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Data sheet 6DL1136-6AA00-0PH1

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SIMATIC ET 200SP HA, analog input module, safety-oriented, F-AI 8xI 2-wire/4-wire HART HA, 16-bit, 2-wire/4-wire, SIL3 (IEC 61508), up to PL e (ISO 13849-1), suitable for terminal block H1, F1, color code CC00, channel diagnostics

General information	
Product type designation	F-AI 8xI 2-/4-wire HART HA
Firmware version	V1.0
● FW update possible	Yes
Usable terminal block	type H1, F1, N0, H0, F0 (see system manual for details)
Color code for module-specific color-coded label	CC00
Product function	
● I&M data	Yes; I&M0 to I&M3
Engineering with	
● STEP 7 TIA Portal configurable/integrated from version	V21
● STEP 7 configurable/integrated from version	V5.6 SP2 (with S7 F Systems V6.4)
● PCS 7 configurable/integrated from version	V9.0 SP3 + UC04 (with F Systems V6.4)
● PROFINET from GSD version/GSD revision	GSDML V2.42 2023.01
Redundancy	
● Redundancy capability	Yes; with TB type F1
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)	90 mA; without sensor supply
Encoder supply	
Number of outputs	8
Short-circuit protection	Yes
24 V encoder supply	
● 24 V	Yes
● Short-circuit protection	Yes
● Output current per channel, max.	30 mA
Power	
Power consumption from the backplane bus	90 mW
Power loss	
Power loss, typ.	2.8 W
Address area	
Address space per module	
● Inputs	22 byte

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● Outputs	5 byte
Analog inputs	
Number of analog inputs	
● For current measurement	8
permissible input current for current input (destruction limit), max.	35 mA
Input ranges (rated values), currents	
● 0 to 20 mA	Yes
— Input resistance (0 to 20 mA)	150 Ω
● 4 mA to 20 mA	Yes
— Input resistance (4 mA to 20 mA)	150 Ω
HART communication	
● Primary Master	Yes
● Secondary Master	No
● input resistance (with HART communication)	150 Ω; for operation with an external secondary master (e.g. communicator), an external load may be necessary to achieve a total impedance of 230 - 600 Ω.
Cable length	
● shielded, max.	1 000 m; shielded, twisted pair
Analog value generation for the inputs	
Measurement principle	Sigma Delta
Integration and conversion time/resolution per channel	
● Resolution with overrange (bit including sign), max.	16 bit
● Integration time, parameterizable	Yes
● Integration time (ms)	20 ms (at 50 Hz); 16.66 ms (at 60 Hz)
● Interference voltage suppression for interference frequency f1 in Hz	50 / 60 Hz
Smoothing of measured values	
● parameterizable	Yes; in 4 stages (1, 4, 16, 64 conversion cycles), channel-by-channel
Encoder	
Connection of signal encoders	
● for current measurement as 2-wire transducer	Yes
● for current measurement as 4-wire transducer	Yes
Errors/accuracies	
Crosstalk between the inputs, min.	-70 dB
Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)	0.008 %
safety-relevant accuracy	
● up to 40 °C, max.	0.6 %; (0.7% in vertical installation)
● up to 70 °C, max.	0.9 %
note regarding accuracy	the safety-relevant accuracy consists of a basic error, a temperature-dependent drift, aging and internal safety measures
Influence of a HART signal modulated on the input signal in relation to input range	
● error at 16.6 ms integration time	0.11 %
● error at 20 ms integration time	0.11 %
Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference frequency	
● Series mode interference (peak value of interference < rated value of input range), min.	40 dB
● Common mode voltage, max.	35 V
● Common mode interference, min.	80 dB
Protocols	
HART protocol	Yes
● Protocol version	up to Revision 7
Interrupts/diagnostics/status information	
Alarms	
● Diagnostic alarm	Yes
Diagnoses	
● Monitoring the supply voltage	Yes
● Wire break	Yes
● Short-circuit	Yes
● Overflow/Underflow	Yes

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Diagnostics indication LED	
● MAINT LED	Yes; Yellow LED
● Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED
● Channel status display	Yes; green LED
● for channel diagnostics	Yes; red LED
● for module diagnostics	Yes; green/red DIAG LED
Potential separation	
Potential separation channels	
● between the channels	No
● between the channels and backplane bus	Yes
● Between the channels and load voltage L+	No
Permissible potential difference	
between the inputs (UCM)	30 V DC / 25 V AC
Isolation	
tested with	
● between backplane bus and load voltage	1 500 V DC (load voltage L+ and channels I+n bridged)
● between the backplane bus and functional ground (FE)	1 500 V DC
● between load voltage and functional ground (FE)	1 500 V DC (load voltage L+ and channels I+n bridged)
● between the channels and load voltage	370 V AC
● between the potential groups of the channels	370 V AC
Standards, approvals, certificates	
Highest safety class achievable in safety mode	
● Performance level according to ISO 13849-1	PLd (PLe for 1oo2 voting on the F-CPU)
● Category according to ISO 13849-1	cat. 3 (cat. 4 for 1oo2 voting on the F-CPU)
● SIL acc. to IEC 61508	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	< 27E-05 (< 9E-05 for 1oo2 voting on the F-CPU)
— High demand/continuous mode: PFH in accordance with SIL3	< 4E-09 1/h (< 1E-09 1/h for 1oo2 voting on the F-CPU)
Ambient conditions	
Ambient temperature during operation	
● horizontal installation, min.	-40 °C
● horizontal installation, max.	70 °C
● vertical installation, min.	-40 °C
● vertical installation, max.	60 °C
Dimensions	
Width	22.5 mm
Height	115 mm
Depth	138 mm
Weights	
Weight, approx.	220 g
Classifications	

	Version	Classification
eClass	16	27-24-26-01
eClass	14	27-24-26-01
eClass	12	27-24-26-01
eClass	9.1	27-24-26-01
eClass	9	27-24-26-01
eClass	8	27-24-26-01
eClass	7.1	27-24-26-01
eClass	6	27-24-26-01
ETIM	10	EC001596
ETIM	9	EC001596
ETIM	8	EC001596
ETIM	7	EC001596
IDEA	4	3562

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UNSPSC	15	32-15-17-05

Approvals / Certificates

General Product Approval











General Product Approval	For use in hazardous locations				
Manufacturer Declaration	Declaration of Conformity				









For use in hazardous locations	Functional Saftey			Maritime application	
Miscellaneous	TUEV	Type Examination Certificate	TUEV		





Maritime application					Environment
		NK / Nippon Kaiji Kyokai		CCS (China Classification Society)	









Environment	Industrial Communication
	PROFIsafe



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