

# SIMATIC S7-1500 Advanced Controllers

I/O modules

Digital modules

## SM 521 digital input modules

### Overview



- 16 and 32-channel digital input modules
- For flexible adaptation of the controller to the corresponding task
- For subsequent expansion of the system with additional inputs
- 35 mm wide modules with parameters and diagnostic functions
- 25 mm wide modules for use in tight spaces: particularly economical, without parameters or diagnostic functions

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### Technical specifications

Article number	6ES7521-1BH00-0AB0	6ES7521-1BL00-0AB0	6ES7521-1BH50-0AA0	6ES7521-1FH00-0AA0	6ES7521-7EH00-0AB0
	S7-1500, DI 16X24VDC HF	S7-1500, DI 32X24VDC HF	S7-1500, DI 16X24VDC SRC BA	S7-1500, DI 16X230VAC BA	S7-1500, DI 16 X 24...125V UC HF
<b>General information</b>					
Product type designation	DI 16x24VDC HF	DI 32x24VDC HF	DI 16x24VDC SRC BA	DI 16x230VAC BA	DI 16x24 ... 125VUC HF
<b>Product function</b>					
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
<b>Engineering with</b>					
• STEP 7 TIA Portal configurable/integrated as of version	V13 SP1 / -	V13 SP1 / -	V12 / V12	V12 / V12	V13 SP1 / -
• STEP 7 configurable/integrated as of version	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -
• PROFIBUS as of GSD version/GSD revision	V1.0 / V5.1	V1.0 / V5.1	V1.0 / V5.1	V1.0 / V5.1	V1.0 / V5.1
• PROFINET as of GSD version/GSD revision	V2.3 / -	V2.3 / -	V2.3 / -	V2.3 / -	V2.3 / -
<b>Operating mode</b>					
• DI	Yes	Yes	Yes	Yes	Yes
• Counter	Yes	Yes	No	No	No
• Oversampling	No	No	No	No	No
• MSI	Yes	Yes	Yes	Yes	Yes
<b>Supply voltage</b>					
Type of supply voltage	DC	DC	DC		
Rated value (DC)	24 V	24 V			
Reverse polarity protection	Yes	Yes			
<b>Digital inputs</b>					
Number of digital inputs	16	32	16	16	16
Digital inputs, parameterizable	Yes	Yes	No	No	Yes
Source/sink input	P-reading	P-reading	m-reading	P-reading	Yes
Input characteristic curve in accordance with IEC 61131, type 1				Yes	
Input characteristic curve in accordance with IEC 61131, type 3	Yes	Yes	Yes		Yes; at 24 V DC
<b>Digital input functions, parameterizable</b>					
• Gate start/stop	Yes	Yes			
• Freely usable digital input	Yes	Yes			
• Counter					
- Number, max.	2	2			
- Counting frequency, max.	1 kHz	1 kHz			
- Counting width	32 bit	32 bit			
- Counting direction up/down	Up	Up			

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### Technical specifications (continued)

Article number	6ES7521-1BH00-0AB0 S7-1500, DI 16X24VDC HF	6ES7521-1BL00-0AB0 S7-1500, DI 32X24VDC HF	6ES7521-1BH50-0AA0 S7-1500, DI 16X24VDC SRC BA	6ES7521-1FH00-0AA0 S7-1500, DI 16X230VAC BA	6ES7521-7EH00-0AB0 S7-1500, DI 16 X 24...125V UC HF
<b>Standards, approvals, certificates</b>					
Suitable for safety functions	No	No	No	No	No
<b>Ambient conditions</b>					
<b>Ambient temperature during operation</b>					
• horizontal installation, min.	0 °C	0 °C	0 °C	0 °C	0 °C
• horizontal installation, max.	60 °C	60 °C	60 °C	60 °C	60 °C
• vertical installation, min.	0 °C	0 °C	0 °C	0 °C	0 °C
• vertical installation, max.	40 °C	40 °C	40 °C	40 °C	40 °C
<b>Decentralized operation</b>					
Prioritized startup	Yes	Yes	Yes	Yes	Yes
<b>Dimensions</b>					
Width	35 mm	35 mm	35 mm	35 mm	35 mm
Height	147 mm	147 mm	147 mm	147 mm	147 mm
Depth	129 mm	129 mm	129 mm	129 mm	129 mm
<b>Weights</b>					
Weight, approx.	240 g	260 g	230 g	300 g	240 g
Article number	<b>6ES7521-1BH10-0AA0</b> S7-1500, DI 16X24VDC BA		<b>6ES7521-1BL10-0AA0</b> S7-1500, DI 32X24VDC BA		
<b>General information</b>					
Product type designation	DI 16 x 24 V DC BA		DI 32x24VDC BA		
<b>Product function</b>					
• I&M data	Yes; I&M0 to I&M3		Yes; I&M0 to I&M3		
<b>Engineering with</b>					
• STEP 7 TIA Portal configurable/ integrated as of version	V13 / V13		V13 / V13		
• STEP 7 configurable/integrated as of version	V5.5 SP3 / -		V5.5 SP3 / -		
• PROFIBUS as of GSD version/ GSD revision	V1.0 / V5.1		V1.0 / V5.1		
• PROFINET as of GSD version/ GSD revision	V2.3 / -		V2.3 / -		
<b>Operating mode</b>					
• DI	Yes		Yes		
• Counter	No		No		
• MSI	Yes		Yes		
<b>Supply voltage</b>					
Type of supply voltage	DC		DC		
Rated value (DC)	24 V		24 V		
<b>Digital inputs</b>					
Number of digital inputs	16		32		
Digital inputs, parameterizable	No		No		
Source/sink input	P-reading		P-reading		
Input characteristic curve in accordance with IEC 61131, type 3	Yes		Yes		
<b>Input voltage</b>					
• Type of input voltage	DC		DC		
• Rated value (DC)	24 V		24 V		
• for signal "0"	-30 to +5V		-30 to +5V		
• for signal "1"	+11 to +30V		+11 to +30V		
<b>Input current</b>					
• for signal "1", typ.	2.7 mA		2.7 mA		
<b>Input delay (for rated value of input voltage)</b>					
<b>for standard inputs</b>					
- parameterizable	No		No		
<b>for interrupt inputs</b>					
- parameterizable	No		No		
<b>for counter/technological functions</b>					
- parameterizable	No		No		

## Technical specifications (continued)

Article number	6ES7521-1BH10-0AA0 S7-1500, DI 16X24VDC BA	6ES7521-1BL10-0AA0 S7-1500, DI 32X24VDC BA
<b>Cable length</b>		
• shielded, max.	1 000 m	1 000 m
• unshielded, max.	600 m	600 m
<b>Encoder</b>		
<b>Connectable encoders</b>		
• 2-wire sensor	Yes	Yes
- permissible quiescent current (2-wire sensor), max.	1.5 mA	1.5 mA
<b>Isochronous mode</b>		
Isochronous operation (application synchronized up to terminal)	No	No
<b>Interrupts/diagnostics/status information</b>		
Diagnostics function	No	No
<b>Alarms</b>		
• Diagnostic alarm	No	No
• Hardware interrupt	No	No
<b>Diagnostic messages</b>		
• Monitoring the supply voltage	No	No
• Wire-break	No	No
• Short-circuit	No	No
<b>Diagnostics indication LED</b>		
• RUN LED	Yes; Green LED	Yes; Green LED
• ERROR LED	Yes; Red LED	Yes; Red LED
• Monitoring of the supply voltage (PWR-LED)	No	No
• Channel status display	Yes; Green LED	Yes; Green LED
• for channel diagnostics	No	No
• for module diagnostics	No	No
<b>Potential separation</b>		
<b>Potential separation channels</b>		
• between the channels and backplane bus	Yes	Yes
<b>Isolation</b>		
Isolation tested with	707 V DC (type test)	707 V DC (type test)
<b>Standards, approvals, certificates</b>		
Suitable for safety functions	No	No
<b>Ambient conditions</b>		
<b>Ambient temperature during operation</b>		
• horizontal installation, min.	0 °C	0 °C
• horizontal installation, max.	60 °C	60 °C
• vertical installation, min.	0 °C	0 °C
• vertical installation, max.	40 °C	40 °C
<b>Decentralized operation</b>		
Prioritized startup	Yes	Yes
<b>Dimensions</b>		
Width	25 mm	25 mm
Height	147 mm	147 mm
Depth	129 mm	129 mm
<b>Weights</b>		
Weight, approx.	230 g	260 g
<b>Other</b>		
Note:	Supplied incl. 40-pole push-in front connectors	Supplied incl. 40-pole push-in front connectors

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## SM 521 digital input modules

Ordering data	Article No.	Article No.
<b>SM 521 digital input modules</b> <u>Module width 35 mm</u> 16 inputs, 24 V DC, isolated, parameterizable diagnostics and hardware interrupts 32 inputs, 24 V DC, isolated, parameterizable diagnostics and hardware interrupts 16 inputs, 24 V DC, isolated, input delay 3.2 ms 16 inputs, 230 V AC, isolated, input delay 20 ms 16 inputs, 24 ... 125 V UC, input delay 0.05 ... 20 ms, parameterizable diagnostics and hardware interrupts <u>Module width 25 mm;</u> <u>front connector (push-in)</u> <u>included in delivery package</u> 16 inputs, 24 V DC, isolated 32 inputs, 24 V DC, isolated	<b>6ES7521-1BH00-0AB0</b>  <b>6ES7521-1BL00-0AB0</b>  <b>6ES7521-1BH50-0AA0</b>  <b>6ES7521-1FH00-0AA0</b>  <b>6ES7521-7EH00-0AB0</b>  <b>6ES7521-1BH10-0AA0</b> <b>6ES7521-1BL10-0AA0</b>	<b>DIN A4 labeling sheets</b> For 35 mm modules; 10 sheets with 10 labeling strips each for I/O modules; perforated, Al gray For 25 mm modules; 10 sheets with 20 labeling strips each for I/O modules; perforated, Al gray <b>U connector</b> 5 units; spare part <b>Universal front door for I/O modules</b> For 35 mm modules; 5 front doors; with 5 labeling strips (front) and 5 cabling diagrams per front door; spare part For 25 mm modules; 5 front doors; with 5 labeling strips (front) and 5 cabling diagrams per front door; spare part <b>SIMATIC Manual Collection</b> Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC <b>SIMATIC Manual Collection update service for 1 year</b> Current "Manual Collection" DVD and the three subsequent updates
<b>Accessories</b> <b>Front connectors</b> For 35 mm modules; including four potential bridges, cable ties and individual labeling strips, 40-pin <ul style="list-style-type: none"> <li>• Screw terminals</li> <li>• Push-in</li> </ul> For 25 mm modules; including cable ties and individual labeling strips; push-in terminal 40-pin; spare part <b>Potential bridges for front connectors</b> For 35 mm modules; 20 pieces; spare part	<b>6ES7592-1AM00-0XB0</b> <b>6ES7592-1BM00-0XB0</b> <b>6ES7592-1BM00-0XA0</b>  <b>6ES7592-3AA00-0AA0</b>	<b>6ES7592-2AX00-0AA0</b>  <b>6ES7592-1AX00-0AA0</b>  <b>6ES7590-0AA00-0AA0</b>  <b>6ES7528-0AA00-7AA0</b>  <b>6ES7528-0AA00-0AA0</b>  <b>6ES7998-8XC01-8YE0</b>  <b>6ES7998-8XC01-8YE2</b>

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