

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

SIEMENS

6ES7421-7DH00-0AB0

SIMATIC AUTOMATION SERVICE MODULE

Used with the applicable PLC System configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Siemens official manufacturer documentation

SIMATIC S7-400 advanced controllerCentral processing units
SIPLUS S7-400 interface modules**SIPLUS S7-400 interface modules**

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Overview

- To connect distributed I/O via PROFIBUS DP
- Max. transmission rate 12 Mbit/s
- Electrically isolated RS 485 interface
- Connection via 9-pin Sub-D socket
- One or two PROFIBUS modules can be plugged in for each S7-400 CPU:
 - CPU 414-3/416-3: 1 module
 - CPU 417-4: 2 modules

Notes:

Can only be used with the CPUs 6AG1416-3XR05-4AB0, 6AG1416-3ER05-4AB0 and 6AG1417-4XT05-4AB0.

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

For further technical documentation on SIPLUS, see:
www.siemens.com/siplus-extreme

Technical specifications

Article number	6AG1964-2AA04-7AB0
Based on	6ES7964-2AA04-0AB0 SIPLUS S7-400 IF964-DP
Ambient conditions	
Ambient temperature in operation	
• Min.	-25 °C; = Tmin
• max.	70 °C; = Tmax
Extended ambient conditions	
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
Relative humidity	
- With condensation, max.	100 %; Relative humidity, incl. condensation / frost permitted (no commissioning under condensation conditions)
Resistance	
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data**Article No.****SIPLUS interface module IF-964 DP**

Interface module with integrated PROFIBUS DP master interface

Extended temperature range and exposure to media

6AG1964-2AA04-7AB0

SIMATIC S7-400 advanced controller

Digital modules

SM 421 digital input module

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Overview



- Digital inputs for the SIMATIC S7-400
- For connecting standard switches and two-wire proximity switches (BERO)

Technical specifications

Article number	6ES7421-7BH01-0AB0	6ES7421-1BL01-0AA0	6ES7421-1EL00-0AA0	6ES7421-1FH20-0AA0	6ES7421-7DH00-0AB0
	SM421, 16DI, DC24V, 0.05MS INPUT DELAY	SM421, 32DI, DC24V	SM421, 32DI, DC/AC 120V	SM421, 16DE, UC120/230V	SM421, 16DE, UC24-60V
Product type designation					
Supply voltage					
Load voltage L+					
• Rated value (DC)	24 V				
• permissible range, lower limit (DC)	20.4 V				
• permissible range, upper limit (DC)	28.8 V				
Input current					
from backplane bus 5 V DC, max.	130 mA	20 mA	200 mA	80 mA	150 mA
from supply voltage L+, max.	120 mA				
Power losses					
Power loss, max.	5 W	6 W	16 W	12 W	8 W; 3.5 W (24 V DC); 6.5 W (48 V DC); 8.0 W (60 V DC)
Digital inputs					
Number of digital inputs	16	32	32	16	16
Number of simultaneously controllable inputs					
all mounting positions					
- up to 40 °C, max.	16	32	32	16	16
- up to 60 °C, max.	16	32	32	16	16
Input voltage					
• Type of input voltage	DC	DC	AC/DC	AC/DC	AC/DC
• Rated value (DC)	24 V	24 V			
• Rated value (UC)			120 V	230 V; 120/230 V UC	24 V; 24 to 60 V UC
• for signal "0"	-30 V DC to +5 V DC	-30 V DC to +5 V DC	0 to 20 V UC	0 to 40 V AC/ -40 to +40 V DC	-6 to +6 V DC/ 0 to 5 V AC
• for signal "1"	11 V DC to 30 V DC	13 V DC to 30 V DC	79 to 132 V AC; 80 to 132 V DC	74 to 264 V AC; 80 to 264 V DC, -80 to -264 V	15 to 72 V DC; -15 to -72 V DC; 15 to 60 V AC
• Frequency range			47 ... 63 Hz	47 ... 63 Hz	47 to 63 Hz AC / DC

SIMATIC S7-400 advanced controller

Digital modules

SM 421 digital input module

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Technical specifications (continued)

Article number	6ES7421-7BH01-0AB0 SM421, 16DI, DC24V, 0.05MS INPUT DELAY	6ES7421-1BL01-0AA0 SM421, 32DI, DC24V	6ES7421-1EL00-0AA0 SM421, 32DI, DC/AC 120V	6ES7421-1FH20-0AA0 SM421, 16DE, UC120/230V	6ES7421-7DH00-0AB0 SM421, 16DE, UC24-60V
Input current • for signal "0", max. (permissible quiescent current) • for signal "1", typ.	6 mA; 6 ... 8 mA	1.3 mA 7 mA	1 mA 2 mA; 2 ... 5 mA	6 mA; AC: 6 mA; DC: 2 mA 10 mA; at 120 V: 10 mA AC, 1.8 mA DC; at 230 V: 14 mA AC, 2 mA DC	4 mA; 4 ... 10 mA
Input delay (for rated value of input voltage) for standard inputs - Parameterizable - nominal	Yes				Yes 0.5 ms; 0.5 / 3 / 10 / 20 ms
Cable length • shielded, max. • Unshielded, max.	1 000 m; 1000 m/3 ms; 70 m/0.5 ms; 30 m/0.1 ms; 30 m/0.05 ms 600 m; 600 m: 3 ms; 50 m: 0.5 ms; 20 m: 0.1 ms; 20 m: 0.05 ms	1 000 m 600 m	1 000 m 600 m	1 000 m 600 m	1 000 m 600 m; 600 m: 3, 10, 20 ms; 100 m: 0.5 ms
Encoder Connectable encoders • 2-wire sensor - Permissible quiescent current (2-wire sensor), max.	Yes 3 mA	Yes 1.5 mA	Yes 1 mA	Yes 5 mA; AC: 5 mA	Yes 0.5 mA; 0.5 to 2 mA
Interrupts/diagnostics/ status information Alarms • Diagnostic alarm • Hardware interrupt	Yes; Parameterizable Yes; Parameterizable				Yes; Parameterizable Yes; Parameterizable
Diagnostic messages • Diagnostics	Yes; internal/ external fault				Yes; internal/ external fault
Galvanic isolation Galvanic isolation digital inputs • between the channels, in groups of • between the channels and the backplane bus	8 Yes	32 Yes	8 Yes	4 Yes	1 Yes
Isolation Isolation checked with	500 V DC	500 V DC	1500 V AC	1500 V AC	1500 V AC
Dimensions Width Height Depth	25 mm 290 mm 210 mm	25 mm 290 mm 210 mm	25 mm 290 mm 210 mm	25 mm 290 mm 210 mm	25 mm 290 mm 210 mm
Weights Weight, approx.	600 g	500 g	600 g	650 g	600 g

SIMATIC S7-400 advanced controller

Digital modules

SM 421 digital input module

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Ordering data

Article No.

SM 421 digital input modules

16 inputs, 24 V DC,
with process/diagnostics interrupt

6ES7421-7BH01-0AB0

32 inputs, 24 V DC

6ES7421-1BL01-0AA0

32 inputs, 120 V AC/DC

6ES7421-1EL00-0AA0

16 inputs, 120/230 V AC/DC, inputs
according to IEC 1131-2 Type 2

6ES7421-1FH20-0AA0

16 inputs, 24 to 60 V AC/DC,
with process/diagnostics interrupt

6ES7421-7DH00-0AB0

Front connector

48-pin

- with screw contacts, 1 unit
- with screw contacts, 84 units
- with spring-loaded terminals,
1 unit
- with crimp contacts, 1 unit
- with crimp contacts, 84 units

6ES7492-1AL00-0AA0

6ES7492-1AL00-1AB0

6ES7492-1BL00-0AA0

6ES7492-1CL00-0AA0

6ES7492-1CL00-1AB0

Cover film for labeling strips

6ES7492-2XX00-0AA0

Spare part

Article No.

Labeling sheets for machine inscription

DIN A4, for printing using laser
printer; pack of 10

petrol

6ES7492-2AX00-0AA0

light-beige

6ES7492-2BX00-0AA0

yellow

6ES7492-2CX00-0AA0

red

6ES7492-2DX00-0AA0

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6ES7998-8XC01-8YE0

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and the three subsequent updates

6ES7998-8XC01-8YE2

SIMATIC S7-400 advanced controller

Digital modules

SM 422 digital output module

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Overview



- Digital outputs for the SIMATIC S7-400
- For connecting solenoid valves, contactors, low-power motors, lamps and motor starters

Technical specifications

Article number	6ES7422-1FH00-0AA0	6ES7422-1HH00-0AA0	6ES7422-1BH11-0AA0	6ES7422-1BL00-0AA0	6ES7422-7BL00-0AB0
	SM422, 16DO, AC120/230V, 2A	SM422, 16DO, AC5-230V, 5A RELAY	SM422, 16DO, DC24V, 2A	SM422, 32DO, DC24V, 0,5A	SM422, 32DO, DC24V, 0,5A
Product type designation					
Supply voltage					
Load voltage L+					
• Rated value (DC)		60 V	24 V	24 V	24 V
• permissible range, lower limit (DC)		1 V	20.4 V	20.4 V	20.4 V
• permissible range, upper limit (DC)		60 V	28.8 V	28.8 V	28.8 V
Load voltage L1					
• Rated value (AC)	230 V; 120/230V AC	230 V			
• permissible range, lower limit (AC)	79 V	2 V			20.4 V
• permissible range, upper limit (AC)	264 V	264 V			28.8 V
Input current					
from load voltage L+ (without load), max.	1.5 mA		30 mA	30 mA	120 mA
from load voltage L1 (without load), max.	6 mA				
from backplane bus 5 V DC, max.	400 mA	1 A	160 mA	200 mA	200 mA
Power losses					
Power loss, max.	16 W	25 W	7 W	4 W	8 W
Digital outputs					
Number of digital outputs	16	16; Relays	16	32	32
Limitation of inductive shutdown voltage to			-30 V	-27 V	L+ (-45 V)
Switching capacity of the outputs					
• on lamp load, max.	50 W	60 W	10 W	5 W	5 W
Output voltage					
• for signal "1", min.	L1 (-18.1 V)		L+ (-0.5 V)	L+ (-0.3 V)	L+ (-0.8 V)