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 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)
nterrupts/diagnostics/status information	
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
ntegrated 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
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.	0 V
Measurable line voltage between phase and neutral conductor, max.	293 V
 Measurable line voltage between the line conductors, min. Measurable line voltage between the line 	0 V 508 V
measurable line voltage between the line conductors, max. — Internal resistance line conductor and neutral	3.4 MΩ
conductor	20 mW
— Power consumption per phase— 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 VA
 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
— 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 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 — Measured variable rective energy — Measured variable neutral current — Measured variable neutral current — Measured variable phase angle — Measured variable frequency — Mesured variable fre		
- Measured variable reactive energy - Measured variable neutral current - Measured variable hase angle - Measured variable frequency - Measured variable fexity - Measured variable variable variable variable variable variable variable var	 Measured variable power factor 	0.5
- Measured variable neutral current - Measured variable phase angle - Measured variable prequency - Measured variable frequency - Mesured variab	 Measured variable active energy 	0.5
- Measured variable phase angle - 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) Standards, approvals, certificates CE mark Yes CSA approval Yes CULus Yes CULus Yes FM approval Yes RCM (formerly C-TICK) Yes Marine approval Yes Ambient conditions Ambient temperature during operation • horizontal installation, min20 °C • vertical installation, min20 °C • vertical installation, min20 °C • vertical installation, min75 mm Width 45 mm Height 100 mm Depth 75 mm Weights Weight, approx. 165 g Other Burden power current transformer x/1A, min. As a function of cable length and cross section, see device manual	 Measured variable reactive energy 	1
Measured variable frequency Potential separation Potential separation channels • between the channels and backplane bus Isolation Isolation tested with Standards, approvals, certificates CE mark CSA approval UL approval Ves CULus Yes CULus Yes RCM (formerly C-TICK) KC approval Ambient conditions Ambient condition, min. • horizontal installation, min. • vertical installation, max. • vertical installation, max. • Vertical installation, max. So "C Dimensions Width Height Data for selecting a current transformer • Burden power current transformer x/1A, min. As a function of cable length and cross section, see device manual	 Measured variable neutral current 	0.5; calculated
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) Standards, approvals, cortificates CE mark Yes CSA approval Yes UL approval Ves UL approval Yes FM approval Yes FM approval Yes KC approval Yes Marine approval Ambient conditions Ambient temperature during operation • horizontal installation, min. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. 100 mm Depth 75 mm Weights Weight, approx. Data for selecting a current transformer • Burden power current transformer x/1A, min. As a function of cable length and cross section, see device manual	 Measured variable phase angle 	±1 °; not covered by IEC 61557-12
Potential separation channels • between the channels and backplane bus Isolation Isolation Isolation tested with 2 300V AC for 1 min. (type test) Standards, approvals, certificates CE mark Yes CSA approval Yes UL approval Yes CULus FM approval Yes RCM (formerly C-TICK) Yes KC approval Yes Ambient conditions Ambient temperature during operation • horizontal installation, min. • horizontal installation, min. • vertical installation, min. • vertical installation, min. • vertical installation, max. 50 °C Dimensions Width 45 mm Height 100 mm Depth 75 mm Worldhs Worldh approx. 165 g Other Data for selecting a current transformer • Burden power current transformer x/1A, min. As a function of cable length and cross section, see device manual	 Measured variable frequency 	0.05
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) Standards, approvals, certificates CE mark Yes CSA approval UL approval ULus Yes EM approval Yes RCM (formerly C-TICK) Yes RCA (approval Yes Marine approval Ambient conditions Ambient temperature during operation • horizontal installation, min. • horizontal installation, min. • vertical installation, min. • vertical installation, min. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, min. -20 °C • vertical installation, max. 50 °C Dimensions Width Height 100 mm Depth 75 mm Weights Weight, approx. 165 g Other Data for selecting a current transformer • Burden power current transformer x/1A, min. As a function of cable length and cross section, see device manual	Potential separation	
Isolation Isolation tested with 2 300V AC for 1 min. (type test) Standards, approvals, certificates CE mark Yes CSA approval Yes UL approval Yes CULus Yes FM approval Yes FM approval Yes FM approval Yes KC approval Yes Marine approval Yes Marine approval Yes Ambient conditions Ambient temperature during operation • horizontal installation, min. • horizontal installation, min. • vertical installation, min. • vertical installation, max. • vertical installation, max. • vertical installation, max. 50 °C Dimensions Width Height 100 mm Depth 75 mm Weight, approx. 165 g Other Data for selecting a current transformer • Burden power current transformer x/1A, min. As a function of cable length and cross section, see device manual	Potential separation channels	
Isolation tested with 2 300V AC for 1 min. (type test) Standards, approvals, certificates CE mark Yes CSA approval Yes UL approval Yes cULus Yes FM approval Yes RCM (formerly C-TICK) Yes Marine approval Yes Marine approval Yes Ambient conditions Ambient temperature during operation • horizontal installation, min20 °C • horizontal installation, min20 °C • vertical installation, min20 °C • wertical installation, min70 °C • burden jower unreal transformer • Burden power current transformer • Burden power current transformer x/1A, min. As a function of cable length and cross section, see device manual	 between the channels and backplane bus 	Yes; 3 700V AC (type test) CAT III
Standards, approvals, certificates CE mark Ves CSA approval UL approval Yes CULus Yes FM approval Yes RCM (formerly C-TICK) Yes KC approval Yes Marine approval Ambient conditions Ambient temperature during operation • horizontal installation, min. • horizontal installation, min. • vertical installation, min. • vertical installation, min. • vertical installation, max. 50 °C Dimensions Width 45 mm Height 100 mm Depth 75 mm Weights Weight, approx. Data for selecting a current transformer • Burden power current transformer x/1A, min. As a function of cable length and cross section, see device manual	Isolation	
CE mark CSA approval Yes UL approval Yes cULus Yes FM approval Yes RCM (formerly C-TICK) KC approval Yes Marine approval Ambient conditions Ambient temperature during operation • horizontal installation, min. • horizontal installation, min. • vertical installation, min. • vertical installation, max. • vertical installation, max. • vertical installation, max. 50 °C Dimensions Width Height 100 mm Depth 75 mm Weights Weight, approx. Other Data for selecting a current transformer • Burden power current transformer x/1A, min. As a function of cable length and cross section, see device manual	Isolation tested with	2 300V AC for 1 min. (type test)
CSA approval UL approval Ves CULus Yes FM approval Yes RCM (formerly C-TICK) Yes Marine approval Ambient conditions Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installation, max. • vertical installati	Standards, approvals, certificates	
UL approval CULus Yes FM approval Yes RCM (formerly C-TICK) Yes KC approval Yes Marine approval Ambient conditions Ambient temperature during operation • horizontal installation, min. • horizontal installation, min. • horizontal installation, min. • vertical installation, min. • vertical installation, max. • vertical installation, max. Vidth 45 mm Height 100 mm Depth 75 mm Weights Weight, approx. Other Data for selecting a current transformer • Burden power current transformer x/1A, min. As a function of cable length and cross section, see device manual	CE mark	Yes
cULus Yes FM approval Yes RCM (formerly C-TICK) Yes KC approval Yes Marine approval Yes Ambient conditions Ambient temperature during operation • horizontal installation, min20 °C • horizontal installation, max. 60 °C • vertical installation, min20 °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 x/1A, min. As a function of cable length and cross section, see device manual	CSA approval	Yes
FM approval RCM (formerly C-TICK) Yes KC approval Yes Marine approval Ambient conditions Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, max. 50 °C Dimensions Width Height 100 mm Depth 75 mm Weights Weight, approx. 165 g Other Data for selecting a current transformer • Burden power current transformer x/1A, min. As a function of cable length and cross section, see device manual	UL approval	Yes
RCM (formerly C-TICK) KC approval Yes Marine approval Ambient conditions Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. 60 °C • vertical installation, min. • vertical installation, max. 50 °C Dimensions Width 45 mm Height 100 mm Depth 75 mm Weights Weight, approx. Other Data for selecting a current transformer • Burden power current transformer x/1A, min. As a function of cable length and cross section, see device manual	cULus	Yes
KC approval Marine approval Ambient conditions Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. 60 °C • vertical installation, min. • vertical installation, min. • vertical installation, min. • 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 • Burden power current transformer x/1A, min. As a function of cable length and cross section, see device manual	FM approval	Yes
Marine approval Ambient conditions Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, min. • 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 x/1A, min. As a function of cable length and cross section, see device manual	RCM (formerly C-TICK)	Yes
Ambient conditions Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • horizontal installation, max. • vertical installation, min. • 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 • Burden power current transformer x/1A, min. As a function of cable length and cross section, see device manual	KC approval	Yes
Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. 60 °C • vertical installation, min. • vertical installation, min. • 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 • Burden power current transformer x/1A, min. As a function of cable length and cross section, see device manual	Marine approval	Yes
 horizontal installation, min. -20 °C horizontal installation, max. vertical installation, min. -20 °C vertical installation, max. 50 °C Dimensions Width 45 mm Height 100 mm Depth 75 mm Weights Weights Uther Data for selecting a current transformer Burden power current transformer x/1A, min. As a function of cable length and cross section, see device manual 	Ambient conditions	
 horizontal installation, max. vertical installation, min. -20 °C vertical installation, max. 50 °C Dimensions Width 45 mm Height 100 mm Depth 75 mm Weights Weights Weight, approx. 165 g Other Data for selecting a current transformer Burden power current transformer x/1A, min. As a function of cable length and cross section, see device manual	Ambient temperature during operation	
 ◆ vertical installation, min. → vertical installation, max. 50 °C Dimensions Width 45 mm Height 100 mm Depth 75 mm Weights Weights Weight, approx. 165 g Other Data for selecting a current transformer ◆ Burden power current transformer x/1A, min. As a function of cable length and cross section, see device manual 	 horizontal installation, min. 	-20 °C
● vertical installation, max. Dimensions Width 45 mm Height 100 mm Depth 75 mm Weights Weight, approx. 165 g Other Data for selecting a current transformer ● Burden power current transformer x/1A, min. As a function of cable length and cross section, see device manual	 horizontal installation, max. 	60 °C
Width 45 mm Height 100 mm Depth 75 mm Weights Weight, approx. 165 g Other Data for selecting a current transformer • Burden power current transformer x/1A, min. As a function of cable length and cross section, see device manual	 vertical installation, min. 	-20 °C
Width 45 mm Height 100 mm Depth 75 mm Weights Weight, approx. 165 g Other Data for selecting a current transformer • Burden power current transformer x/1A, min. As a function of cable length and cross section, see device manual	vertical installation, max.	50 °C
Height 100 mm Depth 75 mm Weights Weight, approx. 165 g Other Data for selecting a current transformer • Burden power current transformer x/1A, min. As a function of cable length and cross section, see device manual	Dimensions	
Depth 75 mm Weights Weight, approx. 165 g Other Data for selecting a current transformer • Burden power current transformer x/1A, min. As a function of cable length and cross section, see device manual	Width	45 mm
Weights Weight, approx. 165 g Other Data for selecting a current transformer • Burden power current transformer x/1A, min. As a function of cable length and cross section, see device manual	Height	100 mm
Weight, approx. Other Data for selecting a current transformer • Burden power current transformer x/1A, min. As a function of cable length and cross section, see device manual		75 mm
Other Data for selecting a current transformer • Burden power current transformer x/1A, min. As a function of cable length and cross section, see device manual	Weights	
Data for selecting a current transformer ◆ Burden power current transformer x/1A, min. As a function of cable length and cross section, see device manual	Weight, approx.	165 g
Burden power current transformer x/1A, min. As a function of cable length and cross section, see device manual	Other	
	Data for selecting a current transformer	
• Burden power current transformer x/5A, min. As a function of cable length and cross section, see device manual	 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

last modified: 4/10/2024 🖸