Technical specifications

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10.1 New technical specifications 7MH41346LB000DA0

Core statement

The technical specifications for 7MH4134-6LB00-0DA0 are:

Article number	7MH4134-6LB00-0DA0
General information	
Product type designation	AI 2xSG 4-/6-wire HS
HW functional status	01
Firmware version	V1.0.1
• FW update possible	Yes
usable BaseUnits	BU type A0
Color code for module-specific color identification plate	CC00
Product function	
• I&M data	Yes; I&M0 to I&M3
• Measuring range scalable	Yes
• Scalable measured values	No
• Adjustment of measuring range	Yes; ±0.5 ... 320 mV/V
Engineering with	
• STEP 7 TIA Portal configurable/integrated from version	V14 SP1
• STEP 7 configurable/integrated from version	V5.6
• PROFIBUS from GSD version/GSD revision	V03.01.105
• PROFINET from GSD version/GSD revision	GSDML V2.33
Operating mode	
• Oversampling	Yes; 2 channels per module
• MSI	No
CiR - Configuration in RUN	
Reparameterization possible in RUN	Yes
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
Encoder supply	
Output voltage (DC)	4.85 V
Short-circuit protection	Yes
Output current	
• Rated value	60 mA; Per channel
Power	
Power available from the backplane bus	65 mW
Power loss	
Power loss, typ.	1.5 W
Address area	
Address space per module	
• Address space per module, max.	32 byte

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• Inputs	32 byte
• Outputs	8 byte
Hardware configuration	
Automatic encoding	Yes
• Mechanical coding element	Yes
Analog inputs	
Cycle time (all channels), min.	100 µs
Analog input with oversampling	Yes
• Values per cycle, max.	14
• Resolution, min.	100 µs
Input ranges	
• Strain gauges (full bridges)	Yes
Cable length	
• shielded, max.	500 m
Analog value generation for the inputs	
Measurement principle	Sigma Delta
Integration and conversion time/resolution per channel	
• Integration time, parameterizable	Yes
• Interference voltage suppression for interference frequency f1 in Hz	60 / 50 Hz / no
• Conversion time (per channel)	100 µs
Smoothing of measured values	
• IIR low-pass filter frequency	0.01 ... 600 Hz
• IIR low-pass filter ordinal number	1 ... 4
• Notch filter frequency	0.1 ... 1 000 Hz
• Notch filter quality	5.00 ... 250.00
• Average value filter	0.1 ... 655.3 ms
Encoder	
Connection of signal encoders	
• For strain gauges (full bridges) with 4-conductor connection	Yes
• For strain gauges (full bridges) with 6-conductor connection	Yes
• Resistance of full bridge, min.	80 Ω
• Resistance of full bridge, max.	5 000 Ω
Errors/accuracies	
Linearity error (relative to input range), (+/-)	0.025 %
Temperature error (relative to input range), (+/-)	0.0005 %/°C; Strain gauge full bridge, 6-conductor connection
Temperature coefficient, zero point	≤ ±0.25 µV/K
Temperature coefficient, span, 4-wire connection (in relation to end value)	≤ ±5 ppm/K

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Temperature coefficient, span, 6-wire connection (in relation to end value)	≤ ±10 ppm/K
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to input range, (+/-)	0.05 %; See manual for details
Isochronous mode	
Filtering and processing time (TCI), min.	87 µs
Bus cycle time (TDP), min.	125 µs
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Alarms	
• Limit value alarm	Yes; two upper and two lower limit values in each case
Diagnoses	
• Monitoring the supply voltage	Yes
• Wire-break	Yes
• Short-circuit	Yes
• Group error	Yes
• Overflow/underflow	Yes
Diagnostics indication 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 the power supply of the electronics	Yes
Isolation	
Isolation tested with	707 V DC (type test)
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-25 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	-25 °C
• vertical installation, max.	50 °C
Altitude during operation relating to sea level	
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 1 K/100 m) at 795 hPa ... 701 hPa (+2 000 m ... +3 000 m)
Dimensions	
Height	73 mm
Depth	58 mm

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Weights	
Weight, approx.	45 g

10.2 Mechanical requirements and data

Construction	
Insulation	Tested with 707 V DC (type test)
Dimension	15 mm wide, see manual ET 200SP BaseUnits (http://support.automation.siemens.com/WW/view/en/59753521)
Weight	Approx. 45 g

Operating conditions in accordance with IEC 60721	
Operation	IEC60721-3-3 Class 3M3, stationary use, weather-proofed
Storage/transport	IEC 60721-3-2 Class 2M2 without precipitation

Mechanical requirements and data		
Testing	**Standards**	**Limits**
Vibrational load during operation	IEC 61131-2:2007 IEC 60068-2-6:2007 Test Fc	5 to 8.4 Hz: 3.5 mm out. 8.4 to 150 Hz: 9.8 m/s^2 (=1 g)
Shock load during operation	IEC 61131-2:2007 IEC 0068-2-27:2008 Test Ea	150 m/s^2 (approx. 15 g), half sine Duration: 11 ms
Vibration load during transport	IEC 60068-2-6:2007 Test Fc	5 to 8.4 Hz: 3.5 mm out. 8.4 to 500 Hz: 9.8 m/s^2
Shock load during transport	IEC 60068-2-27:2008 Test Ea	250 m/s^2 (approx. 25 g), half sine Duration: 6 ms
Free fall	IEC 61131-2:2007 IEC 60068-2-31:2008 Test Ec, procedure 1	In product packaging: 300 mm drop height In shipping packaging: 1.0 m drop height

10.3 Electrical, EMC and climatic requirements

Table 10-1 **Product safety**

Requirement	Standards	Comments/measures	
Safety regulations	IEC 61010-1:2010 +C1:2011 + C2:2013 IEC 61010-2-201:2014 UL 61010-1:2005 UL 61010-201:2014 IEC 61131-2:2007 CSA C22.2 No.142-M1987 (R2014) IEC 60664:2007	Overvoltage category II Pollution degree 2	
Protection class	IEC 61140:2016 IEC 61131-2:2007	To maintain the safety characteristics of extra-low voltage circuits, external connections to the analog circuits and the 24 V DC nominal power supplies must be powered by approved sources that fulfill the requirements according to the various standards for SELV, PELV, NEC Class 2, voltage limited or power limited. The ground connection for the DIN rail serves as a functional ground for dissipating interference currents.	
IP degree of protection	DIN IEC 60529:2010 +A1:2000 + A2:2013	IP 20: Protection against contact with standard probe Protection against solid bodies with diameters in excess of 12.5 mm No special protection against water	
Electrical isolation stability	IEC 61131-2:2007 CSA C22.2 No.142-M1987 (R2014)	Between the channels	No
		Between the channels and the backplane bus	707 V DC (type test)
		Between the channels and the power supply	707 V DC (type test)
Use in hazardous areas	IEC 60079-0 :2009 IEC 60079-7 :2015	See Product Information "Use of modules in zone 2 hazardous areas" (Product information (https://support.industry.siemens.com/cs/ww/en/view/19692172)).	
Electromagnetic compatibility	IEC 61000-6-2 :2004 IEC 61000-6-4 :2007+ A1:2011	All shielded cables must be grounded at both ends to comply with the requirements for electromagnetic compatibility. If the shielded cable is routed out of the hazardous area for explosion-proof equipment, both ends of the cable shield must be connected to the potential equalization.	

Table 10-2 Requirements: Interference emission in industrial area in accordance with EN 61000-6-4

Comments	Standard	Limits
Emission of radio interference (interference field strength)	Class A industrial environment: IEC/CISPR 16-2-3 :2006 EN55016-2-3 :2006	30 – 230 MHz, 40 dB(mV/m) Q 230 – 1000 MHz, 47 dB(mV/m) Q -- 1 GHz to 3 GHz / 76 dB(mV/m) peak, 56 dB(mV/m) average 3 GHz to 6 GHz / 80 dB(mV/m)
Emission on power supply cables	Class A: Industrial environment: IEC/CISPR 16-2-1 :2009 EN 55016-2-1 :2004	Class A: Industrial environment 0.15 ... 0.5 MHz, 79 dB (µV) Q 0.15 ... 0.5 MHz, 66 dB (µV) M 0.5 ... 30 MHz, 73 dB (µV) Q 0.5 ... 30 MHz, 60 dB (µV) M
Emission conducted Ethernet	EN 61000-6-4: 2007+A1:2011 IEC/CISPR 22 :2008 EN55022 :2010	0.15 ... 0.5 MHz: 53 dB (µA) to 43 dB (µA) Q 40 dB (µA) – 30 dB (µA) M 0.5 ... 30 MHz: 43 dB (µA) to 30 dB (µA) M

Note

Radio interference is possible

This is a device of class A. The device may cause radio interference in residential areas. Implement appropriate measures (e.g.: use in 8MC cabinets) to prevent radio interference.

Table 10-3 Requirements: Interference immunity in industrial area in accordance with EN 61000-6-2

Comments	Standard	Severity level
Burst pulses on power supply cables	DIN EN 61000-4-2 :2009 DIN EN 61000-4-3 :2011 DIN EN 61000-4-4 :2013 DIN EN 61000-4-5 :2015 DIN EN 61000-4-6 :2014 IEC 61000-4-2 :2008 IEC 61000-4-3 :2006 +A1:2007 +A2:2010 IEC 61000-4-4 :2012 IEC 61000-4-5 :2014 IEC 61000-4-6 :2014 NAMUR NE21:2011 DIN EN 61131-2 :2008 IEC 61131-2 :2007	±2.0 kV 5/50 ns/5 kHz ±2.0 kV 5/50 ns/100 kHz
Burst pulses on data and signal cables		±2.0 kV 5/50 ns/5 kHz ±2.0 kV 5/50 ns/100 kHz
Electrostatic discharge (ESD)		2, 4, 6 kV direct/indirect
Electrostatic air discharge (ESD)		2, 4, 6, 8 kV
Surge on power supply cables[2)]		±1.0 kV line to line ±2.0 kV line to earth
Electromagnetic RF fields		80 MHz to 3 GHz: 20 V/m
Induced conducted interference		10 kHz to 80 MHz: 10 V_{eff}

1) Not applicable for shielded cables and symmetric ports

2) An external fuse must be provided to comply with the requirement (e.g. Lightning conductor BVTAD24, Dehn & Söhne company)

Ambient conditions

The module can be used under the following conditions:

(Also observe the operating conditions of the ET 200SP system)

Table 10-4 Operating conditions in accordance with IEC 60721

Operation	IEC60721-3-3: Class 3K3, stationary use, weather-proofed
Storage/transport	IEC 60721-3-2 class 2K4 without precipitation

Table 10-5 Climatic requirements

Comments		Ambient conditions	Areas of application
Operating temperature	Vertical installation	-25 to +50 °C	
	Horizontal installation	-25 to +60 °C	
Storage and transport temperature		-40 to +70 °C	
Relative humidity		5 ... 95%	No condensation; corresponds to relative humidity (RH) stress level 2 to DIN IEC 61131-2
Contaminant concentration		SO_2: < 0.5 ppm H_2S: < 0.1 ppm	RH < 60%, no condensation