



SIMATIC ET 200SP, Analog input module, AI Energy Meter 480V AC/CT HF for 1A/5A current transformer, class S power analyser, FITS TO BU-TYPE U0, channel diagnosis

General information	
Product type designation	AI Energy Meter 480 VAC/CT HF
HW functional status	From FS02
Firmware version	
• FW update possible	Yes
usable BaseUnits	BU type U0
Color code for module-specific color identification plate	CC20
Supported power supply systems	TT, TN, IT
Product function	
• Voltage measurement	Yes
— without voltage transformer	Yes
— with voltage transformer	Yes
• Current measurement	Yes
— without current transformer	No
— with current transformer	Yes; 1 A or 5 A current transformer
— With Rogowski coil	No
— With current-voltage-converter	No
• Energy measurement	Yes
• Frequency measurement	Yes
• Power measurement	Yes
• Active power measurement	Yes
• Reactive power measurement	Yes
• Power factor measurement	Yes
• Active factor measurement	Yes
• Reactive power compensation	Yes
• Line analysis	Yes
— Monitoring of instantaneous and half-wave values	Yes
— THD measurement for current and voltage	Yes
— Harmonics for current and voltage	Yes
— Voltage dip (DIP)	Yes
— Voltage swell	Yes
• I&M data	Yes; I&M0 to I&M3
• Isochronous mode	No
Engineering with	
• STEP 7 TIA Portal configurable/integrated from version	STEP 7 V15 or higher
• STEP 7 configurable/integrated from version	V5.5 SP3 or higher

<ul style="list-style-type: none"> <li>• PROFIBUS from GSD version/GSD revision</li> <li>• PROFINET from GSD version/GSD revision</li> </ul>	One GSD file each, Revision 3 and 5 and higher V2.3
<b>Operating mode</b>	
<ul style="list-style-type: none"> <li>• Switching between operating modes in RUN</li> </ul>	Yes; For module version 32 I/20 Q, it is possible to dynamically switch between 25 user data variants, 23 of which are pre-defined and 2 of which can be defined by the specific user
<ul style="list-style-type: none"> <li>• Cyclic measured value access</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Acyclic measured value access</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Fixed measured value sets</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Freely definable measured value sets</li> </ul>	Yes; For cyclic and acyclic measured value access
<b>CiR - Configuration in RUN</b>	
Reparameterization possible in RUN	Yes
Calibration possible in RUN	Yes
<b>Installation type/mounting</b>	
Mounting position	any
<b>Supply voltage</b>	
Design of the power supply	DC
Type of supply voltage	24 V DC
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
<b>Input current</b>	
Current consumption (rated value)	12.5 mA
Current consumption, max.	17 mA
<b>Power loss</b>	
Power loss, typ.	1.4 W; 4x 5 A input current, 3x 230 V AC
<b>Address area</b>	
Address space per module	
<ul style="list-style-type: none"> <li>• Inputs</li> </ul>	256 byte
<ul style="list-style-type: none"> <li>• Outputs</li> </ul>	20 byte
<b>Hardware configuration</b>	
Automatic encoding	Yes
<ul style="list-style-type: none"> <li>• Mechanical coding element</li> </ul>	Yes
Selection of BaseUnit for connection variants	
<ul style="list-style-type: none"> <li>• 2-wire connection</li> </ul>	BU type U0
<b>Time of day</b>	
Operating hours counter	
<ul style="list-style-type: none"> <li>• present</li> </ul>	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)
Cable length	
<ul style="list-style-type: none"> <li>• shielded, max.</li> </ul>	200 m
<ul style="list-style-type: none"> <li>• unshielded, max.</li> </ul>	200 m
<b>Analog value generation for the inputs</b>	
Sampling frequency, max.	2 048 kHz
<b>Interrupts/diagnostics/status information</b>	
Alarms	
<ul style="list-style-type: none"> <li>• Diagnostic alarm</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Limit value alarm</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Hardware interrupt</li> </ul>	Yes; Monitoring of up to 16 freely selectable process values (exceeding or undershooting of value)
Diagnoses	
<ul style="list-style-type: none"> <li>• Line quality</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Supply voltage</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Hardware interrupt lost</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Parameter assignment error</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Module fault</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Channel not available</li> </ul>	Yes

• Overflow/underflow	Yes
• Overload current	Yes
<b>Diagnostics indication LED</b>	
• 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
<b>Integrated Functions</b>	
<b>Measuring functions</b>	
• 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	128 byte
• Bandwidth of measured value acquisition	3.2 kHz; Harmonics: 63 / 50 Hz, 52 / 60 Hz
<b>Measuring range</b>	
— Frequency measurement, min.	45 Hz
— Frequency measurement, max.	65 Hz
<b>Measuring inputs for voltage</b>	
— Measurable line voltage between phase and neutral conductor	300 V
— Measurable line voltage between the line conductors	519 V
— Measurable line voltage between phase and neutral conductor, min.	3 V
— Measurable line voltage between phase and neutral conductor, max.	300 V
— Measurable line voltage between the line conductors, min.	6 V
— Measurable line voltage between the line conductors, max.	519 V
— Internal resistance line conductor and neutral conductor	1.5 MΩ
— Power consumption per phase	60 mW; 300 V AC
— Impulse voltage resistance 1,2/50μs	2.5 kV
— Measurement category for voltage measurement in accordance with IEC 61010-2-030	CAT II
<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; 6 A permanent thermal overload
— 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
— Surge strength	10 A; for 1 minute
— Zero point suppression	0 ... 20%, referred to the nominal current
<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	0,2

— Measured variable phase angle	±0.5 °; not covered by IEC 61557-12
— Measured variable frequency	0.05
— Measured variable harmonic	1
— Measured variable THDU	1
— Measured variable THDI	1
<b>Accuracy class line analysis acc. to IEC 61000-4-30</b>	
— Measured variable voltage	Class S
— Measured variable current	Class S
— Measured variable frequency	Class S
— Measured variable voltage interruption	Class S
— Measured variable voltage dip and swell	Class S
— Measured variable harmonic voltage	Class S
— Measured variable harmonic current	Class S
<b>Potential separation</b>	
Potential separation channels	
• between the channels	No
• between the channels and backplane bus	Yes
• Between the channels and load voltage L+	Yes; Including FE
<b>Isolation</b>	
Isolation tested with	Between channels and backplane bus, 24 V supply: Routine test, 1 920 V AC, 2 s; between backplane bus and 24 V supply: Type test, 707 V DC
<b>Ambient conditions</b>	
Ambient temperature during operation	
• horizontal installation, min.	-30 °C; < 0 °C as of FS02
• horizontal installation, max.	60 °C
• vertical installation, min.	-30 °C; < 0 °C as of FS02
• vertical installation, max.	50 °C
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	3 000 m; Restrictions for installation altitudes > 2 000 m, see manual
<b>Dimensions</b>	
Width	20 mm
Height	73 mm
Depth	58 mm
<b>Weights</b>	
Weight, approx.	45 g
<b>Other</b>	
Data for selecting a voltage transformer	
• Secondary side, max.	300 V
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
• Burden power current transformer x/5A, min.	As a function of cable length and cross section, see device manual
<b>last modified:</b>	12/19/2020 