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
 Isochronous mode 	Yes
Prioritized startup	Yes
Engineering with	
 STEP 7 TIA Portal configurable/integrated from version 	V13 SP1 / -
 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.	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

 Freely usable digital input Yes Counter Number, max. Counting frequency, max. E ktiz Counting width 32 bit Counting direction upbdown Up Input voltage • Reted value (DC) 24 V for signal '0" -30 to 45 V for signal '1", hp. 2.5 mA Input certain for signal '1", hp. 2.5 mA Input certain for signal '1", hp. 1.6 or signal '1", hp. 2.5 mA Input certain for signal '1", hp. 2.5 mA Input certain for signal '1", hp. 2.5 mA Input certain for signal '1", hp. 2.5 mA Input certain for signal '1", hp. 2.5 mA Input certain for interrupt inputs at '0" to "1", min. 0.05 ms at '1" to "0", min. 0.05 ms at '1" to "0", max. 20 ms for interrupt inputs at rot "1" to "1", min. 0.05 ms at '1" to "0", max. 20 ms for interrupt inputs at '1" to "0", min. 0.05 ms at '1" to "0", min. 0.00 m at oth to "1", min. 0.00 m at oth to "1", min. balaeted, max. at oth the mathematice at oth the mathe
 - Number, max. - Counting interpretation in protocols and interpretation in the interpretation interp
- Courting frequency, max. 92 bit - Counting direction up/down Up Input civilized value (DC) 24 V • for signal °1*. 490. Input civilized value (DC) 24 V • for signal °1*. 490. Input civilized value (DC) 25 mA Input civilized related value of input voltage • for signal °1*. 190. 1901 civilized related value of input voltage • for signal °1*. 190. 1901 civilized related value of input voltage • for signal °1*. 190. • for signal °1*. 190. • of signal °1*. • of signa
- Counting with 32 bit - Counting direction up/down Up Input voltage 24 V • Reted value (CC) 24 V • for signal '1' +11 to +30V Input delay (for reted value of input voltage) 5 • for signal '1', typ. 2.5 mA Input delay (for reted value of input voltage) 6 for standard inputs - at '1' to '1', max. 20 ms for interrupt liquits - parameterizable Yes Cobie length - parameterizable Yes Cobie length - • parameterizable Yes Cobie length - • parameterizable Yes Cobie length - • Subleded, max. 600 m Encoder - Connecable encoders - <t< td=""></t<>
— Counting direction up/down Up Input voltage
Input voltage • Rated value (DC) 24 V • for signal "0" -30 to +5 V • for signal "1" +11 to +30V Input delay (for taded value of input voltage) - for standard inputs - - parameterizable Yes; 0.05 / 0.1 / 0.4 / 1.8 / 3.2 / 12.8 / 20 ms - at 70 to "1", min. 0.06 ms - at 70 to "1", min. 0.05 ms - at 1" to 70, min. 0.05 ms - at 1" to 70, max. 20 ms for iterungl inputs - - parameterizable Yes - parameterizable Yes - parameterizable Yes for itechnological functions - - parameterizable Yes Cobie length 1000 m • unshielded, max. 600 m Encoder - Concatable encoders Yes - permissible quiescent current (2-wire sensor), max. 1.5 mA Bas cycle time (TDP), min. 250 µs Diagnostic alarm Yes Platering and processing time (TOI), min. 80 µs; At 50 µs filter time
• Rated value (DC) 24 V • for signal '0' -30 to +5 V • for signal '1'. +11 to +30V Input delay (for rated value of input voltage) - for signal '1'. typ. 2.5 mA Input delay (for rated value of input voltage) - for signal '1'. typ. 2.5 mA Input delay (for rated value of input voltage) - for standard inputs - - at '0' to '1', max. 20 ms - at '1' to '0', max. 20 ms - at '1' to '0', max. 20 ms - at '1' to '0', max. 20 ms - parameterizable Yes for technological functions - - parameterizable Yes Cable length - • shelded, max. 600 m Encoder - Connectable encoders Yes • 2-wirs sensor Yes • 2-wirs sensor Yes - 1.5 mA -
 • for signal "0" - 30 to +5 V + tor signal "1" + 11 to +30V Input degay (for rated value of input voltage) for sindnard inputs - parameterizable - at "0" to "1", min. - 0.06 ms - at "0" to "1", min. - 0.06 ms - at "0" to "1", max. 20 ms - at "1" to "0", max. 20 ms for interrupt inputs - parameterizable Yes Cable length - shielded, max. 600 m - and "1" to "0", min. 250 µs - at "1" to "0", max. 250 µs - parameterizable Yes - parameterizable - parameterizable
• 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 *1" to *0", min. 0.05 ms - at *1" to *0", min. 0.05 ms - at *1" to *0, max. 20 ms - at *1" to *0, max. 20 ms - at *1" to *0, max. 20 ms for itempological functions - - parameterizable Yes Cable length - - shelded, max. 600 m Connectable encoders - - 2-wire sensor Yes - parameterizable Yes - concous mode - - maxishle quiescent current (2-wire sensor), max. 600 m - 2-wire sensor Yes - distributed, information 25 us Diagnostic alarm Yes - blagnostic alarm Yes - blagnostic alarm Yes
Input current 2.5 mA for signal "1", typ. 2.5 mA Input delay (for rated value of input voltage) 5 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" to "0", min. 0.05 ms - at "1" to "0", max. 20 ms - parameterizable Yes Cable length - - sinielded, max. 1000 m - sinishielded, max. 600 m Encoder - Connectable encoders Yes - parmissible quiescent current (2-wire sensor), mox. 1.5 mA Interrupts
• 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", max. 2.0 ms - at "0" to "1", max. 20 ms - at "1" to "0", max. 20 ms - parameterizable Yes for technological functions - - parameterizable Yes Cable length 1000 m • shielded, max. 600 m Encoder - Connectable encoders - • 2-wire sensor Yes - permissible quiescent current (2-wire sensor), max. 1.5 mA sochonous mode - Filtering and processing time (TCI), min. 26 μs /s /s 150 μs filter time Bus cycle time (TDP). min. 250 μs Interrupts/diagnostics/status information Yes Diagnoses - • Nonitoring the suppit voltage Yes; to
Input delay (for rate value of input voltage) for standard inputs
for standard inputs Yes; 0.05 / 0.1 / 0.4 / 1.6 / 3.2 / 12.8 / 20 ms
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 "1" to "0", max. 20 ms parameterizable Yes for technological functions
at "0" to "1", min. 0.05 ms at "0" to "1", max. 20 ms at "1" to "0", max. 20 ms at "1" to "0", max. 20 ms for interrupt inputs 20 ms parameterizable Yes for technological functions
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 20 ms parameterizable Yes for technological functions parameterizable Yes Cable length 1000 m • unshielded, max. 600 m Encoder 600 m Connectable encoders Yes permissible quiescent current (2-wire sensor). 1.5 mA max. 280 μs; At 50 μs filter time Bus cycle time (TDP), min. 280 μs; At 50 μs filter time Diagnostics function Yes Airms 200 μs Obignostic alarm Yes • Hardware interrupt Yes Diagnostic alarm Yes • Wre-break Yes; to I < 350 μA
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. 600 m shielded, max. 600 m barameterizable Yes Connectable encoders Yes permissible quiescent current (2-wire sensor), max. 1000 m 2-wire sensor Yes permissible quiescent current (2-wire sensor), max. 80 µs; At 50 µs filter time Bus cycle time (TDP), min. 80 µs; At 50 µs filter time Bus cycle time (TDP), min. 250 µs Interrupts/diagnostics/status information Yes Diagnostics function Yes + lardware interrupt Yes • Diignostic alarm Yes; to 1 < 350 µA
at "1" to "0", max. 20 ms for interrupt inputs parameterizable Yes Gable length - shielded, max. 000 m Encodor Connectable encoders permissible quiescent current (2-wire sensor), max. 1.5 mA Stochronous mode Filtering and processing time (TCI), min. 80 us; At 50 us filter time Bus cycle time (TDP), min. 250 us Interrupt diagnostic status information Diagnostic status Diagnostic status Monitoring the supply voltage Ves Vire-break Yes; yes (1 < 350 µA
for interrupt inputs Yes parameterizable Yes for technological functions
for technological functions Yes Cable length 1000 m • shielded, max. 1000 m • unshielded, max. 600 m Encodar 600 m Connectable encoders Yes • 2-wire sensor Yes - permissible quiescent current (2-wire sensor), max. 1.5 mA Isochronous mode 80 μs; At 50 μs filter time Bus cycle time (TDP), min. 80 μs; At 50 μs filter time Bus cycle time (TDP), min. 250 μs Interrupts/diagnostics/status information Yes Alarms Yes • Diagnostic alarm Yes • Monitoring the supply voltage Yes • Monitoring the supply voltage Yes; to I < 350 μA
parameterizable Yes Cable length - • shielded, max. 600 m • unshielded, max. 600 m Encodor - Connectable encoders - • 2-wire sensor Yes - permissible quiescent current (2-wire sensor), max. 1.5 mA Isochronous mode - Filtering and processing time (TCI), min. 80 μs; At 50 μs filter time Bus cycle time (TDP), min. 250 μs Interrupts/diagnostics/status information Yes Diagnostic function Yes Atarms - • Diagnostic function Yes • Hardware interrupt Yes • Diagnostic sindication LED Yes; to I < 350 μA
Cable length • shielded, max. 1 000 m • unshielded, max. 600 m Encoder 600 m Connectable encoders • 2-wire sensor • 2-wire sensor Yes permissible quiescent current (2-wire sensor), max. 1.5 mA Isochronous mode 1.5 mA Filtering and processing time (TCI), min. 80 µs; At 50 µs filter time Bus cycle time (TDP), min. 250 µs Interrupts/diagnostics/status information 260 µs Diagnostic function Yes • Diagnostic function Yes • Diagnostic alarm Yes • Hardware interrupt Yes Diagnoses Yes (yes / 450 µA) • Wire-break Yes; to 1 < 350 µA
• shielded, max. 1 000 m • unshielded, max. 600 m Encoder 600 m Connectable encoders • • 2-wire sensor Yes permissible quiescent current (2-wire sensor), max. 1.5 mA Sochronous mode Filtering and processing time (TCI), min. Bus cycle time (TDP), min. 250 μs Interrupts/diagnostics/status information 250 μs Diagnostics function Yes Alarms • • Diagnostic alarm Yes • Hardware interrupt Yes • Monitoring the supply voltage Yes, yes (1 < 350 μA
• unshielded, max. 600 m Encoder Connectable encoders Yes • 2-wire sensor Yes - permissible quiescent current (2-wire sensor), max. 1.5 mA Isochronous mode Filtering and processing time (TCI), min. Bus cycle time (TDP), min. 80 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 Diagnostic sindication LED Yes; to I < 350 μA
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Connectable encoders Yes • 2-wire sensor Yes - permissible quiescent current (2-wire sensor), max. 1.5 mA Isochronous mode 1.5 mA Filtering and processing time (TCI), min. 80 µs; At 50 µs filter time Bus cycle time (TDP), min. 250 µs Interrupts/diagnostics/status information 250 µs Diagnostics function Yes Alarms Yes Obignostic alarm Yes • Diagnostic alarm Yes • Monitoring the supply voltage Yes Vire-break Yes; to I < 350 µA
Connectable encoders Yes • 2-wire sensor Yes - permissible quiescent current (2-wire sensor), max. 1.5 mA Isochronous mode 1.5 mA Filtering and processing time (TCI), min. 80 µs; At 50 µs filter time Bus cycle time (TDP), min. 250 µs Interrupts/diagnostics/status information 250 µs Diagnostics function Yes Alarms Yes Obignostic alarm Yes • Diagnostic alarm Yes • Monitoring the supply voltage Yes Vire-break Yes; to I < 350 µA
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Filtering and processing time (TCI), min. 80 μs; At 50 μs filter time Bus cycle time (TDP), min. 250 μs Interrupts/diagnostics/status information Yes Diagnostic function Yes Alarms Yes • Diagnostic alarm Yes • Hardware interrupt Yes Diagnoses Yes; to I < 350 μA
Bus cycle time (TDP), min. 250 µs Interrupts/diagnostics/status information Ves Alarms Yes • Diagnostic alarm Yes • Hardware interrupt Yes Diagnoses Yes; to I < 350 µA
Interrupts/diagnostics/status information Diagnostic function Yes Alarms Yes • Diagnostic alarm Yes • Hardware interrupt Yes Diagnoses Yes • Wire-break Yes; to I < 350 μA
Diagnostics function Yes Alarms Diagnostic alarm Hardware interrupt Yes Hardware interrupt Yes Diagnoses Monitoring the supply voltage Yes; to I < 350 μA Short-circuit No Diagnostics indication LED RUN LED Yes; green LED ERROR LED Yes; green LED Yes; green LED Onitoring of the supply voltage (PWR-LED) Yes; green LED Yes; green LED On the supply voltage (PWR-LED) Yes; green LED Yes; red LED Yes; red LED Yes; red LED Potential separation Potential separation channels Potential separation
Diagnostics function Yes Alarms Diagnostic alarm Hardware interrupt Yes Hardware interrupt Yes Diagnoses Monitoring the supply voltage Yes; to I < 350 μA Short-circuit No Diagnostics indication LED RUN LED Yes; green LED ERROR LED Yes; green LED Yes; green LED Onitoring of the supply voltage (PWR-LED) Yes; green LED Yes; green LED On the supply voltage (PWR-LED) Yes; green LED Yes; red LED Yes; red LED Yes; red LED Potential separation Potential separation channels Potential separation
Alarms Yes • Diagnostic alarm Yes • Hardware interrupt Yes Diagnoses Yes • Monitoring the supply voltage Yes; to I < 350 μA
• Diagnostic alarmYes• Hardware interruptYesDiagnoses• Monitoring the supply voltageYes• Wire-breakYes; to I < 350 μA
• Hardware interruptYesDiagnoses• Monitoring the supply voltageYes• Wire-breakYes; to I < 350 μA
Diagnoses Yes • Monitoring the supply voltage Yes; to I < 350 µA
• Monitoring the supply voltageYes• Wire-breakYes; to I < 350 μA
• Wire-break Yes; to I < 350 μA
• Short-circuitNoDiagnostics indication LED• RUN LED• RUN LED• ERROR LED• ERROR LED• Monitoring of the supply voltage (PWR-LED)• Yes; green LED• Channel status display• for channel diagnostics• for module diagnostics• for module diagnostics• Yes; red LED• Potential separation
Diagnostics indication LED Yes; green LED • RUN LED Yes; red 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
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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
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
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Potential separation Potential separation channels
Potential separation channels
a potycop the chappele
between the channels No
• between the channels, in groups of 16
between the channels and backplane bus Yes
between the channels and the power supply of the No
electronics
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; From FS05
 horizontal installation, max. 	60 °C
 vertical installation, min. 	-30 °C; From FS05
 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
last modified:	7/30/2021 🖸