

Ziegler

Redefine Innovative Metering

Technical Datasheet

ZAM LC60

DIGITAL POWER MONITORING METER – LOAD ANALYSER

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DIGITAL POWER MONITORING METER – LOAD ANALYSER

ZAM LC60 Power Monitoring meter which can measure important AC electrical parameters in 1 ϕ and 3 ϕ systems. It measures all electrical parameters including Individual harmonics, %THD, Demand, RPM, Neutral current, Run-hours, On-hours and No. of interruptions.

Product Features

- On-site fully programmable
- THD and Individual Harmonic measurement up to 31st harmonics
- Percentage load bar graph
- Hour Run, ON Hour, Number of Interruptions
- User Assignable Screens
- Back depth 51mm without option / 70mm with option
- Various interface options like Modbus RS485, Ethernet, BACnet and USB
- Compliance to International safety standard IEC 61010-1-2001
- Optional feature of data logging with real time stamping
- Active energy accuracy 0.2s as per IEC 62053-22



Technical Specifications

Display	
Display type	Back-lit LCD display - 4 Line 4 Digit with a separate 9 digit energy counter
Dimensions	96 x 96 x 57mm
Update Rate	1 sec approx
Interface	
Relay (optional)	2 outputs (250 VAC, 5 A AC; 30VDC, 5A DC)
Modbus (optional)	RS485, max. 1200m
Ethernet (optional)	Ethernet access on Modbus TCP/IP Protocol
BACnet (Optional)	BACnet IP with BACnet protocol version 12
USB interface (optional)	Isolated USB Interface on Modbus
Impulse LED	For energy testing
Conforms standards	
EMC	IEC 61326-1: 2012
Immunity	IEC 61000-4-3 10V/m – Level 3 industrial Low level
Safety	IEC 61010-1-2001
IP for water & dust	IEC60529
Pollution degree	2
Installation category	III
High Voltage Test	Input+Aux Vs Surface : 4kV RMS, 50Hz, 1min Input Vs Remaining Circuit : 3.3kV RMS, 50Hz, 1min
Model	
Number of parameters measured	85
System	3Ph 4W / 3Ph 3W / 1Ph 2W
Input Details	
Input Voltage	
Nominal input voltage (AC RMS)	L-L 100 - 600V (L-N 57.5 - 346.42 V)
PT primary values	100VLL - 1200kVLL (on-site programmable)
Maximum continuous input voltage	120% of nominal value

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Input Current	
Nominal input current	1A/5A AC RMS
CT secondary values	1A & 5A (on-site programmable)
CT primary values	1A...9999A
Maximum continuous input current	120% of nominal value
Operating Measuring Range	
Voltage (of rated value)	20...120%
Current (of rated value)	1...200%
Frequency	45...66Hz
Power Factor	0.5 Lag...1...0.8 Lead
Auxiliary Supply	
Higher Auxiliary supply range	100-550V AC/DC (230V AC/DC nominal)
Lower Auxiliary supply range	12-60V AC/DC (24 V AC /48 V DC nominal)
Aux Supply frequency	45 to 65 Hz range
VA Burden (approx.)	
Nominal input voltage burden	< 0.3VA approx. per phase(at nominal 240V)
Nominal input current burden	< 0.3 VA approx. per phase
Auxiliary supply burden	< 6VA approx. with add on card
	< 8 VA approx. with Ethernet card
Overload Withstand	
Voltage	2x rated value for 1 sec, repeated 10 times at 10 second intervals
Current	20 x rated value for 1 second , repeated 5 times at 5 minute intervals
Accuracy	
Voltage	± 0.2% of Nominal value
Current	± 0.2% of Nominal value
Frequency	± 0.2% of mid frequency
Active Power	± 0.2% of Nominal value
Re-Active Power	± 1.0% of Nominal value
Apparent Power	± 0.2% of Nominal value
Active Energy (kWh)	Class 0.2s as per IEC 62053- 22
Re-Active Energy (kVAh)	Class 2 as per IEC 62053 - 23
Apparent Energy (kVAh)	Class 1
Power Factor	±3°
Total Harmonic Distortion	±3%
Reference Conditions for Accuracy	
Reference temperature	23°C +/- 2°C
Input frequency	50/60 Hz ± 2%
Input Waveform	Sinusoidal(distortion factor 0.005)
Auxiliary supply frequency	50/60 Hz ± 1%
Voltage range	50%.....100% of nominal value
Total Harmonic distortion	50% up to 15th Harmonics 10% up to 31st Harmonics (Current range 20%...100% of nominal value)
Environmental	
Operating temperature	-20 to +70°C
Storage temperature	-25 to +75°C
Relative humidity	0... 95 % RH (non condensing)
Warm up time	Minimum 3 minute
Enclosure	IP 20 (Terminal side) and IP50(Front side)

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Parameter Measurement

System-wise parameter measurement				
Sr.No.	Parameter	3Ph 4W	3Ph 3W	1Ph 2W
1	System Volts	√	√	√
2	System Current	√	√	√
3	Volts L1 – N	√	–	–
4	Volts L2 – N	√	–	–
5	Volts L3 – N	√	–	–
6	Volts L1 – L2	√	√	–
7	Volts L2 – L3	√	√	–
8	Volts L3 – L1	√	√	–
9	Current L1	√	√	–
10	Current L2	√	√	–
11	Current L3	√	√	–
12	Neutral Current	√	–	–
13	Frequency	√	√	√
14	System Active Power (kW)	√	√	√
15	Active Power L1 (kW)	√	–	–
16	Active Power L2 (kW)	√	–	–
17	Active Power L3 (kW)	√	–	–
18	System Re-active Power (kVAr)	√	√	√
19	Re-active Power L1 (kVAr)	√	–	–
20	Re-active Power L2 (kVAr)	√	–	–
21	Re-active Power L3 (kVAr)	√	–	–
22	System Apparent Power (kVA)	√	√	√
23	Apparent Power L1 (kVA)	√	–	–
24	Apparent Power L2 (kVA)	√	–	–
25	Apparent Power L3 (kVA)	√	–	–
26	System Power Factor	√	√	√
27	Power Factor L1	√	–	–
28	Power Factor L2	√	–	–
29	Power Factor L3	√	–	–
30	System Phase Angle	√	√	√
31	Phase Angle L1	√	–	–
32	Phase Angle L2	√	–	–
33	Phase Angle L3	√	–	–
34	Import kWh ¹	√	√	√
35	Export kWh ¹	√	√	√
36	Inductive kVArh ¹	√	√	√
37	Capacitive kVArh ¹	√	√	√
38	kVAh ¹	√	√	√
39	Inductive Var Demand	√	√	√
40	Capacitive Var Demand	√	√	√
41	Current Demand	√	√	√
42	KVA Demand	√	√	√
43	KW Import Demand	√	√	√
44	KW Export Demand	√	√	√

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45	Max Current Demand	√	√	√
46	Max KVA Demand	√	√	√
47	Max KW Import Demand	√	√	√
48	Max KW Export Demand	√	√	√
49	Max Inductive Var Demand	√	√	√
50	Max Capacitive Var Demand	√	√	√
51	Run Hour	√	√	√
52	On Hour	√	√	√
53	Number of Interruptions	√	√	√
54	Phase Reversal Indication	√	-	-
55	Current Reversal Indications	√	-	√
56	RPM	√	√	√
57	Phase Absent Indication	√	-	√
58	System Voltage THD	√	√	√
59	THD Volts L1	√	√	-
60	THD Volts L2	√	√	-
61	THD Volts L3	√	√	-
62	System Current THD	√	√	√
63	THD Current L1	√	√	√
64	THD Current L2	√	-	√
65	THD Current L3	√	√	√
66	THD Current L3	√	√	√
67	Individual Harmonics of VI1 (Up to 31st Harmonics)	√	√	√
68	Individual Harmonics of VI2 (Up to 31st Harmonics)	√	√	-
69	Individual Harmonics of VI3 (Up to 31st Harmonics)	√	√	-
70	Individual Harmonics of II1 (Up to 31st Harmonics)	√	√	√
71	Individual Harmonics of II2 (Up to 31st Harmonics)	√	-	-
72	Individual Harmonics of II3 (Up to 31st Harmonics)	√	√	-
73	Old Import Active Energy ²	√	√	√
74	Old Export Active Energy ²	√	√	√
75	Old Inductive Reactive Energy ²	√	√	√
76	Old Capacitive Reactive Energy ²	√	√	√
77	Old Apparent Energy ²	√	√	√
78	Old Run Hour ²	√	√	√
79	Old On Hour ²	√	√	√
80	Old Max kW Import Demand ²	√	√	√
81	Old Max kW Export Demand ²	√	√	√

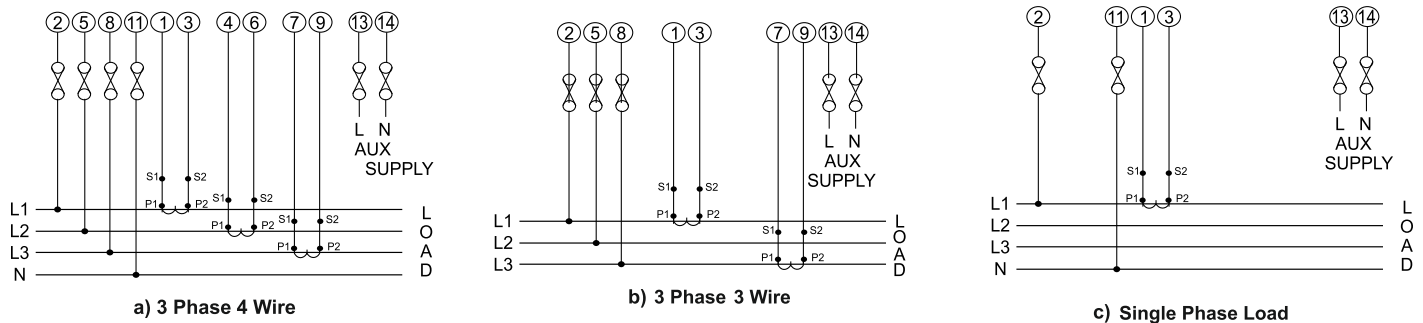
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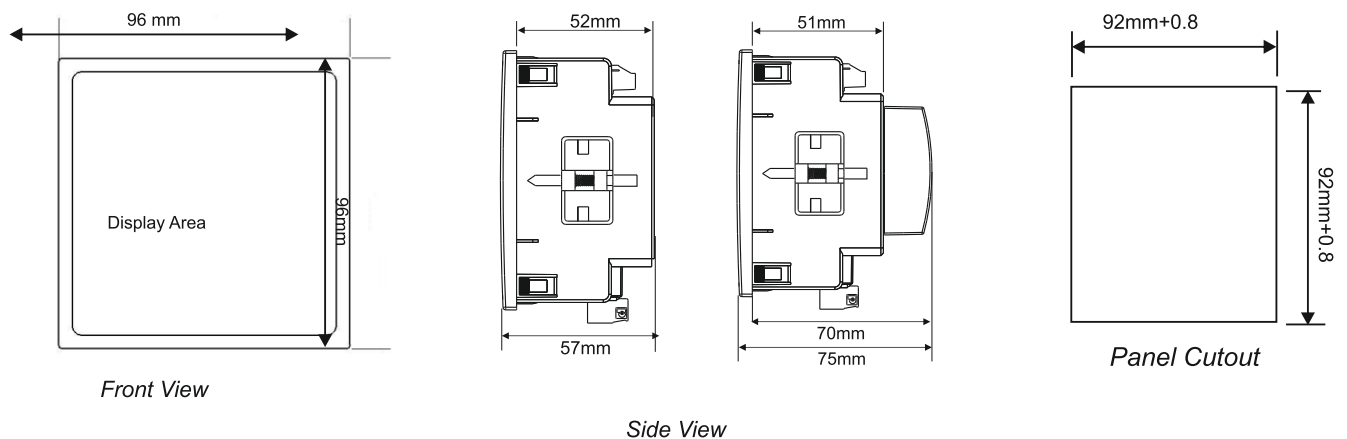
82	Old Max Var Inductive Demand ²	√	√	√
83	Old Max Var Capacitive Demand ²	√	√	√
84	Old Max VA Demand ²	√	√	√
85	Old Max A Demand ²	√	√	√

Note: 1. Energy on display is auto ranging & unit for Energy parameters on modbus are dependent on CT PT ratio or unit selected by user.
2. Parameters are available only on modbus.

Connection Diagram and Installation



Dimensions



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Ordering Information

Model	(√)
ZAM LC60	
Auxiliary Supply	
100 - 550V AC/DC	
12 - 60V AC/DC	
Option	
Modbus RS485 + 2 Pulse Output	
Ethernet Modbus (TCP/IP)	
Ethernet - Data logging	
Modbus RS485 + 2 Pulse Output + Data logging + USB	
BACnet	

Example – ZAM LC60, 12 - 60V AC/DC, Modbus RS485 + 2 Pulse Output

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