IO1	6	1		2		
AXM-IO2	4		2			2
AXM-IO3	4			2	2	

Communication Module (Option)

Module Name	Spec
AXM-NET	10M/100M Self-Adaptable, RJ45 Jack Modbus-TCP/IP Protocol HTTP Web Page Browser Email Sending on Time Interval or on Event
AXM-PROFI	Profibus-DP/V0 Input Byte (Typical): 32 Byte Output Byte (Typical): 32 Byte EN50170 Vol.2 Compliance Profibus Slave Mode, Baud Rate Self-Adaptable up to 12M

Module Name	Spec
AXM-RS485	Modbus®-RTU Protocol
AXM-BMS	BACnet MS/TP (Serial)
AXM-BIP	BACnet IP (Ethernet)

APPLICATIONS

- Metering of Distribution Feeders, Transformers, Generators, Capacitor Banks and Motors
- Medium and Low Voltage Systems
- Commercial, Industrial, Utility
- Power Quality Analysis
- Data Logging

FEATURES

Metering

- Voltage V1, V2, V3, Vlnavg, V12, V23, V31, Vllavg
- Current I1, I2, I3, In, Iavg
- Power P1, P2, P3, Psum
- Reactive Power Q1, Q2, Q3, Qsum
- Apparent Power S1, S2, S3, Ssum
- Frequency F
- Power Factor PF1, PF2, PF3, PF
- Energy Ep_imp, Ep_exp, Ep_total, Ep_net
- Reactive Energy Eq_imp, Eq_exp, Eq_total, Eq_net
- Apparent Energy Es
- Demand Dmd_P, Dmd_Q, Dmd_S, Dmd_I1, Dmd_I2, Dmd_I3
- Load Features
- Four Quadrant Powers

Monitoring

- Power Quality
- Voltage Harmonics 2nd to 63rd and THD
- Current Harmonics 2nd to 63rd and THD
- Voltage Crest Factor
- THFF (TIF)
- Current K Factor
- Voltage Unbalance Factor U_unbl
- Current Unbalance Factor I_unbl
- Max/Min Statistics with Time Stamps

Alarms

Limits can be set for up to 16 indicated parameters and can be set with a specified time interval. If any input of the indicated parameters is over or under its setting limit and persists over the specified time interval, the event will be recorded with time stamps and trigger the Alarm DO output. The 16 indicated parameters can be selected from any of the 51 parameters available.

I/O option module

The E-module® technique was adopted for its flexibility and easy expansion of the I/O function of Acuvim II. A maximum of 3 modules can be used for one meter. Digital input, digital output, pulse output, relay output, analog input and analog output are provided by I/O option module.

Communication

- Modbus RTU Protocol and DNP 3.0 via RS485
- Ethernet (Modbus TCP, HTTP, SMTP, SNMP, SNTP)
- Profibus DP
- BACnet IP, BACnet MS/TP
- Dual RS485 Communication Ports

Display

- Clear and Large Character LCD Screen Display with White Backlight
- Wide Environmental Temperature Endurance
- Display Load Percentage, 4 Quadrant Powers, and Load Nature

Outline

Small Size 96×96 DIN or 4" ANSI Round

Data Logging

Acuvim IIR/IIIE/IIW offers 3 assignable historical logs where the majority of the metering parameters can be recorded. The onboard memory is up to 16 MB and each log size is adjustable. A real time clock allows for any logged events to be accurately time stamped.

Time of use

Users can assign up to 4 different tariffs (sharp, peak, valley and normal) to different time periods within a day according to the billing requirements. The Acuvim IIE meter will calculate and accumulate energy to different tariffs according to the meter's internal clock timing and TOU settings.

Waveform Capture

Acuvim IIW can record 100 groups of voltage and current waveforms. It provides the waveform record of 10 cycles before and after the triggering point. It also supports a settable triggering condition.

Power Quality Event Logging

When a power quality event happens, such as voltage sag and swell, etc., Acuvim IIW will record the timestamp and the triggering condition of the event. It can save up to 50,000 power quality events.

Automatic Frequency adaptation

Rated frequency is adjusted automatically to local frequency such as 50Hz or 60Hz. The same meter can be used in countries with different electrical frequencies.

Flexible Current Input

Compatible with different current transformers such as 5A, 1A, 80mA, 100mA, 200mA, 333mV output CT and Rogowski coil all available from Accuenergy.

Anti-tampering Seal:

Users can physically seal the meter similar to a utility meter in order to provide anti-tampering protection. All metrological programming and user-defined parameters are protected with a physical seal.

High Frequency Metering:

Designed for use with 400Hz aircraft systems and 800Hz aerospace systems Acuvim II series power meters effectively monitors any airborne system.

TYPICAL WEB PAGE FROM Acuvim II SERIES

Max & Min Record

SOE Record

Alarm Record

Harmonics

DATA LOGGING FROM Acuvim II SERIES

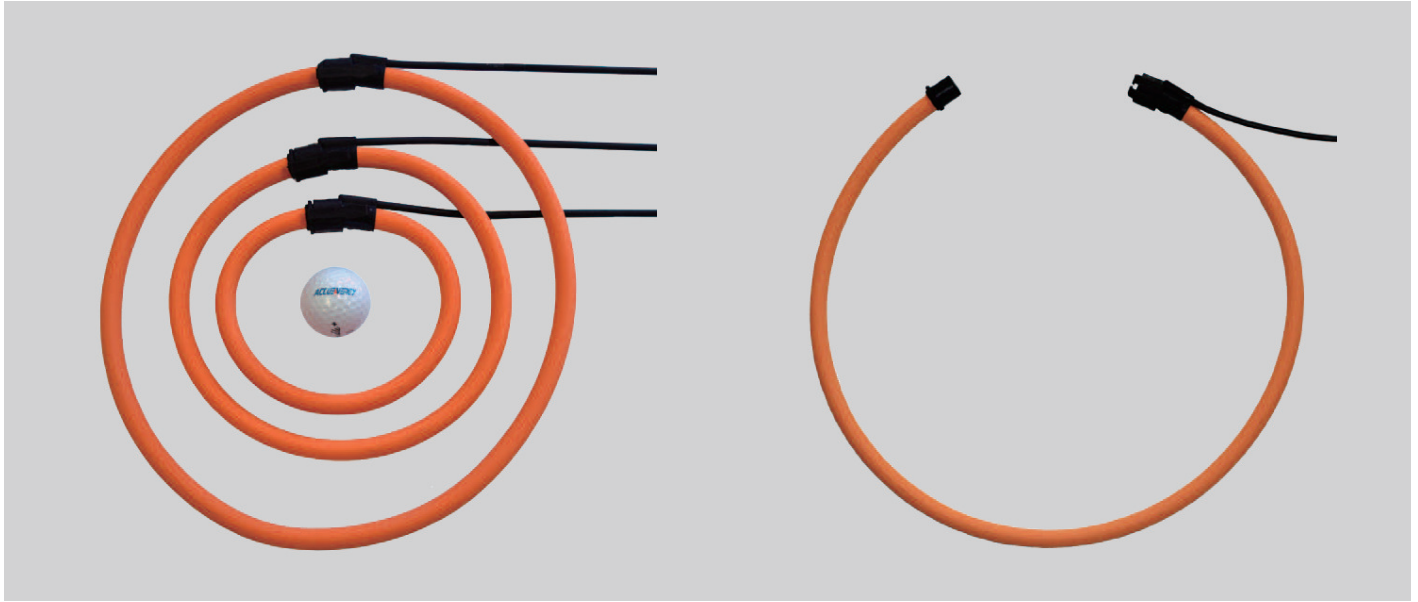
Data Logging

MULTI-PLATFORM ACCESS

Built-in web server provides computer, tablet and smartphone access.



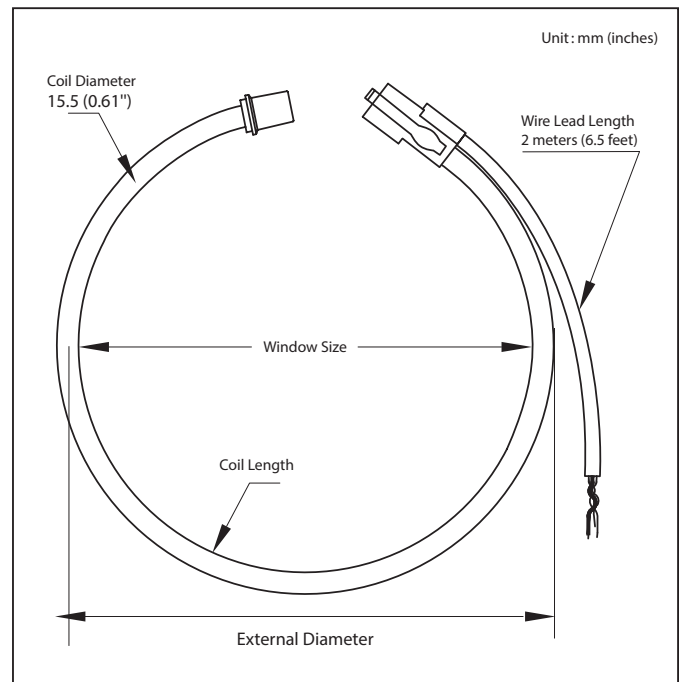
ROGOWSKI COIL



Accuenergy's flexible Rogowski coil is designed for use where regular solid or split core current transformers cannot fit, and is ideal for power quality monitoring such as harmonics. Advantages of the Rogowski coil include; high accuracy, wide measurement and frequency range with no additional integrator or power supply needed.

SPECIFICATION

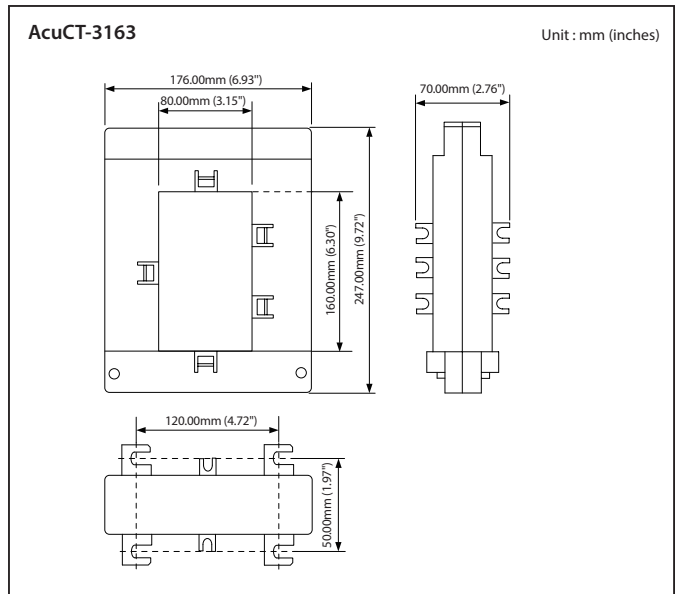
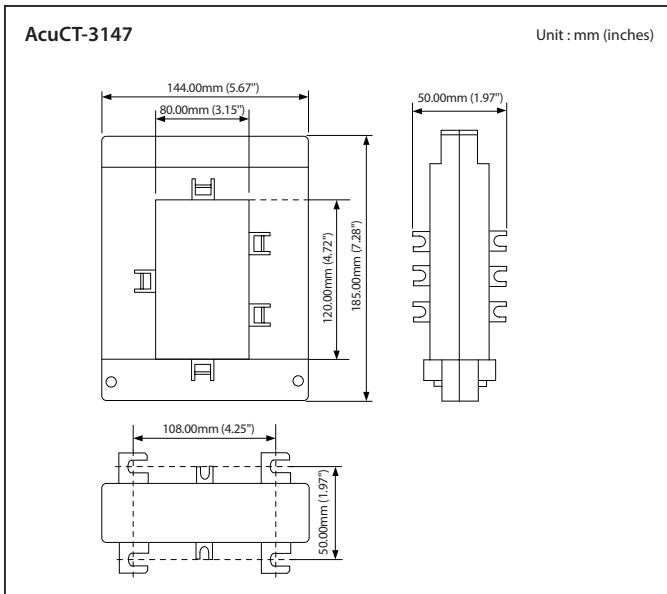
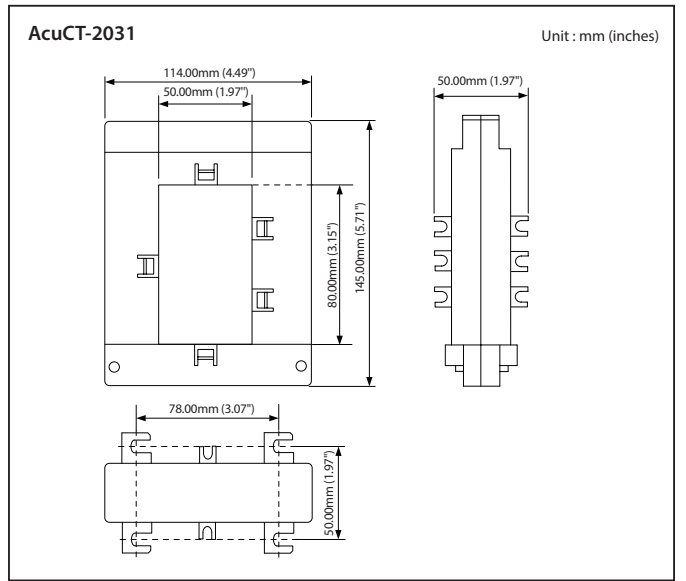
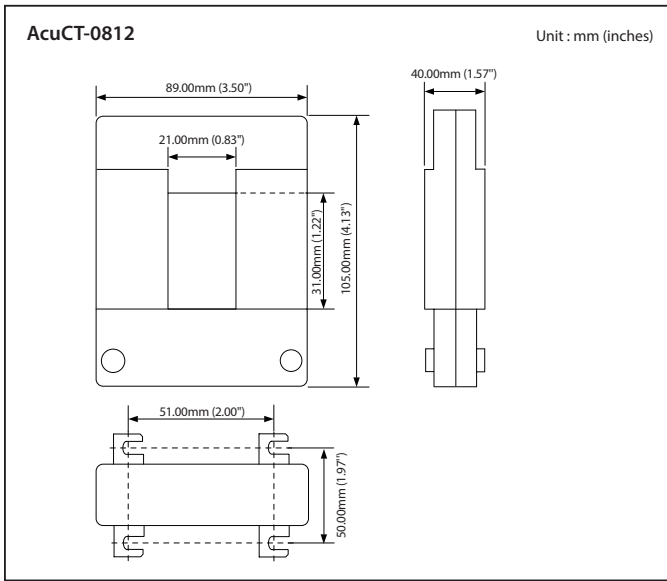
Window Size	106mm (4.17"), 178mm (7.01"), 271mm (10.67"), 369mm (14.53")
Length of Coil	400mm (15.75"), 600mm (23.62"), 900mm (35.43"), 1200mm (47.24")
Current Input Ranges*	5A-1200A 12.5A-3000A 25A-6000A 50A-12000A 250A-50000A
Frequency Range	20Hz - 5kHz
Accuracy	0.5% at any point
Lead	White-Positive, Brown-Negative, Bare-Shield; 24AWG
Polarity	Arrow Towards Load (Current Flow Direction)
Operating Temperature	-20°C - 70°C
Temperature Drift	+/- 0.07% Within Operating Temperature Range
Material	Orange Thermoplastic Rubber, Flame Retardant UL 94 V-0 Rated
Dielectric Strength	7400Vac @ 50/60Hz for 1 Minute



Dimensions mm (Inch)	RCT16	RCT24	RCT36	RCT47
Window Size	106 (4.17")	178 (7.01")	271 (10.67")	369 (14.53")
Coil Length	400mm (15.75")	600mm (23.62")	900mm (35.43")	1200mm (47.24")
External Diameter	143 (5.63")	207 (8.13")	302 (11.89")	398 (15.66")
Coil Diameter	15.5 (0.61")			
Wire Lead Length	2 meters (6.5 feet)			

*Note: Listed ranges are standard input ranges, for any other current input ranges please contact Accuenergy.

SPLIT CORE CTS



SPECIFICATIONS

METERING			
Parameters	Accuracy	Resolution	Range
Voltage	0.2%	0.1V	20V~1000kV
Current	0.2%	0.1mA	5mA~50000A
Power	0.2%	1W	-9999MW~9999MW
Reactive Power	0.2%	1var	-9999Mvar~9999Mvar
Apparent Power	0.2%	1VA	0~9999MVA
Power Demand	0.2%	1W	-9999MW~9999MW
Reactive Power Demand	0.2%	1var	-9999Mvar~9999Mvar
Apparent Power Demand	0.2%	1VA	0~9999MVA
Power Factor	0.2%	0.001	-1.000~1.000
Frequency	0.2%	0.01Hz	45.00~65.00Hz
Energy	Primary	0.2%	0.1kWh
	Secondary	0.2%	0.001kWh
Reactive Energy	Primary	0.2%	0.1kvarh
	Secondary	0.2%	0.001kvarh
Apparent Energy	Primary	0.2%	0.1kVAh
	Secondary	0.2%	0.001kVAh
Harmonics	1.0%	0.1%	
Phase Angle	2.0%	0.1°	0.0°~359.9°
Unbalance Factor	2.0%	0.1%	0.0%~100.0%
Running Time		0.01h	0~9999999.99h

INPUT	
Current Inputs (Each Channel)	
Nominal Current	5A /1A
Metering Range	0~10A ac/0~2A ac
Withstand	20Arms Continuous, 100Arms for 1 second, Non-Recurring
Burden	0.05VA (Typical) @ 5Arms
Pickup Current	0.1% of Nominal
Accuracy	0.2% Full Scale
Voltage Inputs (Each Channel)	
Nominal Full Scale	400Vac L-N, 690Vac L-L (+20%)
Withstand	1500Vac Continuous 2500Vac, 50/60Hz for 1 Minute
Input Impedance	2Mohm per Phase
Metering Frequency	45Hz~65Hz
Pickup Voltage	10Vac
Accuracy	0.2% Full Scale
Energy Accuracy	
Active (According to IEC 62053-22)	Class 0.2s
(According to ANSI C12.20)	Class 0.2s
Reactive (According to IEC 62053-23)	Class 2
Harmonic Resolution	
Metered Value	63 rd Harmonic

COMMUNICATION	
RS-485 (Standard)	
MODBUS [®] RTU and DNP 3.0	
2 Wire Shielded Twisted Pair Cable Connection	
Baud Rate:1200~38400 bps	
The Second RS-485 Port (Optional)	
(The Same as RS-485 Standard Contents)	
Baud Rate: 4800~38400 bps	
Ethernet (Optional)	
10M/100M BaseT	
MODBUS [®] TCP, SNMP, SNTP, HTTP Push	
Webpage Data Browsing Through HTTP Send email Based on Timer or Triggered Event	
PROFIBUS (Optional)	
PROFIBUS-DP/V0 Protocol	
Work as PROFIBUS Slave, Baud Rate Adaptive, up to 12M	
Typical Input Bytes: 32, Typical Output Bytes: 32	
PROFIBUS Standard According to EN 50170 Vol.2	
BACnet(Optional)	
BACnet IP, BACnet MS/TP	

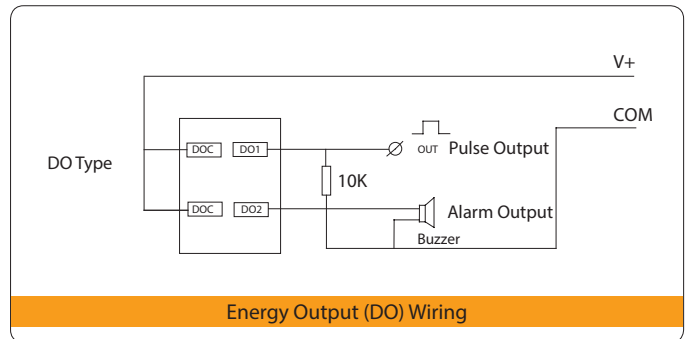
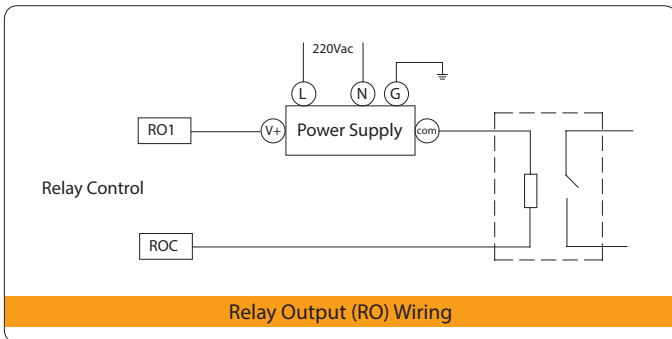
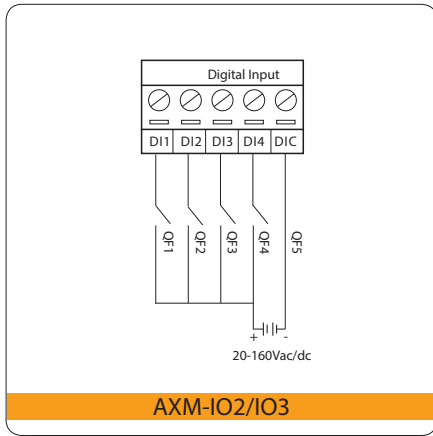
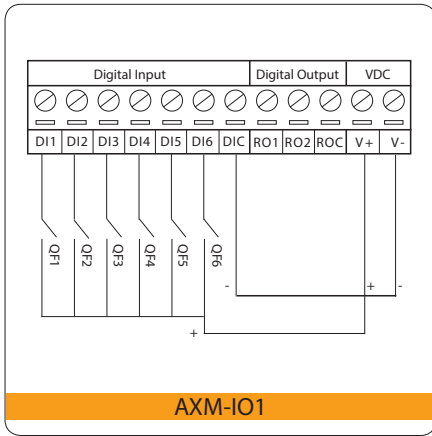
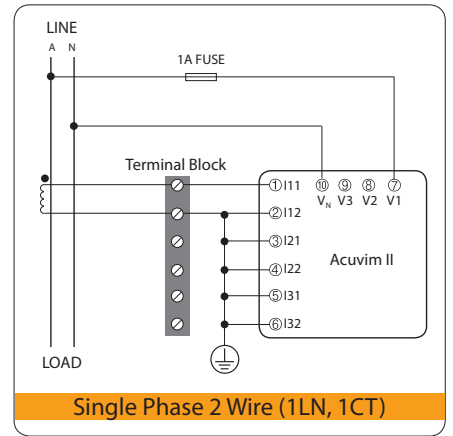
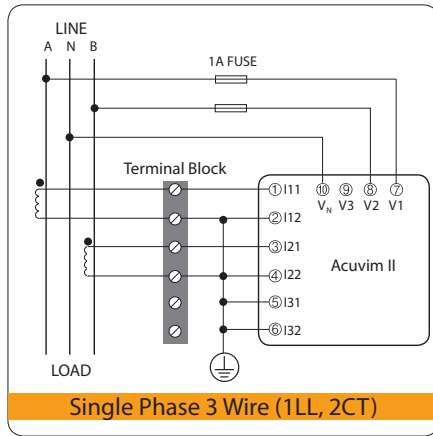
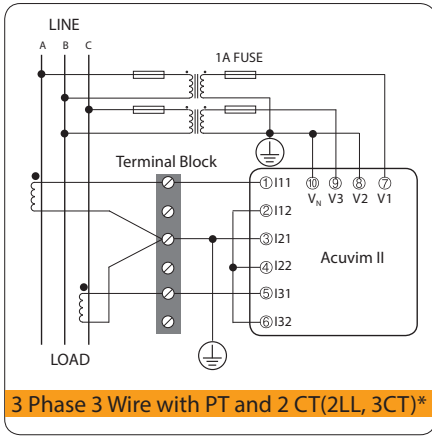
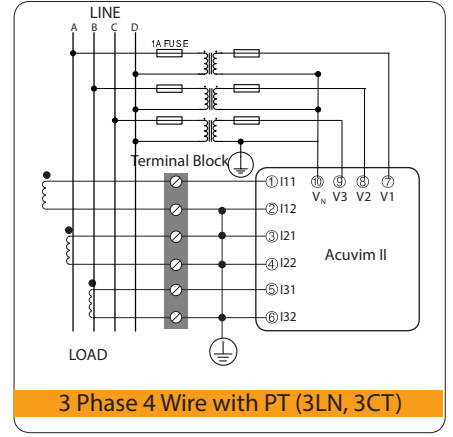
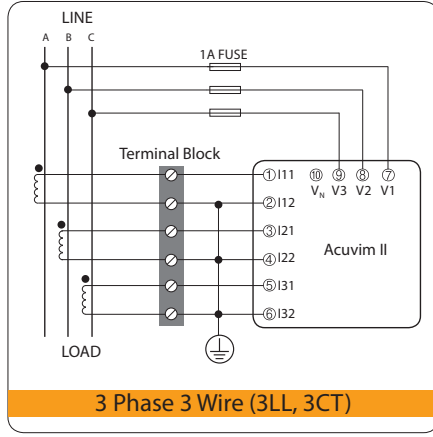
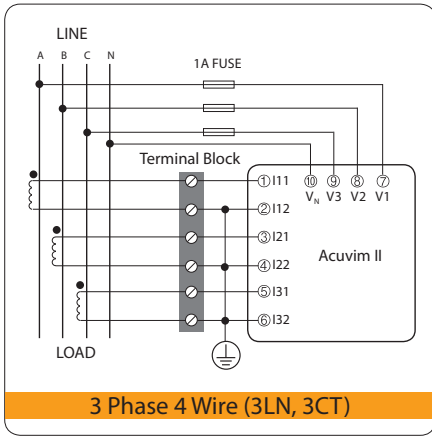
CONTROL POWER	
Universal	AC or DC
AC/DC Control Power	
Operating Range	100~415Vac, 50/60Hz; 100~300Vdc
Burden	5W
Frequency	50/60Hz
Withstand	3250Vac, 50/60Hz for 1 minute
Installation Category III (Distribution)	
Low Voltage DC Control Power (Optional)	
Operating Range	20~60Vdc
Burden	5W

I/O OPTION	
Digital Input	
Input Voltage Range	20~160 Vac/dc
Input Current (Max)	2mA
Start Voltage	15V
Stop Voltage	5V
Pulse Frequency (Max)	100Hz, 50% Duty Ratio (5ms ON and 5ms OFF)
SOE Resolution	2ms
Digital Output (DO) (Photo-MOS)	
Voltage Range	0~250Vac/dc
Load Current	100mA (Max)
Output Frequency	25Hz, 50% Duty Ratio (20ms ON, 20ms OFF)
Isolation Voltage	2500Vac
Relay Output (RO)	
Switching Voltage (Max)	250Vac, 30Vdc
Load Current	5A(R), 2A(L)
Set Time	10ms (Max)
Contact Resistance	30mΩ (Max)
Isolation Voltage	2500Vac
Mechanical Life	1.5x10 ⁷
Analog Output (AO)	
Output Range	0~5V/1~5V, 0~20mA/4~20mA (Optional)
Accuracy	0.5%
Temperature Drift	50ppm/°C Typical
Isolation Voltage	500Vdc
Open Circuit Voltage	15V
Analog Input (AI)	
Input Range	0~5V/1~5V, 0~20mA/4~20mA (Optional)
Accuracy	0.2%
Temperature Drift	50ppm/°C Typical
Isolation Voltage	500Vdc
Power Supply for DI (24Vdc)	
Output Voltage	24Vdc
Output Current	42mA
Load (Max)	21 DIs

OPERATING ENVIRONMENT	
Operation Temperature	- 25°C to 70°C
Storage Temperature	- 40°C to 85°C
Relative Humidity	5% to 95% Non-Condensing

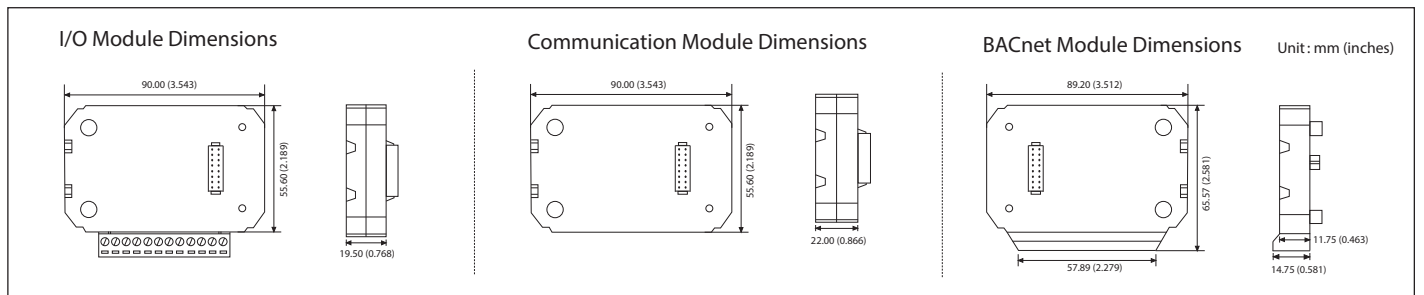
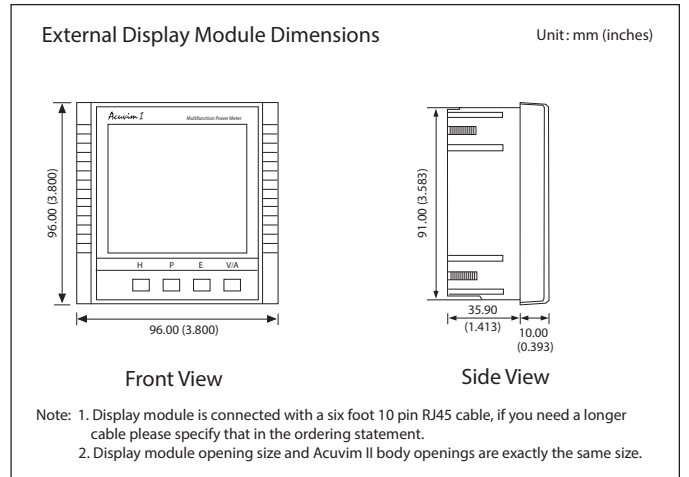
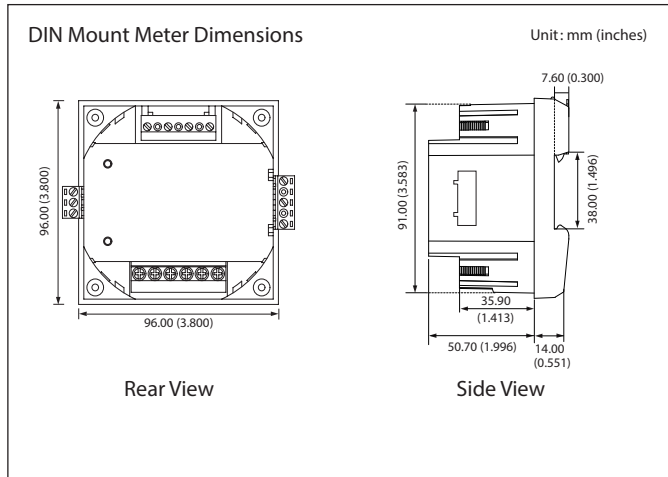
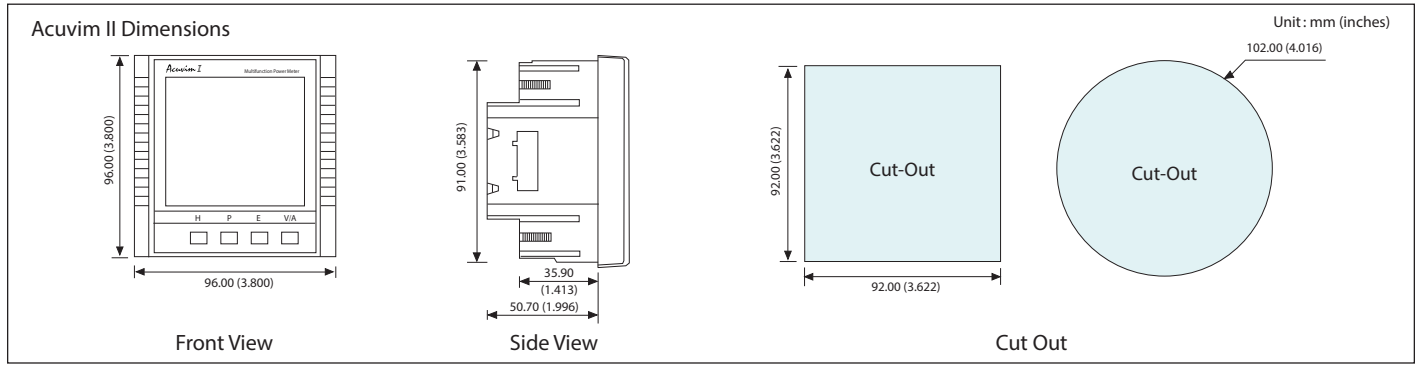
STANDARD COMPLIANCE	
Measurement Standard	IEC 62053-22; ANSI C12.20
Environmental Standard	IEC 60068-2
Safety Standard	IEC 61010-1, UL 61010-1, IEC 61557-12
EMC Standard	IEC 61000-4/-2-3-4-5-6-8-11, CISPR 22, IEC 61000-3-2, IEC 61000-6-2/4
Outlines Standard	DIN 43700, ANSI C39.1

TYPICAL WIRING



*Note: 2CT configuration is optional only in 3 Phase 3 Wire system.

DIMENSIONS



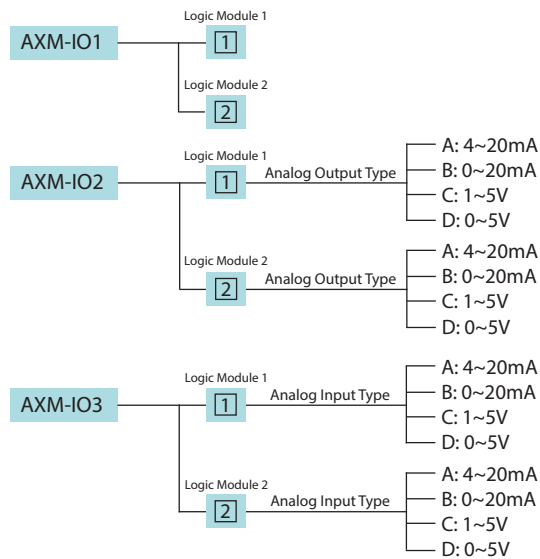
ORDERING INFORMATION

	Model	Mounting Option	Current Input	Power Supply
Ordering Number	-	-	-	-
Ordering Example	Acuvim IIE	D	5A	P1
	Acuvim II: Basic Model	D: Intergrated with LCD Display (Panel Mount Meter/Transducer)	5A: 5A Input	P1: 100~415Vac, 50/60Hz 100~300Vdc
	Acuvim IIR: II + Data Logging	M: Din-Rail Mount Transducer without Display (Optional Remote Display Available)	1A: 1A Input	P2: 20~60Vdc
	Acuvim IIE: IIR + Time of Use		80mA: 80mA Input	
	Acuvim IIW: IIR + Waveform Capture and PQ Event Logging		100mA: 100mA Input	
			200mA: 200mA Input	
			RCT: Rogowski Coil Input (Coil to be Ordered Separately from Below)	
			333: 333mV Input	

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.
3. Add "-S" after power supply for anti-tampering seal option.
4. Contact Accuenergy for 400Hz and 800Hz frequency option.

I/O Option module



I/O Module Ordering Example: AXM-IO2-1A

Remote Display Option

REM- DS2: Compatible with Acuvim II Series "M" (DIN Mount) Models Only

Communication Option Module

AXM- NET: Ethernet Module (AXM-NET)
 NET-P: Ethernet Module With HTTP Push Function
 PROF: Profibus Module (AXM-PROFI)
 RS485: Modbus®-RTU (AXM-RS485)

AXM- BMS: BACnet MS/TP (serial)
 BIP: BACnet IP (Ethernet)

Note: 1. No more than 2 of the same I/O modules may be attached to the meter (example: Two AXM-IO2). The same two I/O modules must have a different logic number.

2. A maximum of 3 modules may be attached to the meter. If a communication module is used (example: AXM-NET), it must be installed on the back FIRST before the other modules are attached.

3. If Acuvim IIW uses DI to trigger a waveform capture, the I/O module logic number must be Module 1.

Rogowski Coil Ordering Information:

	Size	Current Range
Ordering Number	-	-
Ordering Example	RCT16	1000
	RCT16 : 15.75" Coil, 4" Diameter	1000: Metering Range 5A to 1200A
	RCT24 : 23.62" Coil, 7" Diameter	2500: Metering Range 12.5A to 3000A
	RCT36: 35.43" Coil, 10.67" Diameter	5000: Metering Range 25A to 6000A
	RCT47: 47.24" Coil, 14.5" Diameter	10000: Metering Range 50A to 12000A
		50000: Metering Range 250A to 50000A

Note: 1. Make sure maximum current rating in system being metered is within the current metering range for Rogowski coil.

2. Please contact Accuenergy if other lengths of coil or current ranges are needed.

Additional Accessories:

AcuPanel ordering information:

AcuPanel 9014 (NEMA4 Indoor Panel)

AcuPanel 9104X (NEMA4X Waterproof)

Split Core CT Ordering Information:

	Model	Rated Input
Ordering Number	-	-
Ordering Example	AcuCT-0812 - 200	- 5
	200: 200A	5: 5A Input
	250: 250A	
	300: 300A	
	400: 400A	
	AcuCT-2031 - 400	- 5
	400: 400A	
	600: 600A	
	800: 800A	
	1000: 1000A	
	AcuCT-3147 - 1000	- 5
	1000: 1000A	
	1200: 1200A	
	1600: 1600A	
	AcuCT-3163 - 2000	- 5
	2000: 2000A	
	2500: 2500A	
	3000: 3000A	
	4000: 4000A	
	5000: 5000A	

Note: Please contact Accuenergy if CTs in other sizes and ratios are needed.



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