

# Acuvim-L Series

## Multifunction Power Meter



ISO9001 Certified



## DESCRIPTION

The Acuvim-L series are 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 Acuvim-L are:

- True-RMS Measuring Parameter
- 4-quadrant Energy
- Power Quality Analysis
- Over/Under Limit Alarm
- Energy Pulse Output
- TOU, 4 Tariffs, 12 Seasons, 14 Schedules

Acuvim-L 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.

The quality of the power system is important with increasing use of electronic loads such as computers, ballasts or variable frequency drives. With the Acuvim-L power analysis option, any phase current or voltage can be displayed and the harmonic content calculated. By knowing the harmonic distribution, action can be taken to prevent overheated transformers, motors, capacitors, neutral wires and nuisance breaker trips. Redistribution of the system loading can also be determined.

## APPLICATIONS

- Metering of distribution feeders, transformers, generators, capacitor banks and motors
- Medium and low voltage systems
- Commercial, industrial, utility
- Power quality analysis

## FEATURES

### Metering

- Voltage V1, V2, V3, V12, V23, V31
- Current I1, I2, I3, In
- 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
- Reactive Energy Eq\_imp, Eq\_exp
- Apparent Energy Es
- Demand Dmd\_I1, Dmd\_I2, Dmd\_I3, Dmd\_P, Dmd\_Q, Dmd\_S

### Monitoring

- Power Quality
- Voltage Harmonics 2<sup>nd</sup> to 15<sup>th</sup> and THD( Acuvim-DL is from 2<sup>nd</sup> to 25<sup>th</sup>)
- Current Harmonics 2<sup>nd</sup> to 15<sup>th</sup> and THD( Acuvim-DL is from 2<sup>nd</sup> to 25<sup>th</sup>)
- Voltage Unbalance Factor U\_unbl
- Current Unbalance Factor I\_unbl
- Max/Min Statistics
- Meter Running Hour and Load Running Hour(Acuvim-DL, Acuvim-EL and Acuvim-KL)

### Alarm

Two (2) parameter may be set within a specified time interval. If indicated parameter 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 indicated parameter can be selected from any of the 35 parameters available.

### I/O option module

The Acuvim-DL/EL model can extend the I/O module. Digital input, pulse counter, pulse output and SOE can provided by extension I/O module.

### Pulse Output option

Two digital outputs can be configured as pulse output for kWh and kvarh. The pulse rate and width can be set.

### Communication

RS485, industry standard Modbus® RTU protocol; Option the second RS485(just for Acuvim-DL/EL), Modbus® RTU protocol.

### Display

Clear and large character LCD Screen display with white back light; Wide environmental temperature endurance.

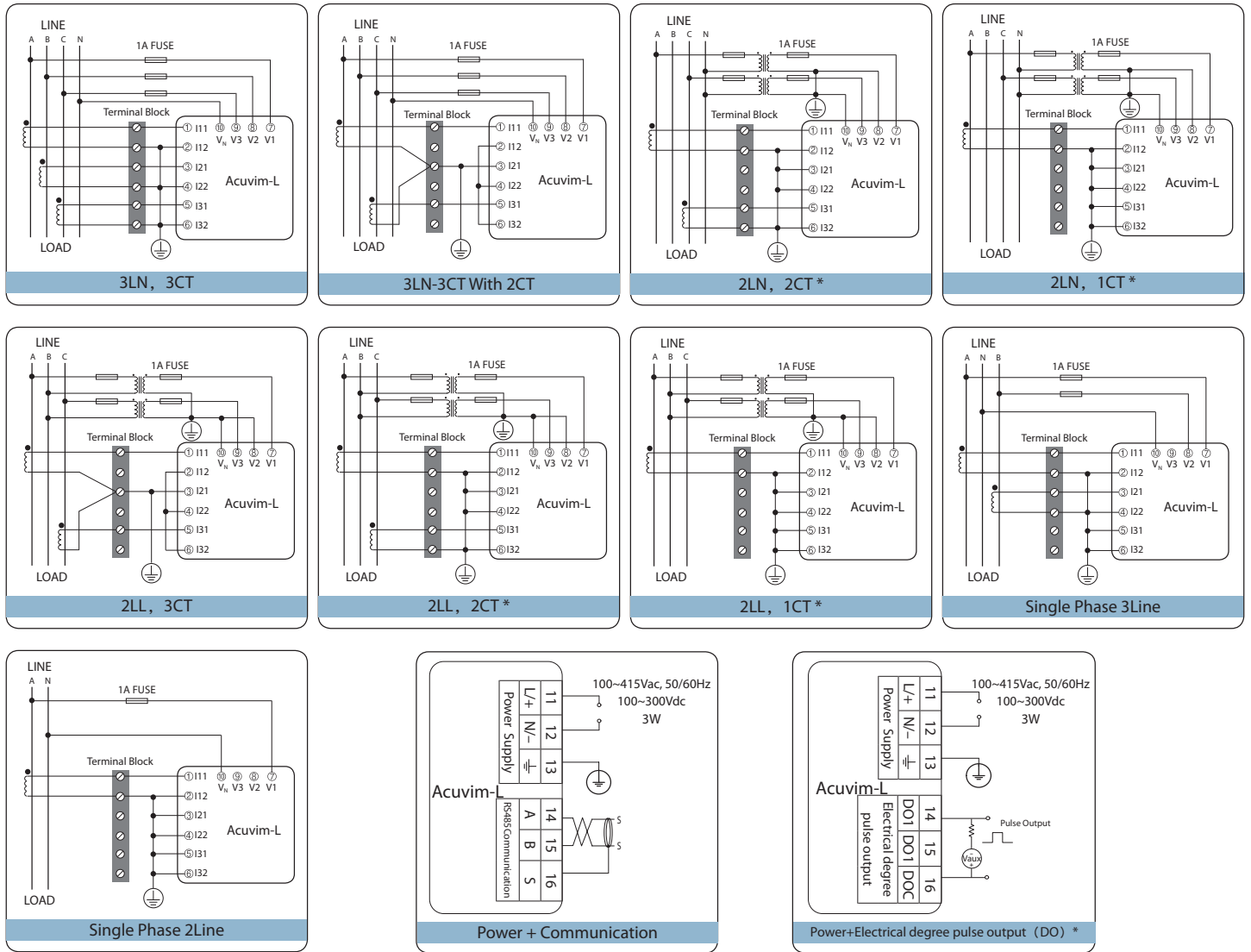
### Outline

Small size 96×96×51mm (92×92 cutout) DIN or 4" ANSI round  
Extension I/O: 90×55.6×19.5mm

## Acuvim-L Meter

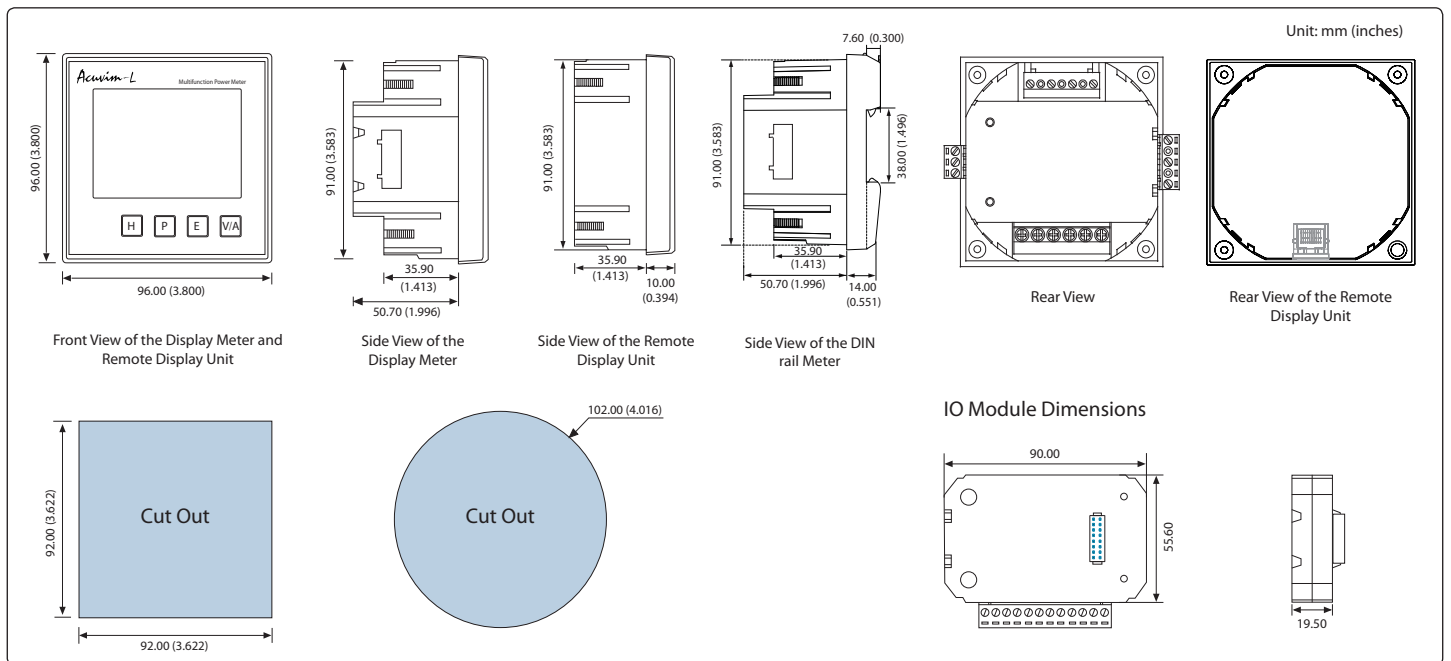
Function	Parameter	Acuvim-AL	Acuvim-BL	Acuvim-CL	Acuvim-DL	Acuvim-EL	Acuvim-KL
REAL TIME METERING	Phase Voltage	U1, U2, U3	●	●	●	●	●
	Line Voltage	U12, U23, U31	●	●	●	●	●
	Current	I1, I2, I3, In (Acuvim-KL no neutral current measurement)	●	●	●	●	●
	Power	P1, P2, P3, Psum	●	●	●	●	●
	Reactive Power	Q1, Q2, Q3, Qsum	●	●	●	●	●
	Apparent Power	S1, S2, S3, Ssum	●	●	●	●	●
	Power Factor	PF1, PF2, PF3, PF	●	●	●	●	●
	Load Nature	L/C/R	●	●	●	●	●
ENERGY & DEMAND	Frequency	F Hz	●	●	●	●	●
	Energy	Ep_imp, Ep_exp	●	●	●	●	●
	Reactive Energy	Eq_imp, Eq_exp	●	●	●	●	●
	Apparent Energy	Es	●	●	●	●	●
	Current Demand	Dmd_I1, Dmd_I2, Dmd_I3	●	●	●	●	●
TIME OF USE	Power Demand	Dmd_Psum, Dmd_Qsum, Dmd_Ssum	●	●	●	●	●
	Energy	TOU, 4 Tariffs, 12 Seasons, 14 Schedules				●	
POWER QUALITY	Voltage Unbalance	U_unbl	●	●	●	●	●
	Current Unbalance	I_unbl	●	●	●	●	●
	Voltage THD	THD_V1, THD_V2, THD_V3	●	●	●	●	●
	Current THD	THD_I1, THD_I2, THD_I3	●	●	●	●	●
STATISTICS	Individual Harmonics	2 <sup>nd</sup> ~15 <sup>th</sup> (Voltage and Current) (Acuvim-DL is from 2 <sup>nd</sup> to 25 <sup>th</sup> )	●	●	●	●	●
	Max Current Demand	Dmd_I1_max, Dmd_I2_max, Dmd_I3_max	●	●	●	●	●
	Max Power Demand	Dmd_Psum_max, Dmd_Qsum_max, Dmd_Ssum_max	●	●	●	●	●
	Max & Min of Voltage		●	●	●	●	●
HOUR	Max & Min of Current		●	●	●	●	●
	Running Hour	Hour	●	●	●	●	●
I/O	Load Running Hour	Hour			●	●	●
	Energy Pulse Output	2 DO, configured as pulse output for kWh and kvarh, the pulse rate and width can be set		●			
COMMUNICATION	Alarm Output		●				
	RS-485	Modbus®-RTU Protocol, 1200~38400 baud rate			●	●	●
EXTENSION I/O	Second RS-485	Modbus®-RTU Protocol, 1200~38400 baud rate			○	○	
	4DI, 2DO	SOE, Pulse Counter, Pulse output, Alarm output			○	○	

# Typical Wiring



Note: "\*" Wiring Diagram is not applicable to Acuvim-EL and Acuvim-KL.

# DIMENSIONS



## SPECIFICATIONS

METERING				
Parameters	Accuracy		Resolution	Range
	Acuvim-L	Acuvim-EL/KL		
Voltage	0.5%	0.5%	0.1V	20V~500kV
Current	0.5%	0.5%	0.001A	0~50000A
Current Demand	0.5%	0.5%	0.001A	0~50000A
Power	1.0%	0.5%	1W	-9999MW~9999MW
Reactive Power	1.0%	0.5%	1var	-9999Mvar~9999Mvar
Apparent Power	1.0%	0.5%	1VA	0~9999MVA
Power Demand	1.0%	0.5%	1W	-9999MW~9999MW
Reactive Power Demand	1.0%	0.5%	1var	-9999Mvar~9999Mvar
Apparent Power Demand	1.0%	0.5%	1VA	0~9999MVA
Power Factor	1.0%	0.5%	0.001	-1.0~1.0
Frequency	1.0%	0.2%	0.01Hz	45.00~65.00Hz
Energy	0.5%	0.5%	0.1kWh	0~99999999.9kWh
Reactive Energy	1.0%	0.5%	0.1kvarh	0~99999999.9kvarh
Apparent Energy	1.0%	0.5%	0.1VAh	0~99999999.9kVAh
Harmonics	2.0%	—	0.01%	0~100.0%
Running Time			0.1hrs	0~99999999.9hrs

COMMUNICATION	
<b>RS-485 (Option)</b>	
Modbus®-RTU Protocol	
2-wire connection, Half-duplex, Isolated	
1200 to 38400 baud rate	

INPUT	
<b>Current Inputs (Each Channel)</b>	
Nominal Current	5 A ac
Metering Range	0~6 A ac
Withstand	20Arms continuous 100Arms for 1 second, non-recurring
Burden	0.05VA (typical) @ 5Arms
Pickup Current	0.1% of nominal
Accuracy	0.5%
<b>Voltage Inputs (Each Channel)</b>	
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	0.5%

<b>Energy Accuracy (Acuvim-EL)</b>	
Active (according to IEC 62053-22)	Class 0.5s
(according to ANSI C12.20)	Class 0.5
Reactive (according to IEC 62053-23)	Class 2
<b>Harmonic Resolution</b>	
Metered Value	2 <sup>nd</sup> ~15 <sup>th</sup> harmonics Acuvim-DL is 2 <sup>nd</sup> to 25 <sup>th</sup>

CONTROL POWER	
Universal	AC or DC
<b>AC/DC Control Power</b>	
Operating Range	100~415Vac, 50/60Hz, 100~300Vdc
Burden	3W
Withstand	3250Vac, 50/60Hz for 1 minute
<b>Low Voltage DC Control Power (Optional)</b>	
Operating Range	20~60Vdc
Burden	3W

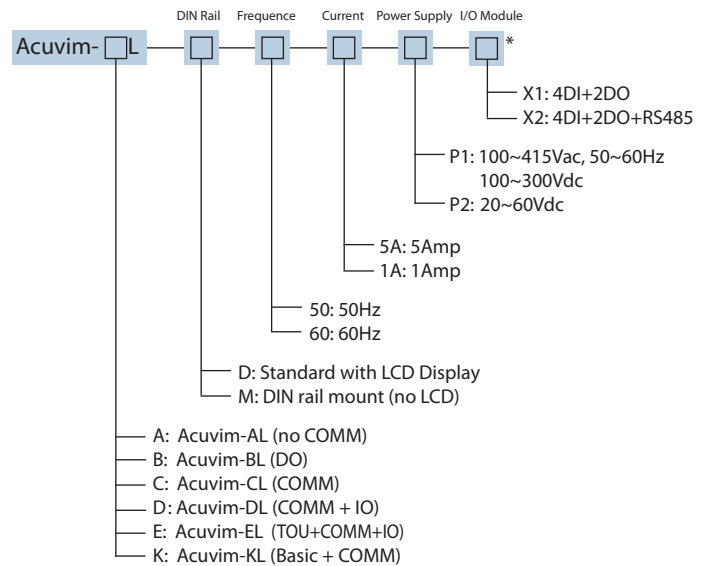
Digital Output OPTION	
<b>Digital Output (DO)</b>	(Photo-MOS)
Voltage Range	0~250Vac/dc
Load Current	100mA (Max)
Output Frequency	25Hz, 50% Duty Ratio (20ms ON, 20ms OFF)
Isolation Voltage	2500V

Digital Input OPTION	
<b>Digital Input (DI)</b>	
Input Voltage Range	20~220Vac/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

OPERATING ENVIRONMENT	
Operation Temperature	-25°C to 70°C
Storage Temperature	-40°C to 85°C
Relative Humidity	5% to 95% non-condensing
Pollution Degree	2

STANDARD COMPLIANCE	
<b>Product</b>	
USA	UL 61010-1
Canada	cUL 61010-1
Europe	IEC 61010-1
<b>Emission</b>	
Radiated/Conducted	FCC Part 15 Subpart B, Class A
Radiated/Conducted	EN 55011
Harmonic	IEC 61000-3-2
Voltage Fluctuation	IEC 61000-3-3
Radio Interference	EN 50081-2
<b>Immunity</b>	
Electromagnetic Compatibility	IEC 61000-6-2
ESD	IEC 61000-4-2
Radiated, radio-frequency, electromagnetic field	IEC 61000-4-3
Electrical fast transient/burst	IEC 61000-4-4
Surge	IEC 61000-4-5
Conducted disturbances	IEC 61000-4-6
Power frequency magnetic field	IEC 61000-4-8
Voltage dips and interruptions	IEC 61000-4-11
Generic Immunity Standard for Industrial Environment	EN 50082-2

## ORDERING INFORMATION



Acuvim-L Series Meter Ordering Example: Acuvim-EL-D - 60 - 5A - P1

\* Note: I/O Module only support by Acuvim-DL and Acuvim-EL.

## Remote Display Option

REM - [ ] — DS1: Compatible with Acuvim-L Series "M" (DIN Mount) models only

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