

SIMATIC S7-1200, Analog input, SM 1238 Energy Meter 480V AC, Energy measurement module for recording electrical parameters in 1 and 3 phase networks (TN, TT) up to 480VAC; current range: 1A, 5A; recording of voltages, currents, phase angles, power, energy values, frequencies; channel diagnosis



## General information

Firmware version	V2.0
<b>Product function</b>	
• Voltage measurement	Yes
• Voltage measurement with voltage transformers	Yes
• Current measurement	Yes
• Phase current measurement without current transformers	No
• Phase current measurement with current transformers	Yes
• Energy measurement	Yes
• Frequency measurement	Yes
• Power measurement	Yes
• Active power measurement	Yes
• Reactive power measurement	Yes
• I&M data	Yes; I&M 0
• Isochronous mode	No
<b>Engineering with</b>	

• STEP 7 TIA Portal configurable/integrated as of version	V13 SP1
<b>Operating mode</b>	
• cyclic measurement	Yes
• acyclic measurement	Yes
• Acyclic measured value access	Yes
• Fixed measured value sets	Yes
• Freely definable measured value sets	Yes
<b>Configuration control</b>	
via dataset	Yes
<b>CiR – Configuration in RUN</b>	
Reparameterization possible in RUN	Yes
Calibration possible in RUN	Yes
<b>Installation type/mounting</b>	
Mounting position	Horizontal, vertical
<b>Supply voltage</b>	
Design of the power supply	Supply via voltage measurement channel L1
Type of supply voltage	AC 100 - 277 V
permissible range, lower limit (AC)	90 V
permissible range, upper limit (AC)	293 V
<b>Line frequency</b>	
• permissible range, lower limit	47 Hz
• permissible range, upper limit	63 Hz
<b>Power loss</b>	
Power loss, typ.	0.6 W
<b>Address area</b>	
Address space per module	
• Address space per module, max.	124 byte; 112 byte input / 12 byte output
<b>Time of day</b>	
Operating hours counter	
• present	Yes
<b>Analog inputs</b>	
Cycle time (all channels), typ.	50 ms; Time for consistent update of all measured and calculated values (cyclic und acyclic data)
<b>Interrupts/diagnostics/status information</b>	
Alarms	
• Diagnostic alarm	Yes
• Limit value alarm	Yes
• Hardware interrupt	No

Diagnostics indication LED	
• Monitoring of the supply voltage (PWR-LED)	Yes
• Channel status display	Yes; Green LED
• for channel diagnostics	Yes; red Fn LED
• for module diagnostics	Yes; green/red DIAG LED

## Integrated Functions

### Measuring functions

• Measuring procedure for voltage measurement	TRMS
• Measuring procedure for current measurement	TRMS
• Type of measured value acquisition	seamless
• Curve shape of voltage	Sinusoidal or distorted
• Buffering of measured variables	Yes
• Parameter length	74 byte
• Bandwidth of measured value acquisition	2 kHz; Harmonics: 39 / 50 Hz, 32 / 60 Hz

### Operating mode for measured value acquisition

— automatic detection of line frequency	No; Parameterizable
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### Measuring range

— Frequency measurement, min.	45 Hz
— Frequency measurement, max.	65 Hz

### Measuring inputs for voltage

— Measurable line voltage between phase and neutral conductor	277 V
— Measurable line voltage between the line conductors	480 V
— Measurable line voltage between phase and neutral conductor, min.	90 V
— Measurable line voltage between phase and neutral conductor, max.	293 V
— Measurable line voltage between the line conductors, min.	155 V
— Measurable line voltage between the line conductors, max.	508 V
— Measurement category for voltage measurement in accordance with IEC 61010-2-030	CAT II; CAT III in case of guaranteed protection level of 1.5 kV
— Internal resistance line conductor and neutral conductor	3.4 MΩ
— Power consumption per phase	20 mW
— Impulse voltage resistance 1,2/50μs	1 kV

### Measuring inputs for current

— measurable relative current (AC), min.	1 %; Relative to the secondary rated current 5 A
— measurable relative current (AC), max.	100 %; Relative to the secondary rated current 5 A

— Continuous current with AC, maximum permissible	5 A
— Apparent power consumption per phase for measuring range 5 A	0.6 V·A
— Rated value short-time withstand current restricted to 1 s	100 A
— Input resistance measuring range 0 to 5 A	25 mΩ; At the terminal
— Zero point suppression	Parameterizable: 2 ... 250 mA, default 50 mA
— Surge strength	10 A; for 1 minute

#### Accuracy class according to IEC 61557-12

— Measured variable voltage	0,2
— Measured variable current	0,2
— Measured variable apparent power	0.5
— Measured variable active power	0.5
— Measured variable reactive power	1
— Measured variable power factor	0.5
— Measured variable active energy	0.5
— Measured variable reactive energy	1
— Measured variable neutral current	0.5; calculated
— Measured variable phase angle	±1 °; not covered by IEC 61557-12
— Measured variable frequency	0.05

#### Potential separation

##### Potential separation channels

- between the channels and backplane bus Yes; 3 700V AC (type test) CAT III

#### Isolation

Isolation tested with 2 300V AC for 1 min. (type test)

#### Ambient conditions

##### Ambient temperature during operation

- horizontal installation, min. -20 °C
- horizontal installation, max. 60 °C
- vertical installation, min. -20 °C
- vertical installation, max. 50 °C

#### Dimensions

Width	45 mm
Height	100 mm
Depth	75 mm

#### Weights

Weight (without packaging) 165 g

#### Other

Data for selecting a current transformer

- Burden power current transformer x/1A, min.
- Burden power current transformer x/5A, min.

As a function of cable length and cross section, see device manual

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**last modified:**

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