

SIPLUS ET 200SP AI EMETER 480VA TX RAIL -40 ... +70 °C(TX mit 85°C für 10 Min) mit conformal coating BasedOn: 6ES7134-6PA20-0BD0 . ANALOG INPUT MODULE, AI ENERGY METER 480VAC ST, FITS TO BU-TYPE D0, CHANNEL DIAGNOSIS

General information

Product type designation	ET 200SP, AI Energy Meter 480 V AC ST, PU 1
usable BaseUnits	BU type D0, BU20-P12+A0+0B

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&M0 to I&M3
• Isochronous mode	No

Operating mode	
• cyclic measurement	Yes
• acyclic measurement	Yes
• Acyclic measured value access	Yes
• Fixed measured value sets	Yes
• Freely definable measured value sets	Yes

CiR – Configuration in RUN

Reparameterization possible in RUN	Yes
Calibration possible in RUN	Yes

Installation type/mounting

Mounting position	Any
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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; At < -25 °C min. permissible supply voltage 110 V AC
permissible range, upper limit (AC)	293 V

Line frequency	
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- 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. 268 byte; 256 byte input / 12 byte output

Hardware configuration

Automatic encoding

- Mechanical coding element Yes

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 Yes; Monitoring of up to 16 freely selectable process values (exceeding or undershooting of value)

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

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 M Ω
— Power consumption per phase	20 mW
— Impulse voltage resistance 1,2/50 μ s	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
— Continuous current with AC, maximum permissible	5 A; at > +60 °C max. permissible current 1 A per phase
— 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
— 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 2 300 V AC for 1 minute (type test) and according to EN 50155 (routine test)

Standards, approvals, certificates

Railway application

- EN 50121-3-2 Yes; EMC for rail vehicles
- EN 50121-4 Yes; EMC for signal and telecommunications systems
- EN 50124-1 Yes; Railway applications - overvoltage category OV3; pollution degree PD2; UNm = 277/480 V AC
- EN 50125-1 Yes; Rail vehicles - see ambient conditions
- EN 50125-2 Yes; Stationary electrical equipment - see ambient conditions
- EN 50125-3 Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
- EN 50155 Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2
- EN 61373 Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
- Fire protection acc. to EN 45545-2 Yes; Rail vehicles - verification on request

Ambient conditions

Ambient temperature during operation

- horizontal installation, min. -40 °C; = Tmin
- horizontal installation, max. 70 °C; = Tmax; +85 °C for 10 min (Tx acc. to EN 50155)

Altitude during operation relating to sea level

- Installation altitude above sea level, max. 2 000 m
- Ambient air temperature-barometric pressure-altitude Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)

Relative humidity

- With condensation, tested in accordance with IEC 60068-2-38, max. 100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

Resistance

Coolants and lubricants

- Resistant to commercially available coolants and lubricants Yes

Use in stationary industrial systems

- to biologically active substances according to EN 60721-3-3 Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3 Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *

— to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles	
— to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
— to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
— to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+	
— Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!

Dimensions	
Width	20 mm
Height	73 mm
Depth	58 mm

Weights	
Weight (without packaging)	45 g

Other	
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

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

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