

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

SIEMENS SIMATIC S7

6DL1133-6EW00-0EH1

DIGITAL OUTPUT AND HART INPUT MODULE

Used with the applicable SIMATIC ET 200SP HA configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Siemens official manufacturer documentation



Figure similar

SIMATIC ET 200SP HA, configurable I/O module, AI-DI16/DQ16x24VDC HART, suitable for terminal block H1, M1, color code CC00, channel diagnostics, 16-bit, +/-0.1%,

General information	
Product type designation	AI-DI 16/DQ 16x24VDC HART HA
Firmware version	V1.1
• FW update possible	Yes; The firmware update can take more than 5 minutes.
Usable terminal block	TB type H1, M1, P0 and N0
Color code for module-specific color identification plate	CC00
Product function	
• I&M data	Yes; I&M0 to I&M3
Engineering with	
• SPPA-T3000 can be configured/integrated from version	V8.0
Operating mode	
• DI	Yes
• Counter	Yes
• DQ	Yes
• DQ with energy-saving function	No
• PWM	No
• Oversampling	No
• MSI	No
• MSO	No
Redundancy	
• Redundancy capability	Yes; With TB type M1
CiR - Configuration in RUN	
Reparameterization possible in RUN	Yes
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)	80 mA; without sensor supply
Current consumption, max.	90 mA; without sensor supply
Encoder supply	
Number of outputs	16
Output voltage, min.	18.2 V
Short-circuit protection	Yes; per channel, electronic
24 V encoder supply	
• 24 V	Yes
• Short-circuit protection	Yes; Electronic (response threshold 0.7 A to 1.5 A)
• Output current per channel, max.	0.5 A

- Output current per module, max.

2 A

Power loss

Power loss, typ.

4.5 W; without sensor supply

Address area

Address space per module

- Address space per module in mixed operation, max.
- Address space per module in mixed operation with HART, max.
- Address space per module in mixed operation with multiHART, max.
- Address space per module in purely digital operation, max.
- Address space per module in purely digital operation with counter/frequency measurement, max.

42 byte; 34 bytes for inputs, 2 bytes for outputs and 6 bytes for QI information
82 byte; 34-byte inputs, 2-byte outputs, 40 bytes for HART secondary variables, and 6 bytes for QI information
70 byte; 34-byte inputs, 2-byte outputs, 24-byte HART inputs, 4-byte HART outputs, and 6 bytes for QI information
26 byte; 2 bytes for inputs, 2 bytes for outputs, 18 bytes for high-precision time stamping and 4 bytes for QI information.
88 byte; 2 bytes for inputs, 2 bytes for outputs, 40 bytes for counter input data, 40 bytes for counter output data and 4 bytes for QI information.

Digital inputs

Number of digital inputs

16

Digital inputs, parameterizable

Yes

Source/sink input

Yes; P-reading

Input characteristic curve in accordance with IEC 61131, type 1

Yes

Input characteristic curve in accordance with IEC 61131, type 2

No

Input characteristic curve in accordance with IEC 61131, type 3

Yes

Pulse extension

Yes; off, 50 ms, 100 ms, 200 ms, 500 ms, 1 s, 2 s

Time stamping

Yes; Resolution 10 ms

Time stamp (with precision of 1 ms)

Yes; Resolution 1ms

Digital input functions, parameterizable

- Gate start/stop
- Freely usable digital input
- Counter
 - Number, max.
 - Counting frequency, max.
 - Counting width
 - Counting direction up/down

Yes; Partner channel of n+8 counter
Yes; Parameterizable input filter
Yes; Incl. frequency measurement
8; Counter channel n=0 ... 7
5 kHz
32 bit; Without sign
Yes; Up

Input voltage

- Rated value (DC)
- for signal "0"
- for signal "1"

24 V
-30 to +5 V
+11 to +30V

Input current

- for signal "1", typ.

2.5 mA

Input delay (for rated value of input voltage)

for standard inputs

— parameterizable

Yes; 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms (in each case + delay of 30 to 500 µs, depending on line length)

Cable length

- shielded, max.
- unshielded, max.

1 000 m
600 m

Digital outputs

Number of digital outputs

16

Current-sinking

No

Current-sourcing

Yes

Short-circuit protection

Yes; Response threshold 0.7 A to 1.3 A

Open-circuit detection

Yes

Overload protection

Yes

Limitation of inductive shutdown voltage to

L+ -(37 to 41V)

Controlling a digital input

Yes

Switching capacity of the outputs

- with resistive load, max.
- on lamp load, max.

0.5 A
5 W

Load resistance range

- lower limit
- upper limit

48 Ω
12 kΩ

Output current

- for signal "1" rated value

0.5 A

• for signal "0" residual current, max.	0.7 mA
Output delay with resistive load	
• "0" to "1", typ.	50 µs
• "1" to "0", typ.	100 µs
Parallel switching of two outputs	
• for uprating	No
• for redundant control of a load	Yes
Switching frequency	
• with resistive load, max.	100 Hz
• on lamp load, max.	10 Hz
Total current of the outputs	
• Current per channel, max.	0.5 A
• Current per module, max.	2 A
Cable length	
• shielded, max.	1 000 m
• unshielded, max.	600 m
Analog inputs	
Number of analog inputs	16
permissible input current for current input (destruction limit), max.	30 mA
Input ranges	
• Current	Yes; 0 ... 10 mA, 0 ... 20 mA, 4 ... 20 mA, 4 ... 20 mA HART
Input ranges (rated values), currents	
• 0 to 10 mA	Yes
— Input resistance (0 to 10 mA)	250 Ω
• 0 to 20 mA	Yes; 16 bit incl. sign
— Input resistance (0 to 20 mA)	250 Ω
• 4 mA to 20 mA	Yes; 16 bit incl. sign
— Input resistance (4 mA to 20 mA)	250 Ω
Analog value generation for the inputs	
Measurement principle	integrating (Sigma-Delta)
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	16 bit; Resolution with overrange (bit including sign), max. 16 bits, exception: 15 bits at 60 Hz interference suppression and 0 to 10 mA
• Integration time, parameterizable	Yes; channel by channel
Smoothing of measured values	
• parameterizable	Yes; none, weak, medium, strong, channel-by-channel
Encoder	
Connection of signal encoders	
• for current measurement as 2-wire transducer	Yes
Connectable encoders	
• 2-wire sensor	Yes
— permissible quiescent current (2-wire sensor), max.	1.5 mA
Errors/accuracies	
Linearity error (relative to input range), (+/-)	0.01 %
Temperature error (relative to input range), (+/-)	0.005 %/K
Crosstalk between the inputs, min.	60 dB
Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)	0.05 %
Operational error limit in overall temperature range	
• Current, relative to input range, (+/-)	0.5 %
Basic error limit (operational limit at 25 °C)	
• Current, relative to input range, (+/-)	0.1 %
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Substitute values connectable	Yes
Alarms	
• Diagnostic alarm	Yes
• Limit value alarm	Yes; two upper and two lower limit values in each case
• Hardware interrupt	Yes; Parameterizable, channels 0 to 15, rising/falling edge
Diagnoses	

- Monitoring the supply voltage - Wire-break - Short-circuit to M - Group error - Overflow/underflow	Yes Yes; channel by channel Yes; Encoder supply to M, channel by channel Yes Yes; channel by channel																																	
Diagnostics indication LED																																		
- MAINT LED - Monitoring of the supply voltage (PWR-LED) - Channel status display - for channel diagnostics - for module diagnostics	Yes; Yellow LED Yes; green PWR LED No No Yes; green/red DIAG LED																																	
Integrated Functions																																		
Frequency measurement	Yes																																	
Number of frequency meters	8																																	
Counting functions																																		
- Continuous counting - Counter response parameterizable - Hardware gate via digital input - Software gate	Yes Yes Yes; Via partner channel (digital input n+8) Yes																																	
Measuring functions																																		
Dynamic measurement period adjustment	Yes																																	
Measuring range																																		
- Frequency measurement, min. - Frequency measurement, max.	0.1 Hz 5 kHz																																	
Accuracy																																		
Frequency measurement	100 ppm; depending on measuring interval and signal evaluation																																	
Potential separation																																		
Potential separation channels																																		
- between the channels - between the channels and backplane bus - Between the channels and load voltage L+	No Yes No																																	
Isolation																																		
Isolation tested with	1 500 V DC/1 min, type test																																	
Ambient conditions																																		
Ambient temperature during operation																																		
- horizontal installation, min. - horizontal installation, max. - vertical installation, min. - vertical installation, max.	-40 °C 70 °C; Observe derating -40 °C 60 °C; Observe derating																																	
Dimensions																																		
Width	22.5 mm																																	
Height	115 mm																																	
Depth	138 mm																																	
Weights																																		
Weight, approx.	150 g																																	
Classifications																																		
	<table><tr><td></td><td>Version</td><td>Classification</td></tr><tr><td>eClass</td><td>14</td><td>27-23-01-90</td></tr><tr><td>eClass</td><td>12</td><td>27-23-01-90</td></tr><tr><td>eClass</td><td>9.1</td><td>27-23-01-90</td></tr><tr><td>eClass</td><td>9</td><td>27-23-01-90</td></tr><tr><td>eClass</td><td>8</td><td>27-23-01-90</td></tr><tr><td>eClass</td><td>7.1</td><td>27-23-01-90</td></tr><tr><td>eClass</td><td>6</td><td>27-23-01-90</td></tr><tr><td>ETIM</td><td>9</td><td>EC000236</td></tr><tr><td>ETIM</td><td>8</td><td>EC000236</td></tr><tr><td>ETIM</td><td>7</td><td>EC000236</td></tr></table>		Version	Classification	eClass	14	27-23-01-90	eClass	12	27-23-01-90	eClass	9.1	27-23-01-90	eClass	9	27-23-01-90	eClass	8	27-23-01-90	eClass	7.1	27-23-01-90	eClass	6	27-23-01-90	ETIM	9	EC000236	ETIM	8	EC000236	ETIM	7	EC000236
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Approvals / Certificates																																		

General Product Approval



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For use in hazardous locations



[Declaration of Con-
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Marine / Shipping

Environment

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tion Society\)](#)



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