

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Selected official pages for procurement and maintenance review

PRODUCT BRAND

Siemens

PRODUCT MODEL

6ES7521-1BH50-0AA0

SIMATIC S7-1500 / ET 200MP DI 16x24VDC SRC BA. Sixteen-channel, 24 V DC sourcing digital input module, reading M.

OFFICIAL SOURCE

Siemens: DI 16x24VDC SRC BA Digital Input Module
A5E03486159-AD | Manual, 09/2016

Open the original Siemens manual

Included: safety and preface, properties, accessories, terminal assignment, potential jumpers and technical specifications. Nine original pages follow this cover (source pp. 3-4, 11-14 and 21-23); original pagination is unchanged.

For complete address-space, diagnostic and system-installation procedures, use the full applicable Siemens manuals. This dated extract is not a current firmware or lifecycle statement.

AMIKON PRODUCT SUPPORT

+86-18020776786

INFO@AMIKON.CN

AMIKONG.COM

Amikon prepared this independent reference package. Siemens is the author of the appended original pages.

Legal information

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 DANGER
indicates that death or severe personal injury will result if proper precautions are not taken.
 WARNING
indicates that death or severe personal injury may result if proper precautions are not taken.
 CAUTION
indicates that minor personal injury can result if proper precautions are not taken.
NOTICE
indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

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The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

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We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

Preface

Purpose of the documentation

This manual supplements the S7-1500/ET 200MP (<https://support.industry.siemens.com/cs/ww/en/view/59191792>) system manual.

Functions that relate in general to the systems are described in this system manual.

The information provided in this manual and in the system/function manuals supports you in commissioning the systems.

Changes compared to previous version

Compared to the previous version, this manual contains the following change:

Original texts of the license conditions and copyright notes for open-source software are available on the Internet as of 09/2016.

Conventions

The term "CPU" is used in this manual both for the CPUs of the S7-1500 automation system and for interface modules of the ET 200MP distributed I/O system.

Please also observe notes marked as follows:

Note

A note contains important information on the product described in the documentation, on the handling of the product or on the section of the documentation to which particular attention should be paid.

Product overview

2.1 Properties

Article number

6ES7521-1BH50-0AA0

View of the module

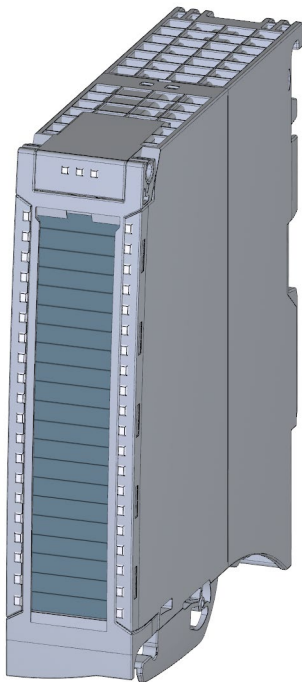


Figure 2-1 View of the DI 16x24VDC SRC BA module

Properties

The module has the following technical properties:

- 16 digital inputs; electrically isolated in groups of 16
- Reading M
- Rated input voltage 24 V DC
- Suitable for switches and 2-/3-/4-wire proximity switches

The module supports the following functions:

Table 2- 1 Version dependencies of the module functions

Function	Firmware version of the module	Configuration software	
		STEP 7 (TIA Portal)	GSD file in STEP 7 (TIA Portal) V12 or higher, or STEP 7 V5.5 SP3 or higher
Firmware update	V1.0.0 or higher	V12 or higher	X
Identification data I&M0 to I&M3	V1.0.0 or higher	V12 or higher	X
Module-internal Shared Input (MSI)	V2.0.0 or higher	V13 Update 3 or higher (PROFINET IO only)	X (PROFINET IO only)
Configurable submodules / sub-modules for Shared Device	V2.0.0 or higher	V13 Update 3 or higher (PROFINET IO only)	X (PROFINET IO only)
Configurable after interface module IM 155-5 DP ST	V2.0.0 or higher	V13 or higher	X

You can configure the module with STEP 7 (TIA Portal) and with a GSD file.

Accessories

The following accessories are supplied with the module and can also be ordered separately as spare parts:

- Labeling strips
- U connector
- Universal front door

Other components

The following component can be ordered separately:

Front connectors, including potential jumpers and cable ties

You can find additional information on accessories in the S7-1500/ET 200MP (<http://support.automation.siemens.com/WW/view/en/59191792>) system manual.

This section contains the block diagram of the module and outlines various wiring options.

You can find information on wiring the front connector, creating a cable shield, etc. in the Wiring section of the S7-1500/ET 200MP

(<http://support.automation.siemens.com/WW/view/en/59191792>) system manual.

Wiring and block diagram

The figure below shows you how to connect the module and channel addressing (input byte a to input byte b)

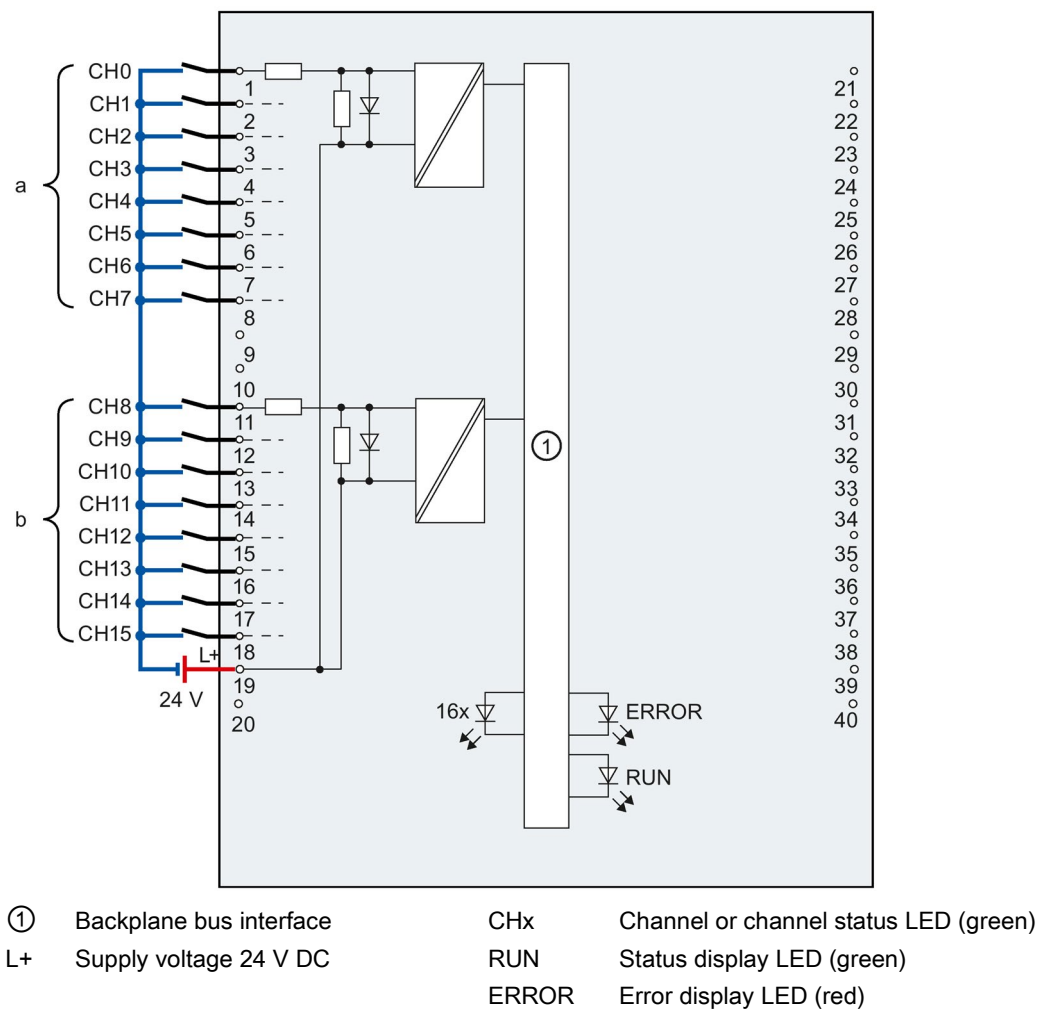


Figure 3-1 Block diagram and terminal assignment

Tip: Using the potential jumpers

Use the potential jumpers supplied with the front connector if you want to distribute the 24V DC supply voltage to a neighboring module. This helps you to avoid having to terminate two wires to one terminal.

Proceed as follows:

1. Connect the 24 V DC supply voltage to terminals 19 and 20.
2. Insert the potential jumpers between terminals 19 and 39 (L+) and between terminals 20 and 40 (M).
3. Use the terminals 39 and 40 to distribute the potential to the next module

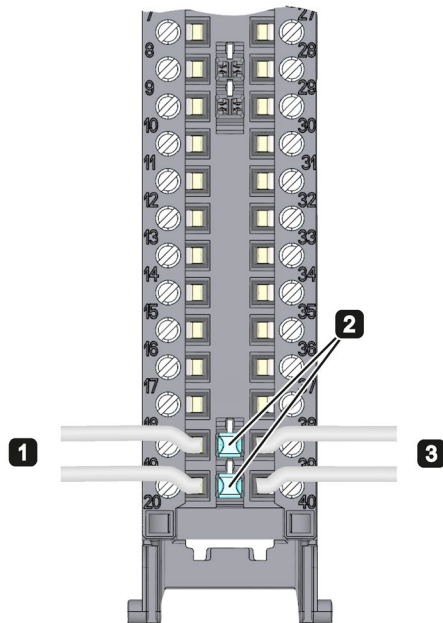


Figure 3-2 Using the potential jumpers

Note

Ensure that the maximum current load of 8 A per potential jumper is not exceeded.

Technical specifications

Technical specifications of the DI 16x24VDC SRC BA

	6ES7521-1BH50-0AA0
General information	
Product type designation	DI 16x24VDC SRC BA
Hardware functional status	FS01
Firmware version	V2.0.0
FW update possible	Yes
Product function	
I&M data	Yes; I&M0 to I&M3
Engineering with	
STEP 7 TIA Portal can be configured/integrated as of version	V12 / V12
STEP 7 can be configured/integrated as of version	V5.5 SP3 / -
PROFIBUS as of GSD version/GSD revision	V1.0 / V5.1
PROFINET as of GSD version/GSD revision	V2.3 / -
Operating mode	
DI	Yes
Counters	No
MSI	Yes
Supply voltage	
Valid range, low limit (DC)	20.4 V
Valid range, high limit (DC)	28.8 V
Power	
Power consumption from the backplane bus	0.9 W
Power loss	
Power loss, typ.	2.8 W
Digital inputs	
Number of inputs	16
Configurable digital inputs	No
Sinking/sourcing input	reading m
Input characteristic curve acc. to IEC 61131, type 3	Yes
Input voltage	
Type of input voltage	DC
Rated value (DC)	24 V
for signal "0"	-5 to +30 V
for signal "1"	-11 to -30 V

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Input current for signal "1", typ.	4.5 mA
Input delay (for rated value of input voltage) For standard inputs	
• Configurable	No
• with "0" to "1", min.	3 ms
• with "0" to "1", max.	4 ms
• with "1" to "0", min.	3 ms
• with "1" to "0", max.	4 ms
For interrupt inputs	
• Configurable	No
for technological functions	
• Configurable	No
Cable length shielded, max.	1000 m
unshielded, max.	600 m
Encoders	
Connectable encoders 2-wire sensor	Yes
• Permitted quiescent current (2-wire sensor), max.	1.5 mA
Isochronous mode	
Isochronous mode (application synchronized up to terminal)	No
Interrupts/diagnostics/status information	
Diagnostics function	No
Interrupts Diagnostics interrupt	No
Hardware interrupt	No
Diagnostics alarms Monitoring of supply voltage	No
Wire break	No
Short-circuit	No
Diagnostics indicator LED RUN LED	Yes; green LED
ERROR LED	Yes; red LED
Monitoring of supply voltage (PWR LED)	No
Channel status display	Yes; green LED
For channel diagnostics	No
For module diagnostics	No

	6ES7521-1BH50-0AA0
Electrical isolation	
Electrical isolation of channels	
Between the channels	No
Between the channels, in groups of	16
Between the channels and backplane bus	Yes
Isolation	
Isolation tested with	707 V DC (type test)
Ambient conditions	
Ambient temperature during operation	
Horizontal mounting position, min.	0 °C
Horizontal mounting position, max.	60 °C
Vertical mounting position, min.	0 °C
Vertical mounting position, max.	40 °C
Distributed mode	
Prioritized startup	Yes
Dimensions	
Width	35 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	230 g