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Data sheet 6ES7238-5XA32-0XB0



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 angels, power, energy values, frequencies; channel diagnosis

General information	
Firmware version	V2.0
Product function	
• 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
Engineering with	

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

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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
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

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— 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	

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• Burden power current transformer x/1A, min.	As a function of cable length and cross section, see device manual
• Burden power current transformer x/5A, min.	As a function of cable length and cross section, see device manual

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