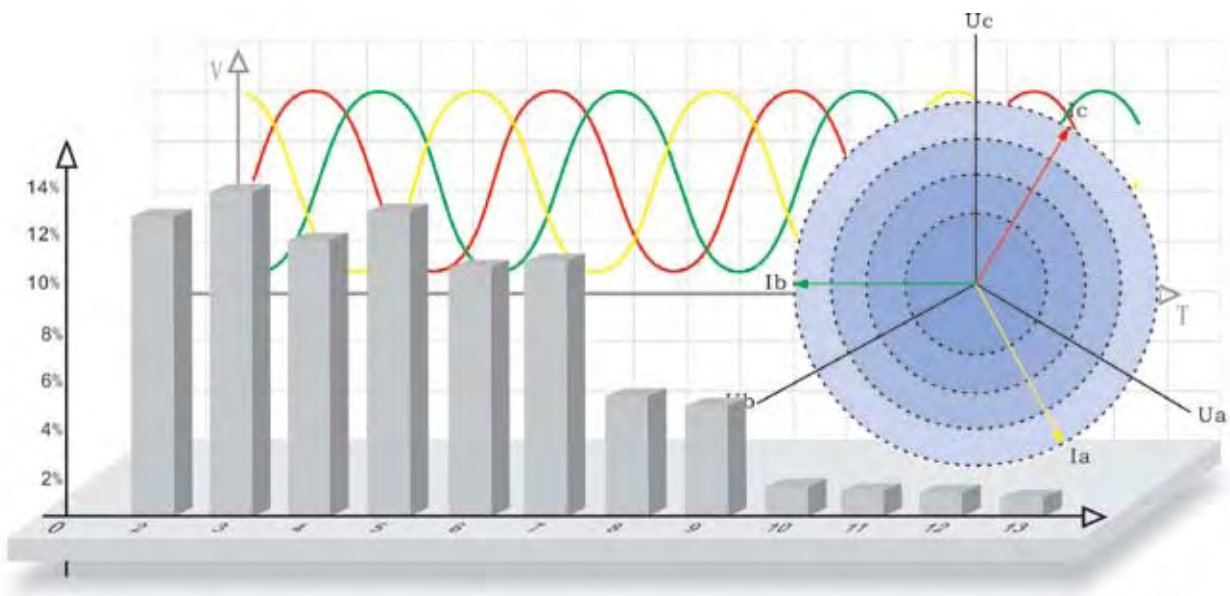


# Acuvim-X Series Multifunction Power Meter



Power System Metering  
Waveform Capture  
Over Limit Alarm  
Remote Switch Control

Power Quality Detection  
Energy TOU Count  
Trend Record  
Input Polarity Adjust

## DESCRIPTION

The Acuvim-X is a series of high-end multifunction power meters manufactured by Accuenergy. It is the ideal choice for monitoring and controlling of power distribution system.

Some of the Features and Electric power parameters available on the ultra-compact Acuvim-X series are:

- 4-quadrant Energy
- Energy Time of Use(TOU)
- Energy Reading
- Power Quality Analysis
- Waveform Capture
- Trend Record
- Sequence of Even(SOE)
- Over limit alarm
- Switch statues monitoring
- Remote switch controlling

Acuvim-X may be used as a data gathering device for an intelligent Power Distribution System or a Plant Automation System. All monitoring data is available via digital RS485 communication port running Modbus™ Protocol. Ethernet communication is also an option and with new wireless technologies and protocols currently under development, the applications for the Acuvim meter are limitless.

## APPLICATIONS

- Medium and low voltage system
- Commercial. Industrial, Utility
- Power Quality Analysis

## 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
Power Factor	PF1, PF2, PF3, PF
Frequency	
Load Nature	
Phase Angel	
Load Rater	

### Power Quality

Crest Factor	(CF)
Total Harmonic Distotion	(THD)
2nd to 31st Individual harmonic	(%)
Total Odd Harmonic Distortion	(Total oddHD)
Total Even Harmonic Distortion	(Total evenHD)
Telephone Harmonic Form Factor	(THFF)
K Factor	(K Factor)
Imbalance Factor	
Sequence Analysis	
Voltage Eligibility Rate Statistics and Record	
Voltage and Current Waveform Capture	

### Demand

Acuvim-X supports most standard demand calculation methods including block, rolling block, thermal and predicted demand. The demand synchronization method can be set by the user.

The Maximum demand and time stamp can be recorded. Demand data includes:

- Current Demand
- Power Demand, (each phase and total)
- Reactive Power Demand, (each phase and total)
- Maximum Demand Record (back up of last trigger)
- Maximum Demand (current trigger)

### Energy (TOU)

There is a function to monitor Energy in all four quadrants fully bi-directional. The Energy Time of Use (TOU) is provided in the Acuvim-X power meter with 4 seasons, 8 daily profiles per season and 4 rate periods per daily profile. Energy count can be on fundamental or harmonic mode. Flexible energy freezing and reading made it easier to access energy data. The TOU function features:

- kWh and kVarh, Bi-direction, 4 quadrant (Imp,Exp,Total,Net)
- kVAh
- Energy Freezing
- kWh, kVarh and kVAh, Time of Use (TOU)
- 4 Seasons in Calendar
- Support 4 Rates (Sharp, Peak, Low and Off Peak)
- Record Enegy of current month automatically
- Backup Energy of last month automatically

### Alarm

The metering parameters can be selected as alarm monitoring objects. The alarm process will be triggered and an event recorded if the parameter is over the value limitation and lasted over time interval limitation. The value limitation and time interval limitation is preset by the user. Up to 16 groups of alarm events could be recorded. The monitoring objects can be chosen from 242 metering parameters. Maximum 16 group alarm inequations can be set and logic relation between inequations can be used. The alarm event can be used to trigger Digital Output or Relay Output even Waveform Capture.

### Trend

Trend can be given by record metering data in a user defined time interval (1~60 min). A maximum of 336 records can be save in Acuvim-X meter. Data for an entire week can be recorded if the time interval is 60 min.

### Max/Min

Real time statistics of Max&Min of voltage, current, power, reactive power, apparent power, power factor, frequency, demand, imbalance factor and THD with time stamps. All this data is stored in NV-RAM so that the data will not be lost when the power of the meter is off. The statistics data can be accessed or cleared from the front panel or over a communication port.

### I / O Port

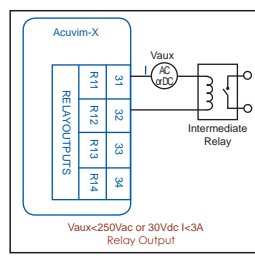
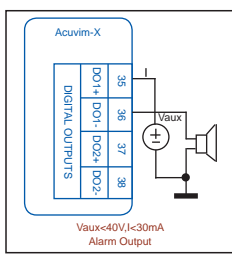
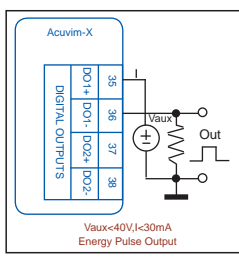
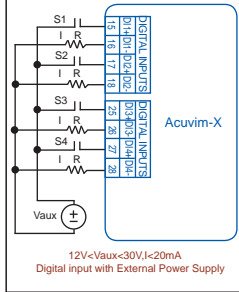
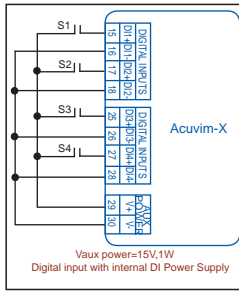
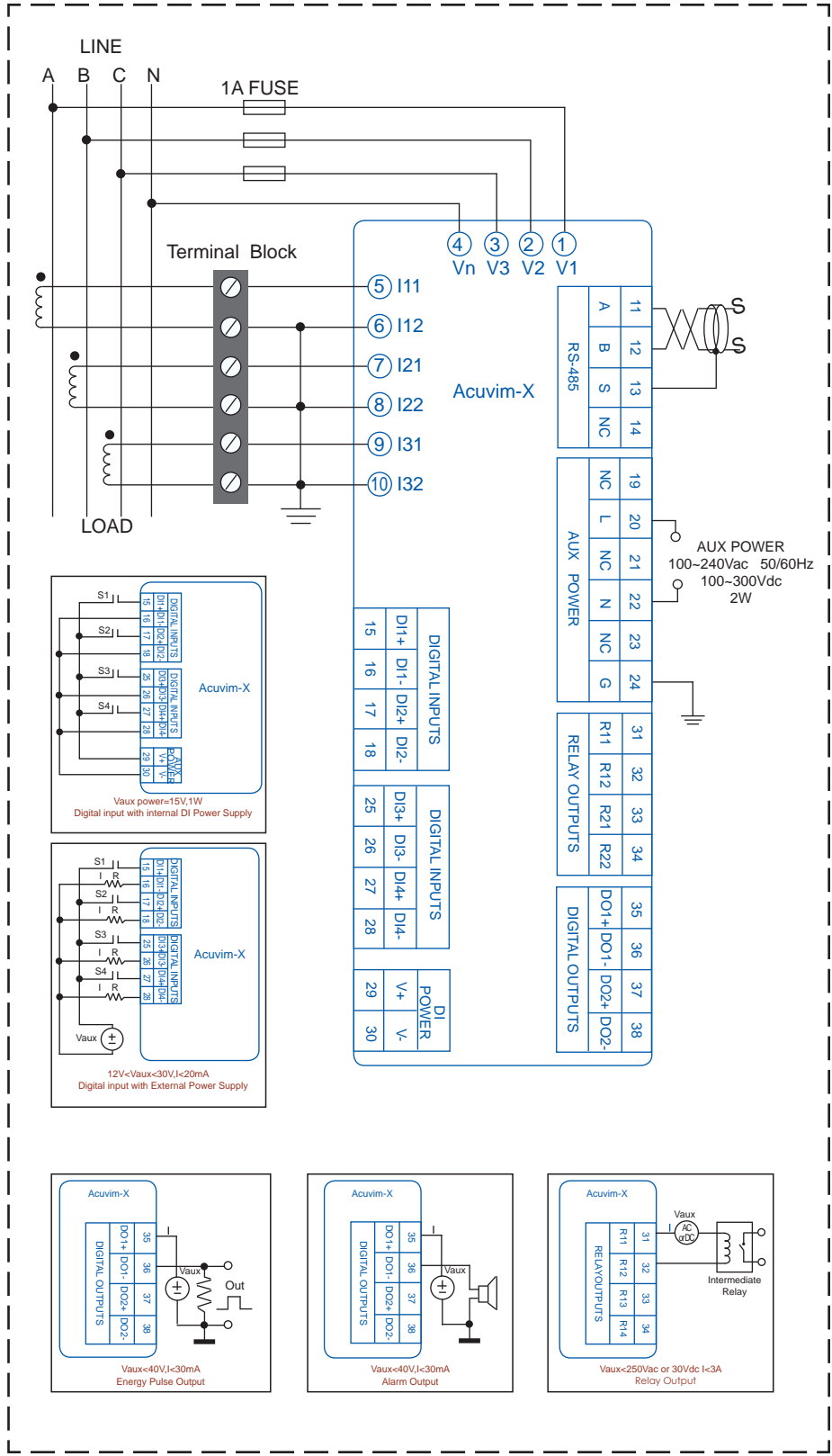
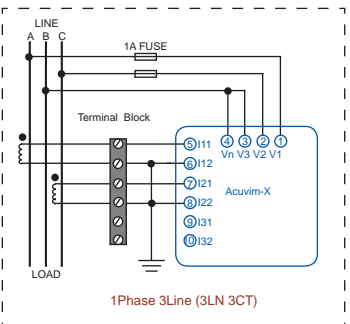
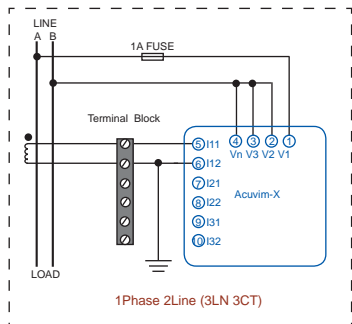
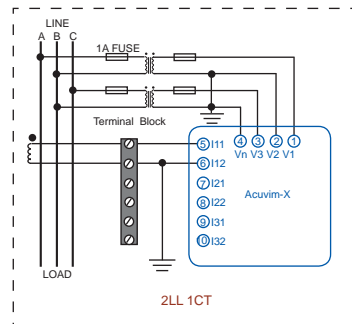
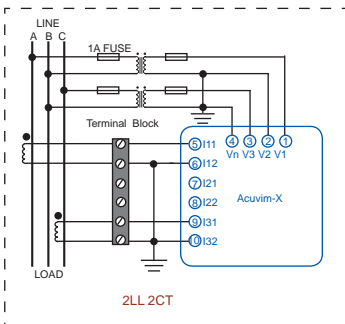
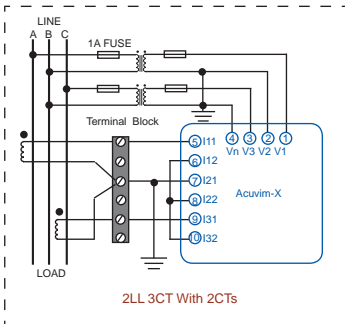
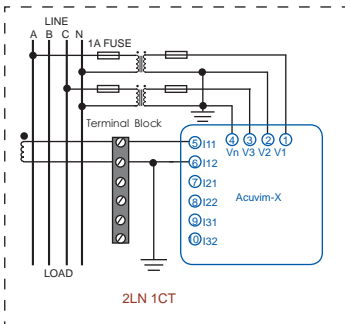
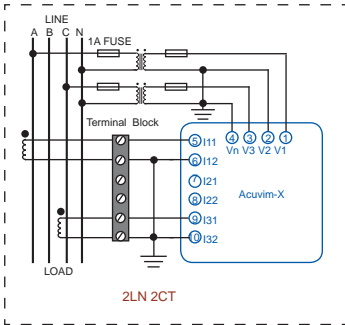
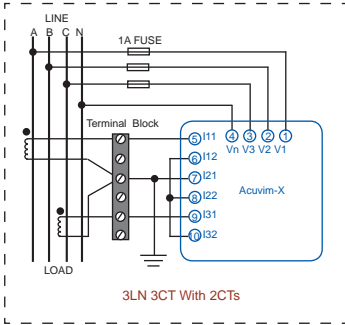
Three kinds of input and output ports are provided in the Acuvim-X power meter. Two relay outputs (RO) are used to control electric switch or trigger alarm signals with latch or momentary mode. Four digital inputs (DI) are used to monitor switch status with power supply (15Vdc) from the meter. Two digital outputs (DO) are used to export energy pulse or to trigger alarm signal.

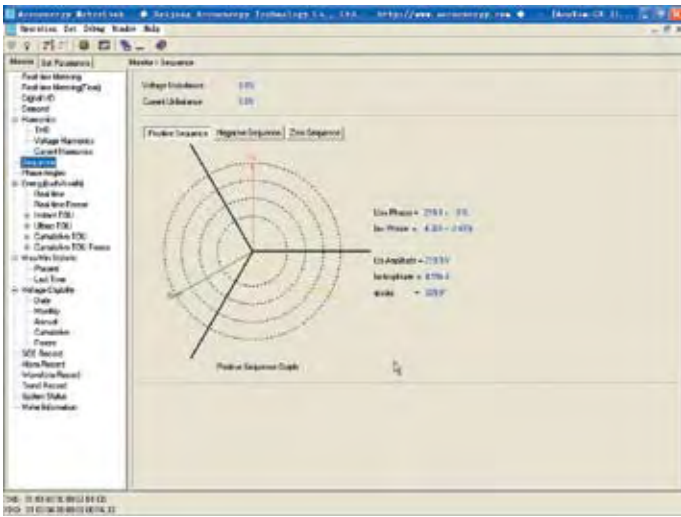
## COMPARISON OF ACUVIM-X SERIES METER

Functions		Parameters	DX	EX	FX	GX
Metering	Real Time	Voltage, Current, Power, Reactive Power, Apparent Power, Power Factor, Load Nature, Frequency, Energy	√	√	√	√
Demand	Demand	Power Dmd, Reactive Power Dmd and Current Dmd	√	√	√	√
Energy Freezing	Energy	Import, Export, Total and Net of Energy	√			√
	Reactive Energy	Inductive, Capacitive, Total and Net of Reactive Energy	√			√
Time of Use (TOU)	Energy	Each phase and total Energy for current month, last Month and accumulation	√			√
	Reactive Energy	Each phase and total Reactive Energy for current month, last month and accumulation	√			√
Energy Freezing	TOU Energy	Each phase and total Energy	√			√
	TOU Reactive Energy	Each phase and total Reactive Energy	√			√
Statistics	Max/Min with time stam	Voltage/Current/Power/Reactive Power/Apparent Power/Power Factor/Frequency/Demand/Imbalance Factor		√	√	√
	Max/Min with time stam of last record	Voltage/Current/Power/Reactive Power/Apparent Power/Power Factor/Frequency/Demand/Imbalance Factor		√	√	√
Voltage Eligibility	Day, Month, Year and Accumulation	Running Hour, Voltage eligibility hours and rate		√		√
Eligibility Freezing	Day, Month, Year and Accumulation	Voltage eligibility hours and rate		√		√
Power Quality	Power Quality	Three Phase Voltage and Current Imbalance Factor, THD		√	√	√
		Individual Harmonics, Crest Factor, THFF, K Factor		√		√
SOE	DI Status record	Time Stamp resolution: 1ms, Maximum: 20 Records			√	√
Phase Sequence	Voltage	Positive, Negative and Zero Sequence		√	√	√
	Current	Positive, Negative and Zero Sequence		√	√	√
Phase Angle	Phase Angle for Voltage and Current	Phase Angle for Voltage and Current of each phase		√	√	√
Alarm	Over Limit Alarm	Alarm parameters select from: each metering item		√	√	√
Waveform	Voltage and current waveform	Capture individual 5 Cycle waveforms before and after trigger point of each phase voltage and current, Save five groups of waveform and Trigger condition can be selected			√	√
Trend	Trend Record	Tend Rcord of Voltage, Current and Frequecy of each Phase, Time interval can be set			√	√
I/O	Digital Input Relay Output Digital Output Alarm Output	4 Digital Input (DI) 2 Relay Output (RO) 2 Digital Output (DO) RO/DO Related	√	√	√	√
Time	Real Time Clock	Year, Month, Date, Hour, Minute, Second	√	√	√	√
Comm	RS485 Port	Modbus Protocol	√	√	√	√
Wire	Remote Wire adjust	Remote Adjust wiring direction over Communication Or Front panel	√	√	√	√

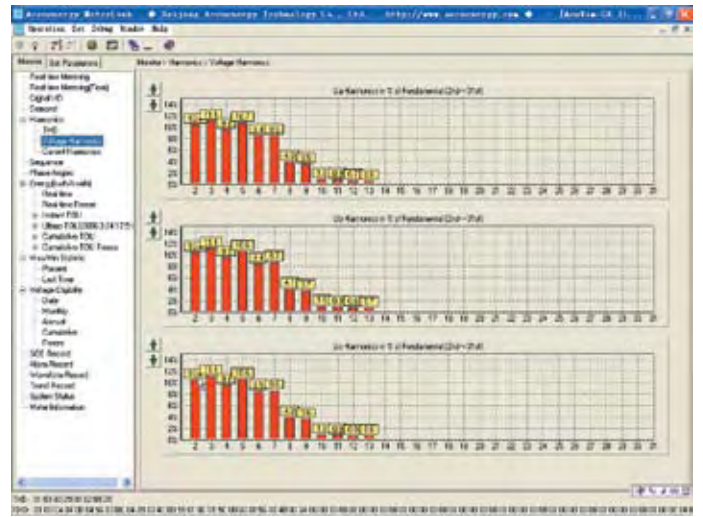
Note: Please take note of the meter model and specifications. Attempts to utilise non-existing functions will provide ineffective results

# TYPICAL WIRING

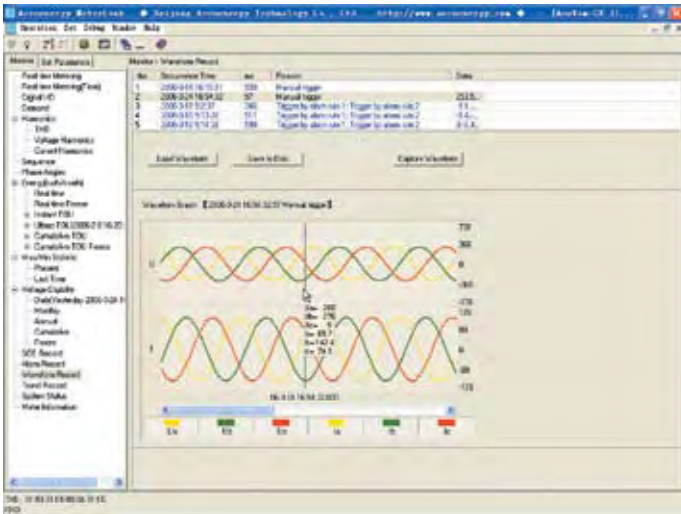




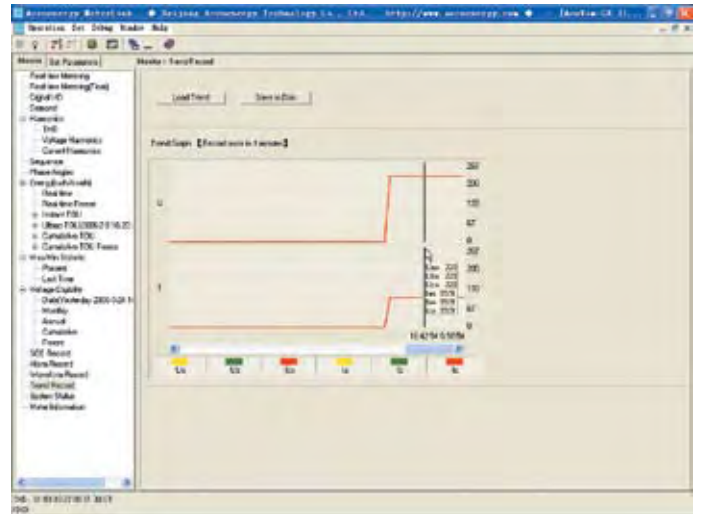
Phase Sequence and Phase Angle



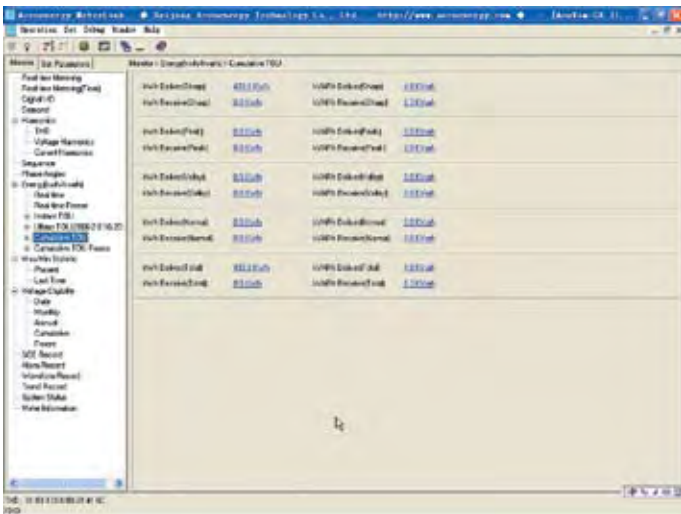
Power Quality Analysis



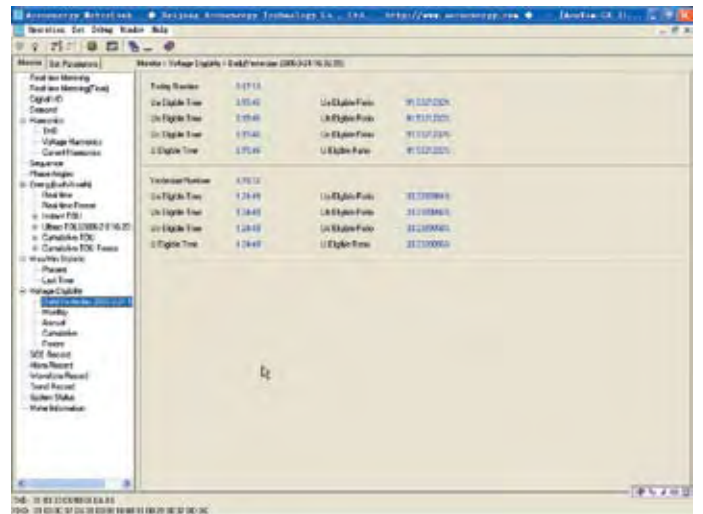
Waveform Capture



Trend Record



Energy TOU



Voltage Eligibility

# TECHNICAL SPECIFICATIONS

Metering			
Parameters	Accuracy	Resolution	Range
Voltage	0.2%	0.1V *	20V to 500kV
Current	0.2%	1mA *	5mA~50000A
kW	0.5%	1W *	-9999~9999MW
kVar	0.5%	1Var *	-9999~9999MVar
kVA	0.5%	1VA *	0~9999MVA
kWh	0.5%	0.01kWh	0~99999999.9kWh
kVarh	0.5%	0.1kVarh	0~99999999.9kVarh
kVAh	1.0%	0.1kVAh	0~99999999.9kVAh
PF	0.5%	0.001	-1.000~1.000
Frequency	0.2%	0.01Hz	45.00~65.00Hz
kW Dmd	0.5%	1W *	0~9999MW
kVar Dmd	0.5%	1Var *	0~9999MVar
kVA Dmd	0.5%	1VA *	0~9999MVA
THD	1.0%	0.01%	0~100%
Imbalance	0.5%	0.1%	0~100%
Volt Eligibility	9“g”	1 Cycle	0~99.9999999%
Run Hour		0.01h	0~9999999.99h

\* Secondary Side

Communication	
Type:	RS485, Optical Isolated
Baud Rate:	1200 to 38400bps
Protocol:	Modbus® RTU

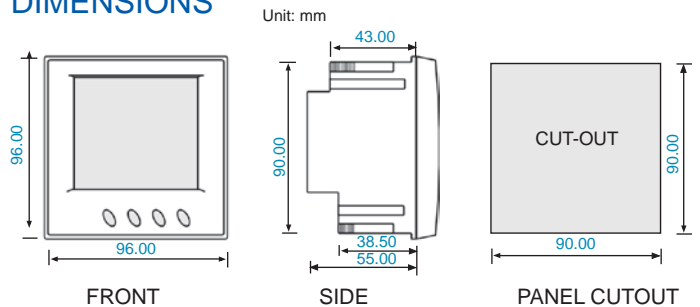
Output	
<b>RELAY OUTPUT (RO)</b>	
Type:	Mechanical Contact
Max Voltage:	250Vac or 30Vdc Max Current:3A
Configuration:	A Contact Material:Silver Alloy
Isolate Voltage:	2500Vac rms
Output Mode:	Latch or Momentary(50 to 6000ms)
<b>DIGITAL OUTPUT</b>	
Output Form:	Photo-MOS, NO
Optical Isolated:	2500Vac rms Max Positive Volt:100Vdc
Max Negative Volt:	6Vdc Max Current: 50mA
<b>PULSE OUTPUT</b>	
Parameters:	kWh (Import, Export, Total, Net) kVarh (Inductive, Capacitive, Total, Net)
Pulse Rate:	1 to 6000, in step of 1(0.1kWh or 0.1kVarh)
Pulse Width:	20ms to 1000ms in step of 20ms
Min Pulse interval:	20ms
<b>ALARM OUTPUT</b>	
Alarm Items:	All meteing parameters, Total: 242
Time Limit:	0 to 76500ms in steps of 300ms
Alarm Output:	DO or RO

Input	
<b>AC CURRENT</b>	
CT Input:	5A Secondary(1A Option)
Burden:	0.2VA
Over Load:	2xCT for Continue 20xCT for 1 Second
Full Scale:	120% of CT
Accuracy:	0.2% of Full Scale
<b>AC VOLTAGE</b>	
PT Pri/Se:	Direct or100~500,000:100~400
Input Range:	40~230V L-N,60~400V L-N
Over Load:	2xPT Continue, 2500V for 1 Minutes
Burden:	<0.2VA Accuracy: 0.2%
<b>DIGITAL INPUT (DI)</b>	
Isolate Volt:	2500Vac rms Optical Isolated
Input Type:	Wet Contact
Resistance:	2K(Typical)
Input Voltage:	5~30Vdc Max Current: 20mA
Internal DI Power supply:	15Vdc/60mA
Close Contact Voltage:	10Vdc SOE Resolution: 1ms

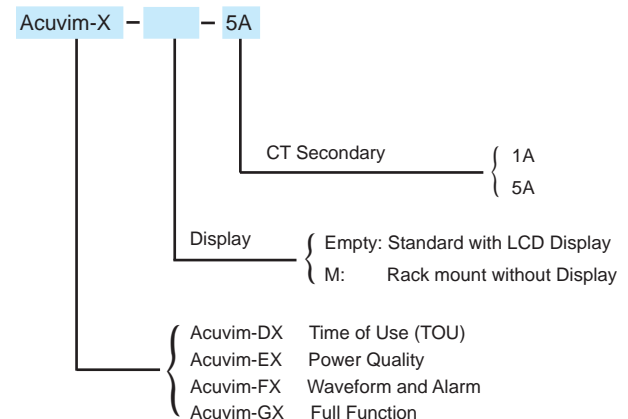
Environment	
Humidity:	95% Non-condensing
Temperature:	-25°C~70°C
Packaging	
Shipping Box:	160mm×140mm×110mm
Shipping Weight:	350g

Power Supply	
Input:	100V~240Vac 50/60Hz 100V~300Vdc(24 or 48Vdc Option)
Max Power:	4W

## DIMENSIONS



## ORDERING



Los Angeles - Toronto - Beijing

Tel: 1-877-721-8908

Web: [www.accuenergy.com](http://www.accuenergy.com)

Email: [marketing@accuenergy.com](mailto:marketing@accuenergy.com)