JX-50 MULTIFUNCTION POWER METER

■ DESCRIPTION

JX series Multifunction Power Meters provide high accuracy, measurement, display and communication of all electrical and power quality parameters including harmonic measurement up to 31st, THD(Total Harmonic distortion) or Individual harmonic. They also have digital inputs and outputs and an interface with versatile functions such as remote control, alarm, statistics and records.

■ APPLICATIONS

Control panels and Motor monitoring
Switchgear distribution systems
Energy management
Power quality analysis

■ ORDERING INFORMATION

JX– Model Number – A Input range | V Input range – DI | DO | RL – AUX. POWER (OPTION 1 / OPTION 4)

CODE	MODEL NUMBER
51	Standard
52	With individual Harmonics

CODE	INPUT RANGE
A1	0 ~ 1 A(optional)
A5	0 ~ 5 A
V1	0 ~ 120 V
V5	0 ~ 500 V
VO	Specify (V i/p)

CODE	DI/DO/Relay
I2 N N	2 DI (Standard)
OPTION 1	
I4 O2 R2	4 DI, 2 DO & 2R

CODE	AXU. POWER
AD	AC 85~264V/ DC 100~300V
OPTION 4	
D25	DC 20~56V

	PARAMETERS		JX-51	JX-52
Power Measurements	Voltage	V_{12} V_{23} V_{31} V_{LL_Avg} V_{1N} V_{2N} V_{3N} V_{LN_Avg}	●	●
	Current	I_1 I_2 I_3 I_{Avg} I_N	●	●
	Active Power	W_1 W_2 W_3 ΣW	●	●
	Reactive Power	Q_1 Q_2 Q_3 ΣQ	●	●
	Apparent Power	S_1 S_2 S_3 ΣS	●	●
	Power Factor	PF_1 PF_2 PF_3 PF_{Avg}	●	●
	Frequency	Hz	●	●
	Active Energy	WH_{INP} WH_{EXP} ΣWH WH_{NET}	●	●
	Reactive Energy	QH_{INP} QH_{EXP} ΣQH QH_{NET}	●	●
	Demand	Wmd Qmd Smd		●
Power Quality	Un-balance	V_{unbl} I_{unbl}	●	●
	THD for Voltage	THD_{V12} THD_{V23} THD_{V31} THD_{V_Avg}	●	●
	THD for Current	THD_{I1} THD_{I2} THD_{I3} THD_{I_Avg}	●	●
	Individual Harmonic	2nd~31st		●
	Crest Factor for Volt	Crest Factor		●
	K Factor for Current	K Factor		●
	Max/Mini Recording	Maxi./Mini. Recording for all parameters with time stamp		●
I/O	Digital Input	DI_1 DI_2 *DI_3 *DI_4	●	●
	Digital Output	*DO_1 *DO_2	●	●
	Relay Output	*RO_1 *RO_2	●	●
	RS485 Port	Modbus RTU mode	●	●
	Real Time Clock	Year, Month, Day, Hour, Minute, Sec.		●
	* means optional, please specify in ordering code.			

Accuracy & Resolutions

PARAMETERS	ACCURACY	RESOLUTION	INPUT RANGE
Voltage	0.2%	0.1%	40~290Vac(V_{L-N})
Current	0.2%	0.02%	1%~120% of Rated
Neutral Current	1.0%	0.1%	1%~120% of Rated
Active Power	0.5%	0.1%	0~9999MW
Reactive Power	0.5%	0.1%	0~9999MVar
Apparent Power	0.5%	0.1%	0~9999MVA
Power Factor	0.5%	0.1%	±0.02~1.00
Frequency	0.2%	0.01Hz	45~65Hz
Active Energy	0.5%	0.1KWh	0~99999999.9KWh
Reactive Energy	0.5%	0.1KVarh	0~99999999.9KVarh
THD	1.0%	0.01%	0~100%
Individual Harmonic	1.0%	0.01%	0~100%
Un-balance	0.5%	0.1%	0~300%

■ TECHNICAL SPECIFICATION

Input

Measurement: True rms measurement
Sampling: Sampling: 128 points/Cycle
Connection: 1P2W, 1P3W, 3P3W, 3P4W, Balanced/Unbalanced
Set by front key
Input Range: Voltage: 40~290V L-N, 70~500V L-L
PT ratio(primary) programmable: 100.0~500000.0V
PT ratio(secondary) programmable: 100.0~400.0V
Current: 5A, 1A(Optional)
CT ratio(primary) programmable: 5(1)~10000A
Frequency: 45~65Hz
Max. Input over capability:
Voltage: 2 x rated continuous; 2500V for 1 second
Current: 2 x rated continuous; 20 x rated for 1 second
Input Burden: Voltage: < 0.2VA, Current: < 0.1VA

I/O functions

The meter offers two digital inputs as standard. Additionally, there are I/O modules available as options. The modules offer an extra two digital inputs, two digital outputs, two relay outputs and DC aux power.

Digital input: standard: 2 points (4 points optional);
Open collector, 5~30V, 20mA
Response time ≤ 1.0ms
Isolation: 2500Vac
Functions: *Remote Monitoring*
Digital output: 2 points; Photo-MOS, 100Vdc, 50mA (optional)
Response time ≤ 1.0ms
Isolation: 2500Vac
Functions: *There are two modes that can be set as below:*
Energy Mode: Digital output represents Energy. Each output can be user programmed to represent Imp/Exp/Total/Net KWh or Imp/Exp/Total/Net KVarh
Pulse rate divider: programmable 1~6000(x0.1) KWh(KVarh)/p
Pulse width: programmable 1~50(x 20msec)
Alarm Mode: Digital output as Hi or Low Alarm. Each output can be user programmed to any measured value.
On triggering am alarm there will be an output plus record *In EEPROM with time stamp. Alarm setup by RS485*
Energized level: programmable High or Low
Delay time: programmable from

JX-50 MULTIFUNCTION POWER METER

Relay output: 2 relay, FORM-A, 3A/250Vac, 3A/30Vdc (Optional)

Functions: *There are Three modes can be set as below:*

Energy Mode: Digital output represents Energy. Each output can be user programmed to represent Imp/Exp/Total/Net KWh or Imp/Exp/Total/Net KVarh

Pulse rate divider: programmable 1~6000(x0.1) KWh(KVarh)/p

Pulse width: programmable 1~50(x 20msec)

Alarm Mode: Digital output as Hi or Low Alarm. Each output can be user programmed to any measured value.

On triggering am alarm there will be an output plus record

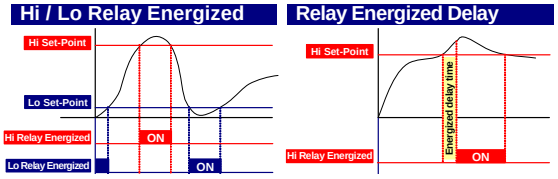
Digital output represents Energy. Each output

In EEPROM with time stamp. Alarm setup by RS485

Energized level: programmable High or Low

Delay time: programmable from 50~3000ms or Latch.

Back light on for Alarm: In case of alarm, the back-light will be turned on. The time of turn on can be set from 0



Remote DO: *Allows a remote computer to directly control the outputs.*

Power Quality

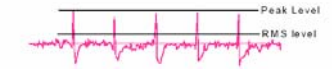
The instrument gives an evaluation of energy of the energy quality by Total Harmonic Distortion, individual Harmonic, Crest Factor of voltage, K Factor of Current, Max/Mini stamp, un-balance..

Harmonic: 2nd~31st individual harmonic for Voltage and Current

THD: 2nd~31st Total harmonic distortion for Voltage and Current

K Factor for Current: K-factor is a weighting of thr harmonic load currents According to their effects on transformer heating. A K-factor of 1.0 indicates a linear load (no harmonics). The higher the K-factor, the greater the harmonic Heating effects

Crest Factor: The purpose of it calculation is to give an analyst a Quick idea of how much impacting is occurring in a Waveform. Crest Factor = Peak / RMS



Max/Mini stamp: Custom alarm with time stamping

Recorded measurements: V_{LN}, V_{LL}, I_L, ΣW, ΣQ, ΣS, THD, Un-balance, Hz, PF, Demand

Recording period: Month, Day

Un-balance: Shows Un-balance for Voltage and Current

Demand

For Active, Re-active,

Demand calculation: Block, sliding mode selectable

Calculation period: Programmable from 1~30 minutes

RS485

Protocol: Modbus RTU mode

Baud rate: 1200/2400/4800/9600/19200/38400

Data bits: 8 bits

Parity: None

Stop bits: 1

Address: 1~247

Wiring: 1200M max,

Termination Res. (Ω): 120~300Ω/0.25W(typical: 150Ω)

Electrical safety

Dielectric Strength: AC 2KV, 50/60Hz, 1 min. Between Input / Output / Power / Case

Surge test: 3KV, 1.2 x 50 µsec. Common mode & differential mode

Insulation resistance: ≥100M ohm, DC 500V

Isolation: Input / Output / Power / Case

EMC: EN 55011:2002; EN 61326:2003

Safety(LVD): EN 61010-1:2001

Environmental

Operating Temp.: -20~70 ˚C

Operating Humidity: 5~95 %RH, Non-condensing

Temp. Coefficient: ≤100 PPM/˚C

Storage Temperature: -40~85 ˚C

Enclosure: Front panel: IEC 549 (IP54); Housing: IP20

Power

Power supply: AC 85~264, 50/60 Hz
DC 100V~300V or 20~56V(optional)

Power effect: ≤ 0.05% F.S.

Power consumption: ≤ 3W @ 230Vac

Back up memory: By EEPROM

Mechanical

Dimension: 96mm(W) x 96mm(H) x 71mm(D)

Panel cutout: 90mm(W) x 90mm(H)

Case material: White ABS fire-protected

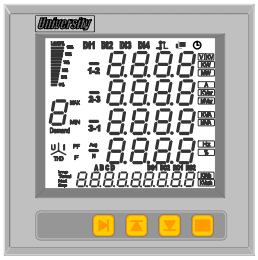
Mounting: Panel flush mounting

Connection: Screw terminal, Plastic NYLON 66 (UL 94V-0)
Current/Voltage input(#1~#10): 1.3~2.5mm²
Other: 0.5~1.3mm²

Weight: Under 500g

■ FRONT PANEL

Display: Reading: 0.8"(2.0cm) red high-brightness LED



4 digital x 4 line, 10.0mm high for V, A, Power, Hz, PF, THD, Demand, Unbalance, Max/Mini,..

1 line 9 digit, 6.0mm high for Energy & Clock

DIx DOx ROx Symbols for I/O status

Symbols for Load of Cap. or Ind.

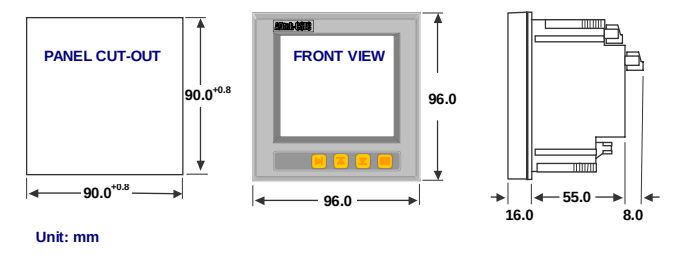
Symbol for percent of Load

Display Update: 0.5 second

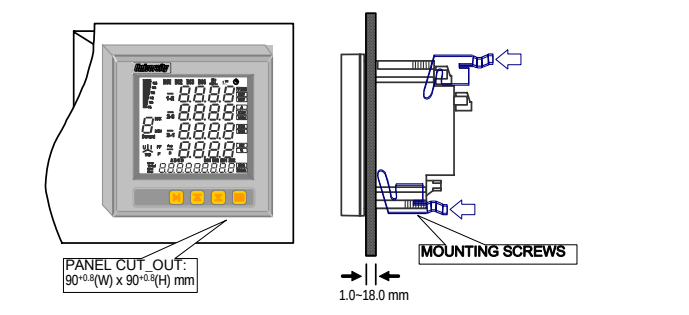
Operating Key: A 4-button interface for on front panel
Programming: Shift / Up / Down / Enter
Quick View of measurements: Harm / Power / Energy / V,A

Security Code: 4 digit Password, programmable from 0000~9999

■ DIMENSIONS

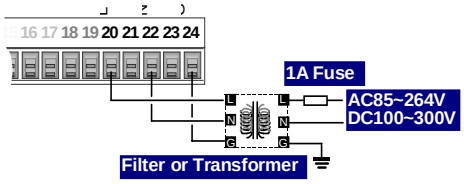


■ PANEL MOUNTING HOLES



CONNECTION DIAGRAM

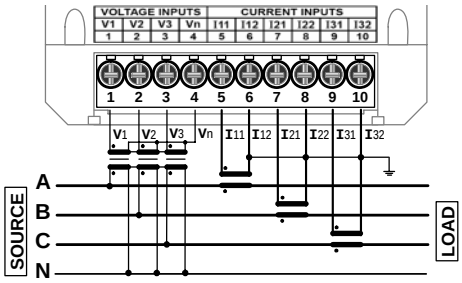
Auxiliary Power (Terminal Block 2)



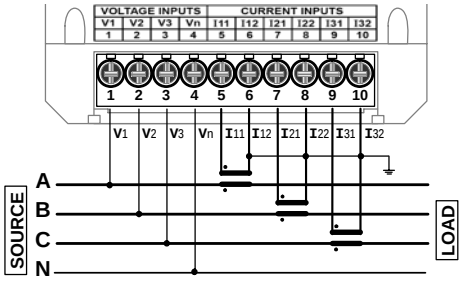
Voltage & Current Input (Terminal Block 1)

The connection has to relative the page 3 and page 4 of programming.
Voltage wiring: AWG16~12(1.3~2.0mm²)
Current wiring: AWG15~10(1.5~2.5mm²)

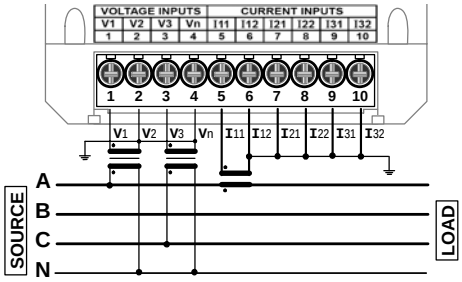
- **3 Phase 4 Wire with 3PT/3CT[Setting: 3LN, 3CT]**



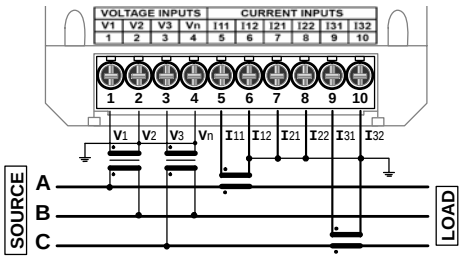
- **3 Phase 4 wire – direct/3CT[Setting: 3LN, 3CT]**



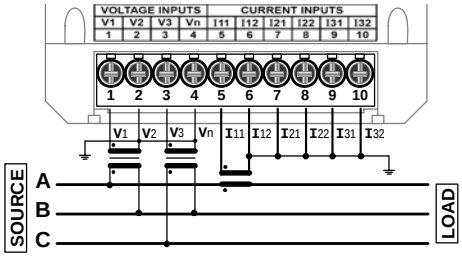
- **3 Phase 4 wire(Balanced) with 2PT/1CT [Setting: 2LN, 1CT]**



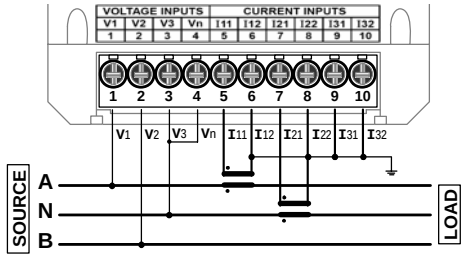
- **3 Phase 3 wire with 2PT/2CT[Setting: 2LL, 2CT]**



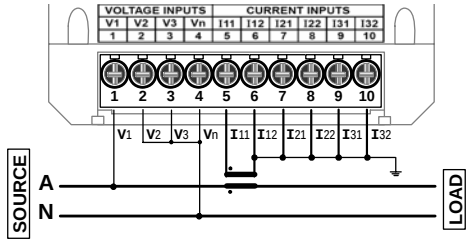
- **3 Phase 3 wire (Balanced) with 2PT/1CT [Setting: 2LL, 1CT]**



- **1 Phase 3 wire – [Setting 3LN, 3CT]**

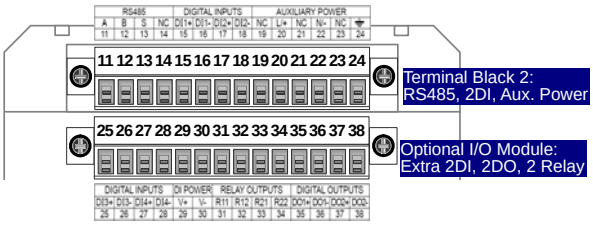


- **1 Phase 2 wire – [Setting 3LN, 3CT]**

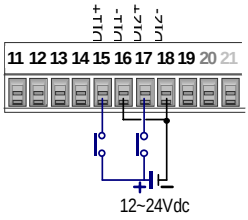


RS485 / 2DI (Terminal Block 2) and Extra 2DI / 2DO / 2Relay (Optional I/O Module)

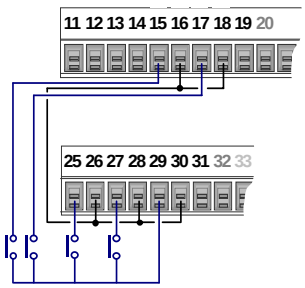
Wiring: AWG22~16(0.5~1.3mm²)



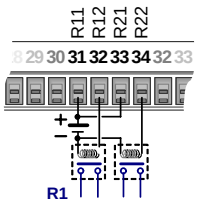
2DI(Standard) with external DC powered



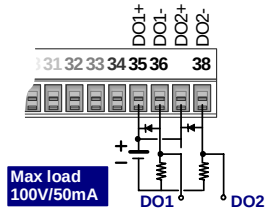
4DI(Optional) with internal DC powered



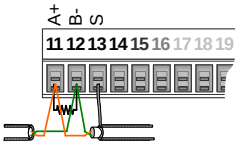
2Relay(Optional) with External Power Relay



2DO(Optional) with External Powered



RS485 Communication Port



Max. Distance: 1200M
Terminate Resistor (at latest unit): 120~300? /0.25W(typical: 150?)