



Figure similar

SIPLUS ET 200SP F-AI 4xI 2-/4-wire HF based on 6ES7136-6AA00-0CA1 with conformal coating, -30...+60 °C, fail-safe analog inputs up to PL e (ISO 13849) up to SIL 3 (IEC 61508)

General information	
Product type designation	F-AI 4xI 0(4)..20mA 2-/4-wire HF
Firmware version	
<ul style="list-style-type: none"> FW update possible 	Yes
usable BaseUnits	BU type A0, A1
Color code for module-specific color identification plate	CC00
Product function	
<ul style="list-style-type: none"> I&M data 	Yes; I&M0 to I&M3
CiR - Configuration in RUN	
Reparameterization possible in RUN	No
Calibration possible in RUN	No
Supply voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Input current	
Current consumption (rated value)	0.38 A
Current consumption, max.	0.4 A
Encoder supply	
24 V encoder supply	
<ul style="list-style-type: none"> 24 V Short-circuit protection Output current, max. 	Yes; min. L+ (-1.5 V) Yes 300 mA; total current of all encoders/channels
Power	
Power available from the backplane bus	70 mW
Power loss	
Power loss, typ.	2 W
Address area	
Address space per module	
<ul style="list-style-type: none"> Inputs Outputs 	14 byte; S7-300/400F CPU, 13 byte 5 byte; S7-300/400F CPU, 4 byte
Hardware configuration	
Automatic encoding	
<ul style="list-style-type: none"> Electronic coding element type F 	Yes
Analog inputs	
Number of analog inputs	4

<ul style="list-style-type: none"> For current measurement 	4
permissible input current for current input (destruction limit), max.	35 mA
Input ranges (rated values), currents	
<ul style="list-style-type: none"> 0 to 20 mA <ul style="list-style-type: none"> Input resistance (0 to 20 mA) 4 mA to 20 mA <ul style="list-style-type: none"> Input resistance (4 mA to 20 mA) 	Yes 125 Ω Yes 125 Ω
Cable length	
<ul style="list-style-type: none"> shielded, max. 	1 000 m
Analog value generation for the inputs	
Measurement principle	Sigma Delta
Integration and conversion time/resolution per channel	
<ul style="list-style-type: none"> Resolution with overrange (bit including sign), max. Integration time, parameterizable Integration time (ms) Interference voltage suppression for interference frequency f1 in Hz 	16 bit Yes 20 / 16,667 50 / 60 Hz
Smoothing of measured values	
<ul style="list-style-type: none"> Number of smoothing levels parameterizable Step: None Step: low Step: Medium Step: High 	7 Yes Yes; 1x conversion cycle time Yes; 2x / 4x conversion cycle time Yes; 8x / 16x conversion cycle time Yes; 32x / 64x conversion cycle time
Encoder	
Connection of signal encoders	
<ul style="list-style-type: none"> for current measurement as 2-wire transducer <ul style="list-style-type: none"> Burden of 2-wire transmitter, max. for current measurement as 4-wire transducer 	Yes 650 Ω Yes
Errors/accuracies	
Linearity error (relative to input range), (+/-)	0.1 %
Temperature error (relative to input range), (+/-)	0.023 %/K
Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)	0.1 %
Operational error limit in overall temperature range	
<ul style="list-style-type: none"> Current, relative to input range, (+/-) 	2.6 %
Basic error limit (operational limit at 25 °C)	
<ul style="list-style-type: none"> Current, relative to input range, (+/-) 	0.1 %
Interference voltage suppression for $f = n \times (f1 \pm 1 \%)$, f1 = interference frequency	
<ul style="list-style-type: none"> Series mode interference (peak value of interference < rated value of input range), min. Common mode interference, min. 	40 dB 70 dB
Interrupts/diagnostics/status information	
Alarms	
<ul style="list-style-type: none"> Diagnostic alarm Limit value alarm 	Yes Yes
Diagnoses	
<ul style="list-style-type: none"> Monitoring the supply voltage Wire-break Short-circuit 	Yes Yes; Measuring range 4 to 20 mA only Yes
Diagnostics indication LED	
<ul style="list-style-type: none"> RUN LED ERROR LED Monitoring of the supply voltage (PWR-LED) Channel status display for channel diagnostics for module diagnostics 	Yes; green LED Yes; red LED Yes; green PWR LED Yes; green LED Yes; red LED Yes; green/red LED
Potential separation	
Potential separation channels	

<ul style="list-style-type: none"> • between the channels • between the channels and backplane bus • between the channels and the power supply of the electronics 	No Yes Yes
Permissible potential difference	
between the inputs (UCM)	10 Vpp
Isolation	
Isolation tested with	707 V DC (type test)
Standards, approvals, certificates	
Highest safety class achievable in safety mode	
<ul style="list-style-type: none"> • Performance level according to ISO 13849-1 • Category according to ISO 13849-1 • SIL acc. to IEC 61508 	PLe Cat. 4 SIL 3
Probability of failure (for service life of 20 years and repair time of 100 hours)	
— Low demand mode: PFDavg in accordance with SIL3	< 5.00E-05
— High demand/continuous mode: PFH in accordance with SIL3	< 1.00E-09 1/h
Ambient conditions	
Ambient temperature during operation	
<ul style="list-style-type: none"> • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. 	-30 °C; = Tmin (incl. condensation/frost) 60 °C; = Tmax; +70 °C with configured empty slots to the left and right of the module -30 °C; = Tmin 50 °C; = Tmax
Altitude during operation relating to sea level	
<ul style="list-style-type: none"> • Installation altitude above sea level, max. • Ambient air temperature-barometric pressure-altitude 	4 000 m Restrictions for installation altitudes > 2 000 m, see entry ID: 109771992
Relative humidity	
<ul style="list-style-type: none"> • With condensation, tested in accordance with IEC 60068-2-38, max. 	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance	
Coolants and lubricants	
— Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air
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, *
— Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Use on land craft, rail vehicles and special-purpose vehicles	
— Against mechanical environmental conditions acc. to EN 60721-3-5	Yes; Class 5M2 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
— against mechanical environmental conditions in agriculture acc. to ISO 15003	Yes; level 1 (Location LE) using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Use on ships/at sea	
— to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)
— to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
— to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
— Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Usage in industrial process technology	
— Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)
— Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible);

71.04	level LC3 (salt spray) and level LB3 (oil)
Remark	
— Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
<ul style="list-style-type: none"> ● Coatings for printed circuit board assemblies acc. to EN 61086 ● Protection against fouling acc. to EN 60664-3 ● Military testing according to MIL-I-46058C, Amendment 7 ● Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A 	<p>Yes; Class 2 for high reliability</p> <p>Yes; Type 1 protection</p> <p>Yes; Discoloration of coating possible during service life</p> <p>Yes; Conformal coating, Class A</p>
Dimensions	
Width	15 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	48 g
last modified:	3/16/2021 