

# SIEMENS

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## SICAM MMU

Reliable power system planning and monitoring at all voltage levels

[www.siemens.com/sicam](http://www.siemens.com/sicam)

### Device description

SICAM MMU (Measurement and Monitoring Unit) is a power monitoring device that measures electrical quantities in power supply system.

SICAM MMU is used in industrial plants, power plants and substations to measure and calculate parameters (e.g. current, voltage, power, phase angle, harmonics, energy or frequency) and forward these measured values to network control systems (SCADA, DMS, EMS etc.) via IEC 60870-5-104 or to automation systems via MODBUS where they can be further processed and visualized.

### Major characteristics of SICAM MMU

- Compact and rugged design
- Over 100 measured or calculated values available
- Temperature range: -25 °C to +55 °C / -13 °F to 131 °F
- Measuring accuracy: 0.1 % deviation for rated input voltage and rated input current according to IEC 60688 and 0.2 s according to IEC 62053-21
- High EMC immunity: according to the requirements of EN 61000-62 and EN 61000-6-4 for the EMC directives and the requirements of EN 61010-1 for the low-voltage directive
- UL certification according to UL 61010-1 standard
- Flexible current measuring range (up to 2 x I<sub>n</sub>)
- 2 individual binary outputs for fast switching, indications (e.g., limit violation) and operation status monitoring
- 4 LEDs for local status visualization
- Ethernet communication via IEC 60870-5-104 or MODBUS TCP protocols



- Internal battery to power the real-time clock and save the energy counter values in case of auxiliary voltage failure
- Real-time clock (RTC), field bus synchronization or network synchronization possible via NTP

### Application

- Equipping secondary substations with measurement instrumentation and communication link
- SICAM MMU is used at power utilities as well as industrial and commercial applications
- Connection in 1-phase systems, in 3-wire and 4-wire systems

### Customer benefit

- Reliable and cost efficient support of power system management and planning by measurements from distribution systems
- Reduced cabling through Ethernet
- Real-time data transmission via mobile communications (e.g. GPRS, UMTS) through reduced data rate
- User-friendly operation through Web Server (no extra software for parameterization needed, no converters and extra cables)

# Compact and flexible

## Device characteristics

### Housing specification

- DIN rail mounting device
- Plastic case 96 mm × 96 mm × 100 mm/  
3.78 in. x 3.78 in. x 3.94 in. (W × H × D)
- Degree of protection: IP20

### Input and output circuits

- 4 inputs for alternating voltage measurements
- 3 inputs for alternating current measurements up to 10 A continuous current
- Individually programmable binary outputs

### Signalization LEDs

- To automatically monitor the functions of hardware, software, and firmware components

### Communication

- Ethernet: IEC 60870-5-104 or MODBUS TCP communication protocol

### Measurands

- The following measurands can be recorded or calculated from the measured quantities:
- TRMS (True RMS) for alternating voltage and current
- Active, reactive and apparent power

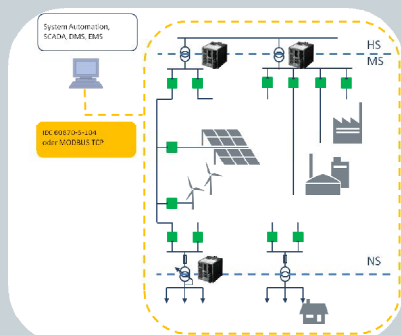
- Active, reactive and apparent energy
- Power frequency
- Phase angle
- Power factor and active power factor
- Voltage and current unbalance up to 21st harmonic
  - Mean value of the 3 phase voltages:  $V_{avg}$
  - Mean value of the 3 phase currents:  $I_{avg}$

### Time synchronization

- External time synchronization via Ethernet NTP
- Internal time synchronization via RTC (if external time synchronization is not available)

### Applications

- Support the integration of online measurements into network control systems and automation systems, protocols via IEC 60870-5-104 or MODBUS TCP, e.g. for voltage and load control
- Monitoring of transformers and distributed power generation
- Alarming and notification of limit violations via protocol or binary outputs
- Basic power quality profile monitoring (voltage, frequency, harmonics and unbalance)
- Option to support all power systems IT, TT and TN



Siemens AG 2016  
Energy Management Division  
Freyeslebenstraße 1  
91058 Erlangen, Germany

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E-Mail: [support.energy@siemens.com](mailto:support.energy@siemens.com)  
Tel: +49 180 524 70 00

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