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Data sheet 6ES7521-7TH00-0AB0



SIMATIC S7-1500, digital input module DI 16xNAMUR HF, 16 channels in groups of 8; for 8.2 V NAMUR encoder; sensor supply 8.2 V; input delay; parameterizable 0.05 ... 20 ms; integrated counting function up to 20 kHz pulse stretching; chatter monitoring; signal inversion diagnostics; hardware interrupts; all necessary components for shielding included in the scope of supply; front connector (screw terminals or push-in) to be ordered separately

General information	
Product type designation	DI 16xNAMUR HF
HW functional status	from FS01
Firmware version	V1.0.0
● FW update possible	Yes
Product function	
● I&M data	Yes; I&M0 to I&M3
● Isochronous mode	Yes
● Prioritized startup	Yes
Engineering with	
● STEP 7 TIA Portal configurable/integrated from version	STEP 7 V17 or higher
● STEP 7 configurable/integrated from version	V5.5 SP3 / -
● PROFIBUS from GSD version/GSD revision	V1.0 / V5.1
● PROFINET from GSD version/GSD revision	V2.3 / -
Operating mode	
● DI	Yes
● Counter	Yes
● Oversampling	No
● MSI	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, max.	220 mA
Encoder supply	
Number of outputs	16; 2x 8.2 V DC
Short-circuit protection	Yes
NAMUR encoder supply	
● 8.2 V	Yes
● Short-circuit protection	Yes; Per group, electronic
● Output current, max.	100 mA; per group
● Output current per module, max.	200 mA
Power	
Power consumption from the backplane bus	0.6 W

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Power loss	
Power loss, typ.	3.7 W
Digital inputs	
Number of digital inputs	16; NAMUR
Digital inputs, parameterizable	Yes
Source/sink input	P-reading
Pulse extension	Yes; 0.05 s, 0.1 s, 0.2 s, 0.5 s, 1 s, 2 s
Edge evaluation	Yes; rising edge, falling edge, edge change
Signal change flutter	Yes; 2 to 32 signal changes
Flutter observation window	Yes; 0.5 s, 1 s to 100 s in 1-s steps
Digital input functions, parameterizable	
● Gate start/stop	Yes; software/hardware gate
● Freely usable digital input	Yes
● Counter	
— Number, max.	4; 4 counters max. 10 kHz or 2 counters max. 20 kHz + 2 counters max. 10 kHz; see manual for details
— Counting frequency, max.	20 kHz; See manual for details
— Counting width	32 bit
— Counting direction up/down	Yes; forward / backward
Input voltage	
● Rated value (DC)	8.2 V
Input current	
● for signal "1", typ.	10 mA
for 10 k switched contact	
— for signal "0", min.	0.35 mA
— for signal "0", max.	1.2 mA
— for signal "1", min.	2.1 mA
— for signal "1", max.	10 mA
for unswitched contact	
— for signal "0", max. (permissible quiescent current)	0.35 to 1.2 mA
— for signal "1", typ.	2.1 ... 10 mA
for NAMUR encoders	
— for signal "0", min.	0.35 mA
— for signal "0", max.	1.2 mA
— for signal "1", min.	2.1 mA
— for signal "1", max.	10 mA
Input delay (for rated value of input voltage)	
for standard inputs	
— parameterizable	Yes; 0.05 / 0.1 / 0.4 / 1.6 / 3.2 / 12.8 / 20 ms
— at "0" to "1", min.	0.05 ms
— at "0" to "1", max.	20 ms
— at "1" to "0", min.	0.05 ms
— at "1" to "0", max.	20 ms
for interrupt inputs	
— parameterizable	Yes
for technological functions	
— parameterizable	Yes
for NAMUR inputs	
— at "0" to "1", max.	20 ms
— at "1" to "0", max.	20 ms
Cable length	
● shielded, max.	200 m; 200 m for technological functions; depending on input frequency, encoder and cable quality; max. 50 m at 20 kHz
Encoder	
Connectable encoders	
● NAMUR encoder/changeover contact according to EN 60947	Yes; no CO contact
● Single contact / changeover contact unconnected	Yes; no CO contact
● Single contact / changeover contact connected with 10 kΩ	Yes; no CO contact

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● 2-wire sensor	Yes
— permissible quiescent current (2-wire sensor), max.	1.2 mA
Isochronous mode	
Filtering and processing time (TCI), min.	60 µs; At 50 µs filter time
Bus cycle time (TDP), min.	250 µs
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Alarms	
● Diagnostic alarm	Yes
● Hardware interrupt	Yes
Diagnoses	
● Monitoring the supply voltage	Yes
● Monitoring of encoder power supply	Yes; short-circuit
● Wire-break	Yes; to I < 350 µA
● Short-circuit	No
Diagnostics indication LED	
● RUN LED	Yes; green LED
● ERROR LED	Yes; red LED
● Monitoring of the supply voltage (PWR-LED)	Yes; green LED
● Channel status display	Yes; green LED
● for channel diagnostics	Yes; red LED
● for module diagnostics	Yes; red LED
Potential separation	
Potential separation channels	
● between the channels	No
● between the channels, in groups of	8
● between the channels and backplane bus	Yes
● Between the channels and load voltage L+	Yes
● between the channels and the power supply of the electronics	No
Isolation	
Isolation tested with	707 V DC (type test)
Standards, approvals, certificates	
Siemens Eco Profile (SEP)	Siemens EcoTech
Suitable for safety functions	No
Ecological footprint	
● environmental product declaration	Yes
Global warming potential	
— global warming potential, (total) [CO2 eq]	18.9 kg
— global warming potential, (during production) [CO2 eq]	12.1 kg
— global warming potential, (during operation) [CO2 eq]	7.66 kg
— global warming potential, (after end of life cycle) [CO2 eq]	-1.02 kg
Security	
signed firmware update	No
data integrity	No
Ambient conditions	
Ambient temperature during operation	
● horizontal installation, min.	-30 °C
● horizontal installation, max.	60 °C
● vertical installation, min.	-30 °C
● vertical installation, max.	40 °C
Altitude during operation relating to sea level	
● Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Dimensions	
Width	35 mm
Height	147 mm
Depth	129 mm

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Weights

Weight, approx.	240 g

Classifications

	Version	Classification
eClass	14	27-24-22-04
eClass	12	27-24-22-04
eClass	9.1	27-24-22-04
eClass	9	27-24-22-04
eClass	8	27-24-22-04
eClass	7.1	27-24-22-04
eClass	6	27-24-22-04
ETIM	10	EC001419
ETIM	9	EC001419
ETIM	8	EC001419
ETIM	7	EC001419

Approvals / Certificates

General Product Approval

Manufacturer Declaration | Miscellaneous | KC

General Product Approval | For use in hazardous locations

CCC-Ex | FM | Type Examination Certificate

For use in hazardous locations | Maritime application

Miscellaneous

Maritime application | Environment

NK / Nippon Kaiji Kyokai | CCS (China Classification Society)

Environment

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