

# 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 Time and Load Running Time (Acuvim-DL/EL/KL)

### Alarm

Two (2) parameters 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, Modbus® RTU protocol; or PROFIBUS-DP/V0 Protocol. (just for Acuvim-DL/EL)

### 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

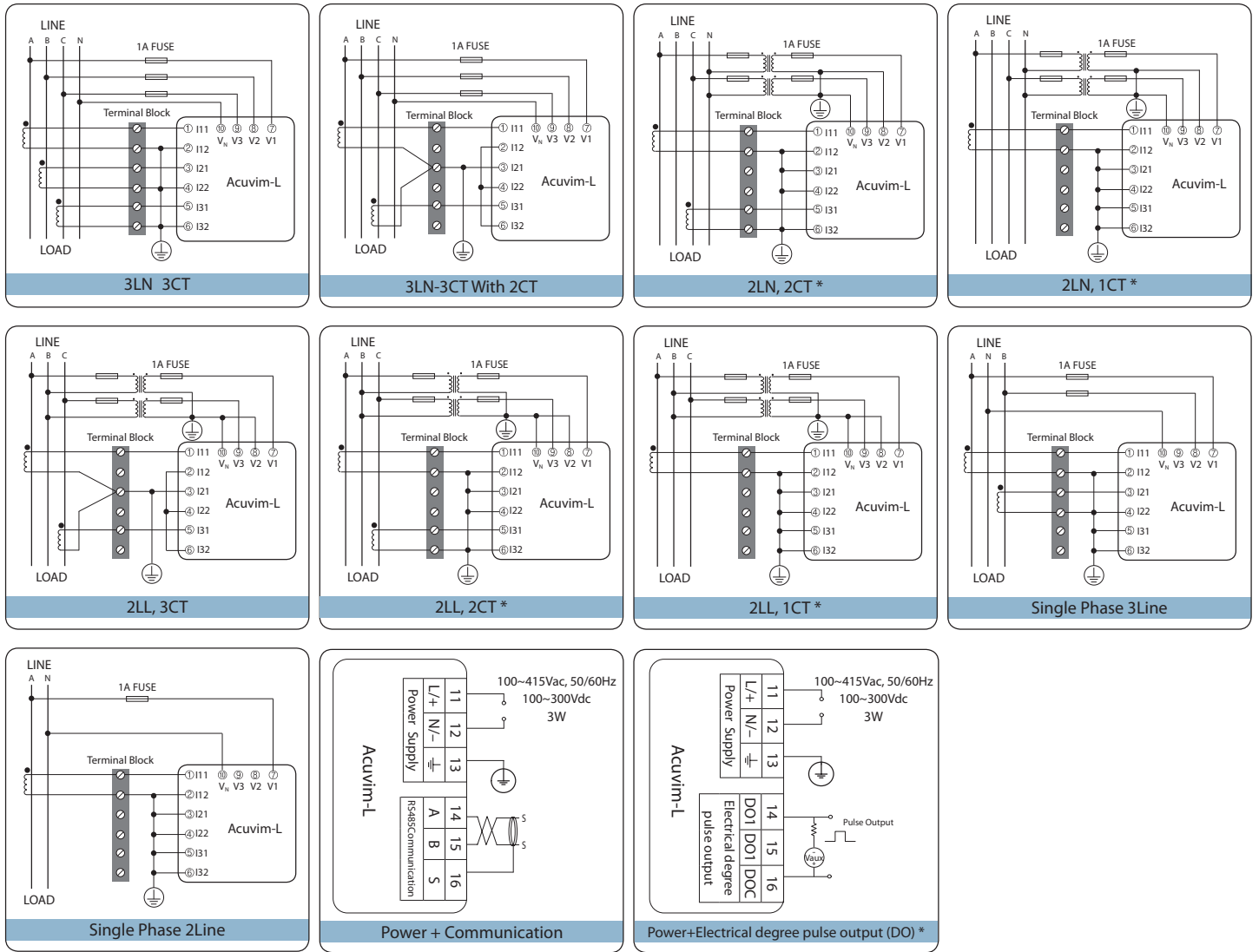
## Acuvim-L Meter

● Function ○ Option Blank NA



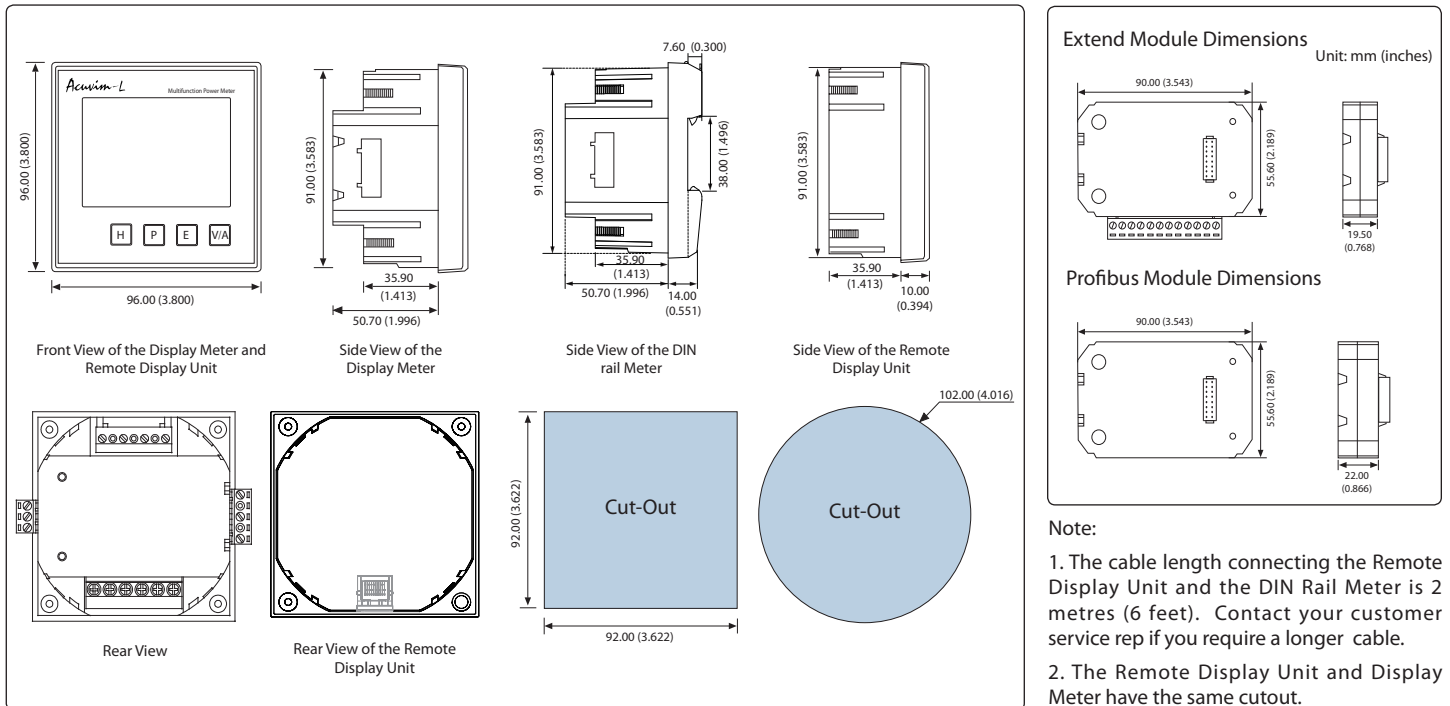
Function	Parameter	Acuvim-AL	Acuvim-BL	Acuvim-CL	Acuvim-DL	Acuvim-EL	Acuvim-KL
REAL TIME METERING	Phase Voltage	U1, U2, U3	●	●	●	●	●
	Line Voltage	U12, U23, U31	●	●	●	●	●
	Current	I1, I2, I3, In (Acuvim-KL no neutral current measurement)	●	●	●	●	●
	Power	P1, P2, P3, Psum	●	●	●	●	●
	Reactive Power	Q1, Q2, Q3, Qsum	●	●	●	●	●
	Apparent Power	S1, S2, S3, Ssum	●	●	●	●	●
	Power Factor	PF1, PF2, PF3, PF	●	●	●	●	●
	Load Nature	L/C/R	●	●	●	●	●
	Frequency	F Hz	●	●	●	●	●
ENERGY & DEMAND	Energy	Ep_imp, Ep_exp	●	●	●	●	●
	Reactive Energy	Eq_imp, Eq_exp	●	●	●	●	●
	Apparent Energy	Es	●	●	●	●	●
	Current Demand	Dmd_I1, Dmd_I2, Dmd_I3	●	●	●	●	●
	Power Demand	Dmd_Psum, Dmd_Qsum, Dmd_Ssum	●	●	●	●	●
TIME OF USE	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	●	●	●	●	●
	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> )	●	●	●	●	●
STATISTICS	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		●	●	●	●	●
	Max & Min of Current		●	●	●	●	●
HOUR	Running Time	Hour	●	●	●	●	●
	Load Running Time	Hour			●	●	●
I/O	Energy Pulse Output	2 DO, configured as pulse output for kWh and kvarh, the pulse rate and width can be set		●			
	Alarm Output			●			
COMMUNICATION	RS-485	Modbus®-RTU Protocol, 1200~38400 baud rate			●	●	●
	Second RS-485	Modbus®-RTU Protocol, 1200~38400 baud rate			○	○	
	Profibus	PROFIBUS-DP/V0 Protocol			○	○	
EXTENSION I/O	4DI, 2DO	SOE, Pulse Counter, Pulse output, Alarm output			○	○	

# Typical Wiring



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

# DIMENSIONS



- Note:
1. The cable length connecting the Remote Display Unit and the DIN Rail Meter is 2 metres (6 feet). Contact your customer service rep if you require a longer cable.
  2. The Remote Display Unit and Display Meter have the same cutout.

## SPECIFICATIONS

METERING				
Parameters	Accuracy		Resolution	Range
	Acuvim-L	Acuvim-EL/KL		
Voltage	0.5%	0.5%	0.1V	20V~1000kV
Current	0.5%	0.5%	0.001A	0~50000A
Current Demand	0.5%	0.5%	0.001A	0~50000A
Power	0.5%	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	0.5%	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	0.2%	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%
Meter Running Time			0.1hrs	0~999999999.9hrs
Load Running Time (Acuvim-DL/EL/KL)			0.1hrs	0~999999999.9hrs

COMMUNICATION	
<b>RS-485 (Optional)</b>	
Modbus®-RTU Protocol	
2-wire connection, Half-duplex, Isolated	
1200 to 38400 baud rate	
Sencond RS485 (Acuvim-DL and Acuvim-EL can optional)	
<b>PROFI-BUS (Optional)</b>	
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	

INPUT	
<b>Current Inputs (Each Channel)</b>	
Nominal Current	5A/1A
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 0.5s
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>

Digital Input OPTION	
<b>Digital Input (DI)</b>	
Input Type	Dry Contact
Input Resistance	4kΩ
Pulse Frequency (Max)	100Hz, 50% Duty Ratio
SOE Resolution	2ms

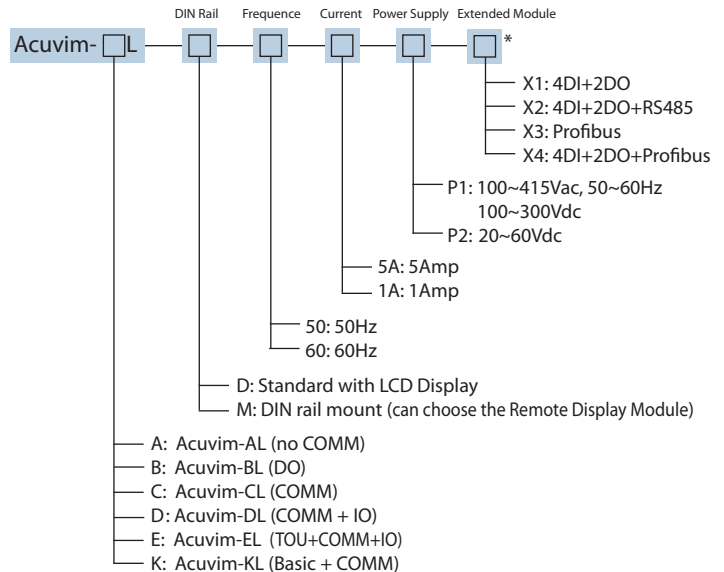
Digital Output OPTION	
<b>Digital Output (DO)</b>	
Voltage Range	(Photo-MOS) 0~250Vac/dc
Load Current	100mA (Max)
Output Frequency (Max)	25Hz, 50% Duty Ratio
Isolation Voltage	2500V

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

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

STANDARD COMPLIANCE	
Measurement Standard	IEC 62053-22 Class 0.2S, 62053-23 Class 2
Environmental Standard	IEC 60068-2
Safety Standard	IEC 61010-1, UL 61010-1
EMC Standard	IEC 61000-4/-2-3-4-5-6-8-11
Outlines Standard	DIN 43700/ANSI C39.1

## ORDERING INFORMATION



Acuvim-L Series Meter Ordering Example: Acuvim-EL-D - 60 - 5A - P1 - X2

\* **Note:** 1. Extended Modules only supported by the Acuvim-DL and Acuvim-EL models.

2. The X4 Module option consists of both the IO Module (X1) and the Profibus Module (X3). The Profibus Module must be installed on the back of the meter FIRST, before the IO Module is attached.

## Remote Display Option

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

Remote Display Option Ordering Example: REM - DS1

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