Data sheet

6ES7521-7BH00-0AB0



SIMATIC S7-1500, digital input module DI 16x24 V DC AUX; 16 channels in groups of 8; for 24 V encoder; sensor supply 24 V DC; input type 2 (IEC 61131); input delay parameterizable 0.05..20 ms; isochronous mode up to 250 μs ; integrated counting function up to 20 kHz; pulse stretching; chatter monitoring; signal inversion diagnostics; hardware interrupts: front connector (screw terminals or push-in) and, if applicable, order shield set separately

Product type designation	General information	
Firmware version • FW update possible • FW update possible • Froduct function • I&M data • Isochronous mode • Prioritized startup Engineering with • STEP 7 TIA Portal configurable/integrated from version • PROFIBUS from GSD version/GSD revision • PROFINET from GSD version/GSD revision • PROFINET from GSD version/GSD revision • DI • Counter • Our STEP 7 Counter • Oversampling • NISI Supply votage Rated value (DC) permissible range, lower limit (DC) permissible range, upper limit (DC) permissible range, upper limit (DC) Reverse polarity protection Yes Tapput current Current consumption, max. 550 mA Encoder supply • 24 V Yes • Short-circuit protection • Yes 24 V Pes • Short-circuit protection • Yes 24 V • Short-circuit protection • Yes Output current, max. • Output current per module, max. • Output cursent per module, max. • Output lor posts, yp. • Power loss.	Product type designation	DI 16x24 V DC HS
Five update possible Product function RM data	HW functional status	From FS01
Product function Namb data Yes; Namb to Namb	Firmware version	V1.0.0
I I I I I I I I I I I I I I I I I I I	FW update possible	Yes
• Isochronous mode • Prioritized startup Engineering with • STEP 7 TIA Portal configurable/integrated from version • STEP 7 TIA Portal configurable/integrated from version • STEP 7 TIA Portal configurable/integrated from version • STEP 7 Configurable/integrated from version • PROFIBUS from GSD version/GSD revision • DI • Counter • OI • Counter • Yes • Oversampling • Yes • MSI • Yes • MSI • Yes • MSI • Yes Supply voltage Rated value (DC) • permissible range, lower limit (DC) • permissible range, upper limit (DC) • 24 V • permissible range, upper limit (DC) • 28.8 V Reverse polarity protection • Yes Input current Current consumption, max. • 550 mA Encoder supply Number of outputs • 16; 2x 24 V DC Short-circuit protection • Yes • Short-circuit protection • Output current, max. • Output current, max. • Output current, max. • Output current per module, max. Power olss Power loss Power loss Power loss Power loss Power loss, typ. Input current Type Supply Ty	Product function	
Prioritized startup Prioritized startup Prioritized startup STEP 7 TIA Portal configurable/integrated from version STEP 7 ton Four and integrated from version STEP 7 ton Four and 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 OII Counter Oversampling MSI Yes Oversampling MSI Yes Supply voltage Rated value (DC) Permissible range, upper limit (DC) Permissible range, upper limit (DC) Permissible range, upper limit (DC) Reverse polarity protection Input current Current consumption, max. Encoder supply Number of outputs Short-circuit protection Yes 24 V Short-circuit protection Yes 24 V Short-circuit protection Output current, max. Output current max. Output current per module, max. Output current per module, max. Power loss, typ. Poget loss, typ. Poget loss, typ. Poget loss, typ. Poget loss, typ. Power loss, typ. Poget loss, ty	● I&M data	Yes; I&M0 to I&M3
Engineering with STEP 7 TIA Portal configurable/integrated from version STEP 7 configurable/integrated from version STEP 7 configurable/integrated from version STEP 7 configurable/integrated from version PROFIBUS from GSD version/GSD revision V1.0 / V5.1 PROFIBUS from GSD version/GSD revision V2.3 /- Operating mode • DI	 Isochronous mode 	Yes
STEP 7 TIA Portal configurable/integrated from version STEP 7 configurable/integrated from version PROFIBUS from GSD version/GSD revision PROFIBUT from GSD version/GSD revision PROFIBUT from GSD version/GSD revision PROFIBUT from GSD version/GSD revision Operating mode DI Ves Counter Ves Oversampling Ves MSI Supply voltage Rated value (DC) Permissible range, lower limit (DC) Permissible range, upper limit (DC) Permissible range, upper limit (DC) Permissible range, upper limit (DC) Proper ossible range, upper ossible range, upper limit (DC) Proper ossible	Prioritized startup	Yes
STEP 7 configurable/integrated from version PROFIBUS from GSD version/GSD revision PROFIBUS from GSD version/GSD revision V2.3 /- Operating mode DI Yes Counter Ves Oversampling MSI Yes MSI Supply voltage Rated value (DC) permissible range, lower limit (DC) Permissible range, lower limit (DC) Permissible range, upper limit (DC) Permissible range, upper limit (DC) Permissible range on the backplane bus Current consumption, max. Encoder supply Aumber of outputs Short-circuit protection Output current, max. Output current, max. Output current, max. Output current, max. Output current per module, max. Power loss Power loss, typ. Poyer loss Power loss, typ. Poget Standard Supply Power loss Power loss, typ. Poget loss Power loss Power loss, typ. Poget loss Power loss, typ. Poget loss Power loss Power loss, typ. Poget loss Power loss	Engineering with	
PROFIBUS from GSD version/GSD revision PROFINET from GSD version/GSD revision V2.3 / - Operating mode DI Counter Ves Oversampling Yes MSI Supply voltage Rated value (DC) Permissible range, lower limit (DC) Permissible range, upper limit (DC) Permissible range, upper limit (DC) Reverse polarity protection Ves Input current Current consumption, max. Encoder supply Number of outputs Short-circuit protection Yes 16; 2x 24 V DC Short-circuit protection Yes 24 V Short-circuit protection Yes Yes Ves 16; 2x 24 V DC Short-circuit protection Yes 24 V Short-circuit protection Yes 25 OmA Power Power available from the backplane bus Power loss Power loss Power loss, typ. 7 W Digital inputs	 STEP 7 TIA Portal configurable/integrated from version 	STEP 7 V17 or higher
PROFINET from GSD version/GSD revision Operating mode OI Outer Ves Oversampling Ves MSI Supply voltage Rated value (DC) Permissible range, lower limit (DC) Permissible range, upper limit (DC) Permissible range, upper limit (DC) Reverse polarity protection Ves Input current Current consumption, max. 550 mA Encoder supply Number of outputs Short-circuit protection Yes Short-circuit protection Yes 24 V encoder supply Ves Ves Ves Short-circuit protection Yes Output current, max. Fes Per group, electronic Output current, max. Output current, max. Output current per module, max. Power Power available from the backplane bus Power loss Power loss Power loss, typ. Power loss Power loss Power loss, typ. Poger available from the backplane bus Power loss Power loss, typ. Power loss Power loss Power loss, typ. Poger loss Power loss	 STEP 7 configurable/integrated from version 	V5.5 SP3 / -
Operating mode • DI • Counter • Counter • Oversampling • MSI Yes • MSI Supply voltage Rated value (DC) permissible range, lower limit (DC) permissible range, upper limit (DC) permissible range, upper limit (DC) permissible range, upper limit (DC) permissible range, tower limit (DC) permissible range, tower limit (DC) Reverse polarity protection Yes Input current Current consumption, max. 550 mA Encoder supply Number of outputs Short-circuit protection Yes 24 V encoder supply • 24 V • Short-circuit protection • Output current, max. • Output current, max. • Output current per module, max. Power Power available from the backplane bus Power loss Power loss Power loss Power loss, typ. 7 W Digital inputs	 PROFIBUS from GSD version/GSD revision 	V1.0 / V5.1
DI Counter Counter Counter Coversampling MSI Ves Supply voltage Rated value (DC) Permissible range, lower limit (DC) Permissible range, upper limit (DC) Permissible range,	PROFINET from GSD version/GSD revision	V2.3 / -
Oversampling	Operating mode	
Oversampling MSI Yes Supply voltage Rated value (DC) permissible range, lower limit (DC) permissible range, upper limit (DC) permissible range, upper limit (DC) permissible range, upper limit (DC) Reverse polarity protection Yes Current consumption, max. 550 mA Encoder supply Number of outputs 16; 2x 24 V DC Short-circuit protection Yes 24 V encoder supply • 24 V • Short-circuit protection • Output current, max. • Output current, max. • Output current per module, max. Power Power available from the backplane bus Power loss Power loss, typ. 7 W Digital inputs	• DI	Yes
MSI Supply voitage Rated value (DC) Permissible range, lower limit (DC) Permissible range, upper limi	Counter	Yes
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. 550 mA Encoder supply Number of outputs 16; 2x 24 V DC Short-circuit protection Yes 24 V encoder supply • 24 V • Short-circuit protection Yes; Per group, electronic • Output current, max. 150 mA; per group • Output current per module, max. 300 mA Power Power variable from the backplane bus 0.6 W Power loss, typ. 7 W Digital inputs	 Oversampling 	Yes
Rated value (DC) permissible range, lower limit (DC) permissible range, upper limit (DC) Reverse polarity protection Yes Input current Current consumption, max. 550 mA Encoder supply Number of outputs Short-circuit protection 24 V encoder supply • 24 V • Short-circuit protection Output current, max. • Output current, max. • Output current per module, max. Power Power loss Power loss, typ. Poget imit (DC) 19.2 V 1	• MSI	Yes
permissible range, lower limit (DC) permissible range, upper limit (DC) Reverse polarity protection Yes Input current Current consumption, max. 550 mA Encoder supply Number of outputs Short-circuit protection Yes 24 V encoder supply • 24 V • Short-circuit protection Output current, max. Output current, max. Output current, max. Output current per module, max. Power Power available from the backplane bus Power loss, typ. Power loss, typ. Digital inputs	Supply voltage	
permissible range, upper limit (DC) Reverse polarity protection Yes Input current Current consumption, max. 550 mA Encoder supply Number of outputs Short-circuit protection Yes 24 V encoder supply • 24 V • Short-circuit protection Yes Short-circuit protection Output current, max. Output current, max. Output current per module, max. Power Power available from the backplane bus Power loss, typ. 7 W Digital inputs	Rated value (DC)	24 V
Reverse polarity protection Input current Current consumption, max. Encoder supply Number of outputs Short-circuit protection 24 V encoder supply • 24 V • Short-circuit protection • Output current, max. • Output current per module, max. Power Power available from the backplane bus Power loss. Power loss. Power loss, typ. 7 W Digital inputs	permissible range, lower limit (DC)	19.2 V
Input current Current consumption, max. Encoder supply Number of outputs Short-circuit protection 24 V encoder supply • 24 V • Short-circuit protection • Output current, max. • Output current, per module, max. Power Power available from the backplane bus Power loss, typ. Digital inputs	permissible range, upper limit (DC)	28.8 V
Current consumption, max. Encoder supply Number of outputs Short-circuit protection Yes 24 V encoder supply • 24 V • Short-circuit protection Yes; Per group, electronic • Output current, max. • Output current per module, max. Power Power available from the backplane bus Power loss, typ. Digital inputs	Reverse polarity protection	Yes
Number of outputs Short-circuit protection Yes 24 V encoder supply • 24 V • Short-circuit protection Yes; Per group, electronic • Output current, max. • Output current per module, max. Power Power available from the backplane bus Power loss Power loss, typ. Digital inputs	Input current	
Number of outputs Short-circuit protection Yes 24 V encoder supply • 24 V • Short-circuit protection Output current, max. • Output current per module, max. Power Power available from the backplane bus Power loss Power loss, typ. Digital inputs	Current consumption, max.	550 mA
Short-circuit protection 24 V encoder supply 24 V Short-circuit protection Short-circuit protection Output current, max. Output current per module, max. Power Power available from the backplane bus Power loss Power loss, typ. 7 W Digital inputs	Encoder supply	
24 V encoder supply • 24 V • Short-circuit protection • Output current, max. • Output current per module, max. Power Power available from the backplane bus Power loss Power loss, typ. Digital inputs	Number of outputs	16; 2x 24 V DC
Yes Short-circuit protection Output current, max. Output current per module, max.	Short-circuit protection	Yes
 Short-circuit protection Output current, max. Output current per module, max. Power Power available from the backplane bus Power loss Power loss, typ. Digital inputs 	24 V encoder supply	
Output current, max. Output current per module, max. Output current per module, max. Output current per module, max. Output current per module, max. Output current per module, max. Output current, max. Som Ma Output current, max. Output current, max. Som Ma Output current per module, max.	• 24 V	Yes
● Output current per module, max. Power Power available from the backplane bus Power loss Power loss, typ. 7 W Digital inputs	Short-circuit protection	Yes; Per group, electronic
Power available from the backplane bus Power loss Power loss, typ. 7 W Digital inputs	 Output current, max. 	150 mA; per group
Power loss Power loss, typ. 7 W Digital inputs	 Output current per module, max. 	300 mA
Power loss Power loss, typ. 7 W Digital inputs	Power	
Power loss, typ. 7 W Digital inputs	Power available from the backplane bus	0.6 W
Digital inputs	Power loss	
Digital inputs	Power loss, typ.	7 W
Number of digital inputs 16	Digital inputs	
	Number of digital inputs	16

Digital inputs parameterizable	Yes
Digital inputs, parameterizable	
Source/sink input	P-reading
Input characteristic curve in accordance with IEC 61131, type 2	Yes
Pulse extension	Yes; 0.05 s, 0.1 s, 0.2 s, 0.5 s, 1 s, 2 s
Edge evaluation	Yes; Positive edge, negative edge
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 totalizers max. 10 kHz or 2 totalizers max. 20 kHz + 2 totalizers max. 10
	kHz
Counting frequency, max.	20 kHz
Counting width	32 bit
 Counting direction up/down 	Yes
 Digital input with oversampling 	Yes
— Number, max.	16
— Values per cycle, max.	16
— Resolution, min.	15.625 µs
Input voltage	
Rated value (DC)	24 V
• for signal "0"	-30 to +5 V
• for signal "1"	+11 to +30V
Input current	11110 1300
·	0 4
• for signal "1", typ.	9 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
— 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
Cable length	
• shielded, max.	1 000 m; 600 m for technological functions; depending on input frequency, encoder and cable quality; max. 50 m at 20 kHz
• unshielded, max.	600 m; for technological functions: No
Encoder	
Connectable encoders	
	Yes
2-wire sensor Permissible guidescent current (2 wire concer) may	
— permissible quiescent current (2-wire sensor), max.	2 mA
sochronous mode	
Filtering and processing time (TCI), min.	60 μs; At 50 μs filter time
Bus cycle time (TDP), min.	250 μs
nterrupts/diagnostics/status information	
Diagnostics function	Yes
Alarms	
Diagnostic alarm	Yes
Hardware interrupt	Yes
Diagnoses	
Monitoring the supply voltage	Yes
Monitoring the supply voltage Monitoring of encoder power supply	Yes; short-circuit
Wire-break	Yes; to I < 350 μA
- Chart singuit	
Short-circuit	No
Diagnostics indication LED	
	Yes; green 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	
Suitable for safety functions	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
Weights	
Weight, approx.	240 g

8/16/2023

last modified: