## SIEMENS

## Data sheet

## 6ES7521-1BH00-0AB0



SIMATIC S7-1500, digital input module DI 16x24 V DC HF, 16 channels in groups of 16; of which 2 inputs as counters can be used; input delay 0.05..20 ms; input type 3 (IEC 61131); diagnostics; hardware interrupts: front connector (screw terminals or push-in) to be ordered separately

General information	
Product type designation	DI 16x24VDC HF
HW functional status	from FS04
Firmware version	V2.2.0
FW update possible	Yes
Product function	
● I&M data	Yes; I&M0 to I&M3
<ul> <li>Isochronous mode</li> </ul>	Yes
Prioritized startup	Yes
Engineering with	
<ul> <li>STEP 7 TIA Portal configurable/integrated from version</li> </ul>	V13 SP1 / -
<ul> <li>STEP 7 configurable/integrated from version</li> </ul>	V5.5 SP3 / -
<ul> <li>PROFIBUS from GSD version/GSD revision</li> </ul>	V1.0 / V5.1
<ul> <li>PROFINET from GSD version/GSD revision</li> </ul>	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.	20 mA; with 24 V DC supply
Power	
Power available from the backplane bus	1.1 W
Power loss	
Power loss, typ.	2.6 W
Digital inputs	
Number of digital inputs	16
Digital inputs, parameterizable	Yes
Source/sink input	P-reading
Input characteristic curve in accordance with IEC 61131, type 3	Yes
Digital input functions, parameterizable	
Gate start/stop	Yes

<ul> <li>Freely usable digital input</li> </ul>	Yes
Counter	
— Number, max.	2
— Counting frequency, max.	- 6 kHz
— Counting width	32 bit
— Counting direction up/down	Up
Input voltage	
Rated value (DC)	24 V
• for signal "0"	-30 to +5 V
● for signal "1"	+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 / 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	
<ul> <li>shielded, max.</li> </ul>	1 000 m
• unshielded, max.	600 m
Encoder	
Connectable encoders	
• 2-wire sensor	Yes
<ul> <li>permissible quiescent current (2-wire sensor),</li> </ul>	1.5 mA
max.	
Isochronous mode	
Filtering and processing time (TCI), min.	80 µs; At 50 µs filter time
Filtering and processing time (TCI), min. Bus cycle time (TDP), min.	80 μs; At 50 μs filter time 250 μs
Filtering and processing time (TCI), min. Bus cycle time (TDP), min. Interrupts/diagnostics/status information	250 μs
Filtering and processing time (TCI), min. Bus cycle time (TDP), min. Interrupts/diagnostics/status information Diagnostics function	
Filtering and processing time (TCI), min. Bus cycle time (TDP), min. Interrupts/diagnostics/status information Diagnostics function Alarms	250 μs Yes
Filtering and processing time (TCI), min. Bus cycle time (TDP), min. Interrupts/diagnostics/status information Diagnostics function Alarms • Diagnostic alarm	250 μs Yes Yes
Filtering and processing time (TCI), min. Bus cycle time (TDP), min. Interrupts/diagnostics/status information Diagnostics function Alarms • Diagnostic alarm • Hardware interrupt	250 μs Yes
Filtering and processing time (TCI), min.         Bus cycle time (TDP), min.         Interrupts/diagnostics/status information         Diagnostics function         Alarms         • Diagnostic alarm         • Hardware interrupt         Diagnoses	250 μs Yes Yes
Filtering and processing time (TCI), min.         Bus cycle time (TDP), min.         Interrupts/diagnostics/status information         Diagnostics function         Alarms         • Diagnostic alarm         • Hardware interrupt         Diagnoses         • Monitoring the supply voltage	250 μs Yes Yes Yes
Filtering and processing time (TCI), min.         Bus cycle time (TDP), min.         Interrupts/diagnostics/status information         Diagnostics function         Alarms         • Diagnostic alarm         • Hardware interrupt         Diagnoses         • Monitoring the supply voltage         • Wire-break	250 μs Yes Yes Yes Yes; to I < 350 μA
Filtering and processing time (TCI), min.         Bus cycle time (TDP), min.         Interrupts/diagnostics/status information         Diagnostics function         Alarms         • Diagnostic alarm         • Hardware interrupt         Diagnoses         • Monitoring the supply voltage         • Wire-break         • Short-circuit	250 μs Yes Yes Yes
Filtering and processing time (TCI), min.         Bus cycle time (TDP), min.         Interrupts/diagnostics/status information         Diagnostics function         Alarms         • Diagnostic alarm         • Hardware interrupt         Diagnoses         • Monitoring the supply voltage         • Wire-break         • Short-circuit         Diagnostics indication LED	250 μs Yes Yes Yes Yes; to I < 350 μA No
Filtering and processing time (TCI), min.         Bus cycle time (TDP), min.         Interrupts/diagnostics/status information         Diagnostics function         Alarms         • Diagnostic alarm         • Hardware interrupt         Diagnoses         • Monitoring the supply voltage         • Wire-break         • Short-circuit         Diagnostics indication LED         • RUN LED	250 μs Yes Yes Yes Yes; to I < 350 μA No Yes; green LED
Filtering and processing time (TCI), min.         Bus cycle time (TDP), min.         Interrupts/diagnostics/status information         Diagnostics function         Alarms         • Diagnostic alarm         • Hardware interrupt         Diagnoses         • Monitoring the supply voltage         • Wire-break         • Short-circuit         Diagnostics indication LED         • RUN LED         • ERROR LED	250 μs Yes Yes Yes Yes; to I < 350 μA No Yes; green LED Yes; red LED
Filtering and processing time (TCI), min.         Bus cycle time (TDP), min.         Interrupts/diagnostics/status information         Diagnostics function         Alarms         • Diagnostic alarm         • Hardware interrupt         Diagnoses         • Monitoring the supply voltage         • Wire-break         • Short-circuit         Diagnostics indication LED         • RUN LED         • ERROR LED         • Monitoring of the supply voltage (PWR-LED)	250 μs Yes Yes Yes Yes; to I < 350 μA No Yes; green LED Yes; red LED Yes; green LED
Filtering and processing time (TCI), min.         Bus cycle time (TDP), min.         Interrupts/diagnostics/status information         Diagnostics function         Alarms         • Diagnostic alarm         • Hardware interrupt         Diagnoses         • Monitoring the supply voltage         • Wire-break         • Short-circuit         Diagnostics indication LED         • RUN LED         • Monitoring of the supply voltage (PWR-LED)         • Channel status display	250 μs Yes Yes Yes Yes Yes; to I < 350 μA No Yes; green LED Yes; green LED Yes; green LED Yes; green LED Yes; green LED
Filtering and processing time (TCI), min.         Bus cycle time (TDP), min.         Interrupts/diagnostics/status information         Diagnostics function         Alarms         • Diagnostic alarm         • Hardware interrupt         Diagnoses         • Monitoring the supply voltage         • Wire-break         • Short-circuit         Diagnostics indication LED         • RUN LED         • ERROR LED         • Monitoring of the supply voltage (PWR-LED)         • Channel status display         • for channel diagnostics	250 μs Yes Yes Yes Yes; to I < 350 μA No Yes; green LED Yes; green LED
Filtering and processing time (TCI), min.         Bus cycle time (TDP), min.         Interrupts/diagnostics/status information         Diagnostics function         Alarms         • Diagnostic alarm         • Hardware interrupt         Diagnoses         • Monitoring the supply voltage         • Wire-break         • Short-circuit         Diagnostics indication LED         • RUN LED         • ERROR LED         • Monitoring of the supply voltage (PWR-LED)         • Channel status display         • for channel diagnostics	250 μs Yes Yes Yes Yes Yes; to I < 350 μA No Yes; green LED Yes; green LED Yes; green LED Yes; green LED Yes; green LED
Filtering and processing time (TCI), min.         Bus cycle time (TDP), min.         Interrupts/diagnostics/status information         Diagnostics function         Alarms         • Diagnostic alarm         • Hardware interrupt         Diagnoses         • Monitoring the supply voltage         • Wire-break         • Short-circuit         Diagnostics indication LED         • RUN LED         • ERROR LED         • Monitoring of the supply voltage (PWR-LED)         • Channel status display         • for channel diagnostics         • for module diagnostics	250 μs Yes Yes Yes Yes; to I < 350 μA No Yes; green LED Yes; green LED
Filtering and processing time (TCI), min.         Bus cycle time (TDP), min.         Interrupts/diagnostics/status information         Diagnostics function         Alarms         • Diagnostic alarm         • Hardware interrupt         Diagnoses         • Monitoring the supply voltage         • Wire-break         • Short-circuit         Diagnostics indication LED         • RUN LED         • ERROR LED         • Monitoring of the supply voltage (PWR-LED)         • Channel status display         • for channel diagnostics	250 μs Yes Yes Yes Yes; to I < 350 μA No Yes; green LED Yes; green LED
Filtering and processing time (TCI), min.         Bus cycle time (TDP), min.         Interrupts/diagnostics/status information         Diagnostics function         Alarms         • Diagnostic alarm         • Hardware interrupt         Diagnoses         • Monitoring the supply voltage         • Wire-break         • Short-circuit         Diagnostics indication LED         • RUN LED         • ERROR LED         • Monitoring of the supply voltage (PWR-LED)         • Channel status display         • for channel diagnostics         • for module diagnostics         • potential separation         Potential separation channels         • between the channels	250 μs Yes Yes Yes Yes Yes; to I < 350 μA No Yes; green LED Yes; red LED Yes; green LED Yes; green LED Yes; green LED Yes; green LED Yes; red LED Yes; red LED Yes; red LED
Filtering and processing time (TCI), min.         Bus cycle time (TDP), min.         Interrupts/diagnostics/status information         Diagnostics function         Alarms         • Diagnostic alarm         • Hardware interrupt         Diagnoses         • Monitoring the supply voltage         • Wire-break         • Short-circuit         Diagnostics indication LED         • RUN LED         • ERROR LED         • Monitoring of the supply voltage (PWR-LED)         • Channel status display         • for channel diagnostics         • for module diagnostics         • Dotential separation         Potential separation channels         • between the channels, in groups of	250 μs Yes Yes Yes Yes Yes; to I < 350 μA No Yes; green LED Yes; green LED Yes; green LED Yes; green LED Yes; green LED Yes; green LED Yes; red LED Yes; red LED Yes; red LED Yes; red LED Yes; red LED Yes; red LED
Filtering and processing time (TCI), min.         Bus cycle time (TDP), min.         Interrupts/diagnostics/status information         Diagnostics function         Alarms         • Diagnostic alarm         • Hardware interrupt         Diagnoses         • Monitoring the supply voltage         • Wire-break         • Short-circuit         Diagnostics indication LED         • RUN LED         • ERROR LED         • Monitoring of the supply voltage (PWR-LED)         • Channel status display         • for channel diagnostics         • for module diagnostics         • Potential separation         Potential separation channels         • between the channels, in groups of         • between the channels and backplane bus	250 μs Yes Yes Yes Yes Yes; to I < 350 μA No Yes; green LED Yes; green LED Yes; green LED Yes; green LED Yes; red LED
Filtering and processing time (TCI), min.         Bus cycle time (TDP), min.         Interrupts/diagnostics/status information         Diagnostics function         Alarms         • Diagnostic alarm         • Hardware interrupt         Diagnoses         • Monitoring the supply voltage         • Wire-break         • Short-circuit         Diagnostics indication LED         • RUN LED         • ERROR LED         • Monitoring of the supply voltage (PWR-LED)         • Channel status display         • for channel diagnostics         • for module diagnostics         • Dotential separation         Potential separation channels         • between the channels, in groups of	250 μs Yes Yes Yes Yes Yes; to I < 350 μA No Yes; green LED Yes; red LED Yes; red LED Yes; red LED Yes; red LED Yes; red LED
Filtering and processing time (TCI), min.         Bus cycle time (TDP), min.         Interrupts/diagnostics/status information         Diagnostics function         Alarms         • Diagnostic alarm         • Hardware interrupt         Diagnoses         • Monitoring the supply voltage         • Wire-break         • Short-circuit         Diagnostics indication LED         • RUN LED         • ERROR LED         • Monitoring of the supply voltage (PWR-LED)         • Channel status display         • for channel diagnostics         • for module diagnostics         • Potential separation         Potential separation channels         • between the channels, in groups of         • between the channels and backplane bus         • between the channels and the power supply of the	250 μs Yes Yes Yes Yes Yes; to I < 350 μA No Yes; green LED Yes; green LED Yes; green LED Yes; green LED Yes; red LED
Filtering and processing time (TCI), min.         Bus cycle time (TDP), min.         Interrupts/diagnostics/status information         Diagnostics function         Alarms         • Diagnostic alarm         • Hardware interrupt         Diagnoses         • Monitoring the supply voltage         • Wire-break         • Short-circuit         Diagnostics indication LED         • RUN LED         • ERROR LED         • Monitoring of the supply voltage (PWR-LED)         • Channel status display         • for channel diagnostics         • for module diagnostics         • between the channels         • between the channels         • between the channels and backplane bus         • between the channels and the power supply of the electronics	250 μs Yes Yes Yes Yes Yes; to I < 350 μA No Yes; green LED Yes; red LED Yes; green LED Yes; green LED Yes; red LED
Filtering and processing time (TCI), min.         Bus cycle time (TDP), min.         Interrupts/diagnostics/status information         Diagnostics function         Alarms         • Diagnostic alarm         • Hardware interrupt         Diagnoses         • Monitoring the supply voltage         • Wire-break         • Short-circuit         Diagnostics indication LED         • RUN LED         • ERROR LED         • Monitoring of the supply voltage (PWR-LED)         • Channel status display         • for channel diagnostics         • for module diagnostics         • Dotential separation         Potential separation channels         • between the channels, in groups of         • between the channels and backplane bus         • between the channels and backplane bus         • between the channels and the power supply of the electronics	250 μs Yes Yes Yes Yes Yes; to I < 350 μA No Yes; green LED Yes; green LED Yes; green LED Yes; green LED Yes; green LED Yes; red LED Yes; red LED Yes; red LED Yes; red LED Yes; red LED

Suitable for safety functions	No
Ambient conditions	
Ambient temperature during operation	
<ul> <li>horizontal installation, min.</li> </ul>	-30 °C; From FS05
<ul> <li>horizontal installation, max.</li> </ul>	60 °C
<ul> <li>vertical installation, min.</li> </ul>	-30 °C; From FS05
<ul> <li>vertical installation, max.</li> </ul>	40 °C
Altitude during operation relating to sea level	
<ul> <li>Installation altitude above sea level, max.</li> </ul>	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
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