



\*\*\* spare part \*\*\* SIMATIC ET 200SP, Analog input module, AI Energy Meter 480 V AC ST, suitable for BU type D0, channel diagnostics

### General information

Product type designation	AI Energy Meter 480VAC ST
Firmware version	V4.0
<ul style="list-style-type: none"> <li>FW update possible</li> </ul>	Yes
usable BaseUnits	BU type D0
Supported power supply systems	TT, TN
<b>Product function</b>	
<ul style="list-style-type: none"> <li>Voltage measurement                             <ul style="list-style-type: none"> <li>without voltage transformer</li> <li>with voltage transformer</li> </ul> </li> <li>Current measurement                             <ul style="list-style-type: none"> <li>without current transformer</li> <li>with current transformer</li> <li>With Rogowski coil</li> <li>With current-voltage-converter</li> </ul> </li> <li>Energy measurement</li> <li>Frequency measurement</li> <li>Power measurement</li> <li>Active power measurement</li> <li>Reactive power measurement</li> <li>Power factor measurement</li> <li>Active factor measurement</li> <li>Reactive power compensation</li> <li>Line analysis</li> <li>I&amp;M data</li> <li>Isochronous mode</li> </ul>	Yes Yes Yes Yes No Yes No No Yes Yes Yes Yes Yes Yes No No No Yes; I&M0 to I&M3 No
<b>Engineering with</b>	
<ul style="list-style-type: none"> <li>STEP 7 TIA Portal configurable/integrated from version</li> <li>STEP 7 configurable/integrated from version</li> <li>PROFIBUS from GSD version/GSD revision</li> <li>PROFINET from GSD version/GSD revision</li> </ul>	V13 SP1 V5.5 SP4 and higher GSD Revision 5 V2.3
<b>Operating mode</b>	
<ul style="list-style-type: none"> <li>Cyclic measured value access</li> <li>Acyclic measured value access</li> <li>Fixed measured value sets</li> <li>Freely definable measured value sets</li> </ul>	Yes Yes Yes Yes
<b>CiR - Configuration in RUN</b>	
Reparameterization possible in RUN	Yes
Calibration possible in RUN	Yes
<b>Installation type/mounting</b>	
Mounting position	any

Supply voltage	
Design of the power supply	Supply via voltage measurement channel L1
Rated value (AC)	AC 100 - 277 V
permissible range, lower limit (AC)	90 V
permissible range, upper limit (AC)	293 V
Line frequency	
<ul style="list-style-type: none"> <li>permissible range, lower limit</li> <li>permissible range, upper limit</li> </ul>	47 Hz 63 Hz
Power loss	
Power loss, typ.	0.6 W
Address area	
Address space per module	
<ul style="list-style-type: none"> <li>Inputs</li> <li>Outputs</li> </ul>	256 byte 12 byte
Hardware configuration	
Automatic encoding	Yes
<ul style="list-style-type: none"> <li>Mechanical coding element</li> <li>Type of mechanical coding element</li> </ul>	Yes type C
Selection of BaseUnit for connection variants	
<ul style="list-style-type: none"> <li>2-wire connection</li> </ul>	BU type D0, BU20-P12+A0+0B
Time of day	
Operating hours counter	
<ul style="list-style-type: none"> <li>present</li> </ul>	Yes
Analog inputs	
Cycle time (all channels), typ.	50 ms; Time for consistent update of all measured and calculated values (cyclic und acyclic data)
Cable length	
<ul style="list-style-type: none"> <li>unshielded, max.</li> </ul>	200 m
Analog value generation for the inputs	
Measurement principle	Sigma Delta
Sampling frequency, max.	1 024 kHz
Interrupts/diagnostics/status information	
Alarms	
<ul style="list-style-type: none"> <li>Diagnostic alarm</li> <li>Limit value alarm</li> <li>Hardware interrupt</li> </ul>	Yes Yes Yes; Monitoring of up to 16 freely selectable process values (exceeding or undershooting of value)
Diagnostics indication LED	
<ul style="list-style-type: none"> <li>Monitoring of the supply voltage (PWR-LED)</li> <li>Channel status display</li> <li>for channel diagnostics</li> <li>for module diagnostics</li> </ul>	Yes Yes; green LED Yes; red Fn LED Yes; green/red DIAG LED
Integrated Functions	
Measuring functions	
<ul style="list-style-type: none"> <li>Measuring procedure for voltage measurement</li> <li>Measuring procedure for current measurement</li> <li>Type of measured value acquisition</li> <li>Curve shape of voltage</li> <li>Buffering of measured variables</li> <li>Parameter length</li> <li>Bandwidth of measured value acquisition</li> </ul>	TRMS TRMS seamless Sinusoidal or distorted Yes 74 byte 2 kHz; Harmonics: 39 / 50 Hz, 32 / 60 Hz
Measuring range	
<ul style="list-style-type: none"> <li>Frequency measurement, min.</li> <li>Frequency measurement, max.</li> </ul>	45 Hz 65 Hz
Measuring inputs for voltage	
<ul style="list-style-type: none"> <li>Measurable line voltage between phase and neutral conductor</li> <li>Measurable line voltage between the line conductors</li> <li>Measurable line voltage between phase and neutral conductor, min.</li> <li>Measurable line voltage between phase and neutral conductor, max.</li> </ul>	277 V 480 V 90 V 293 V

— Measurable line voltage between the line conductors, min.	155 V
— Measurable line voltage between the line conductors, max.	508 V
— Internal resistance line conductor and neutral conductor	3.4 MΩ
— 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
<b>Measuring inputs for current</b>	
— 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
<b>Accuracy class according to IEC 61557-12</b>	
— 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
<b>Potential separation</b>	
<b>Potential separation channels</b>	
• between the channels	No
• between the channels and backplane bus	Yes; 3 700V AC (type test) CAT III
<b>Isolation</b>	
Isolation tested with	2 300V AC for 1 min. (type test)
<b>Ambient conditions</b>	
<b>Ambient temperature during operation</b>	
• horizontal installation, min.	0 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	0 °C
• vertical installation, max.	50 °C
<b>Altitude during operation relating to sea level</b>	
• Ambient air temperature-barometric pressure-altitude	On request: Ambient temperatures lower than 0 °C (without condensation) and/or installation altitudes greater than 2 000 m
<b>Dimensions</b>	
Width	20 mm
Height	73 mm
Depth	58 mm
<b>Weights</b>	
Weight, approx.	45 g
<b>Other</b>	
<b>Data for selecting a voltage transformer</b>	
• Secondary side, max.	296 V
<b>Data for selecting a current transformer</b>	
• 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
<b>last modified:</b>	12/28/2021 

