SICAM P3 Three-phase Multi-function Power Meter

96x96mm for panel flush mounting

Answers for energy

SIEMENS

SICAM P3 Three Phase Multi-function Power Meter

Overview

SICAM P3 is a three phase electronic multi-function power meter with a LCD screen. It is integrated real time measurement, energy metering, status information, remote control and communication function.

The SICAM P3 meter can be widely used for MV and LV power distribution systems, industrial automation control system, energy management and building power SCADA.

Main Features

The SICAM P3 meter is intended to measure grid parameters, e.g. as voltage, current, power, power factor and frequency, analyze 2-50th harmonics, calculate several power quality data, and measure active and reactive energy. The RS-485 communication port supports MODBUS-RTU communication protocol and has binary input and relay output. For the SICAM P3 meter, 24-bit high-accuracy sampling measurement unit and high-speed MCU data processing unit are used to realize high-precision, wide-range, accurate measurement and rapid data analysis. Segment-code multi-row wide-angle LCD is used to display plenty of contents and is equipped with white back light. Nonvolatile memory is used to store different types of data and ensur data for a long time, and no data in the memory will be lost in the case of power failure.

Reference Standards

- IEC 62053-61
- IEC 62053-22
- IEC 62053-23
- IEC 62052-11
- Modbus-RTU

EMC and Insulation Standards

- Electroststic discharge test
  IEC61000-4-2 level 4
- Fast transient burst test
  IEC61000-4-4 level 4
- Surge test
  IEC61000-4-5 level 4
- Power frequency magnetic field
  IEC61000-4-8 level 4
- Damped oscillatory magnetic field immunity test
  IEC61000-4-10 level 4
- Radio frequency, electroma gnetic field immunity test
  IEC61000-4-3, level4
- Dielectric test 2kV
- Impulse voltage test 4kV
- Oscillatory waves immunity test
  IEC61000-4-12 level 3

Main Functions

- Voltage and average voltage of each phase
- Voltage and average phase to phase voltage
- Each phase current, average current and zero sequence current
- Total and each phase active power, reactive power and apparent power of each phase
- Phase angle of voltage and current of each phase
- Total and each phase power factor of each phase
- Measurement range of grid frequency: 45-65Hz
- Combination active energy, supplied and demand active energy
- Combination reactive and four-quadrant reactive energy
- Total fundamental active energy and total harmonic active energy
- Supply and demand active energy of each phase, combination reactive energy of each phase, fundamental active energy and harmonic active energy of each phase
- Time-of-use price, 6 rates, 14 time periods, 8 daily periods, 14 annual periods, 100 public holidays
- Effective value and content rate of voltage and current of 2-50th harmonics of each phase
- Total distortion rate of harmonic voltage and current of each phase
- MAX & MIN value of voltage, current and power
- Power, current and energy demand
- 4 binary inputs, 2 relay output
- 2 energy (active and reactive) pulse output
- Range of voltage current transformation ratio: 0.0000-9999.9999
- 160 sampled points per cycle
- 6 programmable limit violation alarms
- RS485 supports Modbus RTU protocol
- Real-time display of voltage phase failure, inverse phase sequence and communication status on LCD, configurable cyclically displayed items
- Totally enclosed design with prevention against dust

  Note: Actual functions of the meter depend on product order number.

Technical data

- Connection
  Three-phase three-wire, three-phase four-wire, single-phase
- Voltage
  Nominal voltage Un: AC380V, AC220V, AC100V, AC57.7V
  Measurement range: 10V-264V phase voltage
  Power consumption: <0.1VA (single phase @220VAC)
  Accuracy: RMS 0.2% Resolution: 0.01V
  Maximum measurement range: 400V phase voltage
- Current
  Nominal current In: 1A, 5A
  Measurement range: 15mA-6A
  Power consumption: <0.3VA (single phase @5A)
  Accuracy: RMS 0.2% Resolution: 0.001A
  Maximum measurement range: 9A
- Power
  Accuracy: 0.5%
  Resolution: 0.001kW/kVar/kVA
- Frequency
  Measurement range: 45-65Hz
  Accuracy: 0.2%
  Resolution: 0.01Hz
- Harmonic Number: 2-50th Accuracy: 5%
- Active energy
  Accuracy class: 0.5S
  Resolution: 0.01 kW/h
- Reactive energy
  Accuracy class: 2
  Resolution: 0.01 kvarh
- Energy pulse output
  2 energy (active and reactive) pulse output
  Optical coupling isolation 4000VRMS
  pulse width 80±20ms
  Operating voltage range 5-80VDC
  maximum current 10mA
  Pulse constant:
  5000imp/kwh, 5000imp/kvarh
- Binary output
  2 electromagnetic relay output, NO type
  Contact capacity: AC 250V/3A, DC 30V/3A
- Binary input
  4 dry contact input
  Optical coupling isolation 4000VRMS, impedance 1.2kΩ
- RS-485 communication port
  Type: two-wire half-duplex
  Communication rate: 600bps-38400bps
  Protocol: Modbus-RTU
- Operating temperature
  -25℃ ~ +60℃
- Operating temperature limits
  -35℃ ~ +70℃
- Relative humidity
  ≤95% (no condensate)
- Operating power supply
  AC or DC power supply
  Maximum input range: 40V-420V
- Power consumption: ≤2W, 4VA
- Dimensions
  Appearance dimensions (mm): 96×96×95
  Panel cutout (mm): 92×92
  Weight: approx. 450g

Feature list

Name	P39	P38	P37	P36	P35	P32	P31	P30
Technical data (RMS Value)								
Voltage 57.7/100/220/380 VAC	■	■	■	■	■	–	–	–
Current 1/5 A	■	■	■	■	■	■	■	■
Frequency	■	■	■	■	■	–	–	–
Active Power	■	■	■	■	■	–	–	–
Reactive Power	■	■	■	■	■	–	–	–
Apparent Power	■	■	■	■	■	–	–	–
Power Factor	■	■	■	■	■	–	–	–
Phase Angle	■	■	■	■	■	–	–	–
Active Energy	■	■	■	■	■	–	–	–
Reactive Energy	■	■	■	■	■	–	–	–
Harmonic	■	■	■	–	–	–	–	–
Current, Power, Energy Demand	■	■	–	–	–	–	–	–
TOU	■	■	–	–	–	–	–	–
SOE Event	■	■	–	–	–	–	–	–
Measurement Accuracy								
Voltage Accuracy	0.2%	0.2%	0.2%	0.2%	0.2%	–	–	–
Voltage Resolution (V)	0.01	0.01	0.01	0.01	0.01	–	–	–
Current Accuracy	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
Current Resolution (A)	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Power Accuracy	0.5%	0.5%	0.5%	0.5%	0.5%	–	–	–
Power Resolution (kW /kVar/kVA)	0.001	0.001	0.001	0.001	0.001	–	–	–
Frequency Range	45 ~ 65Hz	45 ~ 65Hz	45 ~ 65Hz	45 ~ 65Hz	45 ~ 65Hz	–	–	–
Frequency Accuracy	0.2%	0.2%	0.2%	0.2%	0.2%	–	–	–
Frequency Resolution (Hz)	0.01	0.01	0.01	0.01	0.01	–	–	–
Active Energy (Accuracy Class)	0.5S	0.5S	0.5S	0.5S	0.5S	–	–	–
Reactive Energy (Accuracy Class)	2S	2S	2S	2S	2S	–	–	–
Energy Resolution (kWh/kVarh)	0.01	0.01	0.01	0.01	0.01	–	–	–
Number of Harmonics	2-50	2-50	2-50	–	–	–	–	–
Harmonic Accuracy	5%	5%	5%	–	–	–	–	–
Input / Output								
Energy Pulse Output	2	2	2	2	2	–	–	–
Binary input	4	4	4	4	–	4	–	–
Relay Output	2	2	2	2	–	2	–	–
485 Communication Port	1	2	1	1	1	1	1	0
Ethernet port	1	0	0	0	0	0	0	0
Others								
Operating Temperature	-25 ℃ ~ +60 ℃							
Storage Temperature	-35 ℃ ~ +70 ℃							
Relative Humidity	<=95%							
Operating Power Supply	40V ~ 420V AC/DC							
Display	LCD							
Dimensions	Appearance Dimensions: 96X96X95 mm; Panel cutout: 92X92 mm							



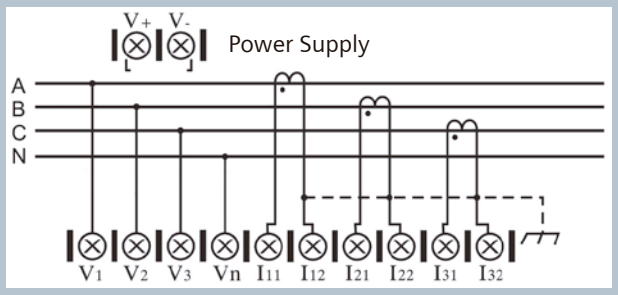
Name

	SICAM P	
Power supply: 40-420 V AC&DC, dimensions: 96*96*95mm		
Functions		
3-phase current, no communication port	3	0
3-phase current, 1 RS485 interface	3	1
3-phase current, 4 BIs, 2 BO, 1 RS485 interface	3	2
3-phase current, 3-phase voltage, power, power factor, frequency, energy, 2 pulse outputs, 1 RS485 interface	3	5
3-phase current, 3-phase voltage, power, power factor, frequency, energy, 2 pulse outputs, 4 BIs, 2 BO, 1 RS485 interface	3	6
3-phase current, 3-phase voltage, power, power factor, frequency, energy, 2 pulse outputs, harmonic , 4 BIs , 2 BOs, 1 RS485 interface	3	7
3-phase current, 3-phase voltage, power, power factor, frequency, energy, 2 pulse outputs, harmonic, demand, TOU, 4 BIs, 2 BOs, 2 RS485 interfaces	3	8
3-phase current, 3-phase voltage, power, power factor, frequency, energy, 2 pulse outputs, harmonic, demand, TOU, 4 BIs, 2 BOs, 1 RS485 interfaces，1 Ethernet port	3	9

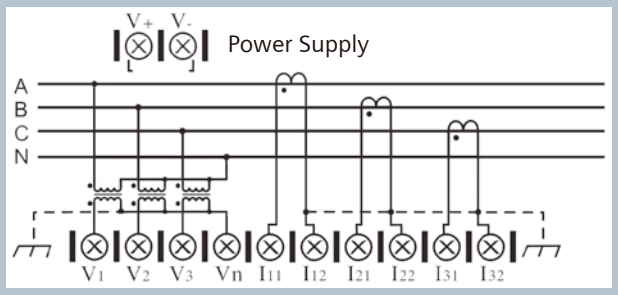
Product Order No.

Name	Order No.
SICAM P30	7KG7331 - 1AA00
SICAM P31	7KG7331 - 1AA01
SICAM P32	7KG7331 - 1AA11
SICAM P35	7KG7331 - 1BA01
SICAM P36	7KG7331 - 1BA11
SICAM P37	7KG7331 - 1HA11
SICAM P38	7KG7331 - 1TA12
SICAM P39	7KG7331 - 1TA13

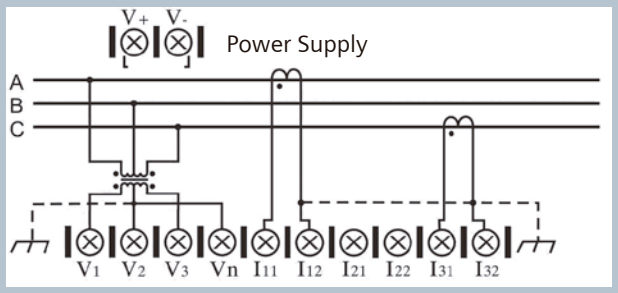
Connection Diagrams



3-phase 4-wire (without PT) Connection Diagram



3-phase 4-wire (with PT) Connection Diagram



3-phase 3-wire Connection Diagram
(V_n shall be externally short-circuited with V_2)

Connection: 3-phase 3-wire and 3-phase 4-wire self-adaption (automatic decision by phase angle)
Input Current Range: 1.5(6)A
Input Voltage Range: 3X220 / 380V

Back Terminal Diagram

Top Block of Terminals

V+	V-	NC	NC	R11	R12	R21	R22
Power Supply		Reserved	Reserved	Relay 1 Output Terminal		Relay 2 Output Terminal	

Middle Block of Terminals

P+	Q+	COM1	DI1	DI2	DI3	DI4	COM2	A1	B1	A2	B2
Active Pulse Output	Reactive Pulse Output	Common Terminal of Pulse Output	1st Binary input	2nd Binary input	3nd Binary input	4nd Binary input	Common Terminal of binary input	1st RS485+	1st RS485-	2nd RS485+	2nd RS485-

Bottom Block of Terminals

V1	V2	V3	Vn	I11	I12	I21	I22	I31	I32
Phase A Voltage	Phase B Voltage	Phase C Voltage	Neutral Terminal	Phase A Current Input	Phase A Current Output	Phase B Current Input	Phase B Current Output	Phase C Current Input	Phase C Current Output

P39 Middle Block of Terminals

RJ45	P+	Q+	COM 1	DI1	DI2	DI3	DI4	COM2	A	B
Ethernet port	Active Pulse Output	Reactive Pulse Output	Common Terminal of Pulse Output	1st Binary input	2nd Binary input	3rd Binary input	4th Binary input	Common Terminal of binary input	RS485+	RS485-

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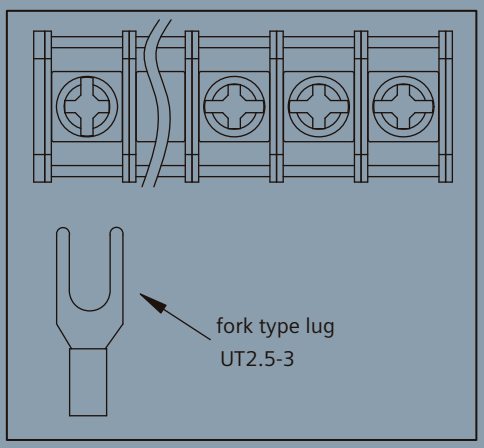
NOTE
The device main terminals are barrier terminals which can be connected using fork or ring type lug (no more than 6.5mm wide). For cables to be connected to upper and lower main terminals, cold-pressed UT2.5-3 terminal is recommended before connection. The diagram of connection is below.



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