Data sheet 6ES7238-5XA32-0XB0



SIMATIC S7-1200, Analog input, SM 1238 Energy Meter 480 V AC, power measurement module for data acquisition in 1- and 3-phase supply systems (TN, TT) up to 480 V AC; Current range: 1 A, 5A; acquisition of voltage, current, phase angles, power, energy values, frequencies; Channel diagnostics

General information	
Product type designation	SM 1238, Al energy meter 480 V AC
HW functional status	From FS02
Firmware version	V2.0.1
Product function	
 Voltage measurement 	Yes
 — with voltage transformer 	Yes
 Current measurement 	Yes
 — without current transformer 	No
 — with current transformer 	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	
 STEP 7 TIA Portal configurable/integrated from 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 	No
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	from CPU
Type of supply voltage	DC
Input current	
Current consumption, max.	180 mA
Power loss	
Power loss, typ.	0.75 W
Address area	

Address	
Address space per module	124 hyter 112 hyte input / 12 hyte system
Address space per module, max. Time of day.	124 byte; 112 byte input / 12 byte output
Time of day	
Operating hours counter	Von
• present	Yes
Analog inputs	FO and Time for a societary we date of all assessment and a classicated
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
Diagnostics indication LED	Voc
Monitoring of the supply voltage (PWR-LED)Channel status display	Yes
· ·	Yes; green LED Yes; red Fn LED
for channel diagnosticsfor module diagnostics	
Integrated Functions	Yes; green/red DIAG LED
Measuring functions	TDMS
 Measuring procedure for voltage measurement Measuring procedure for current measurement 	TRMS 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
Measuring range	2 K 12, Framionios. 30 / 30 F12, 32 / 33 F12
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. 	0 V
 Measurable line voltage between phase and neutral conductor, max. 	293 V
 Measurable line voltage between the line conductors, min. 	0 V
 Measurable line voltage between the line conductors, max. 	508 V
Internal resistance line conductor and neutral conductor	3.4 ΜΩ
— Power consumption per phase	20 mW
Impulse voltage resistance 1,2/50µs	1 kV
 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
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 m Ω ; At the terminal
— Surge strength	10 A; for 1 minute
— Zero point suppression	Parameterizable: 2 250 mA, default 50 mA
Accuracy class according to IEC 61557-12	

— Measured variable ournert 0,2 — Measured variable apparent power 0.5 — Measured variable active power 0.5 — Measured variable active power 1 — Measured variable power factor 0.5 — Measured variable power factor 0.5 — Measured variable reactive onergy 0.5 — Measured variable reactive onergy 1.5 — Measured variable neutral current 1 — Measured variable neutral current 1 — Measured variable reactive onergy 1.5 — Measured variable reactive onergy 1.5 — Measured variable reactive onergy 1.5 — Measured variable phase angle 1.1 °, not covered by IEC 61567-12 — Measured variable frequency 0.05 Potential separation Potential separation Potential separation solution 1 Solation 1 Solation 1 Standards, approvals, certificates CE mark 2 GSA approval Yes CLLus Yes FM approval Yes CLLus Yes FM approval Yes RCM (formerly C-TICK) Yes RCM (formerly C-TICK) Yes RCM (formerly C-TICK) Yes Marine approval Yes Ambient conditions Ambient temperature during operation • horizontal installation, min. 20 °C • horizontal installation, min. 20 °C • vertical installation, max. 50 °C Dimensions Width 45 mm Height 100 mm Depth 75 mm Weights Weight, approx. 165 g Other Data for selecting a current transformer x¹1A, min. As a function of cable length and cross section, see device manual last modified: 2/26/2021 €7		
- Measured variable apparent power	 Measured variable voltage 	0,2
- Measured variable active power - Measured variable reactive power - Measured variable power factor - Measured variable neutral current - Measured variable phase angle - Measured variable phase angle - Measured variable frequency - Measured variable phase angle - 11°, not covered by IEC 61557-12 - 12°, alculated - 11°, not covered by IEC 61557-12 - Measured variable frequency - Measured variable neutral current - Measured v		0,2
- Measured variable reactive power - Measured variable power factor - Measured variable active energy - Measured variable active energy - Measured variable neutral current - Measured variable hase angle - Measured variable frequency - Mesured frequency - Measured variable frequency - Mes (type test) CAT III - Standards, approvals, certificates - Wes - CE mark - Yes - CSA approval - Yes - CMA (type test) CAT III - Standards, approvals, certificates - Wes - Ma porvoal, - Yes - CMA (type test) CAT III - Wes - CSA approval - Yes - CMA (type test) CAT III - Wes - CSA approval - Yes - CMA (type test) CAT III - Wes - CMA (type test) CAT III - Wes - CSA approval - Yes - CMA (type test) CAT III - Wes - CMA (type	 Measured variable apparent power 	0.5
- Measured variable power factor - Measured variable active energy - Measured variable reactive energy - Measured variable phase angle - Measured variable phase angle - Measured variable prequency - Measured variable phase angle - 11 "; not covered by IEC 61557-12 - Measured variable prequency - Measured variable phase angle - 11 "; not covered by IEC 61557-12 - Measured variable phase angle - 12 "; not covered by IEC 61557-12 - Measured variable phase angle - 13 "; not covered by IEC 61557-12 - Measured variable phase angle - 11 "; not covered by IEC 61557-12 - Measured variable phase angle - 12 "; not covered by IEC 61557-12 - Measured variable phase angle - 13 "; not covered by IEC 61557-12 - Measured variable phase angle - 13 "; not covered by IEC 61557-12 - Measured variable phase angle - 13 "; not covered by IEC 61557-12 - Measured variable phase angle - 13 "; not covered by IEC 61557-12 - Measured variable phase angle - 13 "; not covered by IEC 61557-12 - Measured variable phase angle - 13 "; not covered by IEC 61557-12 - Measured variable phase angle - 13 "; not covered by IEC 61557-12 - Measured variable phase angle - 13 "; not covered by IEC 61557-12 - Measured variable phase angle - 13 "; not covered by IEC 61557-12 - Measured variable phase angle - 14 "; not covered by IEC 61557-12 - Measured variable phase angle - 15 "; not covered by IEC 61557-12 - Measured variable phase angle - 15 "; not covered by IEC 61557-12 - Measured variable phase angle - 15 "; not covered by IEC 61557-12 - Measured variable - 15 "; not covered by IEC 61557-12 - 15 "; not covered by IEC 61557-	 Measured variable active power 	0.5
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— Measured variable neutral current — Measured variable neutral current — Measured variable phase angle — Measured variable frequency — O.05 Potential separation Potential separation channels — between the channels and backplane bus — vestween the channels — vestween the channels and backplane bus — vestween the channels — vestween the channels and backplane bus — vestween the channels — vestween the channels and backplane bus — vestween the channels	 Measured variable power factor 	0.5
- Measured variable neutral current - Measured variable phase angle - Measured variable frequency - Measured variable frequency Potential separation Potential separation channels • between the channels and backplane bus Isolation Isolation tested with - Z 300V AC (type test) CAT III Isolation tested with - Z 300V AC for 1 min. (type test) Standards, approvals, certificates CE mark - Yes - CSA approval - Yes - UL approval - Ves - UL approval - Yes - CMA (formerly C-TICK) - Yes - RCM (formerly C-TICK) - Yes - RCM (formerly C-TICK) - Yes - Ambient conditions Ambient temperature during operation - horizontal installation, min 20 °C - horizontal installation, min 20 °C - vertical installation, min 20 °C - vertical installation, min 20 °C - Dimensions Width - Height - 100 mm Weights Weight, approx. Data for selecting a current transformer - Burden power current transformer x/1A, min Burden power current transformer x/5A, min Surccious and consider and cross section, see device manual - As a function of cable length and cross section, see device manual - As a function of cable length and cross section, see device manual - As a function of cable length and cross section, see device manual - As a function of cable length and cross section, see device manual - As a function of cable length and cross section, see device manual - As a function of cable length and cross section, see device manual - As a function of cable length and cross section, see device manual	 Measured variable active energy 	0.5
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Potential separation Potential separation channels • between the channels and backplane bus Separation	 Measured variable phase angle 	±1 °; not covered by IEC 61557-12
Potential separation channels • between the channels and backplane bus Selation	 Measured variable frequency 	0.05
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