NEW
Click on the Article No. in the catalog PDF to access it in the Industry Mall and get all related information.

Article-No.

3RA1943-2C
3RA1943-2B
3RA1953-2B
3RA1953-2N

Or directly in the Internet, e. g. www.siemens.com/product?3RA1943-2C

Introduction

Overview

Stabilized power supplies

					
		6EP1 SITOP lite	**6EP1 SITOP compact**	**6EP1 LOGO!Power**	**6EP1 SITOP smart**
SITOP power supplies					
Phase		1	1	1	1, 3
Rated input voltage	V	120/230 AC	100 ... 230 AC, 110 ... 330 DC	100 ... 240 AC, 110 ... 330 DC	120/230 AC, 3 AC 400 ... 500
Rated output voltage	V DC	24	24, 12	5, 12, 15, 24	24
Rated output current	A	2.5 ... 10	0.6 ... 6.5	1.3 ... 6.3	2.5 ... 40
Connection		Screw terminal connection	Screw terminal connection	Screw terminal connection	Screw terminal connection
Mounting		Standard rail mounting	Standard rail mounting	Standard rail mounting	Standard rail mounting
Approval		cULus	NEC Class 2, cULus, ATEX, GL	cULus, ABS, GL, FM, ATEX	cULus, CSA, ATEX, GL
Page		15/9	15/10	15/11	15/12

					
		6EP1 SITOP modular	**6EP1 Special design, special use**	**6EP1 Expansion modules**	**6EP1 Uninterruptible 24 V DC power supplies**
SITOP power supplies					
Phase		1, 2, 3	1	1	1
Rated input voltage	V	120 ... 230/230 ... 500 AC, 120 ... 230 AC, 3 AC 400 ... 500; 600 DC	120/230 AC	24 DC	24 DC
Rated output voltage	V DC	24, 48	3 ... 52	U_e – approx. 0.5, U_e – approx. 1	24
Rated output current	A	5 ... 40	10	3.5 ... 20, 40, 4 x 3, 4 x 10	6 ... 40
Connection		Screw terminal connection	Screw terminal connection	Screw terminal connection	Screw terminal connection
Mounting		Standard rail mounting	Standard rail mounting	Standard rail mounting	Standard rail mounting (except: wall mounting with SITOP UPS500P)
Approval		cULus, CSA, ATEX, GL, ABS	cULus	NEC Class 2, cULus, ATEX, GL	cULus, ATEX, GL, ABS
Pages		15/13, 15/14	15/15	15/16, 15/17	15/18 ... 15/23

More power supply products, see Catalog KT 10.1 "SITOP Power Supply" or www.siemens.com/sitop.

For more information about SIPLUS extreme power supplies, see www.siemens.com/siplus-extreme.

Heating control systems





	SIPLUS heating control systems			SIPLUS heating control systems	SIPLUS heating controller
	HCS3200	**HCS716I**	**HCS724I**	**HCS4300**	**HCS300I**
With integrated power outputs	✓	✓	✓	✓	--
Design	**Compact**	**Modular**	**Modular**	**Modular**	**Modular**
• Compact design	9 power channels on only 0.12 m^2	192 power channels on only 0.2 m^2	384 power channels on only 0.4 m^2	54 power channels on only 0.23 m^2	--
• System structure	Compact unit	Four rack versions for up to 4 or 12 power output modules	Central interface for up to 16 power output modules	Central interface modules (CIM) for up to 6 power output modules (POM)	Basic unit for connection of 4 digital modules, 4 temperature modules and 1 current measurement or 1 current/voltage measuring module
• Mounting	Screw fixing with variable mounting angles	Screw fixing with mounting angles	Screw fixing with fixing lugs	Rear adapter for snapping onto busbar system	Snap-on mounting onto TH 35 standard mounting rail or screw fixing using additional push-in lugs
• Degree of protection	IP65	IP00	IP20	IP20	IP20
Power outputs					
• The central solution for power outputs	Up to 4 kW per channel	Up to 2.3 kW per channel	Up to 4 kW per channel	Up to 7.2 kW per channel	Dependent on the solid-state switching relay used
• Power outputs	9 outputs 400 V AC	3 power output modules for selection: 8 or 16 output channels 230 V AC	3 power output modules for selection: LA724I HP, LA724I: 12 or 24 output channels 230/400 V AC LA724I SSR: for controlling external SIRIUS solid-state relays	9 outputs 400 V AC / 480 V AC	Per digital module: 6 digital outputs for controlling external SIRIUS solid-state relays, available up to 90 A
• Zero-point switching solid-state switching devices	Integrated	--	--	--	External
• Zero-point switching triacs	--	Integrated	Integrated	Integrated	--
• Protection of the outputs	With fine fuses in fuse holders	With fine fuses in fuse holders	Protection of the outputs with fine fuses in fuse holders which can be reached from the front	With fine fuses in fuse holders on a pluggable and removable fuse module	--
• Control for external fans	Control for external fan with 1 output 230 V AC up to 500 W	--	--	--	--
Open-loop/closed-loop control					
• Temperature measurement	--	--	--	--	Temperature module with four temperature inputs for Pt100/Pt1000 and thermo-elements type J/K/L
• Software for temperature control	--	--	--	--	Optional TCP 3000 temperature control software
• Current measurement	--	--	3 x 400 A	--	3 measuring ranges: 2.4 ... 25 A, 10 ... 100 A, 20 ... 200 A
• Voltage measurement with compensation	Up to 400 V	--	Up to 400 V	Up to 480 V	Up to 690 V

Introduction

Heating control systems (Continued)





	SIPLUS heating control systems			SIPLUS heating control systems	SIPLUS heating controller
	HCS3200	**HCS716I**	**HCS724I**	**HCS4300**	**HCS300I**
Communication and diagnostics					
• Communication with higher-level control system through PROFIBUS DP	✓	✓	✓	--	✓
• Communication with higher-level control system through PROFINET IO	--	--	--	✓	--
• Diagnostics functions	Detection of external and internal faults	Detection of external and internal faults	Detection of external and internal faults	Detection of external and internal faults	Via the current measuring module and the current/ voltage measuring module
• Easy data management with TIA	✓	✓	✓	✓	✓
• Integrated line voltage sensing for compensation of line voltage fluctuations	Integrated	--	Optional	✓	Optional though current/ voltage measuring module
Connections					
• Network supply	Through plugs	Through terminals or plugs	Busbar system at the front	Busbar system at the rear	--
• Connection of heat emitter	Through plugs	Through plugs	Through plugs	Through plugs	--
• PROFIBUS DP connection	Through ECOFAST plugs	Over a 9-pin Sub D socket	Over a 9-pin Sub D socket	--	Over a 9-pin Sub D socket
• PROFINET IO connection	--	--	--	Through RJ45 connector	--
• Connection of the 24 V DC power supply	Through ECOFAST plugs	--	--	Through plugs	Screw terminals
Pages	15/25 to 15/29	15/30 to 15/39	15/40 to 15/51	15/52 to 15/59	15/60 to 15/73

✓ Has this function

-- Does not have this function

For more information, see Industry Mall or www.siemens.com/siplus-hcs.

Automatic door controls

	SIDOOR AT12 elevator door drive	**SIDOOR AT40 elevator door drive**	**SIDOOR ATD400V elevator door drive**
Controllers for elevators			
Characteristics			
• Application	Intelligent door control system for the operation of sliding doors	Intelligent door control system for the horizontal and vertical operation of sliding doors	Intelligent door control system for the operation of rising doors and rolling shutters for elevators
• Max. dynamic door weight	120 kg	600 kg	400 kg
• Automatic door weight detection – hence stable drive characteristics and reduced service costs	✓	✓	✓
• SIDOOR user software (included in the Software Kit) enables user-friendly operation and detailed diagnostics	✓	✓	✓
• 1-button operation for the entire commissioning process	✓	✓	✓
• Flexible motor management	--	Four motor sizes for different power requirements	--
• Degree of protection	IP20	Motor IP54, IP40 for gear unit for 180 to 600 kg motor versions	Motor IP54, IP40 for gear unit for 400 kg motor version
• Power supply	Integrated switch-mode power supply – hence low installation costs	External application-optimized NT40 switch-mode power supply or external mains transformer	External application-optimized NT40 switch-mode power supply or external mains transformer
• Emergency power module 24 V DC	--	Optional	Optional
• Communication module	Integrated CAN module	Either relay or CAN module	Integrated relay module
• Communication interfaces	CANopen, USB via USB adapter, RS 485 – hence easy system integration	CANopen (optional), USB via USB adapter, RS 485 – hence easy system integration	USB via USB adapter, RS 485 – hence easy system integration
Pages	15/76 to 15/77	15/78 to 15/81	15/82 to 15/84

✓ Has this function

-- Does not have this function

For automatic door controllers for industrial applications, see next page.

Introduction

Automatic door controls (continued)

		
	SIDOOR ATD410W machine tool door drive	**SIDOOR ATD420W machine tool door drive**
Controllers for industrial applications		
Characteristics		
• Application	Door controls for industrial protective doors on grinding, milling and machine tools	Door controls for industrial protective doors on grinding, milling and machine tools
• Max. dynamic door weight	600 kg	600 kg
• Automatic door weight detection – hence stable drive characteristics and reduced service costs	✓	✓
• SIDOOR User Software (included in the Software Kit)	Optional	Optional
• Configurable	STEP 7 / TIA	STEP 7 / TIA
• Part positioning function	Parameterizable	Parameterizable
• "Emergency Stop" function	Configurable	Configurable
• "Manual operation" function	Configurable	Configurable
• "Assisted drive" function	✓	✓
• "Impulse drive" function	✓	✓
• "Safe disconnection" function	✓	✓
• Opening speeds	0.2 ... 0.8 m/sec	0.2 ... 0.8 m/sec
• Active braking	Parameterizable	Parameterizable
• Maximum door width	5 m	5 m
• Default energy and force limits	10 J / 150 N	10 J / 150 N
• Maximum force for motor version	M3/MDG 180:300N ;M4/MDG400: 360N	M3/MDG 180:300N ;M4/MDG400: 360N
• Connectable safety devices	LB, DCPS, ESPE TYPE 2, SE	LB, DCPS, ESPE TYPE 2, SE
• Flexible motor management	SIDOOR M3, MDG180, M4; MDG400, M5	SIDOOR M3, MDG180, M4; MDG400, M5
• Degree of protection	IP20	IP20
• Performance level according to ISO 13849-1	"d" (energy limit, force limit, position determination, monitoring of external protective device)	"d" (energy limit, force limit, position determination, monitoring of external protective device)
• Communication interfaces	USS, RS485 (Service)	PROFIBUS, RS485 (Service)
• STANDARD	EN 953, EN ISO 13849-1	EN 953, EN ISO 13849-1
	15/86 to 15/88	15/89 to 15/92

✓ Has this function

For more information, see Industry Mall or www.siemens.com/sidoor.

Condition monitoring systems



	SIPLUS CMS1000	SIPLUS CMS2000	SIPLUS CMS4000
Monitoring			
• Of motors, generators, fans, pumps, etc.	✓	✓	✓
- For imbalance, misalignment, roller bearings	✓	✓	✓
• Max. number of vibration channels	1	16	180
Analysis methods			
Characteristic values			
• Bearing monitoring: DKW, based on K(t) acc. to VDI 3832	✓	✓	✓
• Vibration monitoring: RMS based on DIN ISO 10816-3	✓	✓	✓
• CREST factor, etc. application-specific characteristic values	--	--	✓
Vibration analysis			
• Parameterizable	--	✓	--
• Configurable	--	--	✓
• FFT, envelope curve, fingerprint comparison, trend analysis	--	✓	✓
• Orbit analysis, free configuration of other analysis methods	--	--	✓
Monitoring functions			
• Adjustable limit values for DKW and RMS: Warning and alarm	✓	✓	✓
• Adjustable alarm ranges for frequency spectrums	--	✓	✓
• Limit value monitoring of analog values	--	✓	✓
• Temperature monitoring	--	✓	✓
• Creation of own monitoring algorithms	--	--	✓
Recording functions			
• Raw data recording: Manually or event-triggered, snapshot of the FFT, characteristic values, long-term trend recording	--	✓	✓
• Black box for process data	--	--	✓
Visualization			
• Traffic light status display via binary outputs	✓	✓	--
• Local display	✓	--	--
• Parameterization and online diagnostics via standard web browser	--	✓	--
• Software SIPLUS CMS X-Tools	--	--	✓
Pages	15/103 to 15/109	15/110 to 15/120	See Industry Mall or www.siemens.com/siplus-cms

✓ Has this function

-- Does not have this function

For more information, see Industry Mall or www.siemens.com/siplus-cms.

Options

Delivery time class DT

The delivery time classes are specified in the selection tables in front of the article numbers.

The standard transport time for Germany is 1 day (see Chapter 16 "Appendix" → "Ordering notes").

The quoted delivery time class for the SIPLUS extreme power supplies and heating control systems is applicable to an order quantity of up to 9 units.

The quoted delivery time class for the door control systems is applicable to an order quantity of up to 10 units.

▸ Preferred type

This delivery time class applies with the degree of protection IP00, i.e. these units can be supplied immediately from stock[1)] and will be dispatched within 24 hours. The transport times depend on the destination and the mode of delivery.

Delivery time class B is applicable to an order quantity of 6 units and more.

Delivery time class A

The ordered units will be dispatched within 1 or 2 working days.

Delivery time class B is applicable to an order quantity of 6 units and more.

Delivery time class B

The ordered units will be dispatched within 3 to 5 working days.

Delivery time class C is applicable to an order quantity of 6 units and more.

Delivery time class C

The ordered units will be dispatched within 6 to 15 working days.

Delivery time class D is applicable to an order quantity of 6 units and more.

Delivery time class D

The ordered units, including enclosure and additional options, will be dispatched within 16 to 30 working days.

Delivery time class X

On request.

1) This is based on standard commercial orders – normal order!

More information

Further information:

- SIPLUS extreme,
  see Industry Mall or www.siemens.com/siplus-extreme
- Heating control systems,
  see Industry Mall or www.siemens.com/siplus-hcs
- For door control systems,
  see Industry Mall or www.siemens.com/sidoor
- Conditioning monitoring systems,
  see Industry Mall or www.siemens.com/siplus-cms

NEW **SITOP lite, single-phase**

Overview

The SITOP lite range of power supplies is designed for standard requirements in industrial environments and offers all important functions at a favorable price, of course without compromising quality and the proverbial SITOP reliability. The wide range input with manual switchover supports connection to a variety of single-phase supply systems. Thanks to the slim design, the primary switched power supplies have a low space requirement on the standard mounting rail, and their excellent degree of efficiency ensures low thermal losses in the control cabinet. Short-circuit and overload protection as well as UL approval for export ensure problem-free use.

- 24 V/2.5 A, 5 A and 10 A for industrial applications with basic requirements
- Single-phase wide range input with manual switchover
- Narrow width
- Excellent degree of efficiency
- Green LED for "24 V OK"
- Can be switched in parallel
- No lateral installation clearances required
- Ambient temperature range of 0 °C to 60 °C (from 45 °C with derating)
- Cooling through natural convection
- Short-circuit and overload protection
- Certification according to UL

Selection and ordering data

	Version	Inputs Rated voltage $U_{e\ rated}$	Outputs Rated voltage $U_{a\ rated}$	Rated current $I_{a\ rated}$	Dimensions (W x H x D) mm	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Power supplies 24 V											
 6EP1332-1LB00	**2.5 A**	120/230 V AC (93 ... 132 V AC/ 187 ... 264 V AC)	24 V DC ±3 %	2.5 A	32.5 x 125 x 120	A	**6EP1332-1LB00**		1	1 unit	593
 6EP1333-1LB00	**5 A**	120/230 V AC (93 ... 132 V AC/ 187 ... 264 V AC)	24 V DC ±3 %	5 A	50 x 125 x 120	A	**6EP1333-1LB00**		1	1 unit	593
 6EP1334-1LB00	**10 A**	120/230 V AC (93 ... 132 V AC/ 187 ... 264 V AC)	24 V DC ±3 %	10 A	70 x 125 x 120	A	**6EP1334-1LB00**		1	1 unit	593

For other units and versions, see Catalog KT 10.1 "SITOP Power Supply".

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

SITOP compact, single-phase

Overview

The SITOP compact power supply series for the low performance range features an extremely space-saving, narrow design which makes it suitable in particular for distributed applications in switchboxes or small control cabinets. The switching power supply units are characterized by their low power loss over the entire load range. With losses being extremely small even in no-load operation, these units are predestined for supplying machines and plants which are often in stand-by mode, for example. The switching power supply units have a wide range input for AC and DC networks, with plug-in terminals that facilitate easy electrical connection.

- 24 V/0.6 A, 1.3 A, 2.5 A, 4 A and 3.7 A NEC Class 2; 12 V/2 A and 6.5 A
- Small mounting area thanks to narrow design
- Wide range input for 85 V to 264 V AC and 110 V to 300 V DC
- High degree of efficiency over the entire load range, up to 28 % energy savings compared to comparable units
- Low energy consumption in no-load operation and stand-by, possible energy savings of up to 53 %
- Adjustable output voltage
- Green LED for "output voltage OK"
- Plug-in terminals
- Temperature range from -20 °C to +70 °C
- Comprehensive certification, e.g. ATEX, NEC Class 2 (24 V/3.7 A)

Selection and ordering data

	Version	Inputs Rated voltage $U_{e\ rated}$	Outputs Rated voltage $U_{a\ rated}$	Rated current $I_{a\ rated}$	Dimensions (W x H x D) mm	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Power supplies 24 V											
 6EP1331-5BA00	**0.6 A**	100 ... 230 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	24 V DC ±3 %	0.6 A	22.5 x 80 x 100	A	**6EP1331-5BA00**		1	1 unit	584
 6EP1331-5BA10	**1.3 A**	100 ... 230 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	24 V DC ±3 %	1.3 A	30 x 80 x 100	A	**6EP1331-5BA10**		1	1 unit	584
 6EP1332-5BA00	**2.5 A**	100 ... 230 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	24 V DC ±3 %	2.5 A	45 x 80 x 100	A	**6EP1332-5BA00**		1	1 unit	584
 6EP1332-5BA10	**4 A**	100 ... 230 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	24 V DC ±3 %	4 A	52.5 x 80 x 100	A	**6EP1332-5BA10**		1	1 unit	584
 6EP1332-5BA20	**3.7 A NEC Class 2**	120 ... 230 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	24 V DC ±3 %	3.7 A	52.5 x 80 x 100 NEW	A	**6EP1332-5BA20**		1	1 unit	584
Power supplies 12 V											
 6EP1321-5BA00	**2 A**	100 ... 230 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	12 V DC ±3 %	2 A	30 x 80 x 100	A	**6EP1321-5BA00**		1	1 unit	584
 6EP1322-5BA10	**6.5 A**	100 ... 230 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	12 V DC ±3 %	6.5 A	52.5 x 80 x 100	A	**6EP1322-5BA10**		1	1 unit	584

For other units and versions, see Catalog KT 10.1 "SITOP Power Supply".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

Overview

Our new miniature power supply units in the same design as the logic modules offer great performance in the smallest of spaces: Efficiency has been improved across the entire load range, and the low power losses in no-load operation ensure efficient operation. The wide-range input for single-phase networks as well as operation with direct voltage, the wide operating temperature range, comprehensive certifications as well as the switch-on behavior optimized for capacitive loads makes them suitable for universal use. These reliable power supplies with their flat, stepped profile can be used extremely flexibly in numerous applications such as in distribution boards, for example.

- 2 performance classes each with 5 V, 12 V and 15 V
- 3 performance classes with 24 V
- High efficiency across the entire load range
- Low no-load losses
- Wide range input from 85 V to 264 V AC
- Operation with DC voltage from 110 V to 300 V DC
- Power reserves during starting thanks to 1.5 times the rated current for capacitive loads
- Temperature range from -20 °C to +70 °C
- Extensive approvals and certifications according to CE, cULus, FM, GL and ATEX
- Versions for use in severe ambient conditions (SIPLUS extreme)

Selection and ordering data

Enclosures 54 mm wide

Enclosures 72 mm wide

Enclosures 90 mm wide

Version	Inputs Rated voltage $U_{e\ rated}$	Outputs Rated voltage $U_{a\ rated}$	Rated current $I_{a\ rated}$	Dimensions (W x H x D) mm	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Power supplies 5 V										
3 A	100 ... 240 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	5 V DC ±3 %	3 A	54 x 90 x 52.6	A	**6EP1311-1SH03**		1	1 unit	583
6.3 A	100 ... 240 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	5 V DC ±3 %	6.3 A	72 x 90 x 52.6	A	**6EP1311-1SH13**		1	1 unit	583
Power supplies 12 V										
1.9 A	100 ... 240 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	12 V DC ±3 %	1.9 A	54 x 90 x 52.6	A	**6EP1321-1SH03**		1	1 unit	583
4.5 A	100 ... 240 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	12 V DC ±3 %	4.5 A	72 x 90 x 52.6	A	**6EP1322-1SH03**		1	1 unit	583
Power supplies 15 V										
1.9 A	100 ... 240 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	15 V DC ±3 %	1.9 A	54 x 90 x 52.6	A	**6EP1351-1SH03**		1	1 unit	583
4 A	100 ... 240 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	15 V DC ±3 %	4 A	72 x 90 x 52.6	A	**6EP1352-1SH03**		1	1 unit	583
Power supplies 24 V										
1.3 A	100 ... 240 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	24 V DC ±3 %	1.3 A	54 x 90 x 52.6						
• LOGO!Power					A	**6EP1331-1SH03**		1	1 unit	583
• SIPLUS extreme for medial load, temperature range -25 ... +70 °C					D	**6AG1331-1SH03-7AA0**		1	1 unit	470
2.5 A	100 ... 240 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	24 V DC ±3 %	2.5 A	72 x 90 x 52.6						
• LOGO!Power					A	**6EP1332-1SH43**		1	1 unit	583
• SIPLUS extreme for medial load, temperature range -25 ... +70 °C					D	**6AG1332-1SH43-7AA0**		1	1 unit	471
4 A	100 ... 240 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	24 V DC ±3 %	4 A	90 x 90 x 52.6						
• LOGO!Power					A	**6EP1332-1SH52**		1	1 unit	583
• SIPLUS extreme for medial load, temperature range -25 ... +70 °C					D	**6AG1332-1SH52-7AA0**		1	1 unit	470

For other units and versions, see Catalog KT 10.1 "SITOP Power Supply".

For more information about SIPLUS extreme power supplies, see www.siemens.com/siplus-extreme.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

SITOP smart, single-phase and three-phase

Overview

Small in size, big in performance. SITOP smart requires little room on the standard mounting rail and offers high functionality at an attractive price. With its excellent overload behavior, even loads with a high inrush current can be switched on smoothly. If required, 50 % extra power can be supplied for a duration of 5 s. In addition, the 24 V versions will permanently supply 120 % of the rated power provided the ambient temperature does not exceed 45 °C.

- For 24 V standard applications up to 40 A
- Compact design for small mounting area, no lateral clearance required
- Easy standard rail mounting
- Smooth switching on of loads with high inrush current such as DC/DC converters and motors
- Greater performance thanks to permanent 120 % of rated power up to an ambient temperature of 45 °C
- Large setting range for the output voltage, using potentiometers which are easy to reach from the front
- Parallel switching option to increase performance
- Extensive certifications according to UL, CSA, GL (Germanischer Lloyd) and ATEX directives (Atmosphère Explosible)
- For universal use – in industry and public low-voltage systems – worldwide
- Can be combined with SITOP expansion modules and the uninterruptible power supplies
- Versions for use in severe ambient conditions (SIPLUS extreme)

Selection and ordering data

	Rated current $I_{a\ rated}$	Inputs Rated voltage $U_{e\ rated}$	Outputs Rated voltage $U_{a\ rated}$	Dimensions (W x H x D) mm	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Power supplies 24 V										
 6EP1332-2BA20	Limitation of input current harmonics according to IEC 61000-3-2 **2.5 A**	120/230 V AC (85 ... 132 V AC/ 170 ... 264 V AC)	24 V DC ±3 %	32.5 x 125 x 120 NEW	A	**6EP1332-2BA20**		1	1 unit	582
 6EP1333-2BA20	Limitation of input current harmonics according to IEC 61000-3-2 **5 A**	120/230 V AC (85 ... 132 V AC/ 170 ... 264 V AC)	24 V DC ±3 %	50 x 125 x 120 NEW	A	**6EP1333-2BA20**		1	1 unit	582
 6EP1334-2BA20, 6AG1334-2BA20-4AA0	Limitation of input current harmonics according to IEC 61000-3-2 **10 A**	120/230 V AC (85 ... 132 V AC/ 170 ... 264 V AC)	24 V DC ±3 %	70 x 125 x 120						
	• SITOP smart			NEW	A	**6EP1334-2BA20**		1	1 unit	582
	SIPLUS extreme For use in severe ambient conditions (corrosive gases, salt spray, condensation, dust, biologically active substances, except fauna)			NEW	D	**6AG1334-2BA20-4AA0**		1	1 unit	471
 6EP1336-2BA10	**20 A**	120/230 V AC (85 ... 132 V AC/ 176 ... 264 V AC)	24 V DC ±3 %	115 x 145 x 150 NEW	A	**6EP1336-2BA10**		1	1 unit	582
 6EP1434-2BA10	**10 A**	3 AC 400 ... 500 V (3 AC 340 ... 550 V)	24 V DC ±3 %	90 x 145 x 150	A	**6EP1434-2BA10**		1	1 unit	582
 6EP1436-2BA10, 6AG1436-2BA10-7AA0	**20 A**	3 AC 400 ... 500 V (3 AC 340 ... 550 V)	24 V DC ±3 %	90 x 145 x 150						
	• SITOP smart				A	**6EP1436-2BA10**		1	1 unit	582
	• SIPLUS extreme for medial load, temperature range -25 ... +70 °C				D	**6AG1436-2BA10-7AA0**		1	1 unit	471
 6EP1437-2BA20	**40 A**	3 AC 400 ... 500 V (3 AC 360 ... 550 V)	24 V DC ±3 %	150 x 145 x 150	A	**6EP1437-2BA20**		1	1 unit	582

For other units and versions, see Catalog KT 10.1 "SITOP Power Supply".

For more information about SIPLUS extreme power supplies, see www.siemens.com/siplus-extreme.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

Overview

SITOP modular is the technology power supply unit for demanding solutions and provides maximum functionality for use in complex systems and machines. The wide-range input enables connection to any power system in the world and ensures high safety even in the event of extreme voltage fluctuations. The Power Boost function briefly supplies up to three times the rated current. And in the event of an overload there is a choice between constant current or latching disconnection. The very high degree of efficiency keeps energy consumption and heating in the control cabinet low, and the compact metal housing also saves space.

To further increase 24 V availability, the SITOP modular power supply units can be combined with buffer, UPS, redundancy and selectivity modules.

- For demanding applications from 5 to 40 A
- 48 V/10 A and 20 A enable small cable cross-sections
- Compact metal housing
- No lateral installation clearances required
- Wide range input allows a connection to almost any power system and ensures safety in the event of voltage fluctuations
- Extra power function for brief operational overloads
- Power boost for tripping protective devices
- Selectable short-circuit behavior
- Soft characteristic curve for parallel switching can be selected
- Extremely high efficiency to 94 %
- Operating status indicated by 3 LEDs

Selection and ordering data

	Rated current $I_{a\ rated}$	Inputs Rated voltage $U_{e\ rated}$	Outputs Rated voltage $U_{a\ rated}$	Dimensions (W x H x D) mm	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Power supplies 24 V										
SITOP modular, single-phase and two-phase										
 6EP3333-8SB00-0AY0	**5 A**	120 ... 230 V AC (85 ... 132 V/ 170 ... 264 V AC)	24 V DC ±3 %	45 x 125 x 125 NEW	A	**6EP3333-8SB00-0AY0**		1	1 unit	581
 6EP3334-8SB00-0AY0	**10 A**	120 ... 230 V AC (85 ... 132 V/ 170 ... 264 V AC)	24 V DC ±3 %	55 x 125 x 125 NEW	A	**6EP3334-8SB00-0AY0**		1	1 unit	581
 6EP1333-3BA10	**5 A**	120 ... 230 V AC/ 230 ... 500 V (85 ... 264 V AC/ 176 ... 550 V AC)	24 V DC ±3 %	70 x 125 x 125	A	**6EP1333-3BA10**		1	1 unit	581
 6EP1334-3BA10	**10 A**	120 ... 230 V AC/ 230 ... 500 V (85 ... 264 V AC/ 176 ... 550 V AC)	24 V DC ±3 %	90 x 125 x 125	A	**6EP1334-3BA10**		1	1 unit	581
 6EP1336-3BA10	**20 A**	120 ... 230 V AC (85 ... 275 V AC or 88 ... 350 V DC)	24 V DC ±3 %	90 x 125 x 125	A	**6EP1336-3BA10**		1	1 unit	581
 6EP1337-3BA00	**40 A**	120/230 V AC (85 ... 132 V AC/ 176 ... 264 V AC)	24 V DC ±3 %	240 x 125 x 125	▶	**6EP1337-3BA00**		1	1 unit	581

15

* You can order this quantity or a multiple thereof.
Illustrations are approximate

SITOP modular, single-, two- and three-phase

	Rated current $I_{a\ rated}$	Inputs Rated voltage $U_{e\ rated}$	Outputs Rated voltage $U_{a\ rated}$	Dimensions (W x H x D) mm	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Power supplies 24 V (continued)										
	SITOP modular, three-phase									
 6EP1436-3BA10	**20 A**	3 AC 400 ... 500 V (3 AC 320 ... 575 V)	24 V DC ±3 %	70 x 125 x 125	A	**6EP1436-3BA10**		1	1 unit	581
 6EP1437-3BA10	**40 A**	3 AC 400 ... 500 V (3 AC 320 ... 575 V)	24 V DC ±3 %	150 x 125 x 150	A	**6EP1437-3BA10**		1	1 unit	581
Power supplies 48 V										
	SITOP modular, three-phase									
 6EP1456-3BA00	**10 A**	3 AC 400 ... 500 V (3 AC 320 ... 575 V)	48 V DC ±3 %	70 x 125 x 125	A	**6EP1456-3BA00**		1	1 unit	581
 6EP1457-3BA00	**20 A**	3 AC 400 ... 500 V (3 AC 320 ... 550 V)	48 V DC ±3 %	240 x 125 x 125	A	**6EP1457-3BA00**		1	1 unit	581

For other units and versions, see Catalog KT 10.1 "SITOP Power Supply".

For more information about SIPLUS extreme power supplies, see www.siemens.com/siplus-extreme.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

Overview

SITOP flexi with steplessly adjustable output voltage:
One standard unit for various special voltages.

Selection and ordering data

	Rated current $I_{a\ rated}$	Inputs Rated voltage $U_{e\ rated}$	Outputs Rated voltage $U_{a\ rated}$	Dimensions (W x H x D) mm	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Power supplies 3 V to 52 V										
 6EP1353-2BA00	Limitation of input current harmonics according to IEC 61000-3-2; adjustable output voltage 3 V to 52 V, output max. 10 A or 120 W									
	Max. 10 A or 120 W	120/230 V AC (85 ... 132 V AC/ 170 ... 264 V AC)	3 ... 52 V DC ±1 %	75 x 125 x 125	►	**6EP1353-2BA00**		1	1 unit	582

For other units and versions, see Catalog KT 10.1 "SITOP Power Supply".

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

Expansion modules

Overview

A power supply unit on its own cannot guarantee fault-free 24 V supply. Power failures, extreme variations in the mains voltage, or a faulty load can bring plant operation to a standstill and cause high costs. The expansion modules offer extensive protection against malfunctions on the primary and secondary circuits, right through to complete all-round protection.

The redundancy module disconnects two 24 V power supply units of the same type, enabling the configuration of a redundant 24 V power supply. If a power supply fails, the 24 V supply is reliably maintained. Signaling is performed by LED and signaling contact, with an adjustable switching threshold for the LEDs and signaling contacts.
The following applies for the redundant configuration:

- Power supplies up to 5 A: One redundancy module with 10 A summation current
- Power supplies up to 10 A: Two redundancy modules with 10 A summation current
- Power supplies up to 20 A: One redundancy module with 40 A summation current
- Power supplies up to 40 A: Two redundancy modules with 40 A summation current

The buffer module bridges brief mains failures for up to several seconds for SITOP smart or SITOP modular 24 V power supply units. Maintenance-free capacitors are used as energy stores.

Buffer times:
200 ms at 40 A
400 ms at 20 A
800 ms at 10 A

To increase the buffer time (max. 10 s), up to 8 buffer modules can be connected in parallel. To bridge longer mains failures we recommend using uninterruptible power supplies with capacitors (up into the minutes range) or with battery modules (up into the hours range).

Versions for use in severe ambient conditions (SIPLUS extreme) are available.

Selection and ordering data

	Inputs Rated voltage $U_{e\ rated}$	Outputs Rated voltage $U_{a\ rated}$	Rated current $I_{a\ rated}$	Dimensions (W × H × D) mm	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SITOP PSE202U redundancy modules										
 6EP1964-2BA00	24 V DC (19 ... 29 V DC)	U_e – approx. 0.5 V	10 A	30 × 80 × 100 NEW	A	**6EP1964-2BA00**		1	1 unit	588
 6EP1962-2BA00	24 V DC (19 ... 29 V DC)	U_e – approx. 0.5 V	3.5 A (NEC Class 2)	30 × 80 × 100 NEW	A	**6EP1962-2BA00**		1	1 unit	588
 6EP1961-3BA21, 6AG1961-3BA21-.AX0	24 V DC (24 ... 28.8 V DC)	U_e – approx. 0.5 V	40 A	70 × 125 × 125						
	• SITOP redundancy modules				A	**6EP1961-3BA21**		1	1 unit	588
	• SIPLUS extreme									
	- For use in severe ambient conditions (corrosive gases, salt spray, condensation, dust, biologically active substances, except fauna)				D	**6AG1961-3BA21-4AX0**		1	1 unit	471
	- For use in severe ambient conditions (corrosive gases, salt spray, condensation, dust, biologically active substances, except fauna) and in the extended temperature range -40 ... +70 °C				D	**6AG1961-3BA21-7AX0**		1	1 unit	471
Buffer modules										
 6EP1961-3BA01, 6AG1961-3BA01-7AA0	24 V DC (24 ... 28.8 V)	U_e – approx. 1 V	40 A	70 × 125 × 125						
	• SITOP buffer modules				A	**6EP1961-3BA01**		1	1 unit	588
	• SIPLUS extreme For use in severe ambient conditions (corrosive gases, salt spray, condensation, dust, biologically active substances, except fauna) and in the extended temperature range -25 ... +70 °C				D	**6AG1961-3BA01-7AA0**		1	1 unit	471

* You can order this quantity or a multiple thereof.
Illustrations are approximate

Overview

The SITOP PSE200U selectivity modules and the SITOP select diagnostics module are used in combination with 24 V power supplies for distributing the load current among several current branches and for monitoring the individual partial currents. Faults caused by overload or short circuits in individual branches are detected and selectively switched off so that the remaining load current paths remain unaffected.
Rapid fault diagnosis is achieved and downtimes are minimized.

Signaling is performed via a group alarm contact or single-channel signaling. The selectivity modules with single-channel signaling output the status of the 4 channels cyclically by means of a serial code which can be read in by a digital PLC input.
Function blocks are available free of charge for SIMATIC S7-1500/1200/300/400 and for SIMOTION CPUs, see www.siemens.com/sitop-select

Selection and ordering data

	Inputs Rated voltage $U_{e\ rated}$	Outputs Rated voltage $U_{a\ rated}$	Rated current $I_{a\ rated}$	Dimensions (W × H × D) mm	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SITOP PSE200U selectivity modules										
 6EP1961-2BA11, 6EP1961-2BA21	24 V DC (22 ... 30 V DC)	--	4 x 3 A (0.5 ... 3 A)	72 × 80 × 72	A	**6EP1961-2BA11**		1	1 unit	586
	24 V DC (22 ... 30 V DC)	--	4 x 10 A (3 ... 10 A)	72 × 80 × 72	A	**6EP1961-2BA21**		1	1 unit	586
SITOP PSE200U selectivity modules with single-channel signaling NEW										
 6EP1961-2BA31, 6EP1961-2BA41	24 V DC (22 ... 30 V DC)	--	4 x 3 A (0.5 ... 3 A)	72 × 80 × 72	A	**6EP1961-2BA31**		1	1 unit	586
	24 V DC (22 ... 30 V DC)	--	4 x 10 A (3 ... 10 A)	72 × 80 × 72	A	**6EP1961-2BA41**		1	1 unit	586
SITOP select diagnostics modules										
 6EP1961-2BA00	24 V DC (22 ... 30 V)	--	4 x 10 A (2 ... 10 A)	72 × 90 × 90	►	**6EP1961-2BA00**		1	1 unit	586

For other units and versions, see Catalog KT 10.1 "SITOP Power Supply".

For more information about SIPLUS extreme power supplies, see www.siemens.com/siplus-extreme.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

24 V DC uninterruptible power supplies

Overview

To combat prolonged mains failures the 24 V SITOP power supply units can be upgraded into a 24 V DC uninterruptible power supply.

SITOP offers two systems with different energy stores for this purpose:

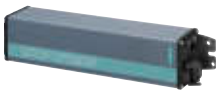
- Capacitors for 24 V buffering in the minutes range
- Battery modules which provide a buffer in the hours range

The DC-UPS systems are used for example in machine-tool building, in the textile industry, on all types of production lines and filling plants, and in conjunction with 24 V industrial PCs. They prevent the negative consequences which often result from mains failures.

DC-UPS with capacitors

To bridge brief mains failures, 24 V SITOP power supply units can be expanded with a SITOP UPS500 uninterruptible DC power supply (DC-UPS). In PC-based automation solutions, the highly capacitive double-layer capacitors of the SITOP UPS500 supply enough energy to safeguard operating and application data and close SW applications in a defined manner

- Buffering into the minutes range depending on the load current and DC-UPS configuration
- SITOP UPS500S basic units for standard mounting rails can be combined with up to 3 UPS501S expansion modules
- SITOP UPS500P in degree of protection IP65 for distributed applications
- Absolutely maintenance-free double-layer capacitors
- Short charging times
- Long service life even at high ambient temperatures
- No ventilation of the installation location required
- USB interface for PC communication
- Easy PC integration thanks to free software tool



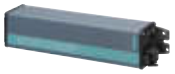
Buffer times

	SITOP UPS500S/501S configurations								**UPS500P**	
Basic unit	2.5 kWs	5 kWs	2.5 kWs	5 kWs	2.5 kWs	5 kWs	2.5 kWs	5 kWs	5 kWs	10 kWs
Expansion modules	-	-	1 x 5 kWs	1 x 5 kWs	2 x 5 kWs	2 x 5 kWs	3 x 5 kWs	3 x 5 kWs	-	-
Total energy	2.5 kWs	5 kWs	7.5 kWs	10 kWs	12.5 kWs	15 kWs	17.5 kWs	20 kWs	5 kWs	10 kWs
Load current	**Buffer times**									
0.5 A	134 s	236 s	390 s	478 s	632 s	748 s	851 s	1007 s	284 s	647 s
0.8 A	90 s	167 s	266 s	346 s	440 s	527 s	580 s	706 s	190 s	435 s
1 A	75 s	138 s	219 s	296 s	365 s	414 s	490 s	572 s	153 s	351 s
2 A	38 s	76 s	122 s	156 s	203 s	230 s	265 s	306 s	80 s	152 s
3 A	26 s	52 s	82 s	106 s	136 s	159 s	186 s	213 s	53 s	108 s
4 A	19 s	39 s	61 s	81 s	101 s	120 s	139 s	160 s	40 s	84 s
5 A	15 s	31 s	49 s	65 s	81 s	95 s	111 s	130 s	30 s	68 s
6 A	12 s	26 s	40 s	55 s	67 s	80 s	94 s	106 s	25 s	57 s
7 A	10 s	21 s	34 s	47 s	58 s	69 s	81 s	82 s	21 s	49 s
8 A	8 s	18 s	29 s	40 s	50 s	59 s	69 s	79 s	--	--
10 A	6 s	15 s	23 s	32 s	39 s	47 s	54 s	62 s	--	--
12 A	4 s	12 s	19 s	26 s	32 s	38 s	44 s	52 s	--	--
15 A	3 s	9 s	14 s	20 s	25 s	30 s	35 s	40 s	--	--

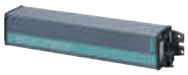
Selection and ordering data

Version	Inputs Rated voltage $U_{e\ rated}$	Outputs Rated voltage $U_{a\ rated}$	Rated current $I_{a\ rated}$	Dimensions (W × H × D) mm	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SITOP UPS500S										
Basic units 15 A										
2.5 kWs	24 V DC (22 ... 29 V DC) Infeed through SITOP 24 V DC	24 V DC ±3 %	15.2 A + approx. 2.3 A (charging mode)	120 × 125 × 125	A	**6EP1933-2EC41**		1	1 unit	585
5 kWs				120 × 125 × 125	A	**6EP1933-2EC51**		1	1 unit	585
SITOP UPS501 expansion modules										
5 kWs	Infeed through basic unit	--	--	70 × 125 × 125	A	**6EP1935-5PG01**		1	1 unit	585
SITOP UPS500P										
Basic units 7 A, degree of protection IP65										
5 kWs	24 V DC (22.5 ... 29 V DC) Infeed through SITOP 24 V DC	24 V DC ±3 %	7 A + approx. 2 A (charging mode)	400 (without plug) x 80 x 80	A	**6EP1933-2NC01**		1	1 unit	585
10 kWs				470 (without plug) x 80 x 80	A	**6EP1933-2NC11**		1	1 unit	585
Connector set for SITOP UPS500P[1)] With input and output connector and assembled UPS cable in 2 m length					A	**6EP1975-2ES00**		1	1 unit	585

6EP1933-2EC.1,
6EP1935-5PG01



6EP1933-2NC01



6EP1933-2NC11

[1)] The connector set must be ordered as optional equipment.

DC UPS with battery modules, see page 15/20 onwards.

For other units and versions, see Catalog KT 10.1 "SITOP Power Supply".

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

UPS1600 uninterruptible power supplies (with UPS1100 battery modules) NEW

Overview

To bridge longer mains failures, 24 V SITOP power supply units can be expanded with a SITOP UPS1600 uninterruptible DC power supply (DC-UPS) and SITOP UPS1100 battery modules. Intelligent battery management using Energy Storage Link automatically detects the UPS1100 energy storage device, and ensures optimum temperature-controlled charging and continuous monitoring. The compact DC-USP modules are overload-capable in order to supply e.g. the inrush current for industrial PCs. They enable starting from the battery for stand-alone operation.

The DC-UPS communicates openly through USB or Ethernet/PROFINET and can be easily integrated into the PC or PLC world. Complete integration in TIA offers user-friendly engineering in the TIA Portal and is supported by ready-to-use function blocks for S7 user programs and WinCC faceplates for rapid visualization. Use of the SITOP UPS manager also enables easy monitoring and configuration in PC systems, e.g. the shutting down of several PCs in accordance with the master-slave principle.

- Buffering into the hours range depending on the load current and DC-UPS configuration
- Compact SITOP UPS1600 DC-UPS modules with digital inputs/outputs, USB interface or two Ethernet/PROFINET interfaces
- SITOP UPS1100 battery modules with maintenance-free lead gel batteries
- High dynamic overload capability and high charging currents
- Intelligent battery management using Energy Storage Link: Automatic detection of the battery modules and selection of the optimum, temperature-controlled charging curve Monitoring of readiness, incoming cable, aging and charge status
- All diagnostic data and alarm messages are available via USB and Ethernet/PROFINET
- Start from battery modules for missing supply system voltage
- Remote monitoring with integrated web server
- SITOP UPS Manager (free software download) supports the configuration and monitoring for PC-based systems
- Complete integration in TIA:
  User-friendly engineering in the TIA Portal
  SIMATIC S7 function blocks for integration in user programs (free download)
  Ready-to-use "faceplates" for SIMATIC panels and SIMATIC WinCC (free download)

Selection and ordering data

	Rated current $I_{a\ rated}$	Inputs Rated voltage $U_{e\ rated}$	Outputs Rated voltage $U_{a\ rated}$	Dimensions (W × H × D) mm	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
UPS1600 uninterruptible power supplies (with UPS1100 battery modules)										
 6EP4134-3AB00-.AY0	**10 A**	24 V DC (22 ... 29 V DC)	24 V DC	50 × 125 × 125						
	• SITOP DC-UPS modules				B	**6EP4134-3AB00-0AY0**		1	1 unit	585
	- With USB interface				B	**6EP4134-3AB00-1AY0**		1	1 unit	585
	- With Ethernet/PROFINET				B	**6EP4134-3AB00-2AY0**		1	1 unit	585
 6EP4136-3AB00-.AY0	**20 A**	24 V DC (22 ... 29 V DC)	24 V DC	50 × 125 × 125						
	• SITOP DC-UPS modules				B	**6EP4136-3AB00-0AY0**		1	1 unit	585
	- With USB interface				B	**6EP4136-3AB00-1AY0**		1	1 unit	585
	- With Ethernet/PROFINET				B	**6EP4136-3AB00-2AY0**		1	1 unit	585

* You can order this quantity or a multiple thereof.
Illustrations are approximate

NEW **UPS1100 battery modules for UPS1600**

Overview

SITOP UPS1100 maintenance-free battery modules with 1.2 Ah to 7 Ah for SITOP UPS1600 DC-USP modules. The intelligent battery management of the UPS1600 charges the UPS1100 with the optimum temperature-controlled charging curve and monitors the status (operating data and diagnostics information) of the connected battery modules using Energy Storage Link. Up to six battery modules can be connected in parallel for longer buffer times. Mounting is on a standard mounting rail or directly on a wall.



Buffer times

Load current	Battery module 1.2 Ah	Battery module 3.2 Ah	Battery module 7 Ah
1 A	34.5 min	2.6 h	5.4 h
2 A	15.5 min	1 h	2.6 h
3 A	9 min	39.3 min	1.6 h
4 A	6.5 min	27.1 min	1.2 h
6 A	3.5 min	17.5 min	41 min
8 A	2 min	12.1 min	28.6 min
10 A	1 min	9 min	21.8 min
12 A	--	7 min	17.3 min
14 A	--	5 min	15.1 min
16 A	--	4 min	12.5 min
20 A	--	1 min	9.1 min

Selection and ordering data

	Rated current $I_{a\ rated}$	Dimensions (W × H × D)	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	A	mm						
Battery modules								
	For UPS1600 10 A							
 6EP4131-0GB00-0AY0	**1,2 Ah**	89 × 130 × 107	B	**6EP4131-0GB00-0AY0**		1	1 unit	585
 6EP4133-0GB00-0AY0	**3,2 Ah**	190 × 169 × 79	B	**6EP4133-0GB00-0AY0**		1	1 unit	585
	For UPS1600 10 A and 20 A							
 6EP4134-0GB00-0AY0	**7 Ah**	186 × 186 × 110	B	**6EP4134-0GB00-0AY0**		1	1 unit	585

* You can order this quantity or a multiple thereof.
Illustrations are approximate

DC-UPS uninterruptible power supplies (with battery modules)

Overview

DC-UPS with battery modules

To combat prolonged mains failures, the SITOP power supply units can be upgraded into a DC uninterruptible power supply.

The SITOP DC-UPS with battery modules comprising lead-gel batteries enables processes to continue for hours. Readiness, incoming cable, aging and charge status are continuously monitored. The integrated battery management ensures optimum charging of the battery modules and a long service life.

- Buffering into the hours range depending on the load current and DC-UPS configuration
- 6 A, 15 A and 40 A DC-UPS modules
- For maintenance-free battery modules up to 12 Ah
- Monitoring of readiness, incoming cable, aging and charge status
- Long service life of loads and batteries thanks to battery management
- Uninterruptible transition from standby to buffer operation
- Signaling via floating contacts
- Communication with the PC via serial interface or USB
- Easy PC integration thanks to free software tool
- Safe shutdown and correct restart of SIMATIC PCs

Selection and ordering data

	Rated current $I_{a\ rated}$	Inputs Rated voltage $U_{e\ rated}$	Outputs Rated voltage $U_{a\ rated}$	Dimensions (W × H × D) mm	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
DC-UPS modules										
 6EP1931-2DC..	**6 A**	24 V DC (22 ... 29 V DC)	24 V DC (mains operation: 21.5 ... 28.5 V, battery operation: 27.0 ... 18.5 V)	50 × 125 × 125						
	• SITOP DC-UPS modules				▶	**6EP1931-2DC21**		1	1 unit	585
	- With serial interface				▶	**6EP1931-2DC31**		1	1 unit	585
	- With USB interface				▶	**6EP1931-2DC42**		1	1 unit	585
 6EP1931-2EC.., 6AG1931-2EC21-2AA0	**15 A**	24 V DC (22 ... 29 V DC)	24 V DC (mains operation: 21.5 ... 28.5 V, battery operation: 27.0 ... 18.5 V)	50 × 125 × 125						
	• SITOP DC-UPS modules				▶	**6EP1931-2EC21**		1	1 unit	585
	- With serial interface				▶	**6EP1931-2EC31**		1	1 unit	585
	- With USB interface				▶	**6EP1931-2EC42**		1	1 unit	585
	• SIPLUS extreme For use in severe ambient conditions (corrosive gases, salt spray, condensation, dust, biologically active substances, except fauna) and in the extended temperature range -25 ... +60 °C				D	**6AG1931-2EC21-2AA0**		1	1 unit	471
 6EP1931-2FC.., 6AG1931-2FC21-7AA0	**40 A**	24 V DC (22 ... 29 V DC)	24 V DC (mains operation: 21.5 ... 28.5 V, battery operation: 27.0 ... 18.5 V)	102 x 125 x 125						
	• SITOP DC-UPS modules				▶	**6EP1931-2FC21**		1	1 unit	585
	- With USB interface				▶	**6EP1931-2FC42**		1	1 unit	585
	• SIPLUS extreme For use in severe ambient conditions (corrosive gases, salt spray, condensation, dust, biologically active substances, except fauna) and in the extended temperature range -25 ... +70 °C				D	**6AG1931-2FC21-7AA0**		1	1 unit	471

Battery modules for DC-UPS modules, see page 15/23.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

Overview

Maintenance-free battery modules comprising lead-gel batteries with 1.2 Ah to 12 Ah for ambient temperatures from 0 to +40 °C. The high-temperature battery module with 2.5 Ah is suitable for ambient temperatures from -40 °C to +60 °C. Mounting is on a standard mounting rail or directly on a wall.

Buffer times

Load current	Battery module 1.2 Ah	Battery module 3.2 Ah	Battery module 7 Ah	Battery module 12 Ah	Battery module 2.5 Ah
1 A	34.5 min	2.6 h	5.4 h	9 h	2 h
2 A	15.5 min	1 h	2.6 h	4.6 h	1h
3 A	9 min	39.3 min	1.6 h	2.9 h	37.5 min
4 A	6.5 min	27.1 min	1.2 h	2.2 h	27 min
6 A	3.5 min	17.5 min	41 min	1.2 h	17.6 min
8 A	--	12.1 min	28.6 min	53.3 min	12.5 min
10 A	--	9 min	21.8 min	43.5 min	8.8 min
12 A	--	--	17.3 min	33.3 min	6.8 min
14 A	--	--	15.1 min	27.5 min	5.1 min
16 A	--	--	12.5 min	23.8 min	4.3 min
20 A	--	--	9.1 min	20.1 min	-
25 A	--	--	--	12.6 min	--
30 A	--	--	--	9.1 min	--
35 A	--	--	--	17.1 min (2 x 12 Ah)	--
40 A	--	--	---	13.5 min (2 x 12 Ah)	---

Selection and ordering data

Version	Charging voltage at +25 °C U_{charge}	Outputs Rated voltage $U_{a\ rated}$	Dimensions (W × H × D) mm	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Battery modules									
For DC-UPS modules 6 A									
 6EP1935-6MC01									
1.2 Ah	27.0 V DC	24 V DC (end of charge voltage: 27.0 V DC, exhaustive discharge protection: 18.5 V DC)	96 × 106 × 108	►	**6EP1935-6MC01**		1	1 unit	585
For DC-UPS modules 6 A and 15A									
2.5 Ah/ high-temperature battery	27.7 V DC	24 V DC (end of charge voltage: 27.7 V DC, exhaustive discharge protection: 18.5 V DC)	265 × 151 × 91	►	**6EP1935-6MD31**		1	1 unit	585
3.2 Ah	27.0 V DC	24 V DC (end of charge voltage: 27.0 V DC, exhaustive discharge protection: 18.5 V DC)	190 × 151 × 82	►	**6EP1935-6MD11**		1	1 unit	585
For DC-UPS modules 6 A to 40 A									
 6EP1935-6ME21									
7 Ah	27.0 V DC	24 V DC (end of charge voltage: 27.0 V DC, exhaustive discharge protection: 18.5 V DC)	186 x 168 x 121	►	**6EP1935-6ME21**		1	1 unit	585
12 Ah	27.0 V DC		253 x 168 x 121	►	**6EP1935-6MF01**		1	1 unit	585

For other units and versions, see Catalog KT 10.1 "SITOP Power Supply".

For more information about SIPLUS extreme power supplies, see www.siemens.com/siplus-extreme.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

General data

Overview

Heating control systems

SIPLUS HCS heating control systems: Industrial heating processes – maximum precision and efficiency

In manufacturing processes where temperature plays a crucial role, deviations of just a few degrees can cause enormous quality problems. To avoid this and to minimize rejection rates, high-precision and reliable, individual control of the electrical heating elements is essential.

Nearly all industrially manufactured products undergo heat treatment. Even slight deviations in the heating process can lead to a huge impairment of product quality.

To increase the quality and quantity of a heat-treated product it is important to be able to focus the energy required with the highest level of precision in terms of both time and space. The SIPLUS HCS ensures utmost precision in the control of electrical heating elements such as infrared heaters.

Three heating control systems are available:

- With integrated power outputs – compact design
- With integrated power outputs – modular design
- Without integrated power outputs

The SIPLUS HCS family of heating control systems saves time, costs and resources when it comes to configuring, commissioning, operation and maintenance.

This is achieved by:

- Simple integration into existing automation systems such as SIMATIC and SIMOTION
- Low wiring outlay and user-friendly engineering
- Intelligent diagnostics options for swift fault detection
- Service-friendly design thanks to ready-to-use function and data blocks
- Reduced volume in the control cabinet with spacing savings of up to 50 %

For an overview of available heating control systems, see page 15/3.

For more information, see Industry Mall or www.siemens.com/siplus-hcs.

Benefits

- Significantly increased plant availability thanks to detailed, intelligent diagnostics functions and fast localization of faults in the heating process
- Simple integration into existing automation systems
- Automation from a single source: Easy data management with TIA
- Easy commissioning with STEP 7 and TIA Portal

Application

The SIPLUS HCS heating control systems are designed for use in the SIMATIC industrial automation system and the SIMOTION motion control system.

They are used above all in the following industries and plants:

- Plastics industry: thermoforming, blow molding, injection molding and extrusion
- Automotive industry: drying tunnels in paint shops
- Food and beverage industry, e.g. packaging lines and PET blow molding

Overview

The distributed solution for deployment in proximity to heating elements – ideally suited for the linear setup of heat emitter arrays, for example when controlling heat emitter arrays to heat preforms in PET blow molding machines.

SIPLUS HCS3200 heating control system

Overview

SIPLUS HCS3200 heating control system with fixing brackets

The SIPLUS HCS3200 heating control system was developed as a compact solution for controlling linear heat emitter arrays.

Thanks to the high IP65 degree of protection, it can be used independently of a control cabinet in a distributed location near the emitters.

Benefits

- Rugged thanks to high IP65 protection

Application

- Heating solutions which require distributed connection of the heating control system with a high degree of protection, e.g.
  - PET blow molding machines
  - Roasting/baking/melting/drying of foodstuffs
- Applications with a small number of heater elements, e.g.
  - Vulcanizing machines
  - Spot repair emitters
  - Drying of coatings on headlights
- Applications requiring medium outputs, e.g.
  - Welding of tanks
  - Drying of paint, e.g. on gas tanks
  - Drying of coatings on alloy wheel rims
  - Forming of loudspeaker covers
  - Drying the screen printing on screens

Design

The main components of the HCS3200 heating control system are:

- HCS3200 device built into a metal enclosure with IP65 degree of protection
- Four mounting brackets for attaching the device (included in scope of supply)

Function

Communications

- Are executed via PROFIBUS DP at 12 Mbit/s
- For importing the parameter settings from the higher-level control system
- For transferring the diagnostics information to the higher-level control system
- Communication takes place via the ECOFAST X3/X4 plugs and can be looped through from device to device using daisy chaining

Performance features

- Calculation of output control variables of power output channels
- Setpoint values are adjustable in 1 % increments from 0 % to 100 %
- Zero cross-switching solid-state relays (SSR)
- External fan output for connection of a 230 V AC fan up to 500 W

Diagnostics

The following faults are detected:

- Heating element fault
- Breakdown of solid-state relay (SSR)
- Incoming line fuse has tripped
- Outgoing fuse has tripped or solid-state relay (SSR) has high resistance
- Monitoring of the fan outlet

Air extraction

- An internal fan is used in order to obtain uniform heat distribution within the enclosure. The fan is controlled according to the internal temperature and is also monitored. If the fan is not functioning correctly, a fault is signaled to the user
- The internal fan is available as an accessory and can be replaced if it becomes defective

Power supply to the main circuit

- The power supply is two-phase with a voltage of 400 V AC (± 10 %)
- The mains frequency is 50/60 Hz (± 5 %)

Power supply to the internal electronics

- The internal electronics of the device must be supplied with 24 V DC ± 20 % (PELV = Protective Extra Low Voltage)
- The maximum current consumed per device is 0.25 A
- Connection for 24 V DC power supply and PROFIBUS DP via the ECOFAST X3/X4 plugs
- The 24 V DC supply can be looped through from device to device using daisy chaining

Power outputs

- Nine power outputs are available for each device
- Max. 4 000 W switching capacity per output
- Max. 25 200 W switching capacity per device

Fan output

An external 230 V AC fan with a maximum output of 500 W can be operated.

Temperature monitoring

The SIPLUS HCS3200 heating control system is fitted with a sensor for monitoring the internal temperature. When a temperature threshold that is permanently set in the hardware is overshot, all the outputs (power outputs and the external fan) are automatically switched off to prevent damage to the device.

Fuses

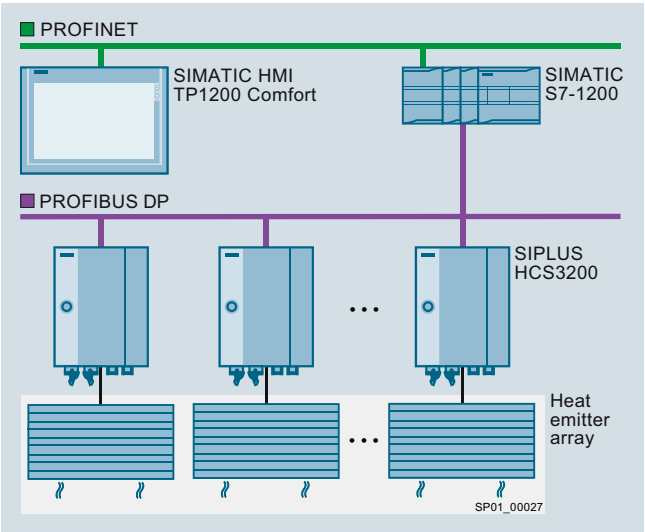
- Two gG 16 A fuses per power output for protecting the power outputs
- One gG 4 A fuse for protecting the fan output
- All fuses are fitted in fuse holders and are easily accessible

Integration

The SIPLUS HCS3200 heating control system is a distributed I/O device. It communicates via the PROFIBUS DP fieldbus with the SIMATIC S7 controller.

A complete system includes the following components:

- SIPLUS HCS3200 heating control system
- Higher-level control through SIMATIC S7 automation system with integrated interface for PROFIBUS DP or SIMOTION
- PROFIBUS DP
- Cabling
- Heat emitter array
- HMI panel (optional)



Application example with SIMATIC and SIPLUS HCS3200

Technical specifications

Type		**6BK1932-0BA00-0AA0**
Product designation		HCS3200 fan
General data		
Type of control of heat emitters		Half-wave control
Type of load		Resistive load
Reference designations according to IEC 81346-2		Q
Degree of pollution		2
Approvals / Certificates		
Certificate of suitability		CE
Supply voltage		
Type of voltage of the supply voltage		AC
Supply voltage at AC, rated value	V	400
• Relative negative tolerance	%	10
• Relative positive tolerance	%	10
Supply voltage frequency		
• 1	Hz	50
• 2	Hz	60
• Relative symmetrical tolerance		5
Switching capacity current per phase, maximum	A	63
Breaking capacity, short-circuit current limit (I_{cu}) at 400 V, rated value	kA	25
Type of electrical isolation		Optocoupler between main circuit and PELV
Maximum permissible power carrying capacity	W	25 200
Type of electrical connection for supply voltage		Connector socket, 4-pole + PE
Type of connectable conductor cross-sections for supply voltage		
• Finely stranded with end sleeve	mm^2	3 x (6 ... 25), 1 x PE (6 ... 16)
• Finely stranded for AWG cables	AWG	3 x (8 ... 4)
Power electronics		
Number of outputs		
• For fans		1
• For heating power		9
Number of heat emitters per output, maximum		1
Output voltage at the output		
• For heating power	V	400
• For fans	V	230
Power carrying capacity		
• Per output	W	200 ... 4 000
• For fans per output	W	60 ... 500
Output voltage at the output for heating power, rated value	V	10
Electrical separation between the outputs		No
Version of short-circuit protection		
• At the output for fan		4 A melting fuse
• For heating power per output		16 A melting fuse
Type of electrical connection at output for heater and fan		Connector sockets, 20-pole + PE
Type of connectable conductor cross-sections for heater and fans		
• Finely stranded with end sleeve	mm^2	20 x (1.5 ... 4), 1 x PE (1.5 ... 16)
• Finely stranded for AWG cables	AWG	20 x (18 ... 12)
Measuring inputs for voltage		
Product function voltage measuring		Yes
Communications		
Protocol is supported PROFIBUS DP protocol		Yes
Interface version		PROFIBUS DP
Transmission rate for PROFIBUS DP, maximum	Mbit/s	12
Type of electrical connection of the PROFIBUS interface		ECOFAST
Display		
Number of status displays		2
Type of status displays using LEDs		• LED green = status indicator • LED red = fault indicator

SIPLUS HCS3200 heating control system

Type		6BK1932-0BA00-0AA0
Product designation		HCS3200 fan
Auxiliary circuit		
Design of the power supply		External
Type of voltage		DC
Supply voltage for electronics	V	24
• Relative symmetrical tolerance of the input voltage	%	20
Consumed current for electronics, maximum	A	0.25
Monitoring functions		
Product function temperature monitoring		Yes
Type of temperature monitoring		NTC thermistors
Diagnostics functions		Fuse diagnostics
• Blown fuse		Yes
• Open circuit		Yes
• Heat emitter break		Yes
Mechanical features		
Mounting position		Vertical
Type of mounting		Screw attachment
Type of ventilation		Self-ventilation
Shock resistance		
• According to IEC 60068-2-27		15 *g*/11 ms/3 shocks/axis
• According to IEC 60068-2-29		25 *g*/6 ms/1 000 shocks/axis
Vibration resistance		
• During operation according to IEC 60068-2-6		10 ... 58 Hz/0.15 mm, 58 ... 150 Hz/1 *g*
• During storage according to IEC 60068-2-6		5 ... 9 Hz/3.5 mm, 9 ... 500 Hz/1 *g*
IP degree of protection		IP65
Dimensions		
• Width	mm	300
• Height	mm	380
• Depth	mm	200
Electromagnetic compatibility		
Conducted interference BURST according to IEC 61000-4-4		2 kV power supply cables/1 kV signal cables
Conducted interference SURGE according to IEC 61000-4-5		• On supply cables: 1 kV symmetrical, 2 kV asymmetrical, (24 V DC supply only with external protective measure) • On PROFIBUS DP cable: 1 kV asymmetrical
Conducted interference as high-frequency interference according to IEC 61000-4-6		10 V (0.15 ... 80 MHz)
Electrostatic discharge according to IEC 61000-4-2		4 kV contact discharge/8 kV air discharge
Field-related interference according to IEC 61000-4-3		10 V/m (80 ... 1 000 MHz), 3 V/m (1.4 ... 2.0 GHz), 1 V/m (2.0 ... 2.7 GHz)
EMC emitted interference		According to IEC 61000-6-4:2007 + A1:2011
Overvoltage category		III
Climatic ambient conditions		
Ambient temperature		
• During operation	°C	0 … 50
• During storage	°C	-40 … +70
• During transport	°C	-40 … +70
Air pressure		
• During operation	hPa	860 … 1 080
• During storage	hPa	660 … 1 080
Maximum relative humidity at 25 °C		95
• At 25 °C during operation maximum	%	95
• At 50 °C during operation maximum	%	50
Installation altitude at height above sea level, maximum	m	2 000

Selection and ordering data

Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIPLUS HCS3200 heating control system						
 6BK1932-0BA00-0AA0 with fixing brackets	HCS3200 fan	X	**6BK1932-0BA00-0AA0**		1	1 unit	475

More information

For more product details, see the operating instructions "SIPLUS HCS3200 Heating control system", http://support.automation.siemens.com/WW/view/en/69048101.

For more information, see Industry Mall or www.siemens.com/siplus-hcs.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

General data

Overview

The cost-optimized, space-saving solution for use in a central control cabinet with an almost unlimited number of power outputs, e.g. for controlling the heat emitter arrays in thermoforming machines or drying ovens in the automotive industry.

SIPLUS HCS716I heating control system > General data

Overview

SIPLUS HCS716I heating control system

The SIPLUS HCS716I heating control system was developed as a cost-optimized controller of heat emitter arrays in thermoforming machines. It is suitable for all generally available radiation devices such as quartz, quartz material, ceramic, halogen and infrared radiation devices.

The SIPLUS HCS716I can be used wherever resistive loads of small to medium output require switching at low-cost in an industrial environment.

The SIPLUS HCS716I range is comprised of four racks and three power output modules.

Benefits

- High degree of modularity in terms of number of channels and channel performance

Application

The SIPLUS HCS716I heating control system is used, for example, to switch the small and medium output heat emitter arrays in thermoforming machines, drying ovens and packaging machines.

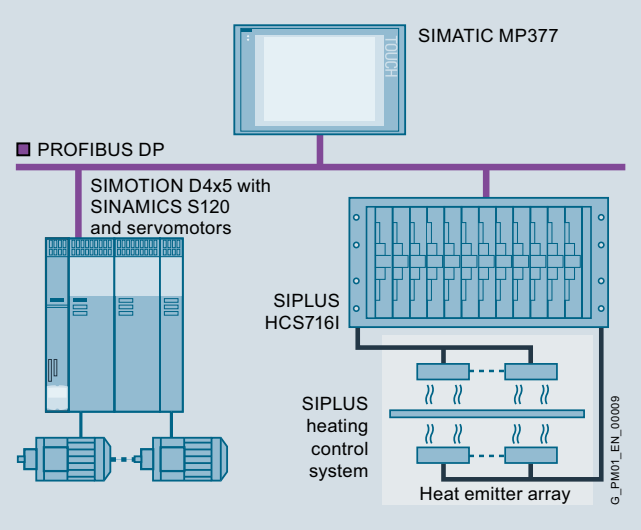
The SIPLUS HCS716I is a distributed I/O unit (slave) that communicates over the PROFIBUS DP fieldbus with a higher-level control system (master) such as SIMATIC S7/SIMOTION.

Design

The main components of the SIPLUS HCS716I heating control system are:

- 19" rack with bus board for inserting up to 4 or up to 12 power output modules, as well as a control module and CPU module
- Power output modules in double-height Eurocard format with 8/16 output channels
- Fan unit with one or three fans (option)
- Communication over PROFIBUS DP, e.g. with SIMOTION, SIMATIC S7, or industrial PC
- Plug-in card system on the front

Integration



Application example with SIMOTION, SINAMICS and SIPLUS HCS716I

Technical specifications

Type		6BK1700-2AA00-0AA1	2AA10-0AA1	2AA70-0AA0	2AA80-0AA0	3AA00-0AA0	6BK1700-2BA70-0AA1	4BA80-0AA0	4CA00-0AA0
Product designation		Racks					Power output modules		
		Hinged frame	Mounting frame With flange	Mounting frame Without flange	Narrow version	Expansion frame	LA716	LA716I	LA716I HP
Approvals / Certificates									
Certificate of suitability		CE, KCC							
Supply voltage									
Type of voltage of the supply voltage		AC							
Supply voltage at AC, rated value	V	230				--	230		
• Relative negative tolerance	%	18							
• Relative positive tolerance	%	15							
Supply voltage frequency									
• 1	Hz	50							
• 2	Hz	60							
• Relative symmetrical tolerance	%	5							
Communications									
Interface version		PROFIBUS DP					System interface		
Mechanical features									
Mounting position		Horizontal					Vertical		
Type of mounting		In one hinged frame	Rear panel control cabinet				Fixing clips in racks		
Type of ventilation		Self-ventilation or forced ventilation							
Shock resistance according to IEC 60068-2-27		15 *g*/11 ms/3 shocks/axis							
Vibration resistance									
• During operation according to IEC 60068-2-6		10 ... 58 Hz/0.15 mm, 58 ... 150 Hz/1 *g*							
• During storage according to IEC 60068-2-6		5 ... 9 Hz/3.5 mm, 9 ... 500 Hz/1 *g*							
IP degree of protection		IP00							
Dimensions									
• Width	mm	483	510		202.7		31		
• Height	mm	265.5	310		309.5		233.4		
• Depth	mm	350	330		287		241	279	

General data

Type		6BK1700-2AA00-0AA1	2AA10-0AA1	2AA70-0AA0	2AA80-0AA0	3AA00-0AA0	6BK1700-2BA70-0AA1	4BA80-0AA0	4CA00-0AA0
Product designation		Racks					Power output modules		
		Hinged frame	Mounting frame With flange	Mounting frame Without flange	Narrow version	Expansion frame	LA716	LA716I	LA716I HP
Electromagnetic compatibility									
Conducted interference BURST according to IEC 61000-4-4		2 kV power supply cables/2 kV signal cables							
Conducted interference SURGE according to IEC 61000-4-5		• On supply cables - 1 kV symmetrical - 2 kV asymmetrical • On PROFIBUS DP cable - 1 kV asymmetrical				--	• On power supply and signal cables - 1 kV symmetrical - 2 kV asymmetrical		
Conducted interference as high-frequency interference according to IEC 61000-4-6		10 V effective in the frequency range 0.15 ... 80 MHz, modulation 80 % AM with 1 kHz, assessment criterion A					10 V (0.15 ... 80 MHz)		
Electrostatic discharge according to IEC 61000-4-2		4 kV contact discharge / 8 kV air discharge							
Field-related interference according to IEC 61000-4-3		10 V/m (80 ... 1 000 MHz), 3 V/m (1.4 ... 2.0 GHz), 1 V/m (2.0 ... 2.7 GHz)							
EMC emitted interference		According to IEC 61000-6-4:2007 + A1:2011							
Overvoltage category		III							
Climatic ambient conditions									
Ambient temperature									
• During operation	°C	0 … 55							
• During storage	°C	-40 … +70							
• During transport	°C	-40 … +70							
Air pressure									
• During operation	hPa	860 … 1 080							
• During storage	hPa	660 … 1 080							
Relative humidity									
• At 25 °C - Max.	%	95							
Installation altitude at height above sea level, maximum	m	2 000							

More information

For more product details, see the operating instructions "Heater controller SIPLUS HCS716I", http://support.automation.siemens.com/WW/view/en/50695867.

For more information, see Industry Mall or www.siemens.com/siplus-hcs.

Overview

The rack is the mechanical framework of the SIPLUS HCS716I and contains all the modules required to control the power outputs.

These are available in four different versions:

- Rack hinged frame
- Rack mounting frame
- Rack mounting frame without flange
- Rack mounting frame, narrow version, and expansion frame, narrow version

Rack hinged frame

The CPU module and the control module are located at the rear of the rack. This rack is suitable for installation in a hinged frame.

Rack hinged frame 6BK1700-2AA00-0AA1

Rack mounting frame

The CPU module and the control module are located on the right-hand side of the rack. This rack is suitable for direct installation in a control cabinet.

Rack mounting frame 6BK1700-2AA10-0AA1

Rack mounting frame without flange

The CPU module and the control module are also located on the right-hand side of the rack. This rack is suitable for installation in a control cabinet. In contrast to the mounting frame, this version has no mounting bracket (flange) at the front.

Rack mounting frame without flange 6BK1700-2AA70-0AA0

Rack mounting frame, narrow version, and expansion frame, narrow version

The CPU module and the control module are also located on the right-hand side of the rack. This rack is suitable for installation in a control cabinet. It accommodates up to four power output modules and can be extended with the expansion frame to take a further four power output modules. The expansion frame is mounted on the left of the mounting frame, narrow version, and is connected to it by a cable.

A fan unit is also available as an accessory. It is fitted to the rack mounting frame, narrow version, and to the expansion frame, narrow version, from underneath.

Rack mounting frame narrow version 6BK1700-2AA80-0AA0 (right), and expansion frame narrow version 6BK1700-3AA00-0AA0 (left), with fan units 6BK1700-2GA10-0AA0 attached below

Fan unit 6BK1700-2GA10-0AA0

Racks

Design

- 19" rack
  - Rear panel for CPU module, control module and bus module
  - Mountings for 4 or 12 power output modules
  - Partition as cover when slots are not all populated
- CPU module with PROFIBUS interface module
- Control module
  - Power supply for the modules of the heating control system
  - Decoding for controlling the power output modules
- Bus module
  - Contains 4 or 12 direct plug-in connectors for connecting the control module to the power output modules
- Heat dissipation possible with optional fan units

Function

Communications

- PROFIBUS DP
  - Import of the parameter settings from the higher-level control system
  - Transfer of the diagnostics information to the higher-level control system
- Internal system bus via bus PCB
- Controlling and monitoring up to 192 power channels

Performance features

- Calculation of the emitter control variables for the power output channels
- Setpoint values are adjustable in 1 % increments from 0 % to 100 %

Diagnostics

- Evaluation of diagnostics information from connected power output modules
- Automatic detection of the line frequency

Forced ventilation

Depending on the switching capacity and ambient temperature, the rack may have to be force-ventilated. Fan units for this purpose are available as optional accessories (see page 15/36).

For detailed information, see the operating instructions "Heater controller SIPLUS HCS716I", http://support.automation.siemens.com/WW/view/en/50695867.

Technical specifications

Type		6BK1700-2AA00-0AA1	2AA10-0AA1	2AA70-0AA0	2AA80-0AA0	3AA00-0AA0
Product designation		Racks				
		Hinged frame	Mounting frame			Expansion frame
			With flange	Without flange	Narrow version	
General data						
Reference designations according to IEC 81346-2		K				
Number of slots		12			4	
Type of power output module connectable		LA716/LA716I/LA716I HP				
Degree of pollution		2				
Supply voltage						
Active power input	W	15				
Mains failure buffering time	ms	20				
Recovery time after mains failure, typical	s	1				
Power carrying capacity						
• With fan per rack	kW	176			59	
• Without fan per rack	kW	67			22	
Type of electrical connection for supply voltage		Plug, 2-pole				
Type of connectable conductor cross-sections for supply voltage						
• Solid	mm^2	1 x (0.2 ... 2.5)				
• Finely stranded with end sleeve	mm^2	1 x (0.25 ... 2.5)				
• Finely stranded for AWG cables	AWG	24 ... 12				
Dimensions						
• Width	mm	483	510		202.7	
• Height	mm	265.5	310		309.5	
• Depth	mm	350	330		287	
Communications						
Protocol is supported PROFIBUS DP protocol		Yes				
Transmission rate for PROFIBUS DP, maximum	Mbit/s	12				
Type of electrical connection of the PROFIBUS interface		9-pin sub D socket				
Display						
Number of status displays		2				
Type of status displays using LEDs		• LED green = status indicator • LED red = fault indicator				

Selection and ordering data

	Number of slots	Type of power output module connectable	Interface version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Rack hinged frame									
 6BK1700-2AA00-0AA1	12	LA716/LA716I/ LA716I HP	PROFIBUS DP	C	**6BK1700-2AA00-0AA1**		1	1 unit	475
Rack mounting frame									
 6BK1700-2AA10-0AA1	12	LA716/LA716I/ LA716I HP	PROFIBUS DP	C	**6BK1700-2AA10-0AA1**		1	1 unit	475
Rack mounting frame without flange									
 6BK1700-2AA70-0AA0	12	LA716/LA716I/ LA716I HP	PROFIBUS DP	C	**6BK1700-2AA70-0AA0**		1	1 unit	475
Rack mounting frame, narrow version									
 6BK1700-3AA00-0AA0 (left) with 6BK1700-2AA80-0AA0 (right) with fan units attached below	**Mounting frame, narrow version**								
	4	LA716/LA716I/ LA716I HP	PROFIBUS DP	C	**6BK1700-2AA80-0AA0**		1	1 unit	475
	Expansion frame, narrow version								
	4	LA716/LA716I/ LA716I HP	PROFIBUS DP	C	**6BK1700-3AA00-0AA0**		1	1 unit	475

Accessories, see next page.

Racks

Accessories

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
For rack hinged frame, rack mounting frame and rack mounting frame without flange						
Fan units[1]						
• 230 V AC with 3 fans		On request[1]				
• 115 … 230 V AC/24 V DC with 3 fans and speed monitoring		On request[1]				
These are fitted to the racks from below.						
For rack mounting frame, narrov version and expansion frame, narrow version						
 6BK1700-2GA10-0AA0 **Fan unit** • 230 V AC with 1 fan This is attached from below to the rack mounting frame, narrow version and to the expansion frame, narrow version.	C	**6BK1700-2GA10-0AA0**		1	1 unit	475

[1] Fan units for the rack hinged frames, rack mounting frames and rack mounting frames without flange are available from: HEITEC AG, see Chapter 16 "Appendix" → "External partners".

More information

For more information, see Industry Mall or www.siemens.com/siplus-hcs.

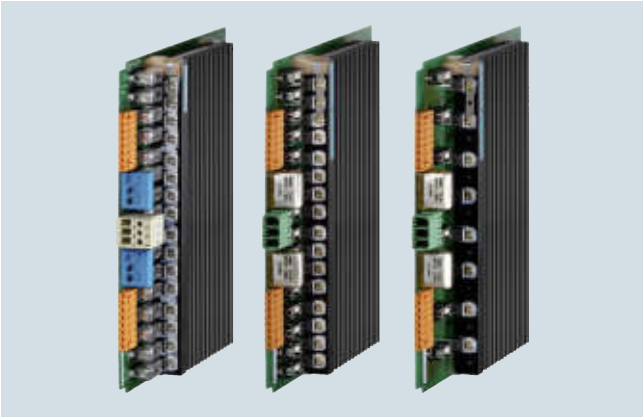
* You can order this quantity or a multiple thereof.
Illustrations are approximate

Overview

The power output modules are an important component of the SIPLUS HCS716I heating control system.

Three different power output modules can be used depending on the application:

- LA716 power output module – the **universal** version
- LA716I power output module – the **innovative** version
- LA716I HP power output module – the **HighPower** version



LA716 (left), LA716I (center) and LA716I HP (right) power output modules

LA716 power output module

The **universal** power output module provides 16 channels for switching on resistive loads. A maximum of 650 W can be used for each output channel.

LA716I power output module

The **innovative** power output module provides 16 channels for switching on resistive loads. A maximum of 1 150 W can be used for each output channel.

LA716I HP power output module

The **HighPower** version provides 8 channels for switching on resistive loads. A maximum of 2 300 W can be used for each output channel.

Design

- Connection of the heat emitter via two 8-pole mating connectors (The heat emitters and the mating connectors are ordered separately).
- Mains infeed at the front:
  - LA716 power output module: 3-pole terminal (Lx/N/Ly)
  - LA716I and LA716I HP power output modules: 3-pole plug connector (Lx/N/Ly)

Function

Protector elements

- Power triacs with zero crossover switching
- Protection of triacs and opto-triacs by means of Transil diodes against overvoltage

Output power

LA716 power output module

- 16 power output channels 230 V each (8 outputs per phase)
- Max. 10 400 W switching capacity per module

LA716I power output module

- 16 power output channels 230 V each (8 outputs per phase)
- Max. 14 720 W switching capacity per module

LA716I HP power output module

- 8 power output channels 230 V each (4 outputs per phase)
- Max. 14 720 W switching capacity per module

Temperature monitoring

There is an NTC thermistor on the heat sink for monitoring its temperature. In the event of an overtemperature, this temperature-dependent resistor issues a signal to the higher-level control system.

Fuses

LA716 power output module

- Each output is protected with a 5 A fuse in an accessible fuse holder for the protection of the power triacs
- A fuse cover is available as touch protection

LA716I power output module

- Each output is protected with a 5 A fuse in an accessible fuse holder for the protection of the power triacs
- A plexiglas cover is available on the front side as touch protection

LA716I HP power output module

- Each output is protected with a 10 A fuse in an accessible fuse holder for the protection of the power triacs
- A plexiglas cover is available on the front side as touch protection

Diagnostics option

Standard diagnostics are provided for detecting the following faults:

- Circuit breaker triac at high resistance or internal fuse blown
- Channel fuse blown on the module
- External faults such as a blown fuse, broken heat emitter or broken cable

Power output modules

Technical specifications

Type		6BK1700-2BA70-0AA1	6BK1700-4BA80-0AA0	6BK1700-4CA00-0AA0
Product designation		Power output modules		
		LA716	LA716I	LA716I HP
General data				
Type of control of heat emitters		Full-wave control		
Type of load		Resistive load		
Reference designations according to IEC 81346-2		Q		
Degree of pollution		2		
Supply voltage				
Switching capacity current per phase, maximum		23	32	
Type of electrical isolation		Optocoupler between main circuit and SELV/PELV		
Power carrying capacity				
• Of the module for delta connection at 40 °C				
- With fan maximum	W	10 400	14 720	
- Without fan maximum	W	6 200	6 500	
• Maximum permissible	W	10 400	14 720	
Type of electrical connection for supply voltage		Terminal, 3-pole	Plug, 3-pole	
Type of connectable conductor cross-sections				
• Supply voltage				
- Solid	mm^2	1 x (0.5 ... 6)	1 x (0.2 ... 10)	1 x (0.2 ... 10)
- Finely stranded with end sleeve	mm^2	1 x (0.5 ... 4)	1 x (0.25 ... 6)	1 x (0.25 ... 6)
- Finely stranded for AWG cables	AWG	22 ... 10	24 ... 8	24 ... 8
Power electronics				
Number of outputs for heating power		16		8
Number of heat emitters per output, maximum		1		
Output voltage with wye connection		230		
Version of the overvoltage protection		Transil diodes		
Power carrying capacity				
• Per output	W	75 … 650	75 … 1 150	75 … 2 300
Output current at the output for heating power, rated value	A	5		10
Type of short-circuit protection for heating power per output		5 A melting fuse		10 A melting fuse
• Electrical separation between the outputs		No		
Type of electrical connection at output for heater and fan		8-pole socket connector		
Type of connectable conductor cross-sections				
• For heater and fans				
- Solid	mm^2	1 x (0.2 ... 1.5)		
- Finely stranded with end sleeve	mm^2	1 x (0.2 ... 1.5)		
• Finely stranded for AWG cables	AWG	28 ... 16		
Dimensions				
• Width	mm	31		
• Height	mm	233.4		
• Depth	mm	241	279	
Auxiliary circuit				
Design of the power supply		Supply through racks		
Monitoring functions				
Product function temperature monitoring		Yes		
Type of temperature monitoring		NTC thermistors		
Diagnostics function		Voltage diagnostics		
• Blown fuse		Yes		
• Open circuit		Yes		
• Heat emitter break		Yes		

Selection and ordering data

	Number of outputs for heating power	Power carrying capacity per output max.	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		W						
LA716 power output module								
 6BK1700-2BA70-0AA1	16	650	C	**6BK1700-2BA70-0AA1**		1	1 unit	475
LA716I power output module								
 6BK1700-4BA80-0AA0	16	1 150	C	**6BK1700-4BA80-0AA0**		1	1 unit	475
LA716I HP power output module								
 6BK1700-4CA00-0AA0	8	2 300	C	**6BK1700-4CA00-0AA0**		1	1 unit	475

Accessories

Version	For power output module	Type
Fuse		
• 5 A quick/250 V	LA716, LA716I	200021116
• 10 A quick/250 V	LA716I HP	A5E00186303
Mating connectors		
• 3-pole for mains connection	LA716I, LA716I HP	A5E30280233
• 8-pole for connection of the heat emitters	LA716, LA716I, LA716I HP	A5E00507233

More information

For more information, see Industry Mall or www.siemens.com/siplus-hcs.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

General data

Overview

SIPLUS HCS724I heating control system

The SIPLUS HCS724I heating control system controls and switches heat emitter arrays and other resistive loads of medium to high output in the industrial environment.

It is connected through PROFIBUS DP and can be used together with for example SIMATIC S7 to form a highly modern and powerful automation system. As an option, a line-voltage sensing module can be integrated in order to compensate automatically and internally for variations in the line voltage.

Benefits

- Time savings by means of adaptation to each production process
- Excellent product quality thanks to integrated line voltage compensation

Application

The SIPLUS HCS724I heating control system is used for example for controlling heat emitter arrays:

- Thermoforming machines
- Blow-molding machines
- Plastic welding machines
- Drying ovens

Design

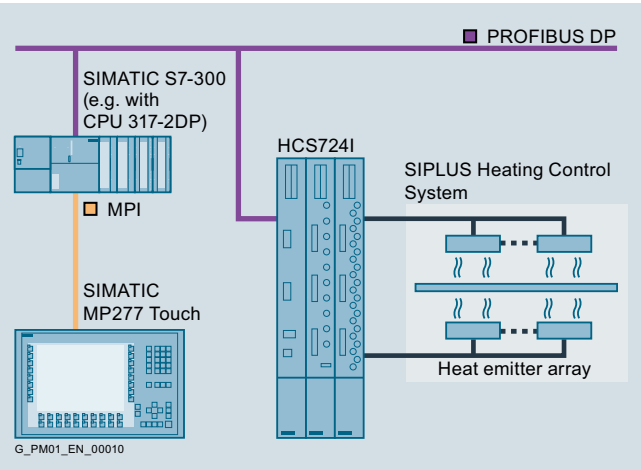
The main components of the SIPLUS HCS724I heating control system are:

- Central interface module
- LA724I/LA724I HP/LA724I SSR power output modules: Up to 16 power output modules can be connected.
- Line-voltage sensing module (option)
- Fan module (option)
- Current measuring module (option)
- Communication over PROFIBUS DP, e.g. with SIMOTION, SIMATIC S7, or industrial PC

The central interface module and the LA724I/LA724I HP/ LA724I SSR power output modules are installed in a metal enclosure and mounted on a mounting plate in the control cabinet.

Customized, distributed solutions are also possible.

Integration



Application example with SIMOTION, SINAMICS and SIPLUS HCS724I

Technical specifications

Type		6BK1700-2BA30-0AA0	6BK1700-2BA00-0AA0	4BA70-0AA0	2BA10-0AA0	6ES7171-1XX00-6AA0	6ES7171-3AA00-0AA0	6BK1700-2BA40-0AA0
Product designation		Central interface module ZA724I	Power output modules LA724I	LA724I HP	LA724I SSR	Line-voltage sensing module NE724	Fan module LM724	Current measuring module SM724I
General data								
Reference designations according to IEC 81346-2		K	Q		K	T	G	T
Degree of pollution		2						
Approvals / Certificates								
Certificate of suitability		CE, KCC						
Supply voltage								
Type of voltage of the supply voltage		AC				--	AC	--
Supply voltage at AC, rated value	V	230		400		--	230	--
• Relative negative tolerance of the supply voltage	%	18				--	18	--
• Relative positive tolerance of the supply voltage	%	15				--	15	--
Type of electrical connection for supply voltage		Terminal 2-pole	Busbars or ring terminal lugs			4 connecting cables with ring terminal lug	Plug, 2-pole	Terminal 16-pole
Communications								
Interface version		PROFIBUS DP	System interface				--	
Mechanical features								
Mounting position		Vertical					Horizontal	Vertical
Type of mounting		Screws in fixing lugs on the top and bottom				--	Mounting clips	Screws in fixing lugs on the top and bottom
Type of ventilation		Self-ventilation or forced ventilation			Self-ventilation	Self-ventilation or forced ventilation		
Shock resistance								
• According to IEC 60068-2-27		15 *g*/11 ms/3 shocks/axis						
• According to IEC 60068-2-29		25 *g*/6 ms/1 000 shocks/axis						
Vibration resistance								
• During operation according to IEC 60068-2-6		10 ... 58 Hz/0.15 mm, 58 ... 150 Hz/1 *g*						
• During storage according to IEC 60068-2-6		5 ... 9 Hz/3.5 mm, 9 ... 500 Hz/1 *g*						
IP degree of protection		IP20						
Dimensions								
• Width	mm	50				86	100	150
• Height	mm	480				22	50	77.5
• Depth	mm	210				160	162	115
Electromagnetic compatibility								
Conducted interference BURST according to IEC 61000-4-4		2 kV power supply cables/2 kV signal cables						
Conducted interference SURGE according to IEC 61000-4-5		• On supply cables - 1 kV symmetrical - 2 kV asymmetrical • On PROFIBUS cable - 1 kV asymmetrical	• On power supply and signal cables - 1 kV symmetrical - 2 kV asymmetrical					
Conducted interference as high-frequency interference according to IEC 61000-4-6		10 V (0.15 ... 80 MHz)						
Electrostatic discharge according to IEC 61000-4-2		4 kV contact discharge/8 kV air discharge						
Field-related interference according to IEC 61000-4-3		10 V/m (80 ... 1 000 MHz), 3 V/m (1.4 ... 2.0 GHz), 1 V/m (2.0 ... 2.7 GHz)						
EMC emitted interference		Limit value class A acc. to EN 55011 Group 1						
Overvoltage category		III						

General data

Type		6BK1700-2BA30-0AA0	6BK1700-2BA00-0AA0	4BA70-0AA0	2BA10-0AA0	6ES7171-1XX00-6AA0	6ES7171-3AA00-0AA0	6BK1700-2BA40-0AA0
Product designation		Central interface module ZA724I	Power output modules LA724I	LA724I HP	LA724I SSR	Line-voltage sensing module NE724	Fan module LM724	Current measuring module SM724I
Climatic ambient conditions								
Ambient temperature								
• During operation	°C	0 … 55						
• During storage	°C	-40 … +70						
• During transport	°C	-40 … +70						
Air pressure								
• During operation	hPa	860 … 1 080						
• During storage	hPa	660 … 1 080						
Installation altitude at height above sea level, maximum	m	2 000						
Relative humidity								
• At 25 °C - Max.	%	95						

More information

For more product details, see the operating instructions "SIPLUS HCS724I Heating control system", http://support.automation.siemens.com/WW/view/en/55336534.

For more information, see Industry Mall or www.siemens.com/siplus-hcs.

Overview

Central interface module

The central interface module is the intelligent processor module of the SIPLUS HCS724I heating control system.

Design

- Module encapsulated in a metal enclosure
- Two LEDs for operating state (green) and fault indication (red)
- PROFIBUS DP interface (up to 12 Mbaud)
- Rotary switch for setting the PROFIBUS DP address
- Serial interface RS 232 C
- Parallel bus interface for the power output modules
- Possibility of connecting a maximum of 16 LA724I/LA724I HP/ LA724I SSR power output modules per central interface module
- Expansion slot for line-voltage sensing module (optional)

Function

Communications

PROFIBUS DP

- Import of the parameter settings from the higher-level control system
- Transfer of the diagnostics information to the higher-level control system

Parallel bus (internal)

- Controlling and monitoring up to 384 power channels

Performance features

- Calculation of the emitter manipulated variables of the power channels
- Setpoint values are adjustable in 0.5 % increments from 0 % to 100 %
- Even load distribution over all power channels and over all SIPLUS HCS724I heating control systems operated as an integrated group
- Simple adaptation to the specific production process through the selection of up to four operating modes
- The various power output modules can be used in mixed operation

Diagnostics

- Evaluation of diagnostics information from connected power output modules
- Phase-sequence detection indicating whether phases L1, L2, and L3 are properly connected
- Automatic detection of the line frequency

Grid synchronization

In order to ensure synchronization of the power output modules with the connected power supply, the system is synchronized with phase L1. The respective switch-on times for phases L2 and L3 are then calculated automatically.

Central interface module

Technical specifications

Type		6BK1700-2BA30-0AA0
General data		
Type of power output module connectable		• LA724I • LA724I HP • LA724I SSR
Supply voltage		
Type of voltage of the supply voltage		AC
Supply voltage at AC, rated value	V	230
• Relative negative tolerance of the supply voltage	%	18
• Relative positive tolerance of the supply voltage	%	15
Supply voltage frequency		
• Rated value 1	Hz	50
• Rated value 2	Hz	60
• Relative symmetrical tolerance	%	5
Active power input	W	35
Mains failure buffering time	ms	20
Recovery time after mains failure, typical	s	1
Type of electrical connection for supply voltage		Terminal 2-pole
Type of connectable conductor cross-sections		
• For supply voltage		
- Solid	mm^2	1 x (0.5 ... 2.5)
- Finely stranded with end sleeve	mm^2	1 x (0.5 ... 2.5)
• For AWG cables for supply voltage	AWG	26 ... 14

Type		6BK1700-2BA30-0AA0
Communications		
Protocol is supported PROFIBUS DP protocol		Yes
Transmission rate for PROFIBUS DP, maximum	Mbit/s	12
Type of electrical connection of the PROFIBUS interface		9-pin sub D socket
Displays		
Number of status displays		2
Type of status displays using LEDs		• LED green = status indicator • LED red = fault indicator
Dimensions		
• Width	mm	50
• Height	mm	480
• Depth	mm	210

Selection and ordering data

	Interface version	Type of power output module connectable	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Central interface modules								
 6BK1700-2BA30-0AA0	PROFIBUS DP	• LA742I • LA724I HP • LA724I SSR	C	**6BK1700-2BA30-0AA0**		1	1 unit	475

* You can order this quantity or a multiple thereof.
Illustrations are approximate

Overview

The power output modules are an important component of the SIPLUS HCS724I heating control system.

Three different power output modules can be used depending on the application:

- LA724I power output module – the **universal** version
- LA724I HP power output module – the **HighPower** version
- LA724I SSR power output module – the **high-current** version

LA724I (left), LA724I HP (center) and LA724I SSR (right) power output modules

LA724I power output module

The **universal** power output module provides 24 channels for switching on resistive loads. A maximum of 1 150 W can be used for each output channel.

LA724I HP power output module

The **HighPower** output module provides 12 channels for switching on resistive loads for voltages up to 400 V/max. and 10 A per channel.

LA724I SSR power output module

The 24-channel power output module is the **high-current** power output module for controlling external solid-state relays (SSR) (up to 90 A/load).

Design

- Modules encapsulated in a metal enclosure
- Connection of the phases via busbars
- Connection of the heat emitter via mating connectors (the heat emitters and the mating connectors are ordered separately)
- Channel fuses at the front
- Heat dissipation with the optimal fan module is possible for the LA724I and LA724I HP power output modules, see page 15/50
- Internal parallel bus interface
- Four diagnostics LEDs for displaying channel/module faults

Function

Protector elements

LA724I and LA724I HP power output modules

- Power triacs with zero crossover switching
- Protection of triacs and opto-triacs by means of Transil diodes against overvoltage

LA724I SSR power output module

This power output module does not have power triacs. Control of the load is handled via external solid-state relays (SSR).

Output power

LA724I power output module

- 24 power output channels 230 V each (8 outputs per phase)
- Max. 1 150 W switching capacity per output
- Max. 7 360 W switching capacity per phase

LA724I HP power output module

- 12 power output channels 230 V/400 V each (4 outputs per phase)
- Max. 2 300 W/4 000 W switching capacity per output
- Max. 9 200 W switching capacity per phase with wye connection and max. 16 000 W switching capacity with delta connection

LA724I SSR power output module

24 channels with one digital control signal of 24 V (8 outputs per phase)

Forced ventilation

LA724I and LA724I HP power output modules

Depending on the switching capacity and ambient temperature, these power output modules may have to be force-ventilated. For this purpose, a fan module is available as an option, see page 15/50.

For detailed information, see the operating instructions "SIPLUS HCS724I Heating Control System", http://support.automation.siemens.com/WW/view/en/55336534.

Temperature monitoring

LA724I and LA724I HP power output modules

There is an NTC thermistor on the heat sink for monitoring its temperature. This temperature-dependent resistance sends a signal at 92 °C ± 3 °C to SIMATIC S7-300. A second switching threshold at 100 °C ± 3 °C switches off the power outputs of the module.

Supply voltage monitoring

LA724I SSR power output module

- The connected 24 V DC supply is monitored for failure. In case of failure, the outputs to the solid-state relay (SSR) are shut down.
- The drivers of the control outputs are monitored for correct functioning

Fuses

LA724I power output module

- For each power output, there is a 5 A fuse in one of the fuse holders accessible from the front for protecting the power triacs, as well as a 32 A fuse per phase for limiting the phase current

LA724I HP power output module

- For each power output, there is a 10 A fuse in a fuse holder accessible from the front for protecting the power triacs, as well as a 40 A fuse per phase for limiting the phase current

LA716I SSR power output module

Protection for each channel is to be provided externally.

Power output modules

Diagnostics option

LA724I and LA724I HP power output modules

Standard diagnostics are provided for detecting the following faults:

- Internal fuse defective or triac at high-resistance
- Triac failed
- External faults such as a blown fuse, broken heat emitter or broken cable

If several heat emitters are connected to one output in parallel, failure of an individual heat emitter is detected by means of extended diagnostics.

LA724I SSR power output module

As an alternative, two different diagnostics methods are possible:

- Through diagnostics of the voltages from the load circuit, the following faults can be detected:
  - Solid-state relay (SSR) cannot be switched, infeed to SSR interrupted or external channel fuse dropped
  - Solid-state relay (SSR) cannot be switched, broken emitters or broken conductors
- Through diagnosis via the external current measuring module (see page 15/51) the following faults can also be detected (these diagnostics are recommended for fault detection on parallel switched emitters):
  - Rated power on the channel is overshot
  - Rated power on the channel is undershot

Technical specifications

Type		6BK1700-2BA00-0AA0	6BK1700-4BA70-0AA0	6BK1700-2BA10-0AA0
Product designation		Power output modules		
		LA724I	LA724I HP	LA724I SSR
General data				
Type of control of heat emitters		Half-wave control		--
Type of load		Resistive load		Solid-state relay (SSR)
Supply voltage				
Type of voltage of the supply voltage		AC		
Supply voltage at AC, rated value	V	230	400	
• Relative negative tolerance of the supply voltage	%	18		
• Relative positive tolerance of the supply voltage	%	15		
Supply voltage frequency				
• Rated value 1	Hz	50		--
• Rated value 2	Hz	60		--
• Relative symmetrical tolerance of the supply voltage frequency	%	5		--
Current switching capacity				
• Per busbar a maximum of	A	120		
• Per phase a maximum of	A	32	40	--
Type of electrical isolation		Optocoupler between main circuit and SELV/PELV		
Power carrying capacity of the module				
• For delta connection at 40 °C				
- With fan maximum	kW	--	36.5	--
- Without fan maximum	kW	--	22.6	--
• With wye connection at 40 °C				
- With fan maximum	kW	22	21	--
- Without fan maximum	kW	14.4	13	--
Maximum permissible power carrying capacity	kW	22	48	--
Type of electrical connection for supply voltage		Busbars or ring terminal lugs		
Power electronics				
Number of outputs for heating power		24	12	--
Number of heat emitters per output, maximum		5		--
Output voltage				
• With wye connection	V	230		--
• With delta connection	V	--	400	--
Version of the overvoltage protection		Transil diodes		--
Power carrying capacity				
• Per output	W	75 … 1 150	75 … 4 000	--
Output current at the output for heating power, rated value	A	5	10	--
Type of short-circuit protection for heating power per output		5 A melting fuse	16 A melting fuse	--
Electrical separation between the outputs		No		--
Type of electrical connection at output for heater and fan		8-pole socket connector		--
Type of connectable conductor cross-sections				
• For heater and fans				
- Solid	mm^2	1 x (0.2 ... 1.5)		
- Finely stranded with end sleeve	mm^2	1 x (0.2 ... 1.5)		--
• Finely stranded for AWG cables	AWG	28 … 16		--

Type		6BK1700-2BA00-0AA0	6BK1700-4BA70-0AA0	6BK1700-2BA10-0AA0
Product designation		Power output modules		
		LA724I	LA724I HP	LA724I SSR
Digital outputs				
Supply voltage at DC				
• Rated value	V	--		20.4 … 28.8
Type of electrical connection for supply voltage		--		2-pole plug
Type of connectable conductor cross-sections				
• For control supply voltage with end sleeves	mm^2	--		1 x (0.2 ... 1.5)
• For AWG cables for control supply voltage	AWG	--		28 … 14
Number of semiconductor outputs		--		24
Type of switching output		--		Semiconductor output (high side switch)
Type of voltage of the output voltages		--		DC
Output voltage for DC, rated value	V	--		24
Output voltage	V	--		18.4 … 28.8
Output current at digital output when signal <1> max.	A	--		0.05
Electrical isolation between outputs and system interface		--		No
Switching performance		--		Monostable
Property of the output short-circuit-proof		--		Yes
Type of electrical connection on the digital outputs		--		8-pole plug
Type of connectable conductor cross-sections on the digital outputs				
• Solid	mm^2	--		1 x (0.2 ... 1.5)
• Finely stranded with end sleeve	mm^2	--		1 x (0.2 ... 1.5)
• For AWG cables	AWG	--		28 … 14
Measuring inputs for current				
Type of electrical connection on the measuring inputs for current		Internal		Externally by 6-pole connector for SM724I
Type of connectable conductor cross-sections on the measuring inputs for current				
• Solid	mm^2	--		1 x (0.2 ... 1.5)
• Finely stranded with end sleeve	mm^2	--		1 x (0.2 ... 1.5)
• For AWG cables	AWG	--		28 … 14
Measuring inputs for voltage				
Diagnostics voltage				
• With wye connection of rated value	V	--		230
• Rated value with delta connection	V	--		400
Type of electrical connection on the measuring inputs for voltage		--		8-pole socket connector
Type of connectable conductor cross-sections on the measuring inputs for voltage				
• Solid	mm^2	--		1 x (0.2 ... 1.5)
• Finely stranded with end sleeve	mm^2	--		1 x (0.2 ... 1.5)
• For AWG cables	AWG	--		28 … 16
Displays				
Number of status displays		4		
Type of status displays using LEDs		• 1 LED green = status indicator • 3 LED red = fault indicator per phase		
Auxiliary circuit				
Design of the power supply		Power supply via central interface		
Monitoring functions				
Product function temperature monitoring		Yes		--
Type of temperature monitoring		NTC thermistors		--
Diagnostics function		Voltage and power diagnostics		
• Blown fuse		Yes		
• Open circuit		Yes		
• Heat emitter break		Yes		
Dimensions				
• Width	mm	50		
• Height	mm	480		
• Depth	mm	210		

Power output modules

Selection and ordering data

	Number of outputs for heating power	Number of semiconductor outputs	Power carrying capacity per output Max. W	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
LA724I power output module									
 6BK1700-2BA00-0AA0	24	--	1 150	C	**6BK1700-2BA00-0AA0**		1	1 unit	475
LA724I HP power output module									
 6BK1700-4BA70-0AA0	12	--	4 000	C	**6BK1700-4BA70-0AA0**		1	1 unit	475
LA724I SSR power output module									
 6BK1700-2BA10-0AA0	--	24	--	X	**6BK1700-2BA10-0AA0**		1	1 unit	475

Accessories

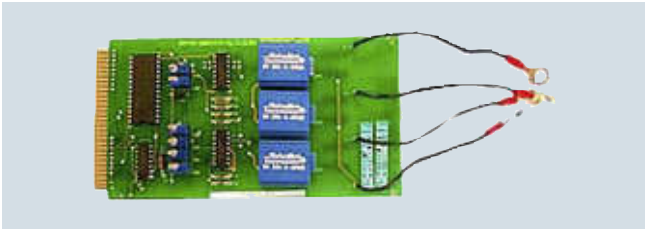
Version	For power output module	Type
Mating connectors		
• For connection of the heat emitters (3 units required per power output module)	LA724I, LA724I HP	40018384
• For the 24 V DC supply	LA724I SSR	A5E00210675
• For connection of the solid state relay (SSR) (3 units required per power output module)	LA724I SSR	A5E00043661
• For connection of the current measuring module	LA724I SSR	A5E00210670
• For voltage diagnostics (3 units required for each power output module)	LA724I SSR	41818384
Fuse		
• 5 A quick/250 V	LA724I	200021116
• 16 A slow/500 V	LA724I HP	A5E01204540

Recommendation for solid-state relay (SSR) to be used

SIRIUS SC solid-state relays/contactors
e.g. 3RF2350-1AA02:
Solid-state contactor 50 A,
40 °C,
control voltage 24 V,
screw terminals

* You can order this quantity or a multiple thereof.
Illustrations are approximate

Overview



Line-voltage sensing module

The line-voltage sensing module is an optional module for mains voltage sensing and correction.

The line-voltage sensing module is inserted from the front into the enclosure of the central interface module. The slot is located in the busbar area. If the line-voltage sensing module is not used, the opening is sealed with the busbar cover. When the line-voltage sensing function is used, the cover provides touch protection.

Design

- Connection of the phases L1, L2, L3 and of the neutral conductor via cable with Teflon insulation
- Printed circuit-boards terminals for central connection

Function

Line-voltage compensation

This function is required if output power is to be automatically corrected in strongly fluctuating networks.

To implement this function, a line-voltage sensing module must be plugged in to at least one central interface module in a network of several HCS724I heating control systems.

The correction factors are calculated and transmitted to the PROFIBUS DP master. The DP master then distributes these values to all HCS724I DP slaves.

Voltage measuring for advanced diagnostics

In order to measure the voltage values for advanced diagnostics, a line-voltage sensing module is required for each central interface module.

The measured voltage value is used for fault detection for parallel switched emitters.

Note:

The central interface module is only delivered ex works without a line-voltage sensing module. If you want to compensate for line voltage fluctuations, you must order both modules (line-voltage sensing module and central interface module) and connect them together on site.

Technical specifications

Type		6ES7171-1XX00-6AA0
Supply voltage		
Design of the power supply		Power supply via central interface module
Measuring inputs for current		
Product function current measurement		No
Measuring inputs for voltage		
Product function voltage measuring		Yes
Operational voltage		
• For AC at 50 Hz rated value	V	187 … 264
• For AC at 60 Hz rated value	V	187 … 264
• Relative measuring accuracy relative to the measured voltage value	%	3
Operating frequency, rated value	Hz	50 … 60
Type of electrical connection on the measuring inputs for voltage		M6 ring terminal lug
Dimensions		
• Width	mm	86
• Height	mm	22
• Depth	mm	160

Selection and ordering data

	Supply voltage at AC, rated value	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V						
Line-voltage sensing module[1]							
 6ES7171-1XX00-6AA0	230	C	**6ES7171-1XX00-6AA0**		1	1 unit	475

1) Inserted in the central interface module.

Fan module

Overview

Fan module for installation underneath two power output modules

The fan module is available for reliable heat dissipation of the LA724I and LA724I HP power output modules. The fan module is a standard fan in an IP00 enclosure.

The fan module can be connected to

- 2 LA724I or LA724I HP power output modules

or

- 1 central interface module and 1 LA724I or LA724I HP power output module

Technical specifications

Type		6ES7171-3AA00-0AA0
Supply voltage		
Supply voltage at AC, rated value	V	230
• Relative negative tolerance of the supply voltage	%	18
• Relative positive tolerance of the supply voltage	%	15
Supply voltage frequency		
• 1 rated value	Hz	50
• 2 rated value	Hz	60
• Relative symmetrical tolerance of the supply voltage frequency	%	5
Active power input	W	6
Type of electrical connection for supply voltage		Plug, 2-pole
Type of connectable conductor cross-sections		
• For supply voltage		
- Solid	mm^2	1 x (0.2 ... 2.5)
- Finely stranded with end sleeve	mm^2	1 x (0.25 ... 2.5)
• For AWG cables for supply voltage	AWG	24 ... 12
Dimensions		
• Width	mm	100
• Height	mm	50
• Depth	mm	162

Selection and ordering data

	Supply voltage at AC Rated value	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V						
Fan module[1]							
 6ES7171-3AA00-0AA0	230	D	**6ES7171-3AA00-0AA0**		1	1 unit	475

1) The fan module is installed underneath
- two LA724I or LA724I HP power output modules
or
- one central interface and one LA724I or LA724I HP power output module.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

Overview

Current measuring module

The current measuring module is an optional module for diagnostics-based current measurement when connected to the LA724I SSR power output module.

The module is required when heat emitters are connected in parallel and failure of a single heat emitter is to be detected using a current measurement.

It is mounted in the control cabinet on a sturdy mounting surface (recommended) or on a standard mounting rail.

Technical specifications

Type		6BK1700-2BA40-0AA0
Supply voltage		
Type of electrical connection for supply voltage		Yes
Type of connectable conductor cross-sections		Terminal 16-pole
• For supply voltage		
- Solid	mm^2	1 x (0.5 ... 1.5)
- Finely stranded with end sleeve	mm^2	1 x (0.5 ... 1.5)
• For AWG cables for supply voltage	AWG	1 x (20 ... 14)
Measuring inputs for current		
Product function current measurement		Yes
Current measuring range	A	1 ... 400
• Relative measuring accuracy relative to the measured current value	%	1
Operating frequency		
• 1 rated value	Hz	50
• 2 rated value	Hz	60
Type of electrical connection for the main circuit		Straight-through transformers
Diameter of the feed-through opening	mm	22
Dimensions		
• Width	mm	150
• Height	mm	77.5
• Depth	mm	115

Selection and ordering data

	Current measuring range	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	A						
Current measuring module							
 6BK1700-2BA40-0AA0	1 ... 400	C	**6BK1700-2BA40-0AA0**		1	1 unit	475

Accessories

Version	Type
Mating connectors For connection of the current measuring module to the LA724I SSR power output module	A5E00210670

Note on the cable to be used between the LA724I SSR power output module and the current measuring module

It is recommended that a 3 x 2-core cable is used with a cross-section of 0.75 mm^2 whose cores are twisted together in pairs. It is not necessary to use a shielded cable.

15

* You can order this quantity or a multiple thereof.
Illustrations are approximate

General data NEW

Overview

The SIPLUS HCS4300 heating control system controls and switches heat emitter arrays and other resistive loads in 400 V / 480 V voltage networks in industrial environments.

Communication takes place via PROFINET and can be used together with for example SIMATIC S7 to form a highly modern and powerful automation system.

Benefits

- Parameterization, commissioning, visualization and diagnostics of resistive loads using the Siemens TIA Portal
- Display of diagnostics data in the SIMATIC web server
- Quick and precise diagnostics functions
- Excellent product quality thanks to integrated line voltage compensation
- Modular (central) and compact (distributed) configuration possible
- Just one 24 V DC infeed for up to 6 power output modules
- Integrated 2-phase protection of the heating elements (supply and return line)
- Straightforward maintenance and servicing thanks to easy replacement of fuses
- Allows for the operation of different types of heating elements (e.g. quartz, halogen and infrared heaters, heating cartridges). This also applies for heating elements which have a very low PTC resistance and therefore a very high inrush current.

Application

The SIPLUS HCS4300 heating control system is used for example for controlling heat emitter arrays:

- Thermoforming machines
- PET blow molding machines
- Plastic welding machines
- (Paint) Drying ovens

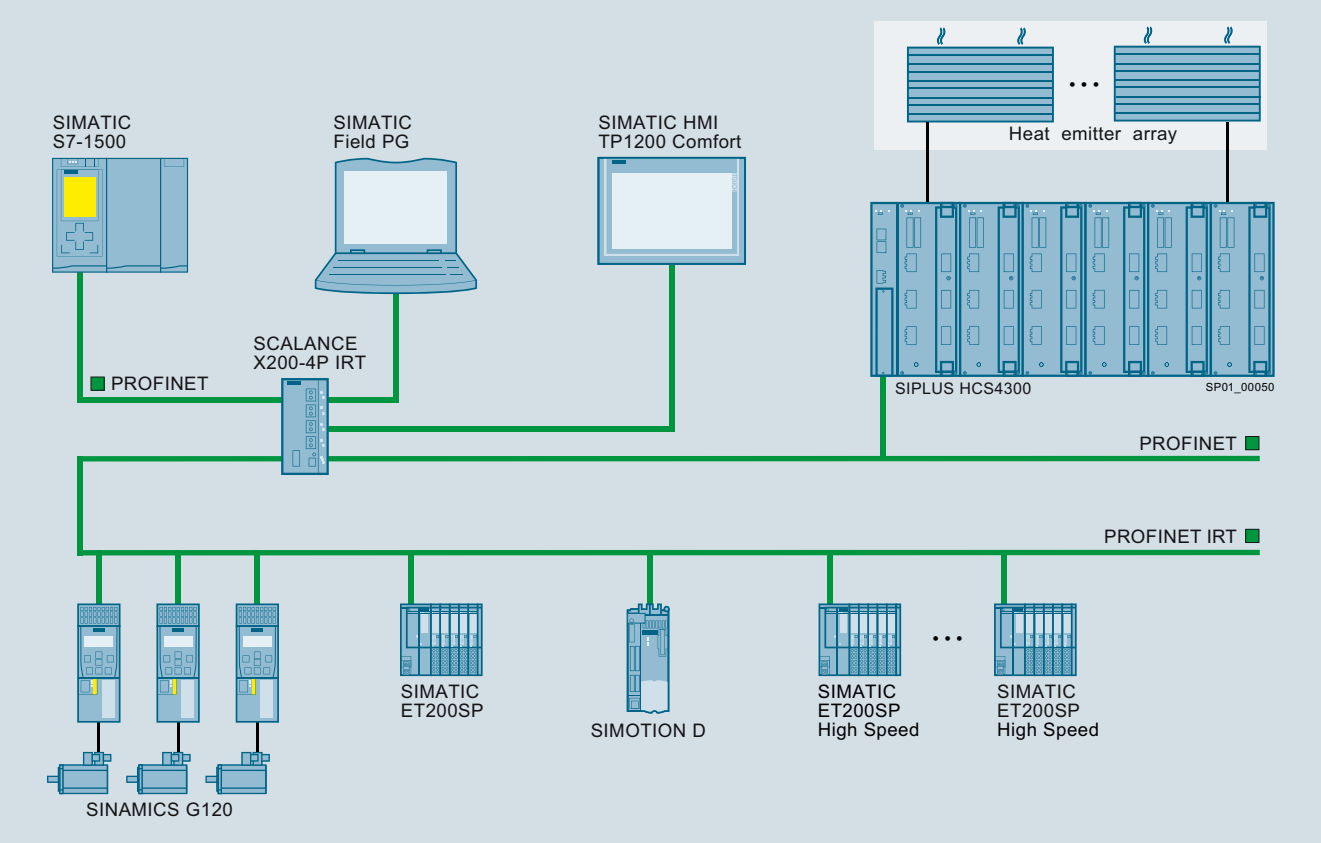
Design

The main components of the SIPLUS HCS4300 heating control system are:

- Central interface modules (CIM) installed in a metal enclosure
  - Mounting is performed with 4 screws (2 at the top and 2 at the bottom) on the left side of the power output module
- Power output modules (POM) installed in a metal enclosure
  - Up to 6 power output modules can be operated on one CIM
- Communication over PROFINET IO, e.g. with SIMOTION, SIMATIC S7 or industrial PC

Customized, distributed configuration solutions are also possible.

Integration



Application example with SIMATIC, SINAMICS and SIPLUS HCS4300

More information

More information, see http://www.siemens.com/siplus-hcs.

Central interface modules (CIM) NEW

Overview

The central interface module (CIM) is the intelligent processor module of the SIPLUS HCS4300 heating control system.

Design

- Module (encapsulated) in a metal enclosure
- 3 LEDs for operating state (green), heating on (yellow) and fault indication (red)
- PROFINET interface (up to 100 Mbaud) with double switch
- Differential serial bus interface to the power output modules (POM)
- Up to 6 POM can be connected to each CIM

Function

Communications

PROFINET

- Import of the parameter settings from the higher-level control system
- Transfer of the diagnostics information to the higher-level control system

Serial bus (internal)

- Controlling and monitoring up to 54 power channels

Performance features

- Calculation of the manipulated variables of the power channels
- Setpoint values are adjustable in 1 % increments from 0 % to 100 %
- Even load distribution over all power channels and over all SIPLUS HCS4300 heating control systems operated as an integrated group
- Simple adaptation to each production process through the selection of operating modes
- Diagnostics functions
- Evaluation of diagnostics information from connected power output modules
- Phase-sequence detection indicating whether phases L1, L2, and L3 are properly connected
- Automatic detection of the line frequency

Technical specifications

Type		6BK1943-1AA00-0AA0
Product brand name		SIPLUS
Product designation		CIM4310 PROFINET
General technical specifications		
Reference designations according to EN 81346-2		K
Number of slots		1
Type of power output connectable		POM4320
Approvals / Certificates		
• Certificate of suitability		CE
Supply voltage		
Type of voltage of the supply voltage		DC
Supply voltage 1 at DC, rated value	V	24
• Relative negative tolerance	%	20
• Relative positive tolerance	%	20
Active power input	W	3
Type of electrical connection for supply voltage		Connector 2 x 2-pole
Type of connectable conductor cross-sections		
• Supply voltage		
- Solid		1 x (0.2 ... 2.5 mm^2)
- Finely stranded with end sleeve		1 x (0.2 ... 2.5 mm^2)
• For AWG cables for supply voltage	AWG	26 ... 12
Communication / Protocol		
Interface version		PROFINET IO
Protocol is supported		
• PROFIBUS DP protocol		--
• PROFINET IO protocol		Yes
Transmission rate		
• For PROFIBUS DP maximum	bit/s	--
• For PROFINET IO maximum	Mbit/s	100
Type of electrical connection		
• Of the PROFIBUS interface		--
• Of the PROFINET interface		2 x RJ45
Displays		
Number of status displays		3
Type of status displays using LEDs		LED green = ready, LED yellow = heating On/Off, LED red = fault indication

NEW Central interface modules (CIM)

Type		6BK1943-1AA00-0AA0
Product brand name		SIPLUS
Product designation		CIM4310 PROFINET
Mechanical features		
Mounting position		Vertical
Type of mounting		Screw fixing to POM
Type of ventilation		Forced ventilation
Shock resistance		
• According to IEC 60068-2-27		15g / 11 ms / 3 shocks / axis
• According to IEC 60068-2-29		25g / 6 ms / 1000 shocks / axis
Vibration resistance		
• During operation according to IEC 60068-2-6		10 ... 58 Hz / 0.075 mm, 58 ... 150 Hz / 1 g
• During storage according to IEC 60068-2-6		5 ... 8.5 Hz / 3.5 mm, 8.5 ... 500 Hz / 1 g
IP degree of protection		IP20
Dimensions		
• Width	mm	56
• Height	mm	285
• Depth	mm	136
Electromagnetic compatibility		
Conducted interference BURST according to IEC 61000-4-4		2 kV power supply cables / 2 kV PROFINET cables
Conducted interference SURGE according to IEC 61000-4-5		On DC supply cables: 0.5 kV symmetrical and asymmetrical, PROFINET cables: 1 kV asymmetrical
Conducted interference as high-frequency interference according to IEC 61000-4-6		10 V (0.15 ... 80 MHz)
Electrostatic discharge according to IEC 61000-4-2		4 kV contact discharge / 8 kV air discharge
Field-related interference according to IEC 61000-4-3		10 V/m (80 ... 1000 MHz), 3 V/m (1.4 ... 2.0 GHz), 1 V/m (2.0 ... 2.7 GHz)
EMC emitted interference		Limit value according to IEC 61000-6-4:2007 + A1:2011
Overvoltage category		III
Climatic ambient conditions		
Ambient temperature		
• During operation	°C	0 … 55
• During storage	°C	-25 … +70
• During transport	°C	-25 … +70
Air pressure		
• During operation	hPa	860 … 1 080
• During storage	hPa	860 … 1 080
Relative humidity		
• At 25 °C during operation maximum	%	95
• At 50 °C during operation maximum	%	50
- Note		95% at 25 °C, decreasing linearly to 50% at 50 °C
Degree of pollution		2
Installation altitude at height above sea level, maximum	m	2000

Selection and ordering data

Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Central interface modules (CIM)						
Central interface modules (CIM)						
• CIM4310 for connection to PROFINET	C	**6BK1943-1AA00-0AA0**		1	1 unit	475

6BK1943-1AA00-0AA0

15

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

Power output modules (POM) NEW

Overview

The power output modules (POM) are an important component of the SIPLUS HCS4300 heating control system

- POM4320 power output module with busbar, CE-certified
- Nine outputs available for switching on resistive loads; a current of up to 16 A can be used per output channel
- Mounting and mains infeed are performed by means of a rear busbar adapter

Design

- Module (encapsulated) in a metal enclosure
- Connection of the phases using the rear busbar adapter
- Two-pole connection of heat emitters using mating connectors (mating connectors are included in the scope of supply!)
- Two fuses per output for supply and return line in a fuse module which can be plugged on and pulled off
- Heat dissipation by fan fitted to top of module
- Internal serial interface
- Three diagnostics LEDs for displaying module faults
- Nine diagnostics LEDs for displaying channel faults

Function

Protector elements

- Power triacs
- Protection of triacs and opto-triacs by means of Transil diodes against overvoltage
- Transfer of the diagnostics information to the higher-level control system

Control types

- Half-wave control: This is the control method used in normal operation. At every zero crossover, the channel is controlled depending on the parameterized set-point value. The control variable is set to values between 0 to 100%. The reference basis is 1 second. It is possible to control loads with peak inrush currents of up to 150 A with half-wave control.

Output power

- 9 power output channels 400V/480V each (3 outputs per phase)
- Switching capacity per output max. 6 400 W at 400 V or 7 200 W at 480 V
- Switching capacity per POM max. 57 600 W at 400 V or 69 120 W at 480 V

Ventilation

At the top of the power output module is a fan that is supplied by the POM and controlled depending on the internal temperature.

Temperature monitoring

There is an NTC thermistor in the device for monitoring the internal temperature. This temperature-dependent resistor switches off the module power outputs when a certain internal temperature is reached.

Diagnostics option

Standard diagnostics are provided for detecting the following faults:

- Implicit diagostics means that the heating power is not influenced by the diagnostics themselves
- Outgoing fuse is defective / triac at high resistance (exception: setpoint value 0%)
- Incoming line fuse is defective
- Triac has failed (exception: setpoint value 100%)
- Emitter cable defective (short-circuit and interruption) or load is defective (short-circuit and interruption)

Line-voltage compensation

- Internal compensation is carried out to compensate line voltage fluctuations
- The function runs on the HCS master; it can be switched on and off by the user
- The measured voltage values from each POM are available to the HCS master

Technical specifications

Type		6BK1943-2AA00-0AA0
Product brand name		SIPLUS
Product designation		POM4320_IEC_BUS_BAR_MOUNTING
General technical specifications		
Type of load		Resistive load
Reference designations according to EN 81346-2		Q
Approvals / Certificates		
• Certificate of suitability		CE
Supply voltage		
Supply voltage type		AC
Supply voltage at AC, rated value	V	400
• Relative negative tolerance • Relative positive tolerance	% %	10 30
Supply voltage frequency		
• 1 • 2 • Relative symmetrical tolerance	Hz Hz %	50 60 5
Switching capacity current per phase, maximum	A	83
Breaking capacity, short-circuit current limit (Icu) at 400 V, rated value	kA	25
Type of electrical isolation		Optocoupler and/or protective impedance beween main circuit and PELV
Power carrying capacity		
• Maximum permissible	kW	69.1
• Of the module for delta connection at 40 °C with fan, maximum	kW	69.1
Recovery time after mains failure, typical	s	1
Type of electrical connection for supply voltage		Busbar adapter 3-pole + PE, suitable for 60 mm busbar systems
Power electronics		
Number of outputs for heating power		9
Number of heat emitters per output, maximum		1
Output voltage at the output for heating power	V	400
Output current at the output for heating power, rated value	A	16
Type of control of heat emitters		Half-wave control
Type of short-circuit protection for heating power per output		16 A melting fuse
Version of the overvoltage protection		Transil diode
Power carrying capacity		
• Per output	W	200 … 7 680
Electrical separation between the outputs		No
Type of electrical connection at output for heater and fan		Connector, 3-pin
Type of connectable conductor cross-sections		
• For heater and fans - Solid - Finely stranded with end sleeve		 1 x (0.2 ... 10 mm^2) 1 x (0.25 ... 6 mm^2)
• Stranded for AWG cables	AWG	24 ... 8
Measuring inputs for voltage		
Product function voltage measuring		Yes
Displays		
Number of status displays		12
Type of status displays using LEDs		LED green = ready, LED yellow = heating On/Off, LED red = fault indication, LED red = fault per channel
Auxiliary circuit		
Design of the power supply		Supply via CIM
Active power drawn, maximum	W	8
Protection/monitoring functions		
Product function temperature monitoring		Yes
Type of temperature monitoring		NTC thermistors
Diagnostics function		Voltage diagnostics
• Blown fuse • Open circuit • Heat emitter break		Yes Yes Yes

Power output modules (POM) NEW

Type		6BK1943-2AA00-0AA0
Product brand name		SIPLUS
Product designation		POM4320_IEC_BUS_BAR_MOUNTING
Mechanical features		
Mounting position		Vertical
Type of mounting		Busbar mounting
Type of ventilation		Self-ventilation
Shock resistance		
• According to IEC 60068-2-27		15g / 11 ms / 3 shocks / axis
• According to IEC 60068-2-29		25g / 6 ms / 1000 shocks / axis
Vibration resistance		
• During operation according to IEC 60068-2-6		10 ... 58 Hz / 0.075 mm, 58 ... 150 Hz / 1 g
• During storage according to IEC 60068-2-6		5 ... 8.5 Hz / 3.5 mm, 8.5 ... 500 Hz / 1 g
IP degree of protection		IP20
Dimensions		
• Width	mm	104
• Height	mm	340
• Depth	mm	250
Electromagnetic compatibility		
Conducted interference BURST according to IEC 61000-4-4		2 kV power supply cables/2 kV signal cables
Conducted interference SURGE according to IEC 61000-4-5		On supply and load cables: 1 kV symmetrical, 2 kV asymmetrical
Conducted interference as high-frequency interference according to IEC 61000-4-6		10 V (0.15 ... 80 MHz)
Electrostatic discharge according to IEC 61000-4-2		4 kV contact discharge/8 kV air discharge
Field-related interference according to IEC 61000-4-3		10 V/m (80 ... 1000 MHz), 3 V/m (1.4 ... 2.0 GHz), 1 V/m (2.0 ... 2.7 GHz)
EMC emitted interference		Limit value according to IEC 61000-6-4:2007 + A1:2011
Overvoltage category		III
Climatic ambient conditions		
Ambient temperature		
• During operation	°C	0 … 55
• During storage	°C	-25 … +70
• During transport	°C	-25 … +70
Air pressure		
• During operation	hPa	860 … 1 080
• During storage	hPa	860 … 1 080
Relative humidity		
• At 25 °C during operation maximum	%	95
• At 50 °C during operation maximum	%	50
- Note		95% at 25 °C, decreasing linearly to 50% at 50 °C
Degree of pollution		2
Installation altitude at height above sea level, maximum	m	2000

Selection and ordering data

Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Power output modules (POM)						
 6BK1943-2AA00-0AA0						
POM4320 power output module						
• With busbar mounting						
- With CE certification	C	**6BK1943-2AA00-0AA0**		1	1 unit	475

Accessories

Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Fuse and fan						
 3NW6005-1						
Fuse						
• 16 A quick/500 V	►	**3NW6005-1**		1	10 unit	13K
Fans	D	**6BK1700-2GA00-0AA0**		1	1 unit	475

* You can order this quantity or a multiple thereof.
Illustrations are approximate

General data

Overview

Variable output power by indirect control of electrical heating elements, e.g. via solid-state contactors. User-friendly control is possible by means of the TCP 3000 temperature control software.

SIPLUS HCS300I heating controller > General data

Overview

SIPLUS HCS300I heating controller

SIPLUS HCS300I is an industrial heating controller which uses solid-state relays (SSR) or contactors to control resistive loads. SIPLUS HCS300I was developed on the basis of the SIMOCODE system.

Benefits

- Easy control of SIRIUS solid-state relays (SSR) using preassembled cables
- Reduced wiring outlay thanks to distributed application
- Easy-to-use TCP 3000 control software available

Application

SIPLUS HCS300I is an industrial heating control system, e.g. for extruders and injection molding machines.

Design

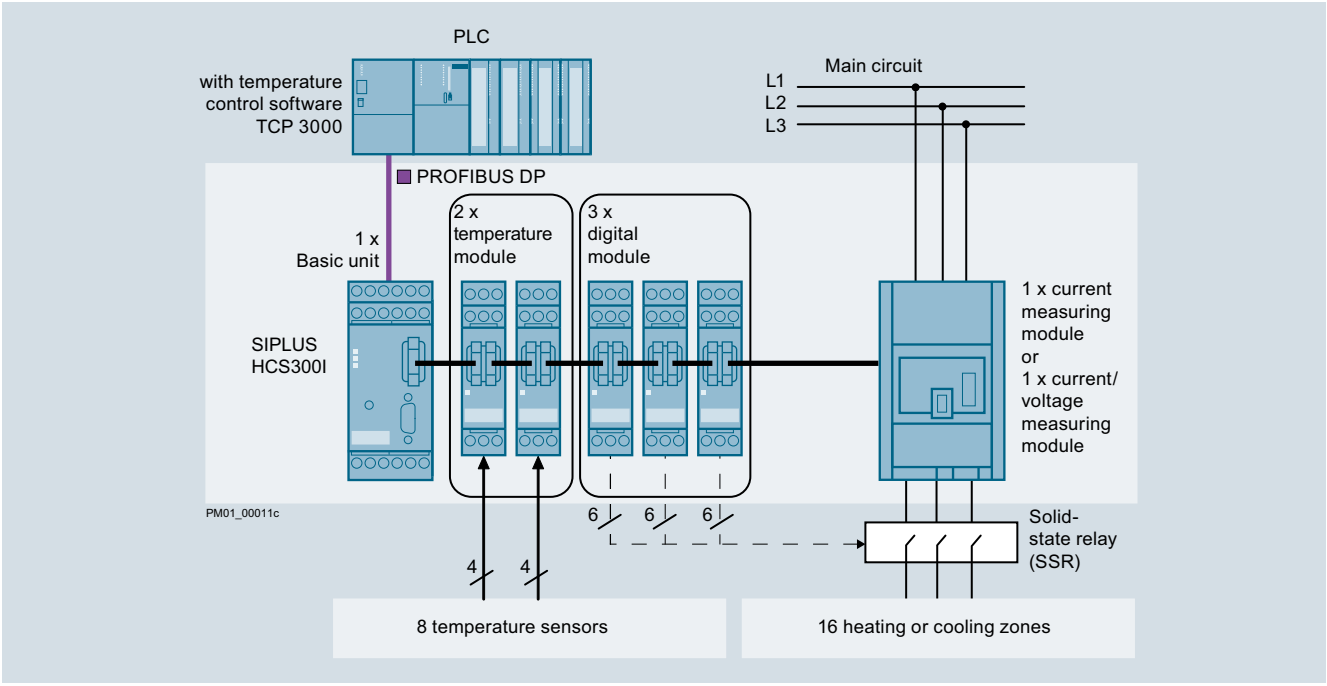
SIPLUS HCS300I can be adapted to your special application by using various modules:

- The basic unit handles the central functions and communicates with the higher-level automation system
- Digital modules expand the SIPLUS HCS300I heating controller with additional digital outputs via which solid-state relays (SSR) or contactors are switched
- Temperature modules process analog temperature values supplied by the temperature sensors of your plant
- The current measuring module measures the load currents, the current/voltage measuring module measures the load currents and the voltages of the heating or cooling devices, and delivers the measured values to the basic unit

The SIPLUS HCS300I is designed for snap-on mounting onto TH 35 standard mounting rails according to IEC 60715 or for screw fixing using additional push-in lugs.

If your application requires more than 16 temperature measuring channels or 24 digital outputs, a second SIPLUS HCS300I basic unit can be connected to the higher-level automation system. Another 16 temperature measuring channels or 24 digital outputs are then available.

Integration



Application example SIPLUS HCS300I

Technical specifications

Type		6BK1700-3BA20-0AA0	6BK1700-2BA80-0AA0	6BK1700-4BA50-0AA0	6BK1700-4BA60-0AA0	6BK1700-3BA30-0AA0	6BK1700-3BA40-0AA0	6BK1700-3BA50-0AA0	6BK1700-3BA60-0AA0	6BK1700-3BA70-0AA0	6BK1700-3BA80-0AA0	6BK1700-4BA40-0AA0
Product designation		Basic unit	Digital modules version 1	Digital modules version 2	Temperature module	Current measuring modules 2.4 ... 25 A	Current measuring modules 10 ... 100 A	Current measuring modules 20 ... 200 A	Current/voltage measuring modules 2.4 ... 25 A	Current/voltage measuring modules 10 ... 100 A	Current/voltage measuring modules 20 ... 200 A	Decoupling module
General data												
Reference designations												
• According to DIN 40719 expanded according to IEC 204-2 according to IEC 750		F										
• According to IEC 61346-2		F										
• According to IEC 81346-2		F										
Degree of pollution		2										
Approvals / Certificates												
Certificate of suitability		CE, cULus, c-tick										
Communications												
Interface version		PROFIBUS DP	System interface									
Mechanical features												
Mounting position		Any										
Type of mounting		Snap-on mounting onto TH 35 standard mounting rail according to IEC 60715 or screw fixing with additional push-in lug										
Shock resistance according to IEC 60068-2-27		15 *g*/11 ms										
Vibration resistance during operation according to IEC 60068-2-6		5 ... 500 Hz/3.5 mm amplitude, 1 *g*, 10 cycles, 1 octaves/min										
Dimensions												
• Width	mm	45	22.5		22.5	45	55	120	45	55	120	22.5
• Height	mm	106	92		102	84	94	95	85	94	95	92
• Depth	mm	115				45	72	145	71	97	145	115

General data

Type		6BK1700-3BA20-0AA0	6BK1700-2BA80-0AA0	6BK1700-4BA50-0AA0	6BK1700-4BA60-0AA0	6BK1700-3BA30-0AA0	6BK1700-3BA40-0AA0	6BK1700-3BA50-0AA0	6BK1700-3BA60-0AA0	6BK1700-3BA70-0AA0	6BK1700-3BA80-0AA0	6BK1700-4BA40-0AA0
Product designation		Basic unit	Digital modules version 1	Digital modules version 2	Temperature module	Current measuring modules 2.4 ... 25 A	Current measuring modules 10 ... 100 A	Current measuring modules 20 ... 200 A	Current/voltage measuring modules 2.4 ... 25 A	Current/voltage measuring modules 10 ... 100 A	Current/voltage measuring modules 20 ... 200 A	Decoupling module
Electromagnetic compatibility												
Conducted interference BURST according to IEC 61000-4-4		2 kV power supply cables/1 kV signal cables										
Conducted interference SURGE according to IEC 61000-4-5		• On supply cables: - 1 kV symmetrical - 2 kV symmetrical • On signal cables - > 30 m unshielded: 1 kV symmetrical, 2 kV asymmetrical - > 30 m shielded: 2 kV asymmetrical	• On supply cables - 1 kV symmetrical - 2 kV asymmetrical • On signal cables - > 30 m unshielded: 0.5 kV symmetrical, 1 kV asymmetrical			• On supply cables - 1 kV symmetrical - 2 kV asymmetrical • On signal cables - > 30 m unshielded: 1 kV symmetrical, 2 kV asymmetrical - > 30 m shielded: 2 kV asymmetrical						
Conducted interference as high-frequency interference according to IEC 61000-4-6		10 V (0.15 ... 80 MHz)										
Electrostatic discharge according to IEC 61000-4-2		6 kV contact discharge/ 8 kV air discharge	4 kV contact discharge/ 8 kV air discharge			6 kV contact discharge/ 8 kV air discharge						
Field-related interference according to IEC 61000-4-3		10 V/m (80 ... 1 000 MHz), 3 V/m (1.4 ... 2.0 GHz), 1 V/m (2.0 ... 2.7 GHz)										
EMC emitted interference		IEC 61131: Class A; conducted and radiated interference: EN 55011/CISPR11 (corresponds to degree of severity A)										
Overvoltage category		--				III						--
Climatic ambient conditions												
Ambient temperature												
• During operation	°C	-25 … +60										
• During storage	°C	-40 … +80										
• During transport	°C	-40 … +80										
Air pressure												
• During operation	hPa	795 … 1 080										
• During storage	hPa	660 … 1 080										
Installation altitude at height above sea level, maximum	m	2 000										

More information

For more product details, see system manual "SIPLUS HCS300I heating controller", http://support.automation.siemens.com/WW/view/en/54439691.

For more information, see Industry Mall or www.siemens.com/siplus-hcs.

Overview

Basic unit

The basic unit handles the central functions of the SIPLUS HCS300I heating controller and communicates with the higher-level automation system.

Benefits

- Three digital relay outputs for switching ohmic loads
- Communication with the higher-level automation system over PROFIBUS DP
- Local control of the system
- Four digital inputs for detecting external signals

Technical specifications

Type		6BK1700-3BA20-0AA0
General data		
Switchgears connectable		Max. • 4 digital modules and 4 temperature modules • 1 current measuring module or 1 current/voltage measuring module • 1 decoupling module
Supply voltage		
Type of voltage of the supply voltage		DC
Supply voltage 1 at DC, rated value	V	24
• Relative negative tolerance of the supply voltage	%	15
• Relative positive tolerance of the supply voltage	%	20
Active power input	W	7
Type of electrical connection for supply voltage		Screw terminals
Type of connectable conductor cross-sections for supply voltage		
• Solid	mm^2	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)
• Finely stranded with end sleeve	mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)
• Finely stranded for AWG cables	AWG	1 x (20 ... 14), 2 x (20 ... 16)
Digital inputs		
Number of digital inputs		4
Type of electrical connection on the digital inputs		Screw terminal with removable terminal
Type of connectable conductor cross-sections on the digital inputs		
• Solid	mm^2	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)
• Finely stranded with end sleeve	mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)
• Finely stranded for AWG cables	AWG	1 x (20 ... 14), 2 x (20 ... 16)

Basic unit

Type		6BK1700-3BA20-0AA0
Digital outputs		
Type of voltage of the output voltages		DC
Supply voltage at DC		
• Rated value	V	24 … 125
Type of electrical connection for supply voltage		Screw terminal with removable terminal
Type of connectable conductor cross-sections for supply voltage		
• Solid	mm^2 mm^2	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)
• Finely stranded with end sleeve	mm^2 mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)
• Finely stranded for AWG cables	AWG AWG	1 x (20 ... 14), 2 x (20 ... 16)
Number of outputs as contacting switching element		3
Output voltage	V	24 … 125
Output current at digital output when signal <1>	A	2
Switching performance		Monostable
Type of switching output		Monostable relays
Electrical isolation between outputs and system interface		Yes
Property of the output short-circuit-proof		No
Type of electrical connection on the digital outputs		Screw terminal with removable terminal
Type of connectable conductor cross-sections on the digital outputs		
• Solid	mm^2 mm^2	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)
• Finely stranded with end sleeve	mm^2 mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)
• Finely stranded for AWG cables	AWG AWG	1 x (20 ... 14), 2 x (20 ... 16)
Communications		
Protocol is supported PROFIBUS DP protocol		Yes
Transmission rate for PROFIBUS DP, maximum	Mbit/s	12
Type of electrical connection of the PROFIBUS interface		9-pin sub D socket
Displays		
Number of status displays		3
Type of status displays using LEDs		• Device: 4 states • BUS: 2 states • GEN.FAULT: 2 states
Dimensions		
• Width	mm	45
• Height	mm	106
• Depth	mm	115

Selection and ordering data

	Supply voltage 1 at DC, rated value	Switching devices connectable	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V							
Basic unit								
 6BK1700-3BA20-0AA0	24	Max. • 4 digital modules and 4 temperature modules • 1 current measuring module or 1 current/voltage measuring module • 1 decoupling module	C	**6BK1700-3BA20-0AA0**		1	1 unit	475

* You can order this quantity or a multiple thereof.
Illustrations are approximate

Overview

Digital module

The digital modules expand the SIPLUS HCS300I heating controller with additional digital outputs via which solid-state relays (SSR) or contactors are switched.

Benefits

- Six digital 24 V DC outputs in the form of "high-side" switches
- Up to four digital modules can be connected to a basic unit
- Up to 24 digital output signals (with four digital modules) can be switched to loads of up to 500 mA
- Control of the digital outputs by means of a higher-level automation system that communicates with the SIPLUS HCS300I basic unit via PROFIBUS DP
- Easy control of solid-state relays (SSR) possible using preassembled cables

Technical specifications

Type		6BK1700-2BA80-0AA0	6BK1700-4BA50-0AA0
		Version 1	Version 2
Digital outputs			
Supply voltage at DC, rated value	V	20.4 … 28.8	
Type of electrical connection for supply voltage		Screw terminal with removable terminal	
Type of connectable conductor cross-sections for supply voltage			
• Solid	mm^2 mm^2	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)	
• Finely stranded with end sleeve	mm^2 mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)	
• Finely stranded for AWG cables	AWG AWG	1 x (20 ... 14), 2 x (20 ... 16)	
Number of semiconductor outputs		6	
Type of switching output		Semiconductor output (high side switch)	
Type of voltage of the output voltages		DC	
Output voltage for DC, rated value	V	24	
Output voltage	V	19.4 … 28.8	
Output current at digital output when signal <1> max.	mA	500	
Switching frequency of the outputs for resistive load, max.	Hz	50	
• Note		For a digital module 50 Hz; for maximum configuration of at least 20 Hz	
Electrical isolation between outputs and system interface		No	
Switching performance		Monostable	
Property of the output short-circuit-proof		Yes	
Product function control for solid-state-relay via assembled connecting cable		Yes	
Type of electrical connection for auxiliary and control circuits		Screw terminals	
Type of electrical connection on the digital outputs		Screw terminal with removable terminal, cable assembly	Screw terminal with removable terminal
Type of connectable conductor cross-sections on the digital outputs			
• Solid	mm^2 mm^2	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)	
• Finely stranded with end sleeve	mm^2 mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)	
• Finely stranded for AWG cables	AWG AWG	1 x (20 ... 14), 2 x (20 ... 16)	

Digital modules

Type		6BK1700-2BA80-0AA0	6BK1700-4BA50-0AA0
		Version 1	Version 2
Displays			
Number of status displays		1	
Type of status displays using LEDs		• Continuous light: Ready • Flashing light: No connection to the basic unit	
Auxiliary circuit			
Design of the power supply		Supply through basic unit	
Dimensions			
• Width	mm	22.5	
• Height	mm	92	
• Depth	mm	115	

Selection and ordering data

	Version	Type of electrical connection on the digital outputs	Output current at digital output when signal <1> max.	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
			mA						
Digital modules									
 6BK1700-.BA.0-0AA0	Version 1	Screw terminal with removable terminal, cable assembly	500	C	**6BK1700-2BA80-0AA0**		1	1 unit	475
	Version 2	Screw terminal with removable terminal	500	C	**6BK1700-4BA50-0AA0**		1	1 unit	475

* You can order this quantity or a multiple thereof.
Illustrations are approximate

Overview

Temperature module

Temperature modules process analog temperature values supplied by a plant's temperature sensors.

Benefits

- Up to four analog sensor measuring circuits in 2-wire technology or two analog sensor measuring circuits in 4-wire technology
- Up to four temperature modules per basic unit which can detect up to 16 analog temperature values
- The compensation method for measurements with thermocouples can be set to one of the following:
  - No compensation
  - Internal compensation
  - External compensation
  - Compensation via the higher-level automation system
- Resolution of temperature values to one decimal point
- Automatic calibration on powering up assures high measuring accuracy
- Different sensor types are supported for use in solid, liquid, or gaseous media: Pt100, Pt1000; TC type J, K, L

Technical specifications

Type		**6BK1700-4BA60-0AA0**
Analog channels		
Product component input for analog temperature sensor		Yes
Type of connection method		2- and 4-conductor technology
Number of analog inputs		
• For 2-wire system		4
• For 4-wire system		2
Physical measurement principle		Sigma-Delta Modulation
Measurement accuracy		Typical ± 1 K, Pt100 up to max. ± 1.3 K
A/D conversion time at analog input	ms	600
Typical sensor circuit	µA	210
Electrical separation between the channels		No
Impulse withstand voltage of the outputs, max.	V	15
Typical temperature drift per °C	%/°C	0.00115
Offset temperature per K, max.	K/K	0.1
Type of electrical connection for temperature sensors		Screw terminal with removable terminal
Type of connectable conductor cross-sections for temperature sensors		
• Solid	mm^2	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)
• Finely stranded with end sleeve	mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)
• Finely stranded for AWG cables	AWG	1 x (20 ... 14), 2 x (20 ... 16)
Sensors that can be connected		
Temperature measuring range		
• According to IEC 60751		
- At Pt100	°C	0 … 400
- At Pt1000	°C	0 … 400
• With thermoelement		
- Type J	°C	0 … 400
- Type K	°C	0 … 400
- Type L	°C	0 … 400
Digital outputs		
Electrical isolation between outputs and system interface		Yes

Temperature module

Type		6BK1700-4BA60-0AA0
Displays		
Number of status displays		3
Type of status displays using LEDs		• Continuous light: Ready • Flashing light: No connection to the basic unit
Auxiliary circuit		
Design of the power supply		Supply through basic unit
Monitoring functions		
Diagnostics function open circuit		Yes
Dimensions		
• Width	mm	22.5
• Height	mm	102
• Depth	mm	115

Selection and ordering data

Number of analog inputs For 2-wire system	For 4-wire system	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Temperature module							
4	2	C	**6BK1700-4BA60-0AA0**		1	1 unit	475

6BK1700-4BA60-0AA0

* You can order this quantity or a multiple thereof.
Illustrations are approximate

Overview

Current measuring module

The current measuring module measures the load currents of the heating or cooling devices, and delivers the values to the basic unit.

The module must be selected according to the expected maximum current of all connected loads.

There are three different versions:

- Current measuring modules 2.4 A to 25 A
- Current measuring modules 10 A to 100 A
- Current measuring modules 20 A to 200 A

Benefits

- Current measurement on a feeder
- Current ranges between 2.4 A and 200 A

Technical specifications

Type		6BK1700-3BA30-0AA0	6BK1700-3BA40-0AA0	6BK1700-3BA50-0AA0
Product designation		Current measuring modules		
		2.4 ... 25 A	10 ... 100 A	20 ... 200 A
General data				
Can be connected to		• Basic unit • Expansion modules (digital module or temperature module) • Decoupling module		
Measuring inputs for current				
Product function current measurement		Yes		
Current measuring range	A	2.4 … 25	10 … 100	20 … 200
• Relative measuring accuracy relative to the measured current value	%	3		
Adjustable response value current	A	2.4 … 25	10 … 100	20 … 200
Operating frequency				
• Rated value 1	Hz	50		
• Rated value 2	Hz	60		
Design of the power supply		Supply through basic unit		
Type of electrical connection for the main circuit		Straight-through transformers		
Auxiliary circuit				
Diameter of the feed-through opening	mm	7.5	14	25
Dimensions				
• Width	mm	45	55	120
• Height	mm	84	94	95
• Depth	mm	45	72	145

Selection and ordering data

	Current measuring range	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	A						
Current measuring modules							
	2.4 ... 25	C	**6BK1700-3BA30-0AA0**		1	1 unit	475
	10 ... 100	C	**6BK1700-3BA40-0AA0**		1	1 unit	475
	20 ... 200	C	**6BK1700-3BA50-0AA0**		1	1 unit	475

6BK1700-3BA.0-0AA0

15

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

Current/voltage measuring modules

Overview

Current/voltage measuring modules

In addition to measuring the load currents, the current/voltage measuring module can also be used to measure phase voltages in a single or three-phase system.

There are three different versions:

- Current/voltage measuring modules 2.4 A to 25 A
- Current/voltage measuring modules 10 A to 100 A
- Current/voltage measuring modules 20 A to 200 A

Benefits

- Current measurement on a feeder
- Current ranges between 2.4 A and 200 A
- Measurement of phase voltages up to 400 V (e.g. UL1) or phase-to-phase voltages up to 690 V (e.g. UL1-UL2)
- Measurements in three-phase systems or single-phase AC systems

Technical specifications

Type		6BK1700-3BA60-0AA0	6BK1700-3BA70-0AA0	6BK1700-3BA80-0AA0
Product designation		Current/voltage measuring modules		
		2.4 ... 25 A	10 ... 100 A	20 ... 200 A
General data				
Can be connected to		• Basic unit • Expansion modules (digital module or temperature module) • Decoupling module		
Measuring inputs for current				
Product function current measurement		Yes		
Current measuring range	A	2.4 … 25	10 … 100	20 … 200
• Relative measuring accuracy relative to the measured current value	%	3		
Operating frequency				
• Rated value 1	Hz	50		
• Rated value 2	Hz	60		
Type of electrical connection for the main circuit		Straight-through transformers		
Diameter of the feed-through opening	mm	7.5	14	25
Measuring inputs for voltage				
Product function voltage measuring		Yes		
Operational voltage				
• At 50 Hz at AC	V	110 … 690		
• At 60 Hz at AC	V	110 … 690		
Relative measuring accuracy relative to the measured voltage value	%	3		
Operating frequency	Hz	50 … 60		
Type of electrical connection on the measuring inputs for voltage		Screw terminal with removable terminal		
Type of connectable conductor cross-sections on the measuring inputs for voltage				
• Solid	mm^2 mm^2	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)		
• Finely stranded with end sleeve	mm^2 mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)		
• Finely stranded for AWG cables	AWG AWG	1 x (20 ... 14), 2 x (20 ... 16)		

Type		6BK1700-3BA60-0AA0	6BK1700-3BA70-0AA0	6BK1700-3BA80-0AA0
Product designation		Current/voltage measuring modules		
		2.4 ... 25 A	10 ... 100 A	20 ... 200 A
Auxiliary circuit				
Design of the power supply		Supply through basic unit		
Dimensions				
• Width	mm	45	55	120
• Height	mm	85	94	95
• Depth	mm	71	97	145

Selection and ordering data

	Current measuring range	Operating frequency	Operational voltage At 50 Hz At AC	Operational voltage At 60 Hz At AC	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	A	Hz	V	V						
Current/voltage measuring modules										
	2.4 ... 25	50 ... 60	110 ... 690	110 ... 690	C	**6BK1700-3BA60-0AA0**		1	1 unit	475
	10 ... 100	50 ... 60	110 ... 690	110 ... 690	C	**6BK1700-3BA70-0AA0**		1	1 unit	475
	20 ... 200	50 ... 60	110 ... 690	110 ... 690	C	**6BK1700-3BA80-0AA0**		1	1 unit	475

6BK1700-3BA.0-0AA0

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

Decoupling module

Overview

Decoupling module

A decoupling module must be used:

- When using a current/voltage measuring module, if the supply system is not grounded
- When using a current measuring module or a current/voltage measuring module when the system bus has reached its maximum current consumption

If a mixed configuration is planned with temperature module, digital module and current measuring module or current/voltage measuring module, it must be checked first whether a decoupling module is required.

If

(number (temperature module) * 2 + number (digital module) * 1 + number (current measuring module or current/voltage measuring module) * 4) > 14,

then a decoupling module will be needed.

Example calculation, see system manual "SIPLUS HCS300I heating controller", http://support.automation.siemens.com/WW/view/en/54439691.

Note:

For this equation, each module type is weighted with a specific current factor, see table.

Module	Current factor
Temperature module	2
Digital module	1
Current measuring module, current/voltage measuring module	4

Benefits

- Electrical separation of the current/voltage measuring module from the previous expansion modules (digital module, temperature module) or a basic unit
- Power supply for a current measuring module or a current/voltage measuring module when the system bus has reached its maximum current consumption

Technical specifications

Type		6BK1700-4BA40-0AA0
Supply voltage		
Type of electrical connection for supply voltage		Screw terminals
Type of connectable conductor cross-sections for supply voltage		
• Solid	mm^2	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)
• Finely stranded with end sleeve	mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)
• Finely stranded for AWG cables	AWG	1 x (20 ... 14), 2 x (20 ... 16)

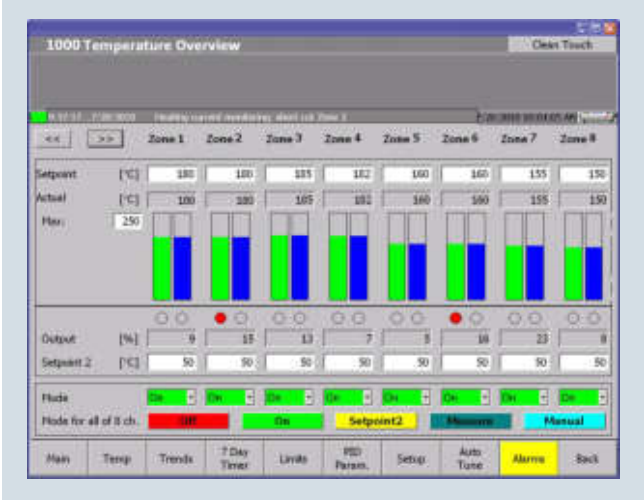
Type		6BK1700-4BA40-0AA0
Displays		
Number of status displays		1
Type of status displays using LEDs		Continuous light: Ready
Auxiliary circuit		
Design of the power supply		Supply through basic unit
Dimensions		
• Width	mm	22.5
• Height	mm	92
• Depth	mm	115

Selection and ordering data

	Interface version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Decoupling module							
 6BK1700-4BA40-0AA0	System interface	C	**6BK1700-4BA40-0AA0**		1	1 unit	475

* You can order this quantity or a multiple thereof.
Illustrations are approximate

Overview



TCP 3000 temperature control software

In order to control SIPLUS HCS300I from the higher-level automation level, a suitable automation system such as a programmable logic controller (PLC) is required. Together with the TCP 3000 temperature control software the result is a powerful automation solution for controlling heating or cooling units.

The following licenses can be purchased optionally for the TCP 3000 temperature control software:

- Initial license TCP 3000
  Type A4027462-A0443
- Runtime license TCP 3000
  Type A4027462-A0444

More information

For more information, please contact your Siemens sales office.

General data

Overview

For elevators
- Passenger elevators
- Freight elevators
- Rising doors and rolling shutters

For rail applications
- Interior railway doors
- Platform screen doors

For industrial applications
- Cold room doors / gates
- Protective machine doors / gates
- Machine tool doors

Automatic door controls

Design

SIDOOR automatic door control systems

Door control system is the general term for a controller of access systems.

The SIDOOR product family is primarily intended for the operation of sliding doors, whereby these doors can be operated both horizontally and vertically.

Door control systems are characterized by the fact that there are always two defined states for the open and closed position of the door.

The door is always controlled, regulated and operated between these positions according to the guidelines of the respective application.

In a defined learn run via "1-button operation", the door system independently determines the values for the door width, the dynamic door weight and the drive direction of the geared motor and stores these data in a non-volatile memory.

The optimum drive characteristics for the door are calculated and continuously maintained.

The travel curve transitions are rounded off so that the door movement is smooth and jerk-free.

Benefits

- 1-button operation for the entire commissioning process
- Optimum and stable drive characteristics
- Reduced service requirements and costs
- SIDOOR User Software (part of the Software Kit, not included in the scope of supply, see page 15/95) enables user-friendly operation and detailed diagnostics
- Integrated terminal module enables simple setup and diagnostics via an event and statistics memory
- Integrated relay module for the "OPEN" position, "CLOSED" position and "Reversing" functions
- Small footprint thanks to compact design
- Automated functions for enhanced safety

Application

The elevator door drive is comprised of a controller and a maintenance-free drive unit (geared motors).

Controllers are electronic controllers connected to the power supply via an external power supply unit (SIDOOR NT40, SIDOOR Transformer). They are generally connected to the higher-level controller via digital or fieldbus interfaces, and can be configured via a user interface.

The SIDOOR AT12 and SIDOOR AT40 controllers can be used to operate horizontally operated cabin and shaft doors at adjustable speeds and accelerations.

The SIDOOR ATD400V controller for rising doors and rolling shutters can be used to operate vertical door systems on elevators at adjustable speeds and accelerations.

The geared motors are the maintenance-free drive unit of the door drive. The geared motors are DC motors with non-self-locking gearing, and are speed-controlled. The set force and speed limits are not exceeded.

Operation of the door drives listed here does not require a limit switch. The door width and the "OPEN/CLOSED" positions are determined automatically.

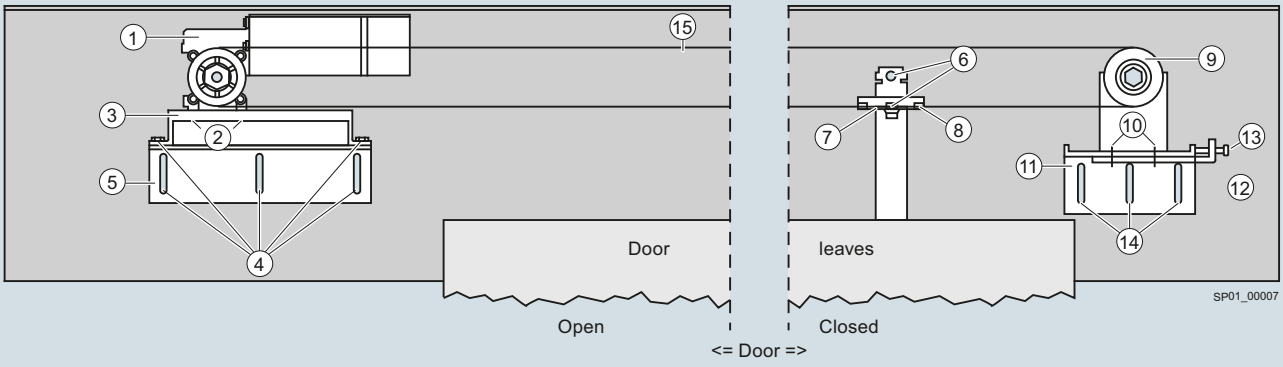
Forces are transferred via a toothed belt. The toothed belt passes over a deflector pulley, and can be fitted with 2 clutch holders. This enables it to drive both single-sided and centrally-opening doors. The accessories are not included in the scope of supply, see "Accessories".

Configuration

The product-specific property of elevator door controls is based on the fact that the closing weights/closing springs integrated in the shaft doors are also taken into account.

These weights/springs are integrated in the shaft doors so that open doors close automatically if the cabin is not at the relevant floor.

The elevator door drive also serves to move the doors in their opening direction and supports their closing movement.



Complete motor mounting

(1) Geared motor
(2) 4 x locking hexagonal safety bolts M5 x 10
(3) Rubber-metal anti-vibration mount
(4) 10 x locking hexagonal safety bolts M6 x 16
(5) Mounting bracket for the motor mounting

Mounting material for door clutch holder

(6) 2 x locking hexagonal safety bolts M6 x 12
(7) Door clutch holder
(8) Clamping plate

Deflector unit and clamping device

(9) Deflector unit
(10) 2 x locking hexagonal safety bolts M6 x 12
(11) Mounting bracket for the deflector unit and tensioning device
(12) Tensioning lug for the deflector unit and tensioning device
(13) Tensioning screw M6 x 30
(14) 10 x locking hexagonal safety bolts M6 x 16
(15) Toothed belt (length 4 m)

Mounting suggestion for door control systems

SIDOOR AT12 elevator door drive

Overview

1. Line voltage connection
2. Connection
   - Service Tool or
   - Software Kit
3. Operating state LED
4. Learn run button
5. CANopen connection
6. Connection for input and output signals
7. Connection for motor
8. Connection for 24 V DC/120 mA output voltage

SIDOOR AT12 elevator door drive

SIDOOR AT12 – SIDOOR enables the quick, easy and flexible movement, installation and configuration of a wide range of elevator door systems.

- For dynamic door weights up to 120 kg
- 4 kg maximum counterweight
- Operating temperature 0 to +50 °C
- Opening width 0.3 to 2.4 m
- Integrated switch-mode power supply
- Auxiliary voltage output 24 V DC, 120 mA (short-circuit-proof)
- CANopen interface (integrated in the controller)
- Degree of protection IP20

Design

The SIDOOR AT12 elevator door drive system consists of several components:

Version	Type	Page
Controller		
SIDOOR AT12 elevator door drive (with integrated switch-mode power supply)	**6FB1111-1AT20-1AT1**	15/77
The following individual components must be ordered separately:		
Additional units To enable the universal use and maintenance of the door drive system		
• Software Kit	**6FB1105-0AT01-6SW0**	15/95
• Service Tool	**6FB1105-0AT01-6ST0**	15/96
DC geared motors		
• SIDOOR M2 geared motor (max. door weight of 120 kg) - SIDOOR M2 L (pinion left) - SIDOOR M2 R (pinion right)	**6FB1103-0AT10-5MA0** **6FB1103-0AT11-5MA0**	15/99
Accessories for the complete system Also see overview diagram, page 15/75		
• Rubber-metal anti-vibration mount for low-noise operation of the door drive system - For the SIDOOR M2 geared motor	**6FB1104-0AT02-0AD0**	15/100
• Mounting bracket - For the SIDOOR M2 geared motor for flexible accommodation of the rubber-bonded metal	**6FB1104-0AT01-0AS0**	15/100
- For the deflector unit for the toothed belt to be set to the required belt tension	**6FB1104-0AT02-0AS0**	15/100
• Door clutch holder For connecting the respective door leaf by means of a toothed belt	**6FB1104-0AT01-0CP0**	15/100
• Deflector unit for the toothed belt STS for attaching on the door system	**6FB1104-0AT03-0AS0**	15/100
• Toothed belt STS As connection between the door system and the final positions of the door - 4 m long - 45 m long	**6FB1104-0AT01-0AB0** **6FB1104-0AT02-0AB0**	15/100 15/100

Technical specifications

Type		6FB1111-1AT20-1AT1
General data		
Supply voltage at AC	V	230
Relative symmetrical tolerance of the supply voltage	%	15
Supply voltage frequency		
• At AC	Hz	50 … 60
Input voltage		
• Per DC input	V	10 … 28
Input current		
• Per DC input	mA	6 … 18
Product feature		
• Control inputs isolated		Yes
• Control inputs p-switching		Yes
Output current at 24 V DC output, maximum	mA	120
Property of the 24 V DC output		
• Note		CAUTION: Do not supply with external voltage!
• Short-circuit-proof		Yes
• Overload-proof		Yes
Switching capacity current of the output relay at 30 V		
• At DC	mA	10 … 500

Type		6FB1111-1AT20-1AT1
Opening width of door	m	0.3 … 2.4
Counterweight for M2 motor, max.	kg	4
Ambient temperature		
• During operation	°C	0 … 50
• During storage	°C	-20 … +85
IP degree of protection		IP20
Relative humidity		
• No condensation	%	--
Dimensions		
• Width	mm	260
• Height	mm	45
• Depth	mm	105
Standards		
Type of inspection, TÜV prototype tested		Yes
Standard		
• For EMC		EN 12015/EN 12016
• For safety		IEC 60950-1:2006
Certificate of suitability		
• According to EN 81		Yes
• CE marking		Yes

Selection and ordering data

Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIDOOR AT12 elevator door drive						
 6FB1111-1AT20-1AT1 **SIDOOR AT12 controller with integrated switch-mode power supply**	C	**6FB1111-1AT20-1AT1**		1	1 unit	478

More information

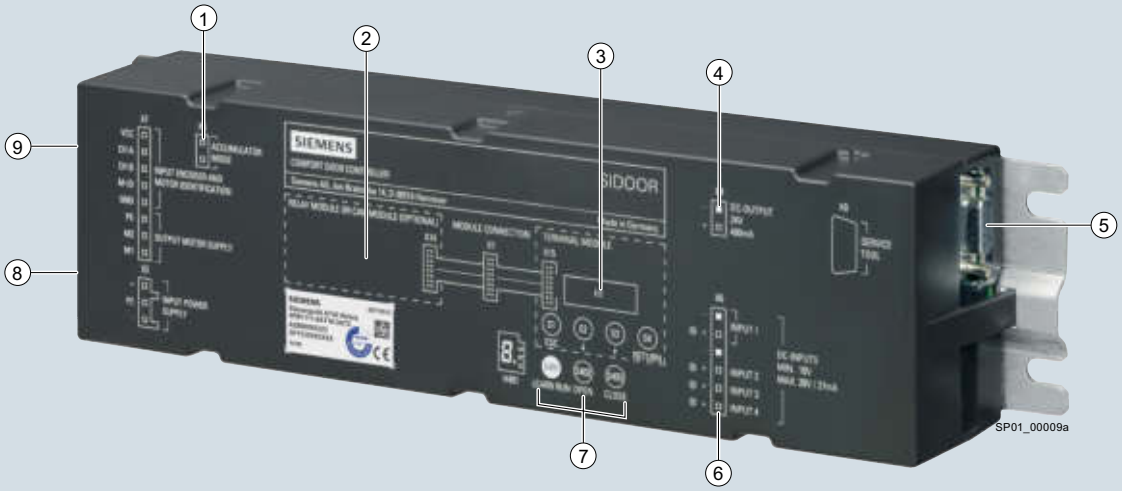
For further product details, see

- "SIDOOR AT12 Elevator Door Drive" Manual, http://support.automation.siemens.com/WW/view/en/58497029
- "SIDOOR AT12 Elevator Door Drive – Manufacturer-Specific CANopen Objects" Compact User Manual, http://support.automation.siemens.com/WW/view/en/59004938
- "SIDOOR Software Kit" Installation Instructions, http://support.automation.siemens.com/WW/view/en/58572351

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

SIDOOR AT40 elevator door drive

Overview



1. Connection for emergency power module
2. CAN module or relay module
3. Terminal module
4. Connection for 24 V DC/400 mA output voltage
5. Connection
   - Software Kit or
   - Service Tool
6. Connection for input signals
7. Control panel
8. Connector
   - NT40 switch-mode power supply or
   - Mains transformer
9. Connection for motor

SIDOOR AT40 elevator door drive (relay module version)

SIDOOR AT40 – SIDOOR enables the quick, easy and flexible movement, installation and configuration of a wide range of elevator door systems.

- Version:
  - Relay module
  - CAN module
- For dynamic door weights up to 600 kg
- Automatic door weight detection
- 4 to 8 kg maximum counterweight (depending on motor version)
- Operating temperature -20 to +50 °C
- Flexible motor management (four different motor types), automatic detection
- Opening width 0.3 to 5 m
- Emergency power input via special emergency power module 24 V DC ± 15 %
- Auxiliary voltage output 24 V DC ± 15 %; 0.4 A (short-circuit-proof)
- Output stage short-circuit-proof
- Supports power-optimized operation in the elevator cabin
- Vandal-proof
- Degree of protection IP54 for 180 to 600 kg motor versions, gear unit IP40 (SIDOOR M5: entirely IP54)
- The current operating states are indicated via a 7-segment display directly in the elevator door drive or externally using the Software Kit or Service Tool, see "Accessories".

Design

The SIDOOR AT40 elevator door drive system consists of several components:

Version	Type	Page
Controller		
SIDOOR AT40 elevator door drive (incl. terminal module and relay or CAN module)		
• Relay module	**6FB1111-0AT10-3AT2**	15/81
• CAN module	**6FB1111-1AT10-3AT3**	15/81
The following individual components must be ordered separately:		
Power supplies		
• Mains transformer	**6FB1112-0AT20-2TR0**	15/93
• NT40 switch-mode power supply	**6FB1112-0AT20-3PS0**	15/94
Additional units to enable the universal use and maintenance of the door drive system		
• Software Kit	**6FB1105-0AT01-6SW0**	15/95
• Service Tool	**6FB1105-0AT01-6ST0**	15/96
• Emergency power module	**6FB1115-0AT10-4CP0**	15/97
DC geared motors		
• SIDOOR M2 geared motor (max. door weight of 120 kg)		
- SIDOOR M2 L (pinion left)	**6FB1103-0AT10-5MA0**	15/99
- SIDOOR M2 R (pinion right)	**6FB1103-0AT11-5MA0**	
• SIDOOR M3 geared motor (max. door weight of 180 kg)		
- SIDOOR M3 L (pinion left)	**6FB1103-0AT10-4MB0**	15/99
- SIDOOR M3 R (pinion right)	**6FB1103-0AT11-4MB0**	
• SIDOOR M4 geared motor (max. door weight of 400 kg)		
- SIDOOR M4 L (pinion left)	**6FB1103-0AT10-3MC0**	15/99
- SIDOOR M4 R (pinion right)	**6FB1103-0AT11-3MC0**	
• SIDOOR M5 geared motor (max. door weight 600 kg)		
- SIDOOR M5 L (pinion left)	**6FB1103-0AT10-3MD0**	15/99
- SIDOOR M5 R (pinion right)	**6FB1103-0AT11-3MD0**	
Accessories for the complete system Also see overview diagram, page 15/75		
• Rubber-metal anti-vibration mount for low-noise operation of the door drive system		
- For geared motors with a door weight below 300 kg	**6FB1104-0AT02-0AD0**	15/100
- For a geared motor with a door weight above 300 kg	**6FB1104-0AT01-0AD0**	15/100
• Mounting bracket		
- For fitting the SIDOOR rubber-metal anti-vibration mount with mounted geared motor	**6FB1104-0AT01-0AS0**	15/100
- With tensioning device for fitting the deflector unit and setting the toothed belt to the required tension	**6FB1104-0AT02-0AS0**	15/100
• Door clutch holder for attaching both ends of the toothed belt, and for connecting the respective door panel to the toothed belt	**6FB1104-0AT01-0CP0**	15/100
- For toothed belt width 12 mm	**6FB1104-0AT01-0CP0**	
- For toothed belt width 14 mm	**6FB1104-0AT02-0CP0**	
• Deflector unit for the toothed belt STS for attaching on the door system	**6FB1104-0AT03-0AS0**	15/100
• Toothed belt STS as connection between the door system and the final positions of the door		
- Toothed belt width 12 mm		15/100
Length 4 m	**6FB1104-0AT01-0AB0**	
Length 45 m	**6FB1104-0AT02-0AB0**	
- Toothed belt width 14 mm		15/101
Length 4 m	**6FB1104-0AT03-0AB0**	
Length 55 m	**6FB1104-0AT04-0AB0**	

Technical specifications

Type		SIDOOR AT40 CAN	SIDOOR AT40 relay
General data			
Supply voltage at DC	V	36	
Relative positive tolerance of the supply voltage	%	3	
Input voltage			
• Per DC input	V	10 … 28	
Input current			
• Per DC input	mA	9 … 27	
Product feature			
• Control inputs isolated		Yes	
• Control inputs p-switching		Yes	
Output current at 24 V DC output, maximum	mA	400	
Property of the 24 V DC output			
• Note		CAUTION: Do not supply with external voltage!	
• Short-circuit-proof		Yes	
Product expansion, optional		Emergency power module	
Switching capacity current of the output relay			
• At 230 V			
- At AC	mA	10 … 1 000	
• At 50 V			
- At DC	mA	10 … 1 000	
Opening width of door	m	0.3 … 5	
Counterweight			
• For M2 motor max.	kg	4	
• For M3 motor max.	kg	6	
• For M4 motor max.	kg	8	
Ambient temperature			
• During operation	°C	-20 … +50	
• During storage	°C	-40 … +50	
IP degree of protection		IP20	
Relative humidity			
• No condensation	%	10 … 93	
Dimensions			
• Width	mm	320	
• Height	mm	60	
• Depth	mm	80	
Standards			
Type of inspection, TÜV prototype tested		Yes	
Certificate of suitability			
• According to EN 81		Yes	
• CE marking		Yes	
Standard			
• For EMC		EN 12015/EN 12016	
• For safety		IEC 60950-1:2006	
Standard for communication interfaces CANopen, CiA standard 301, profile 417		No	Yes

Selection and ordering data

	Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIDOOR AT40 elevator door drive							
 6FB1111-0AT10-3AT2	**SIDOOR AT40 relay controller**	C	**6FB1111-0AT10-3AT2**		1	1 unit	478
 6FB1111-1AT10-3AT3	**SIDOOR AT40 CAN controller**	C	**6FB1111-1AT10-3AT3**		1	1 unit	478

More information

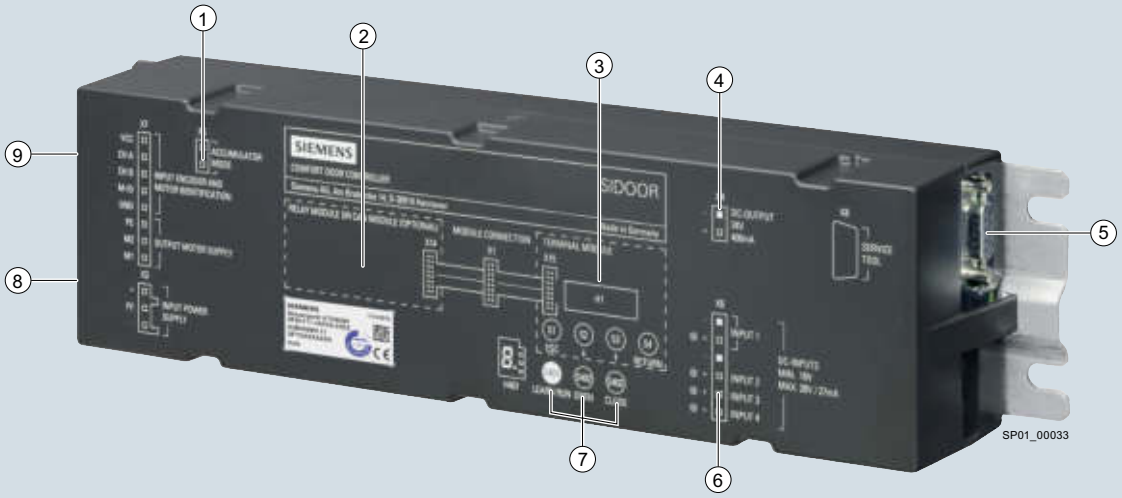
For further product details, see

- "System Manual SIDOOR AT40, ATD400V, ATD400K, ATD4xxW, ATD400S, ATE250S, ADT400T", http://support.automation.siemens.com/WW/view/en/58531074
- "SIDOOR Elevator Door Drive AT40 – Manufacturer-specific CANopen Objects" Compact User Manual, http://support.automation.siemens.com/WW/view/en/58992020
- "SIDOOR Software Kit" Installation Instructions, http://support.automation.siemens.com/WW/view/en/58572351

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

SIDOOR ATD400V elevator door drive

Overview



1. Emergency power module connection
2. Relay module
3. Terminal module
4. Output voltage 24 V DC/400 mA connection
5. Connection
   - Software Kit or
   - Service Tool
6. Input signal connection
7. Control panel
8. Connection
   - NT40 switch mode power supply or
   - Mains transformer
9. Motor connection

SIDOOR ATD400V elevator door drive

SIDOOR ATD400V – the SIDOOR ATD400V elevator door drive enables the quick, easy and versatile installation, configuration and operation of vertical elevator door systems, such as rising doors and roller shutters.

- Relay module version
- For dynamic door weights up to 400 kg
- Automatic door weight detection
- Operating temperature -20 to +50 °C
- Opening width 0.3 to 4 m
- Emergency power input via special emergency power module 24 V DC ± 15 %
- Auxiliary voltage output 24 V DC ± 15 %; 0.4 A (short-circuit-proof)
- Output stage short-circuit-proof
- Vandal-proof

Design

The SIDOOR ATD400V elevator door drive system consists of several components:

Version	Type	Page
Controller		
SIDOOR ATD400V elevator door drive (incl. terminal module and relay module)	**6FB1111-1AT10-3VE2**	15/84
The following individual components must be ordered separately:		
Power supplies		
• Mains transformer	**6FB1112-0AT20-2TR0**	15/93
• NT40 switch-mode power supply	**6FB1112-0AT20-3PS0**	15/94
Additional units to enable the universal use and maintenance of the door drive system		
• Software Kit	**6FB1105-0AT01-6SW0**	15/95
• Service Tool	**6FB1105-0AT01-6ST0**	15/96
• Emergency power module	**6FB1115-0AT10-4CP0**	15/97
DC geared motors		
• SIDOOR M4 geared motor (max. door weight of 400 kg) - SIDOOR M4 L (pinion left) - SIDOOR M4 R (pinion right)	 **6FB1103-0AT10-3MC0** **6FB1103-0AT11-3MC0**	 15/99
Accessories for the complete system Also see overview diagram, page 15/75		
• Rubber-metal anti-vibration mount for low-noise operation of the door drive system - For the SIDOOR M4 geared motor	 **6FB1104-0AT01-0AD0**	 15/99
• Mounting bracket - For the SIDOOR M4 geared motor for flexible accommodation of the rubber-bonded metal	 **6FB1104-0AT01-0AS0**	 15/100
- For the deflector unit for the toothed belt to be set to the required belt tension	**6FB1104-0AT02-0AS0**	15/100
• Door clutch holder for connecting the respective door leaf by means of a toothed belt	**6FB1104-0AT01-0CP0**	15/100
• Deflector unit for the toothed belt STS for attaching on the door system	**6FB1104-0AT03-0AS0**	15/100
• Toothed belt STS as connection between the door system and the final positions of the door - 4 m long - 45 m long	 **6FB1104-0AT01-0AB0** **6FB1104-0AT02-0AB0**	 15/100

SIDOOR ATD400V elevator door drive

Technical specifications

Type		6FB1111-1AT10-3VE2
General data		
Supply voltage at DC	V	36
Relative positive tolerance of the supply voltage	%	3
Input voltage		
• Per DC input	V	10 … 28
Input current		
• Per DC input	mA	9 … 27
Product feature		
• Control inputs isolated		Yes
• Control inputs p-switching		Yes
Output current at 24 V DC output, maximum	mA	400
Property of the 24 V DC output		
• Note		CAUTION: Do not supply with external voltage!
• Short-circuit-proof		Yes
Product expansion, optional		Emergency power module
Switching capacity current of the output relay		
• At 230 V		
- At AC	mA	10 … 1 000
• At 50 V		
- At DC	mA	10 … 1 000

Type		6FB1111-1AT10-3VE2
Opening width of door	m	0.3 … 4
Ambient temperature		
• During operation	°C	-20 … +50
• During storage	°C	-40 … +50
IP degree of protection		IP20
Relative humidity		
• No condensation	%	10 … 93
Dimensions		
• Width	mm	320
• Height	mm	60
• Depth	mm	80
Standards		
Type of inspection, TÜV prototype tested		Yes
Certificate of suitability		
• According to EN 81		Yes
• CE marking		Yes
Standard		
• For EMC		EN 12015/EN 12016
• For safety		IEC 60950-1:2006
Standard for communication interfaces CANopen, CiA standard 301, profile 417		No

Selection and ordering data

	Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIDOOR ATD400V elevator door drive							
 6FB1111-1AT10-3VE2	**SIDOOR ATD400V relay controller, vertical rising door/rolling shutter**	C	**6FB1111-1AT10-3VE2**		1	1 unit	478

More information

For further product details, see

- "System Manual SIDOOR AT40, ATD400V, ATD400K, ATD4xxW, ATD400S, ATE250S, ADT400T", http://support.automation.siemens.com/WW/view/en/58531074
- "SIDOOR Software Kit" Installation Instructions, http://support.automation.siemens.com/WW/view/en/58572351

You will find power supplies and additional units under "For industrial applications" on page 15/93

* You can order this quantity or a multiple thereof.
Illustrations are approximate

Application

The machine tool door drive is comprised of a controller and a maintenance-free drive unit (geared motors).

Controllers are electronic controllers connected to the power supply via an external power supply unit (SIDOOR NT40, SIDOOR Transformer). They are generally connected to the higher-level controller via digital or fieldbus interfaces, and can be configured via a user interface.

Two controllers are available for machine tool doors:

- SIDOOR ATD410W, connection to higher-level control system through USS bus interface (USS module), up to 600 kg door weight
- SIDOOR ATD420W, connection to higher-level control system through PROFIBUS interface (PROFIBUS module), up to 600 kg door weight

The safe functions - force limitation, energy limitation and end position detection - fulfill the requirements according to DIN EN ISO 13849-1:2008 for Category 2 and Performance Level d. The drives are suitable for power-operated guards according to EN 953:1997+A1:2009 Section 5.2.5.2 "Actuating forces".

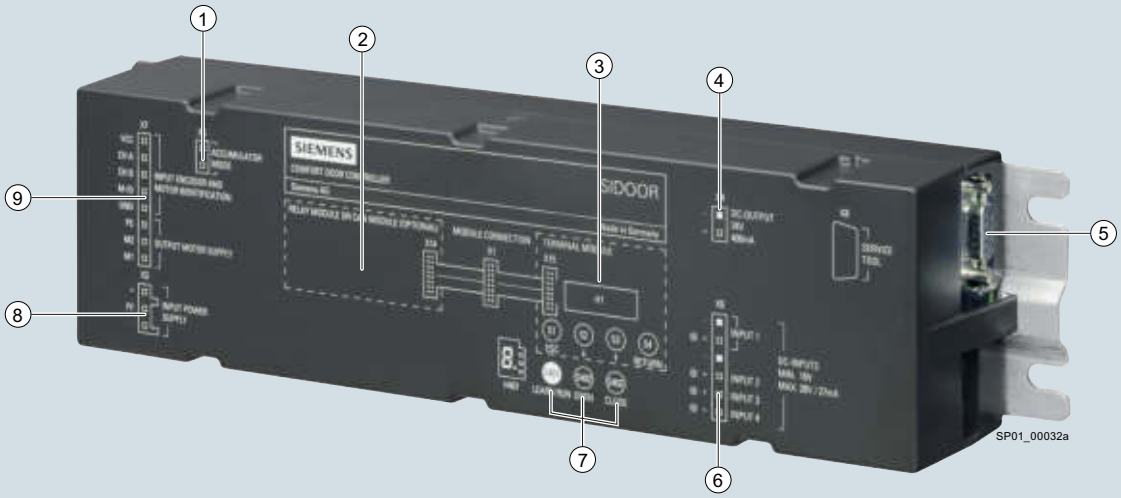
The geared motors are the maintenance-free drive unit of the door drive. The geared motors are DC motors with non-self-locking gearing, and are speed-controlled. The set force and speed limits are not exceeded.

Operation of the door drives listed here does not require a limit switch. The door width and the "OPEN/CLOSED" positions are determined automatically.

Forces are transferred via a toothed belt. The toothed belt passes over a deflector pulley, and can be fitted with 2 clutch holders. This enables it to drive both single-sided and centrally-opening doors. The accessories are not included in the scope of supply, see "Accessories".

SIDOOR ATD410W machine tool door drive NEW

Overview



1. Emergency power module connection
2. Relay module, USS module or PROFIBUS module (according to requirements)
3. Terminal module
4. Output voltage 24 V DC/400 mA connection
5. Connection
   - Software Kit or
   - Service Tool
6. Input signal connection
7. Control panel
8. Input voltage connection 16.8 to 36 V DC for connection of power supply
9. Motor connection

SIDOOR ATD410W machine tool door drive

The SIDOOR ATD410W machine tool door drive can be used to operate horizontal sliding doors. The drive system has been specially designed for use in a very wide range of machine tools. The communication-capable ATD410W controller offers complete flexibility for integration with a machine tool.

- USS module version: USS communication interface for connection to type ET200, SIMATIC S7-1200, SIMATIC S7-1500 and SIMATIC S7-300 higher-level controllers
- For dynamic door weights up to 600 kg
- Automatic door weight detection
- Operating temperature -20 to +50 °C
- Flexible motor management (five different motor types), automatic detection
- Opening width 0.3 to 4 m
- Emergency power input via special emergency power module 24 V DC ± 15 %
- Auxiliary voltage output 24 V DC ± 15 %; 0.4 A (short-circuit-proof)
- Output stage short-circuit-proof
- Degree of protection IP20
- Belt break detection
- Supports type 2 ESPE electro-sensitive protective equipment according to IEC 61496-1
- Support of DCPS sensors
- Slow approach to obstruction position
- Assisted Drive, Impulse Stop
- Impulse Drive
- The current operating states are indicated via a 7-segment display directly in the controller or using the Software Kit or Service Tool
- Parameterization of all door parameters using the PROFIDrive profile with the function block provided. For more details, see "System Manual SIDOOR AT40, ATD400V, ATD400K, ATD4xxW, ATD400S, ATE250S, ADT400T", http://support.automation.siemens.com/WW/view/en/58531074

Design

The SIDOOR ATD410W machine tool door drive system is comprised of several components:

Version	Type	Page
Controller		
SIDOOR ATD410W machine tool door drive (incl. terminal module and USS module)	**6FB1141-4AT10-3WE2**	15/86
The following individual components must be ordered separately:		
Power supplies		
• Mains transformer	**6FB1112-0AT20-2TR0**	15/93
• NT40 switch-mode power supply	**6FB1112-0AT20-3PS0**	15/94
Additional units to enable the universal use and maintenance of the door drive system		
• Software Kit	**6FB1105-0AT01-6SW0**	15/95
• Service Tool	**6FB1105-0AT01-6ST0**	15/96
• Emergency power module	**6FB1115-0AT10-4CP0**	15/97
DC geared motors		
• SIDOOR MDG180 geared motors (max. door weight 180 kg, degree of protection IP56)		
- SIDOOR MDG180 L (pinion left)	**6FB1103-0AT14-4MB0**	15/98
- SIDOOR MDG180 R (pinion right)	**6FB1103-0AT13-4MB0**	15/98
• SIDOOR MDG400 geared motors (max. door weight 400 kg, degree of protection IP56)		
- SIDOOR MDG400 L (pinion left)	**6FB1103-0AT14-3MC0**	15/98
- SIDOOR MDG400 R (pinion right)	**6FB1103-0AT13-3MC0**	15/98
• SIDOOR M3 geared motors (max. door weight 180 kg, degree of protection IP40)		
- SIDOOR M3 L (pinion left)	**6FB1103-0AT10-4MB0**	15/98
- SIDOOR M3 R (pinion right)	**6FB1103-0AT11-4MB0**	15/98
• SIDOOR M4 geared motors (max. door weight 400 kg, degree of protection IP40)		
- SIDOOR M4 L (pinion left)	**6FB1103-0AT10-3MC0**	15/98
- SIDOOR M4 R (pinion right)	**6FB1103-0AT11-3MC0**	15/98
• SIDOOR M5 geared motors (max. door weight 600 kg, degree of protection IP54)		
- SIDOOR M5 L (pinion left)	**6FB1103-0AT10-3MD0**	15/98
- SIDOOR M5 R (pinion right)	**6FB1103-0AT11-3MD0**	15/98
Accessories for the complete system Also see overview diagram, page 15/75		
• Rubber-metal anti-vibration mount for low-noise operation of the door drive system		
- For the SIDOOR MDG180 and SIDOOR M3 geared motors	**6FB1104-0AT02-0AD0**	15/100
- For the SIDOOR MDG400, SIDOOR M4 and SIDOOR M5 geared motors	**6FB1104-0AT01-0AD0**	15/100
• Mounting bracket		
- For fitting the SIDOOR rubber-metal anti-vibration mount with mounted geared motor	**6FB1104-0AT01-0AS0**	15/100
- With tensioning device for fitting the deflector unit and setting the toothed belt to the required tension	**6FB1104-0AT02-0AS0**	15/100
• Rail holder for mounting controllers on standard mounting rail TH 35 according to IEC 60715	**6FB1144-0AT00-3AS0**	
• Door clutch holder for attaching both ends of the toothed belt, and for connecting the respective door panel to the toothed belt		15/100
- For toothed belt width 12 mm	**6FB1104-0AT01-0CP0**	
- For toothed belt width 14 mm	**6FB1104-0AT02-0CP0**	
• Deflector unit for deflecting the STS toothed belt at the same height and depth, aligned with motor drive pinion	**6FB1104-0AT03-0AS0**	15/100
• Toothed belt STS as connection between the door system and the final positions of the door		15/100
- Toothed belt width 12 mm Length 4 m	**6FB1104-0AT01-0AB0**	
Length 45 m	**6FB1104-0AT02-0AB0**	
- Toothed belt width 14 mm Length 4 m	**6FB1104-0AT03-0AB0**	
Length 55 m	**6FB1104-0AT04-0AB0**	
Accessories for the SIDOOR ATD410W machine tool door drive only		
• CABLE-MDG hybrid connecting cables for connecting the SIDOOR MDG geared motor to the SIDOOR ATD410W machine tool door drive		
- CABLE-MDG-0.5m (length 0.5 m)	**6FB1104-0AT00-0CB5**	15/101
- CABLE-MDG-1.5m (length 1.5 m)	**6FB1104-0AT01-0CB5**	
- CABLE-MDG-5m (length 5 m)	**6FB1104-0AT05-0CB0**	
- CABLE-MDG-7m (length 7 m)	**6FB1104-0AT07-0CB0**	
- CABLE-MDG-10m (length 10 m)	**6FB1104-0AT10-0CB0**	
- CABLE-MDG-15m (length 15 m)	**6FB1104-0AT15-0CB0**	
• PROFIBUS FastConnect bus connector and PROFIBUS FC Standard Cable GP		
- PB FC RS485 PLUG 180 Bus connector for connecting the SIDOOR ATD410W machine tool door drive to the SIMATIC controller	**6GK1500-0FC10**	15/101
- PB FC Standard Cable GP Standard bus cable with special configuration for fast installation	**6XV1830-0EH10**	
• ET200S electronic module for serial data exchange via point-to-point connection	**6ES7138-4DF11-0AB0**	15/101
• Communication module CM PtP RS422/485 BA	**6ES7540-1AB00-0AA0**	15/101
• Communication module CM 1241 Communication module for point-to-point connection	**6ES7241-1CH32-0XB0**	15/101

SIDOOR ATD410W machine tool door drive NEW

Technical specifications

Type		SIDOOR ATD410W
General data		
Supply voltage at DC	V	36
Relative positive tolerance of the supply voltage	%	3
Input voltage		
• Per DC input	V	10 … 28
Input current		
• Per DC input	mA	9 … 27
Product feature		
• Control inputs isolated		Yes
• Control inputs p-switching		Yes
Output current at 24 V DC output, maximum	mA	400
Property of the 24 V DC output		
• Note		CAUTION: Do not supply with external voltage!
• Short-circuit-proof		Yes
Product expansion, optional		Emergency power module
Switching capacity current of the output relay		
• At 230 V		
- At AC	mA	10 … 1 000
• At 50 V		
- At DC	mA	10 … 1 000
Opening width of door	m	0.3 … 4
Ambient temperature		
• During operation	°C	-20 … +50
• During storage	°C	-40 … +70
IP degree of protection		IP20
Relative humidity		
• No condensation	%	10 … 93
Dimensions		
• Width	mm	320
• Height	mm	60
• Depth	mm	80
Standards		
Type of inspection, TÜV prototype tested		Yes
Certificate of suitability CE marking		Yes
Standard		
• For EMC		IEC 61000-6-2/IEC 61000-6-4
• For safety		IEC 60950-1:2011

Selection and ordering data

Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIDOOR ATD410W machine tool door drives						
 6FB1141-4AT10-3WE2 **SIDOOR ATD410W machine tool door drive controller**	C	**6FB1141-4AT10-3WE2**		1	1 unit	478

More information

- For further product details, see
- "System Manual SIDOOR AT40, ATD400V, ATD400K, ATD4xxW, ATD400S, ATE250S, ADT400T", http://support.automation.siemens.com/WW/view/en/58531074
- Operating instructions (compact), "SIDOOR ATD410W Controllers for Protective Machine Doors", http://support.automation.siemens.com/WW/view/en/85104115
- "SIDOOR Software Kit" Installation Instructions, http://support.automation.siemens.com/WW/view/en/58572351

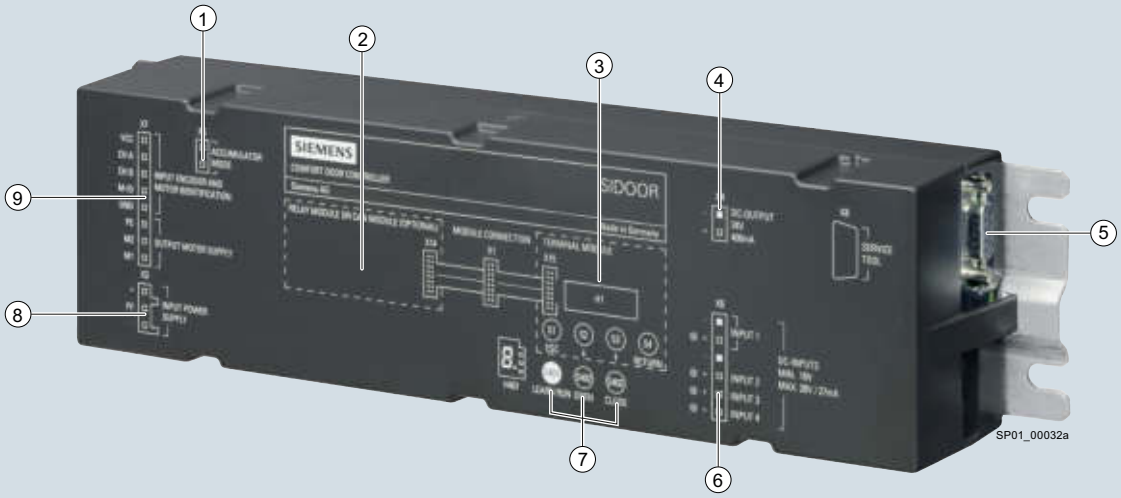
Additional components for the SIDOOR ATD410W machine tool door drive system:

- Mains transformer and NT40 switch-mode power supply, see "Power supplies"
- Software Kit, Service Tool, see "Additional units"
- SIDOOR MDG180, SIDOOR MDG400 and SIDOOR M3 to SIDOOR M5 DC geared motors, see "Geared motors"
- Accessories for the complete system, see "Accessories"

* You can order this quantity or a multiple thereof.
Illustrations are approximate

NEW **SIDOOR ATD420W machine tool door drive**

Overview



1. Emergency power module connection
2. Relay module, USS module or PROFIBUS module (according to requirements)
3. Terminal module
4. Output voltage 24 V DC/400 mA connection
5. Connection
   - Software Kit or
   - Service Tool
6. Input signal connection
7. Control panel
8. Input voltage connection
   16.8 to 36 V DC
   for connection of power supply
9. Motor connection

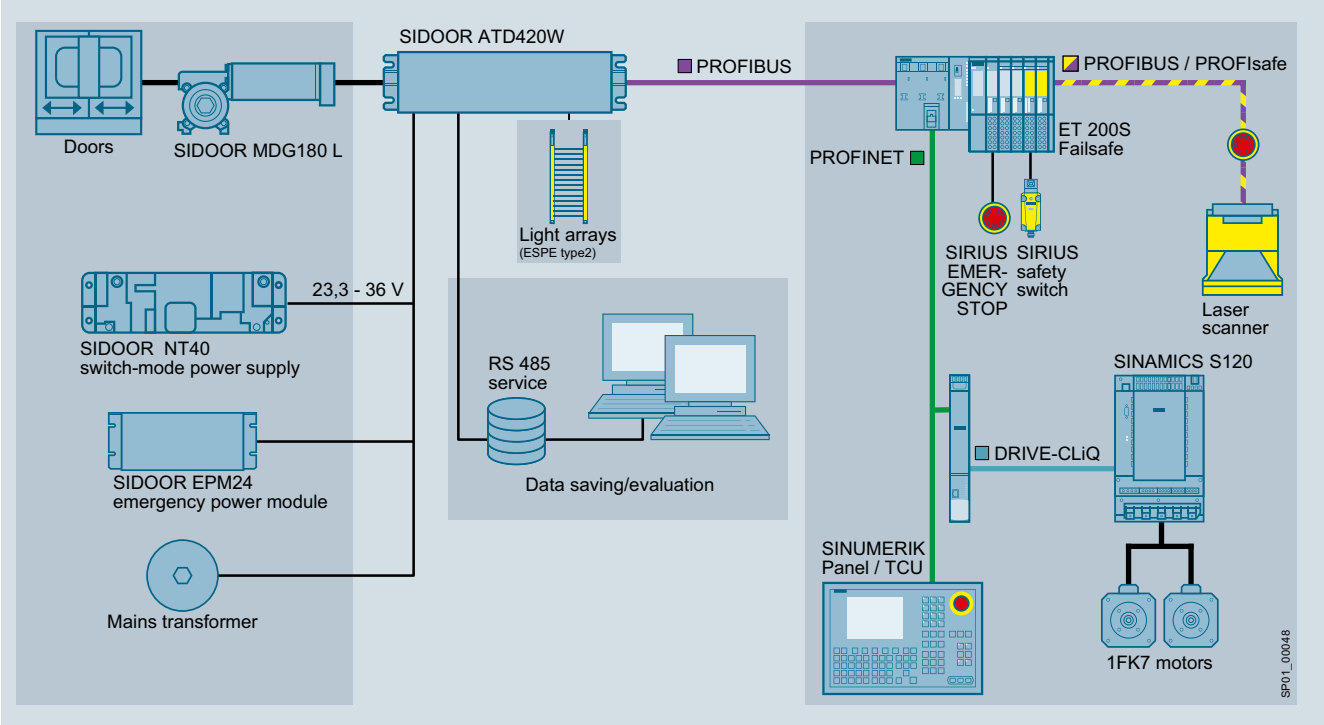
SIDOOR ATD420W machine tool door drive

The SIDOOR ATD420W machine tool door drive can be used to operate horizontal sliding doors. The drive system has been specially designed for use in a very wide range of machine tools. The communication-capable ATD420W controller offers complete flexibility for integration with a machine tool.

- For dynamic door weights up to 600 kg
- Four digital inputs for signal detection (door open, door closed, LB/DCPS sensor)
- Integrated PROFIBUS interface
- 2 relay contacts for additional position signals
- Direct connection of a light barrier as type 2 ESPE (electro-sensitive protective equipment) according to EN 61496-1
- Automatic determination of the door weight and friction during the learn run
- Parameter assignment and analysis of the door parameters via PROFIDrive
- Operating temperature -20 to +50 °C
- Flexible motor management, i.e. automatic detection of the geared motor
- Assisted Drive (motor-assisted movement of the door)
- Impulse Stop (door stopped automatically by applying light force)
- Impulse Drive (automatic door movement by applying light force)
- Opening width 0.3 to 4 m
- Door speeds up to 0.5 m/s
- Emergency power input via special emergency power module (24 V DC ± 15 %)
- Auxiliary voltage output 24 V DC ± 15 % and 0.4 A (short-circuit-proof)
- Output stage is short-circuit-proof
- Vandal-proof
- The current operating states are indicated via a 7-segment display directly in the controller or using the Software Kit or Service Tool
- Parameterization of all door parameters using the PROFIDrive profile with the function block provided. For more details, see "System Manual SIDOOR AT40, ATD400V, ATD400K, ATD4xxW, ATD400S, ATE250S, ADT400T", http://support.automation.siemens.com/WW/view/en/58531074

SIDOOR ATD420W machine tool door drive NEW

Design



The SIDOOR ATD420W machine tool door drive system consists of a number of components:

Version	Type	Page
Controller		
SIDOOR ATD420W machine tool door drive	**6FB1141-2AT10-3WE2**	15/89
The following individual components must be ordered separately:		
Power supplies		
• Mains transformer	**6FB1112-0AT20-2TR0**	15/93
• NT40 switch-mode power supply	**6FB1112-0AT20-3PS0**	15/94
Additional units to enable the universal use and maintenance of the door drive system		
• Software Kit	**6FB1105-0AT01-6SW0**	15/95
• Service Tool	**6FB1105-0AT01-6ST0**	15/96
• Emergency power module	**6FB1115-0AT10-4CP0**	15/97
DC geared motors		
• SIDOOR MDG180 geared motors (max. door weight 180 kg, degree of protection IP56)		
- SIDOOR MDG180 L (pinion left)	**6FB1103-0AT14-4MB0**	15/99
- SIDOOR MDG180 R (pinion right)	**6FB1103-0AT13-4MB0**	15/99
• SIDOOR MDG400 geared motors (max. door weight 400 kg, degree of protection IP56)		
- SIDOOR MDG400 L (pinion left)	**6FB1103-0AT14-3MC0**	15/99
- SIDOOR MDG400 R (pinion right)	**6FB1103-0AT13-3MC0**	15/99
• SIDOOR M3 geared motors (max. door weight 180 kg, degree of protection IP40)		
- SIDOOR M3 L (pinion left)	**6FB1103-0AT10-4MB0**	15/99
- SIDOOR M3 R (pinion right)	**6FB1103-0AT11-4MB0**	15/99
• SIDOOR M4 geared motors (max. door weight 400 kg, degree of protection IP40)		
- SIDOOR M4 L (pinion left)	**6FB1103-0AT10-3MC0**	15/99
- SIDOOR M4 R (pinion right)	**6FB1103-0AT11-3MC0**	15/99
• SIDOOR M5 geared motors (max. door weight 600 kg, degree of protection IP54)		
- SIDOOR M5 L (pinion left)	**6FB1103-0AT10-3MD0**	15/99
- SIDOOR M5 R (pinion right)	**6FB1103-0AT11-3MD0**	15/99

Version	Type	Page
Accessories for the complete system		
Also see overview diagram, page 15/75		
• Rubber-metal anti-vibration mount		
for low-noise operation of the door drive system		
- For the SIDOOR MDG180 and SIDOOR M3 geared motors	**6FB1104-0AT02-0AD0**	15/100
- For the SIDOOR MDG400, SIDOOR M4 and SIDOOR M5 geared motors	**6FB1104-0AT01-0AD0**	15/100
• Mounting bracket		
- For SIDOOR geared motors	**6FB1104-0AT01-0AS0**	15/100
for flexible accommodation of the rubber-bonded metal		
- For the deflector unit	**6FB1104-0AT02-0AS0**	15/100
for the toothed belt to be set to the required belt tension		
• Rail holder for mounting controllers on standard mounting rail TH 35 according to IEC 60715	**6FB1144-0AT00-3AS0**	15/100
• Door clutch holder		15/100
for connecting the respective door leaf by means of a toothed belt		
- For toothed belt width 12 mm	**6FB1104-0AT01-0CP0**	
- For toothed belt width 14 mm	**6FB1104-0AT02-0CP0**	
• Deflector unit	**6FB1104-0AT03-0AS0**	
for the toothed belt STS for attaching on the door system		
• Toothed belt STS		15/100
as connection between the door system and the final positions of the door		
- Toothed belt width 12 mm		15/100
Length 4 m	**6FB1104-0AT01-0AB0**	
Length 45 m	**6FB1104-0AT02-0AB0**	
- Toothed belt width 14 mm		15/101
Length 4 m	**6FB1104-0AT03-0AB0**	
Length 55 m	**6FB1104-0AT04-0AB0**	
Accessories for the SIDOOR ATD420W machine tool door drive only		
• CABLE-MDG hybrid connecting cables		
for connecting the SIDOOR MDG geared motor to the machine tool door drive		
- CABLE-MDG-0.5m (length 0.5 m)	**6FB1104-0AT00-0CB5**	15/101
- CABLE-MDG-1.5m (length 1.5 m)	**6FB1104-0AT01-0CB5**	
- CABLE-MDG-5m (length 5 m)	**6FB1104-0AT05-0CB0**	
- CABLE-MDG-7m (length 7 m)	**6FB1104-0AT07-0CB0**	
- CABLE-MDG-10m (length 10 m)	**6FB1104-0AT10-0CB0**	
- CABLE-MDG-15m (length 15 m)	**6FB1104-0AT15-0CB0**	
• PROFIBUS FastConnect bus connector and PROFIBUS FC Standard Cable GP		
- PB FC RS 485 PLUG 180	**6GK1500-0FC10**	15/101
Bus connector for connecting the SIDOOR ATD420W machine tool door drive to the SIMATIC controller		
- PB FC Standard Cable GP	**6XV1830-0EH10**	
Standard bus cable with special configuration for fast installation		
• ET200S electronic module	**6ES7138-4DF11-0AB0**	15/101
for serial data exchange via point-to-point connection		
• Communication module CM PtP RS 422/485 BA	**6ES7540-1AB00-0AA0**	15/101
• Communication module CM 1241	**6ES7241-1CH32-0XB0**	15/101
Communication module for point-to-point connection		

SIDOOR ATD420W machine tool door drive NEW

Technical specifications

Type		SIDOOR ATD420W
General data		
Supply voltage at DC	V	36
Relative positive tolerance of the supply voltage	%	3
Input voltage		
• Per DC input	V	10 … 28
Input current		
• Per DC input	mA	9 … 27
Product feature		
• Control inputs isolated		Yes
• Control inputs p-switching		Yes
Output current at 24 V DC output, maximum	mA	400
Property of the 24 V DC output		
• Note		CAUTION: Do not supply with external voltage!
• Short-circuit-proof		Yes
Product expansion, optional		Mains transformer 6FB1112-0AT20-2TR0
Switching capacity current of the output relay		
• At 230 V		
- At AC	mA	10 … 1 000
• At 50 V		
- At DC	mA	10 … 1 000
Opening width of door	m	0.3 … 4
Ambient temperature		
• During operation	°C	-20 … +50
• During storage	°C	-40 … +70
IP degree of protection		IP20
Relative humidity		
• No condensation	%	10 … 93
Dimensions		
• Width	mm	320
• Height	mm	60
• Depth	mm	80
Standards		
Type of inspection, TÜV prototype tested		Yes
Certificate of suitability CE marking		Yes
Standard		
• For EMC		IEC 61000-6-2/IEC 61000-6-4
• For safety		IEC 60950-1:2011

Selection and ordering data

Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIDOOR ATD420W machine tool door drives						
SIDOOR ATD420W machine tool door drive controller	C	**6FB1141-2AT10-3WE2**		1	1 unit	478

6FB1141-2AT10-3WE2

More information

- For further product details, see
- "System Manual SIDOOR AT40, ATD400V, ATD400K, ATD4xxW, ATD400S, ATE250S, ADT400T", http://support.automation.siemens.com/WW/view/en/58531074
- Operating instructions (compact), "SIDOOR Controllers for Protective Machine Door", http://support.automation.siemens.com/WW/view/en/85104115
- "SIDOOR Software Kit" Installation Instructions, http://support.automation.siemens.com/WW/view/en/58572351

Additional components for the SIDOOR ATD410W machine tool door drive system:

- Mains transformer and NT40 switch-mode power supply, see "Power supplies"
- Software Kit, Service Tool, see "Additional units"
- SIDOOR MDG180, SIDOOR MDG400 and SIDOOR M3 to SIDOOR M5 DC geared motors, see "Geared motors"
- Accessories for the complete system, see "Accessories"

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

Overview

SIDOOR power supplies connect the controllers to the respective country-specific power supply.

These power supplies can be used for the various SIDOOR controllers:

Mains transformer

- SIDOOR AT40 and SIDOOR ATD400V elevator door drives
- SIDOOR ATD410W and SIDOOR ATD420W machine tool door drives

NT40 switch-mode power supply

- SIDOOR AT40 and SIDOOR ATD400V elevator door drives
- SIDOOR ATD410W and SIDOOR ATD420W machine tool door drives

Overview

Mains transformer 6FB1112-0AT20-2TR0

The mains transformer is a standard power supply unit operated with 230 V AC (±15 %) 50/60 Hz from the SIDOOR product range and can be used for all controllers that do not have an integrated power supply unit. The SIDOOR AT12 elevator door drive, for example, has an integrated power supply unit.

Technical specifications

Type		6FB1112-0AT20-2TR0
General data		
Supply voltage at AC	V	230
Relative symmetrical tolerance of the supply voltage	%	15
Supply voltage frequency		
• At AC	Hz	50 … 60
Operational current of protection at input during installation, max.	A	10
IP degree of protection		IP54
Output current, maximum rated value	A	15.9
Dimensions		
• Height	mm	65
• Diameter	mm	126
Standards		
Standard for EMC		EMC directive 2004/108/EC, EN 12015, EN 12016

Selection and ordering data

	Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Mains transformer							
 6FB1112-0AT20-2TR0	**SIDOOR mains transformer**	C	**6FB1112-0AT20-2TR0**		1	1 unit	478

More information

For more product details, see "System Manual SIDOOR AT40, ATD400V, ATD400K, ATD4xxW, ATD400S, ATE250S, ADT400T", http://support.automation.siemens.com/WW/view/en/58531074

15

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

NT40 switch-mode power supply

Overview

The SIDOOR NT40 switch-mode power supply is operated at 50/60 Hz, 230 V AC (±15 %) to power the following SIDOOR door controllers:

- Elevator door drives
- Machine tool door drives

It is particularly suited for door systems with high door weights.

On the output side, the power supply unit delivers a voltage of 36 V DC (± 3 %) SELV at a rated output power of < 100 W.

In order to enable fast acceleration/deceleration of the doors by the controller, the device can briefly (< 2 s) deliver a current of 15 A (corresponds to a short-time power output of 540 W).

6FB1112-0AT20-3PS0 NT40 switch-mode power supply

Technical specifications

Type		6FB1112-0AT20-3PS0
General data		
Supply voltage at AC	V	230
Relative symmetrical tolerance of the supply voltage	%	15
Supply voltage frequency		
• At AC	Hz	47 … 63
Input current at rated value of input voltage 230 V, rated value	A	0.7
Operational current of protection at input during installation, max.	A	10
Current consumption for 2 s, maximum	A	3.5
Absorbed apparent power, maximum	V·A	650
Efficiency at 100 W emitted active power at 230 V AC	%	90
Equipment protection class		I
Overvoltage category		2
IP degree of protection		IP54
Output voltage for DC, rated value	V	36
• Note		SELV
Output current	A	0 … 2.5
Active power input, maximum rated value	W	100
Temporary overload current for a maximum of 2 s	A	15
Ambient temperature		
• During operation	°C	-20 … +55
- Note		No direct exposure to the sun
• During storage	°C	-20 … +70
• During transport	°C	-40 … +70
Relative humidity		
• No condensation	%	10 … 93
Installation altitude at height above sea level, maximum	m	2 000
Dimensions		
• Width	mm	270
• Height	mm	55
• Depth	mm	80
Standards		
Standard		
• For EMC		EMC directive 2004/108/EC, EN 12015, EN 12016
• For safety		IEC 60950-1:2006

Selection and ordering data

Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
NT40 switch-mode power supply						
SIDOOR NT40 switch-mode power supply	C	**6FB1112-0AT20-3PS0**		1	1 unit	478

6FB1112-0AT20-3PS0

More information

For more product details, see "System Manual SIDOOR AT40, ATD400V, ATD400K, ATD4xxW, ATD400S, ATE250S, ADT400T", http://support.automation.siemens.com/WW/view/en/58531074

* You can order this quantity or a multiple thereof.
Illustrations are approximate

Overview

The additional units from SIDOOR meet a range of customer requirements in order to ensure the universal implementation and maintenance of the system.

These additional units are simple to connect to the de-energized controller via the interfaces provided – and are available for use as soon as the power supply is connected.

Up to three additional units are available for SIDOOR controllers:

- SIDOOR AT12 elevator door drive
  - Service Tool
  - Software Kit
- SIDOOR AT40 and SIDOOR ATD400V elevator door drives; SIDOOR ATD410W and SIDOOR ATD420W machine tool door drives
  - Service Tool
  - Software Kit
  - Emergency power module

Software Kit

Overview

SIDOOR Software Kit

For commissioning, you can choose between the

- SIDOOR Software Kit and the
- SIDOOR PC Kit

The difference between the two is that the SIDOOR Software Kit comes with an installation CD included in the scope of supply, while the firmware for the SIDOOR PC Kit is available as a download from Industry Online Support (http://support.automation.siemens.com/WW/view/en/92418945).

The following functionalities are available for selection - either on CD or as a download.

SIDOOR User Software	This software allows you to configure, parameterize and analyze the door control system.
Siemens HCS12 Firmware Loader	Installing this component is only recommended for experienced users. It is used to update the door control system firmware.
SIDOOR USB to UART Bridge Driver	This driver is required to operate the "USB adapter".

Design

The Software Kit consists of:

- SIDOOR User Software: User-friendly parameter adjustment and oscilloscope function
- Siemens HCS12 Firmware Loader: For firmware updates
- USB adapters: The hardware interface for the controller
- Accessories: Connection cable and manual

Selection and ordering data

Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Software Kit						
 6FB1105-0AT01-6SW0						
SIDOOR Software Kit with USB adapter	C	**6FB1105-0AT01-6SW0**		1	1 unit	478

More information

For further product details, see

- "SIDOOR Software Kit" Installation Instructions, http://support.automation.siemens.com/WW/view/en/58572351
- "SIDOOR User Software" Operating Instructions, http://support.automation.siemens.com/WW/view/en/58572375

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

Service Tool

Overview

SIDOOR Service Tool

The Service Tool can be used to input run commands, change run parameters and read out learned parameters, door states, input/output signals and service data.

The Service Tool can be connected to the various controllers using the respective cable:

- SIDOOR AT12, SIDOOR AT40 and SIDOOR ATD400V elevator door drives
- SIDOOR ATD410W and SIDOOR ATD420W machine tool door drives

You do not need to open the cover of the controller to do this.

Note:

Controller door commands are blocked via the command inputs while the Service Tool is in the "Quick adjustment" or "Total adjustment" menu.

Selection and ordering data

Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Service Tool						
 6FB1105-0AT01-6ST0 **SIDOOR Service Tool**	C	**6FB1105-0AT01-6ST0**		1	1 unit	478

More information

For more product details, see "SIDOOR Service Tool" Compact User Manual, http://support.automation.siemens.com/WW/view/en/60136636.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

Overview

SIDOOR emergency power module

The emergency power module is connected between the power supply and the voltage input of the controllers:

- SIDOOR AT40 and SIDOOR ATD400V elevator door drives
- SIDOOR ATD410W and SIDOOR ATD420W machine tool door drives

In the event of a power failure, this module switches the power supply from the switch-mode power supply to the 24 V DC emergency power supply (battery).

During the switchover, the controller receives the command to reduce the travel speed of the door to initial speed in order to prevent excessive discharge of the connected batteries.

Technical specifications

Type		6FB1115-0AT10-4CP0
Supply voltage from emergency power supply at DC	V	24
Relative symmetrical tolerance of the supply voltage from emergency power supply	%	15
Current of emergency power supply, rated value	A	1.6
Energy demand for one opening and closing cycle, max.	W·h	2.4
Battery capacity		
• Recommended	A·h	2
• For one opening and closing cycle at 24 V	A·h	0.1
Operating current of fuse protection at input of battery during installation slow-blow	A	6
Ambient temperature		
• During operation	°C	-20 … +50
• During storage	°C	-40 … +50
Dimensions		
• Width	mm	105
• Height	mm	35
• Depth	mm	71

Selection and ordering data

Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Emergency power module						
 6FB1115-0AT10-4CP0 **SIDOOR emergency power module**	C	**6FB1115-0AT10-4CP0**		1	1 unit	478

More information

For more product details, see "System Manual SIDOOR AT40, ATD400V, ATD400K, ATD4xxW, ATD400S, ATE250S, ADT400T", http://support.automation.siemens.com/WW/view/en/58531074.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

Overview

SIDOOR geared motors are a combination of gear unit, motor, and sensor. They are easy to connect to the controller via the interface provided and are automatically detected during commissioning.

The maintenance-free, variable speed drive unit comprises a DC motor with non-self-locking gearing.

The geared motors must be selected according to the dynamic door weight.

Geared motors for elevator applications

Two different versions are available for each of the SIDOOR M2 to SIDOR M5 geared motors:

- SIDOOR M2 geared motors (max. door weight of 120 kg)
  - SIDOOR M2 L (pinion left) 6FB1103-0AT10-5MA0
  - SIDOOR M2 R (pinion right) 6FB1103-0AT11-5MA0
- SIDOOR M3 geared motors (max. door weight of 180 kg)
  - SIDOOR M3 L (pinion left) 6FB1103-0AT10-4MB0
  - SIDOOR M3 R (pinion right) 6FB1103-0AT11-4MB0
- SIDOOR M4 geared motors (max. door weight of 400 kg)
  - SIDOOR M4 L (pinion left) 6FB1103-0AT10-3MC0
  - SIDOOR M4 R (pinion right) 6FB1103-0AT11-3MC0
- SIDOOR M5 geared motors (max. door weight 600 kg)
  - SIDOOR M5 L (pinion left) 6FB1103-0AT10-3MD0
  - SIDOOR M5 R (pinion right) 6FB1103-0AT11-3MD0

Geared motors for industrial applications

In addition to the SIDOOR M2 to SIDOOR M5 versions listed above, the following two geared motors are also available for industrial applications: SIDOOR MDG180 and SIDOOR MDG400

- SIDOOR MDG180 geared motors (max. door weight 180 kg)
  - SIDOOR MDG180 L (pinion left) 6FB1103-0AT14-4MB0
  - SIDOOR MDG180 R (pinion right) 6FB1103-0AT13-4MB0
- SIDOOR MDG400 geared motors (max. door weight 400 kg)
  - SIDOOR MDG400 L (pinion left) 6FB1103-0AT14-3MC0
  - SIDOOR MDG400 R (pinion right) 6FB1103-0AT13-3MC0

The gear outlet direction is defined as left or right when viewing the gear unit from the front.

Geared motors (pinion left) from bottom to top: SIDOOR MDG180 L, SIDOOR MDG400 L, SIDOOR M3 L, SIDOOR M4 L, SIDOOR M5 L

Technical specifications

Type		6FB1103-					
		0AT14-4MB0, 0AT13-4MB0	0AT14-3MC0, 0AT13-3MC0	0AT10-5MA0, 0AT11-5MA0	0AT10-4MB0, 0AT11-4MB0	0AT10-3MC0, 0AT11-3MC0	0AT10-3MD0, 0AT11-3MD0
Product designation		Motor for door control					
		MDG180	MDG400	M2	M3	M4	M5
Supply voltage at DC	V	30	30	24	30	30	30
Active power input rated value	W	80	120	40	80	120	220
Speed, maximum	m/s	0.75 left 0.65 right	0.65 left 0.75 right	0.5	0.65	0.75	0.5
IP degree of protection							
• Of gear unit		IP56	IP56	IP20	IP40	IP40	IP54
• Of motor		IP56	IP56	IP20	IP54	IP54	IP54
Gear ratio		15	15	15	15	15	15
Torque of the rotary operating mechanism, rated value	Nm	3.5	10	1.05	3.5	10	10
Number of pulses per revolution, maximum		100	100	100	100	100	100
Operational current, rated value	A	4	4	1.8	4	4	7.5
Weight of door, max.	kg	120	180	400			
Ambient temperature							
• During operation	°C	-20 … +50	-20 … +50	-20 … +50	-20 … +50	-20 … +50	-20 … +50
• During storage	°C	-40 … +85	-40 … +85	-40 … +85	-40 … +85	-40 … +85	-40 … +85
Dimensions							
• Length of the motor	mm	236	275	207	236	275	344
• Height of motor	mm	98	115	90	98	115	124
• Diameter of motor	mm	63	63	48	63	63	80
• Width of gear unit including drive pinion	mm	85	105	90	85	108	111

Selection and ordering data

Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIDOOR MDG180 geared motors						
 6FB1103-0AT14-4MB0 (pinion left)						
SIDOOR MDG180 geared motor for max. door weight of 180 kg						
• With pinion left	C	**6FB1103-0AT14-4MB0**		1	1 unit	478
• With pinion right	C	**6FB1103-0AT13-4MB0**		1	1 unit	478
SIDOOR MDG400 geared motors						
 6FB1103-0AT14-3MC0 (pinion left)						
SIDOOR MDG400 geared motor for max. door weight of 400 kg						
• With pinion left	C	**6FB1103-0AT14-3MC0**		1	1 unit	478
• With pinion right	C	**6FB1103-0AT13-3MC0**		1	1 unit	478
SIDOOR M2 geared motors						
 6FB1103-0AT10-5MA0 (pinion left)						
SIDOOR M2 geared motor for max. door weight of 120 kg						
• With pinion left	C	**6FB1103-0AT10-5MA0**		1	1 unit	478
• With pinion right	C	**6FB1103-0AT11-5MA0**		1	1 unit	478
SIDOOR M3 geared motors						
 6FB1103-0AT10-4MB0 (pinion left)						
SIDOOR M3 geared motor for max. door weight of 180 kg						
• With pinion left	C	**6FB1103-0AT10-4MB0**		1	1 unit	478
• With pinion right	C	**6FB1103-0AT11-4MB0**		1	1 unit	478
SIDOOR M4 geared motors						
 6FB1103-0AT10-3MC0 (pinion left)						
SIDOOR M4 geared motor for max. door weight of 400 kg						
• With pinion left	C	**6FB1103-0AT10-3MC0**		1	1 unit	478
• With pinion right	C	**6FB1103-0AT11-3MC0**		1	1 unit	478
SIDOOR M5 geared motors						
 6FB1103-0AT10-3MD0 (pinion left)						
SIDOOR M5 geared motor for max. door weight of 600 kg						
• With pinion left	C	**6FB1103-0AT10-3MD0**		1	1 unit	478
• With pinion right	C	**6FB1103-0AT11-3MD0**		1	1 unit	478

Accessories

The following accessories are available for SIDOOR MDG180, SIDOOR MDG400 and SIDOOR M2 to SIDOOR M5 geared motors:

- Rubber-metal anti-vibration mount for low-noise door operation
  - 6FB1104-0AT02-0AD0 for SIDOOR MDG180, SIDOOR M2 and SIDOOR M3 geared motors (door weights up to 180 kg)
  - 6FB1104-0AT01-0AD0 for SIDOOR MDG400 and SIDOOR M4 geared motors (door weights up to 400 kg), SIDOOR M5 (door weights up to 600 kg)
- Mounting bracket 6FB1104-0AT01-0AS0 for the geared motor mount for flexible accommodation of the rubber-bonded metal

Accessories, see page 15/100 onwards.

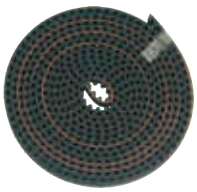
More information

For further product details, see Manuals

- "SIDOOR AT12 Elevator Door Drive", http://support.automation.siemens.com/WW/view/en/58497029
- System Manual "SIDOOR AT40, ATD400V, ATD400K, ATD400W, ATD410W, ATD400S, ATE250S, ATD400T", http://support.automation.siemens.com/WW/view/en/79111035

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

Selection and ordering data

	Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Rubber-metal anti-vibration mounts for geared motors							
 6FB1104-0AT02-0AD0	**SIDOOR rubber-metal anti-vibration mount** For low-noise operation of the door drive system						
	• For geared motors for door weights up to 300 kg	C	**6FB1104-0AT02-0AD0**		1	1 unit	478
 6FB1104-0AT01-0AD0	• For geared motors for door weights above 300 kg	C	**6FB1104-0AT01-0AD0**		1	1 unit	478
Mounting bracket							
	SIDOOR mounting bracket						
 6FB1104-0AT01-0AS0	• For geared motors for flexible accommodation of the rubber-bonded metal	C	**6FB1104-0AT01-0AS0**		1	1 unit	478
 6FB1104-0AT02-0AS0	• With tensioning device for deflector pulley for setting the toothed belt to the required tension	C	**6FB1104-0AT02-0AS0**		1	1 unit	478
Standard mounting rail holder							
	Standard mounting rail holder						
	• Mounting the controllers onto TH 35 standard mounting rail according to IEC 60715	C	**6FB1144-0AT00-3AS0**		1	1 unit	478
Door clutch holder							
 6FB1104-0AT01-0CP0	**SIDOOR door clutch holder** For connecting the respective door leaf with the toothed belt						
	• 12 mm wide	C	**6FB1104-0AT01-0CP0**		1	1 unit	478
	• 14 mm wide	C	**6FB1104-0AT02-0CP0**		1	1 unit	478
Deflector unit							
 6FB1104-0AT03-0AS0	**SIDOOR deflector unit** For the toothed belt STS for attaching to the door system	C	**6FB1104-0AT03-0AS0**		1	1 unit	478
Toothed belt STS							
 6FB1104-0AT01-0AB0	**SIDOOR toothed belt STS** As connection between the door system and the final positions of the door						
	• 12 mm wide						
	- 4 m long	C	**6FB1104-0AT01-0AB0**		1	1 unit	478
	- 45 m long	C	**6FB1104-0AT02-0AB0**		1	1 unit	478

* You can order this quantity or a multiple thereof.
Illustrations are approximate

	Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
 6FB1104-0AT02-0AB0	• 14 mm wide						
	- 4 m long	C	**6FB1104-0AT03-0AB0**		1	1 unit	478
	- 55 m long	C	**6FB1104-0AT04-0AB0**		1	1 unit	478
Accessories for SIDOOR ATD410W and SIDOOR ATD420W machine tool door drives							
	• CABLE-MDG hybrid connecting cables for connecting the SIDOOR MDG geared motor to the SIDOOR ATD4.0W machine tool door drive						
	- CABLE-MDG-0.5m (length 0.5 m)	X	**6FB1104-0AT00-0CB5**		1	1 unit	478
	- CABLE-MDG-1.5m (length 1.5 m)	C	**6FB1104-0AT01-0CB5**		1	1 unit	478
	- CABLE-MDG-5m (length 5 m)	C	**6FB1104-0AT05-0CB0**		1	1 unit	478
	- CABLE-MDG-7m (length 7 m)	X	**6FB1104-0AT07-0CB0**		1	1 unit	478
	- CABLE-MDG-10m (length 10 m)	X	**6FB1104-0AT10-0CB0**		1	1 unit	478
	- CABLE-MDG-15m (length 15 m)	C	**6FB1104-0AT15-0CB0**		1	1 unit	478
	• PROFIBUS FastConnect bus connector and PROFIBUS FC Standard Cable GP						
	- PB FC RS 485 PLUG 180 Bus connector for connecting the SIDOOR ATD4.0W machine tool door drive to the SIMATIC controller	A	**6GK1500-0FC10**		1	1 unit	5K2
	- PB FC Standard Cable GP Standard bus cable with special configuration for fast installation	A	**6XV1830-0EH10**		1	1 m	5K1
	• ET200S electronic module for serial data exchange via point-to-point connection	A	**6ES7138-4DF11-0AB0**		1	1 unit	250
	• Communication module CM PtP RS 422/485 BA	A	**6ES7540-1AB00-0AA0**		1	1 unit	215
	• Communication module CM 1241 Communication module for point-to-point connection	A	**6ES7241-1CH32-0XB0**		1	1 unit	212

More information

For more information, see Manuals

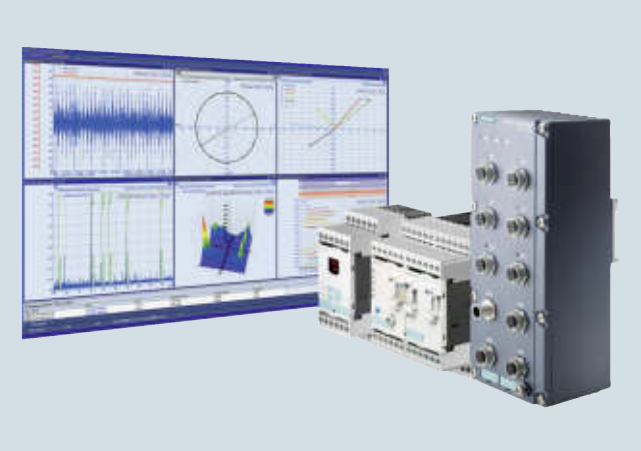
"SIDOOR AT12 Elevator Door Drive",
http://support.automation.siemens.com/WW/view/en/58497029

"System Manual SIDOOR AT40, ATD400V, ATD400K, ATD4xxW, ATD400S, ATE250S, ADT400T",
http://support.automation.siemens.com/WW/view/en/58531074

15

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

Overview



Condition Monitoring Systems

With the Condition Monitoring System from Siemens you can constantly monitor your machines and plants. Maintenance procedures can be planned better and only performed when they are actually necessary – predictive maintenance.

For an overview of Condition Monitoring Systems, see page 15/7.

Overview

Bearing guard and sensor with connecting cable

Requiring absolutely no expert knowledge, SIPLUS CMS1000 offers an easy introduction to condition monitoring. In monitoring, the SIPLUS CMS1000 condition monitoring system works on the basis of characteristic values.

Additional advantages at a glance:

- Permanent monitoring for protection of machines
- Effective monitoring of important processes and systems
- Energy efficiency support
- Early detection of damage
- Planned maintenance instead of spontaneous repairs
- Reduction in maintenance costs
- Increased plant availability
- Optimum utilization of the service life of the units

Application

SIPLUS CMS1000 is the entry-level system for condition monitoring of roller bearings in an industrial environment.

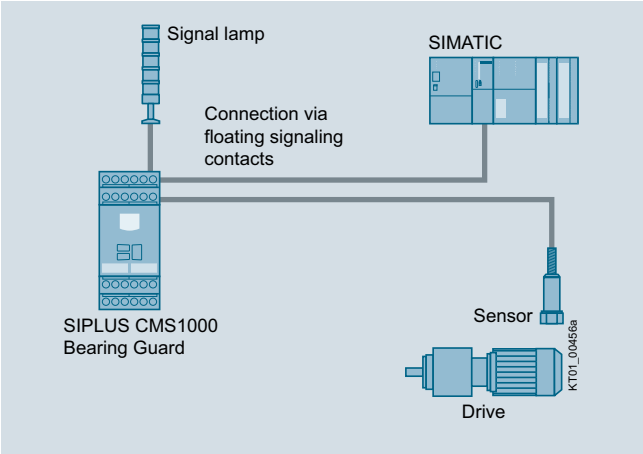
With the SIPLUS CMS1000 condition monitoring system, mechanical components such as motors, generators, fans or pumps can be monitored on the basis of characteristic values. Mechanical wear and other damage-related causes can thus be detected in time before a total failure of the mechanical component in the plant occurs.

SIPLUS CMS1000 can be integrated into the Totally Integrated Automation (TIA) architecture.

Design

SIPLUS CMS1000 consists of two components:

- SIPLUS CMS1000 Bearing Guard
- SIPLUS CMS1000 Sensor



System configuration with SIPLUS CMS1000

Mode of operation

The bearing guard analyzes the measured values according to VDI 3832 procedures (DKW) and DIN ISO 10816-3 (RMS) and signals a limit violation on the display and via floating contacts.

The sensor detects vibration acceleration of the monitored roller bearing as well as general component and machine vibrations.

More information

For further product details, see

- "SIPLUS CMS1000" Operating Instructions, http://support.automation.siemens.com/WW/view/en/42469516
- www.siemens.com/siplus-cms

Overview

Bearing Guard 6AT8001-1AA00

The compact design of the SIPLUS CMS1000 Bearing Guard is the core component of the complete system.

It analyses the measured signals from the sensor:

- For analysis of the condition of rolling-contact bearings according to VDI 3832 (DKW)
- Machine monitoring RMS according to DIN ISO 10816-3
- Signaling of limit violations via floating contacts

Design

The bearing guard consists of four terminal blocks A, B, C and D, a display and corresponding control elements. The terminal blocks are coded and therefore constitute non-interchangeable connection elements.

Function

The bearing guard reliably analyzes the status condition of machines and roller bearings and signals limit violations via floating contacts.

Functions:

- A cost-efficient solution for monitoring roller bearings
- Diagnostics procedure according to VDI 3832 and DIN ISO 10816-3
- Monitoring motors with fixed speed
- Teach mode for easy commissioning (learning mode) via LCD
- Adjustable limit values for warning and alarm
- Limit signaling via two floating contacts

Technical specifications

Type		6AT8001-1AA00
Product designation		SIPLUS CMS1000 Bearing Guard
Product description		Device for monitoring mechanical vibrations based on characteristic values
General data		
IP degree of protection		IP20
Ambient temperature		
• During operation	°C	-25 … +60
• During storage	°C	-25 … +60
• During transport	°C	-25 … +60
Relative humidity without condensation during operation	%	5 … 95
Current typically consumed at 24 V with DC	A	0.21
Total active power loss, typical	W	3.5
Reference designations		
• According to DIN 40719 expanded according to IEC 204-2 according to IEC 750		P
• According to IEC 61346-2		P
Supply voltage		
Type of voltage of the supply voltage		AC/DC
Supply voltage 1		
• At DC	V	24
• At 50 Hz		
- At AC	V	115 … 240
• At 60 Hz		
- At AC	V	115 … 240
Installation/fixing/dimensions		
Mounting position		Vertical
• Recommended		Vertical
Type of mounting		Standard mounting rails
Dimensions		
• Width	mm	45
• Height	mm	106
• Depth	mm	86
Inputs/outputs		
Number of sensor inputs		
• For IEPE sensors		--
• For MEMS sensors		1
Number of disable inputs		1
Number of speed inputs		1
Number of signaling outputs		2
Design of switching input of the disable inputs 24 V DC		Yes
Input voltage at speed input 24 V DC digital		Yes
Range of input voltage at speed input -10 V ... +10 V		Yes
Range of input current at speed input		
• 0 mA ... 20 mA		No
• 4 mA ... 20 mA		Yes
Type of switching output of the signaling outputs		Relay outputs

Type		6AT8001-1AA00
Connections		
Type of electrical connection		
• Of the inputs and outputs		Screw terminals
• For auxiliary and control circuit		Screw terminals
Terminals		
Product function		
• Removable terminal for main circuit		Yes
• Removable terminal for auxiliary and control circuit		Yes
Connectable conductor cross-section for auxiliary contacts		
• Solid	mm^2	0.5 … 4
• Finely stranded		
- With end sleeves	mm^2	0.5 … 2.5
- Without end sleeves	mm^2	0.5 … 2.5
Communications		
Product function bus communication		No
Structural design		
Distance to be maintained with side-by-side mounting		
• At the top	mm	25
• At the front	mm	80
• At the side	mm	0
• At the bottom	mm	25
Material of the enclosure		Plastic
Design of thread of connection screw		M3
Size of screwdriver bit		Size 2 and Pozidriv 2
Tightening torque for screw terminals	Nm	0.8 … 1.2
Standards and approvals		
Standard		
• For interference immunity		IEC 61326-1, IEC 61326-2-3
• For safety		IEC 61010-1
Certificate of suitability		CE, KC, EAC

Bearing Guard

Selection and ordering data

	Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIPLUS CMS1000 Bearing Guard							
 6AT8001-1AA00	For analysis of the state of roller bearings in accordance with VDI 3832 and signaling of limit violations	C	**6AT8001-1AA00**		1	1 unit	477

More information

For more product details refer to the "SIPLUS CMS1000" Operating Instructions, http://support.automation.siemens.com/WW/view/en/42469516.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

Overview

The following accessories, to be ordered separately, are available for the SIPLUS CMS1000 condition monitoring system:

- Sensor for detection of vibration acceleration of roller bearings
- Cable for connection of bearing guards and sensors
  - 4 m long
  - 10 m long
  - 30 m long
- Adapters for connection of the sensor to various motors
  - M6/M6, M6/M8
  - M6/SPM

Design

Sensor

Sensor 6AT8001-1AA00-1XA0

SIPLUS CMS1000 Sensor is designed with ground insulation. It consists of one M12 sensor cable connector and an M6 thread for adaptation to the machine chassis.

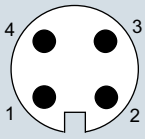
Technical features:

- Industry-standard design
- Sensor on the basis of MEMS technology (Micro Electro Mechanical Systems)
- Quick and easy installation (e.g. on fans, pumps and motors)
- High degree of protection IP67

The sensor reliably records the vibration acceleration of rolling-contact bearings and converts this into an analog, differential voltage signal.

Cable

The SIPLUS CMS1000 Bearing Guard and Sensor are connected via the sensor cable. For connection of the sensor, the cable is configured with an M12 connector socket that matches the sensor.



Pin	Assignment	Core color
1	VCC_S	Brown
2	GND_S	White
3	VIB-	Blue
4	VIB+	Black
	Shield	Knurled nut

KT01_00457

Terminal assignment M12 connector socket

Adapters

Two different adapters are available for installing the SIPLUS CMS1000 Sensor in the correct measuring position:

- M6/M6 or M6/M8 adapters
  For motors with a condition monitoring for bearings connection with M6 or M8 threads
- M6/SPM adapters
  For IEC squirrel-cage motors with the option of bearing monitoring Q01/G50. A measuring nipple is mounted here for SPM shock pulse measurement to check bearing vibration.

Technical specifications

Sensor

Type		6AT8001-1AA00-1XA0
Product designation		SIPLUS CMS1000 SENSOR
Product description		Vibration acceleration sensor for the SIPLUS CMS1000 Bearing Guard
General data		
Material of the enclosure		Stainless steel
IP degree of protection		IP67
Ambient temperature		
• During operation	°C	-40 … +120
• During storage	°C	-40 … +120
• During transport	°C	-40 … +120
Relative humidity with condensation		
• During operation	%	5 … 95
Measuring range vibration acceleration	*g*	-5 … +5
Measuring range vibration frequency	Hz	0 … 6 500
Sensitivity of the vibration acceleration sensor, typical	mV/*g*	312
Total active power loss, typical	W	0.02
Reference designations		
• According to IEC 61346-2		B
• According to DIN 40719 expanded according to IEC 204-2 according to IEC 750		B
Type of power supply		Through basic unit
Installation/fixing/dimensions		
Installation and mounting instructions		In the load zone of the bearing, radial to the drive axis
Type of mounting		Screw via M6 thread
Dimensions		
• Length	mm	64
• Diameter	mm	22
Connections		
Type of switching output		Electronics
Type of the electric connection of the inputs and outputs		4-pole socket M12
Communications		
Product function bus communication		No
Standards/approvals/certificates		
Standard		
• For safety		IEC 61010-1
• For interference immunity		IEC 61326-1
Certificate of suitability		CE, KC, EAC

Cable

Type		6AT8001-1AA00-1AA4	6AT8001-1AA00-1AB1	6AT8001-1AA00-1AB3
Product designation		SIPLUS CMS1000 CABLE-MEMS-44-0004	SIPLUS CMS1000 CABLE-MEMS-44-0010	SIPLUS CMS1000 CABLE-MEMS-44-0030
Product description		4 x 0.34 mm² PUR cable shielded, M12, open end		
General data				
Cable length	m	4	10	30

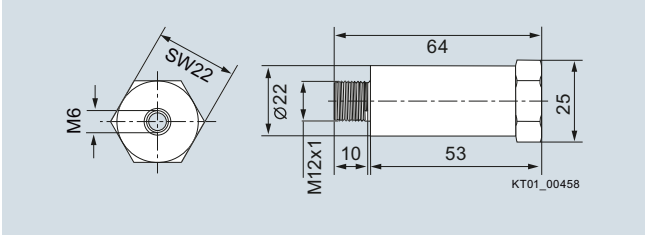
Adapters

Type	6AT8001-2AA10-1AM0	6AT8001-2AA10-1SA0
Product designation	SIPLUS CMS1000 Adapter M6/M6, M6/M8	SIPLUS CMS1000 Adapter M6/SPM
Product description	Thread adapter for mounting the SIPLUS CMS1000 Sensor	SPM adapter for IEC squirrel-cage motors with the option of bearing monitoring Q01, G50
General data		
Design of thread	M6/M6, M6/M8	M6/SPM

Selection and ordering data

	Product designation	Cable length	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Sensor								
 6AT8001-1AA00-1XA0	**SIPLUS CMS1000 SENSOR** Vibration acceleration sensor for the SIPLUS CMS1000 Bearing Guard	--	C	**6AT8001-1AA00-1XA0**		1	1 unit	477
Cable								
	SIPLUS CMS1000 CABLE-MEMS-44-0004 4 x 0.34 mm² PUR cable shielded, M12, open end	4	X	**6AT8001-1AA00-1AA4**		1	1 unit	477
	SIPLUS CMS1000 CABLE-MEMS-44-0010 4 x 0.34 mm² PUR cable shielded, M12, open end	10	X	**6AT8001-1AA00-1AB1**		1	1 unit	477
	SIPLUS CMS1000 CABLE-MEMS-44-0030 4 x 0.34 mm² PUR cable shielded, M12, open end	30	D	**6AT8001-1AA00-1AB3**		1	1 unit	477
Adapters								
	SIPLUS CMS1000 Adapter M6/M6, M6/M8 Thread adapter for mounting the SIPLUS CMS1000 Sensor	--	D	**6AT8001-2AA10-1AM0**		1	1 unit	477
	SIPLUS CMS1000 Adapter M6/SPM SPM adapter for IEC squirrel-cage motors with the option of bearing monitoring Q01, G50	--	D	**6AT8001-2AA10-1SA0**		1	1 unit	477

Dimensional drawings



Sensor 6AT8001-1AA00-1XA0

More information

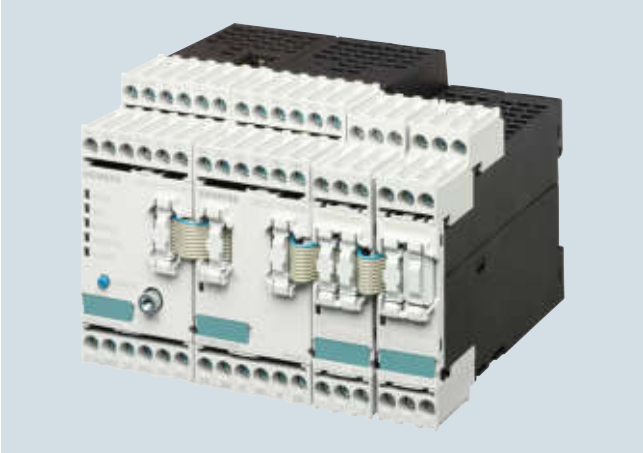
For more product details refer to the "SIPLUS CMS1000" Operating Instructions, http://support.automation.siemens.com/WW/view/en/42469516.

15

* You can order this quantity or a multiple thereof.
Illustrations are approximate

General data

Overview



SIPLUS CMS2000 Condition Monitoring System

The modular and configurable SIPLUS CMS2000 Condition Monitoring System is a web-based system which can be easily parameterized.

It provides the following benefits:

- Analysis of the condition of roller bearings according to VDI 3832 (DKW)
- Machine monitoring RMS according to DIN ISO 10816-3
- Detailed identification of damage with frequency-selective diagnostics
- Raw data recording and export to SIPLUS CMS X-Tools
- Trend recording and analysis
- Monitoring of process variables
- Reporting of upper limit violations
- Permanent monitoring for protection of machines
- Effective monitoring of important processes and systems
- Energy efficiency support
- Early detection of damage
- Planned maintenance instead of spontaneous repairs
- Reduction in maintenance costs
- Increased plant availability
- Optimum utilization of the service life of the units

The SIPLUS CMS2000 condition monitoring system can be expanded on a modular basis, e.g. with the

- SIPLUS CMS2000 VIB-MUX expansion module for expanding the IEPE vibration channels
- Temperature module for direct connection of temperature sensors (Pt100, Pt1000, …)

Benefits

Visualization and parameterization of the SIPLUS CMS2000 are easily performed using a web browser, without the need for additional software. Handling has therefore been considerably simplified for the service personnel.

Additional advantages:

- Monitoring of everything from individual machines to complex drive trains
- No additional software is required for parameterization and visualization
- Proactive maintenance through detailed and early localization of damage
- Fast full diagnostics at a glance
- Event-triggered notification to the service center
- Expert analysis based on raw data

Application

In addition to the productivity of a plant, lifecycle costs are increasingly becoming the focus of attention. Increasing plant availability is an important topic in all areas where machines are used.

Continuous plant monitoring and thus the early detection of impending failures are a suitable measure to minimize down-times. Status-oriented maintenance permits an increase in availability with a simultaneous reduction of lifecycle costs.

Visualization and parameterization of the SIPLUS CMS2000 are easily performed using a web browser, without the need for additional software. Handling has therefore been considerably simplified for service personnel – both locally as well as in remote operation.

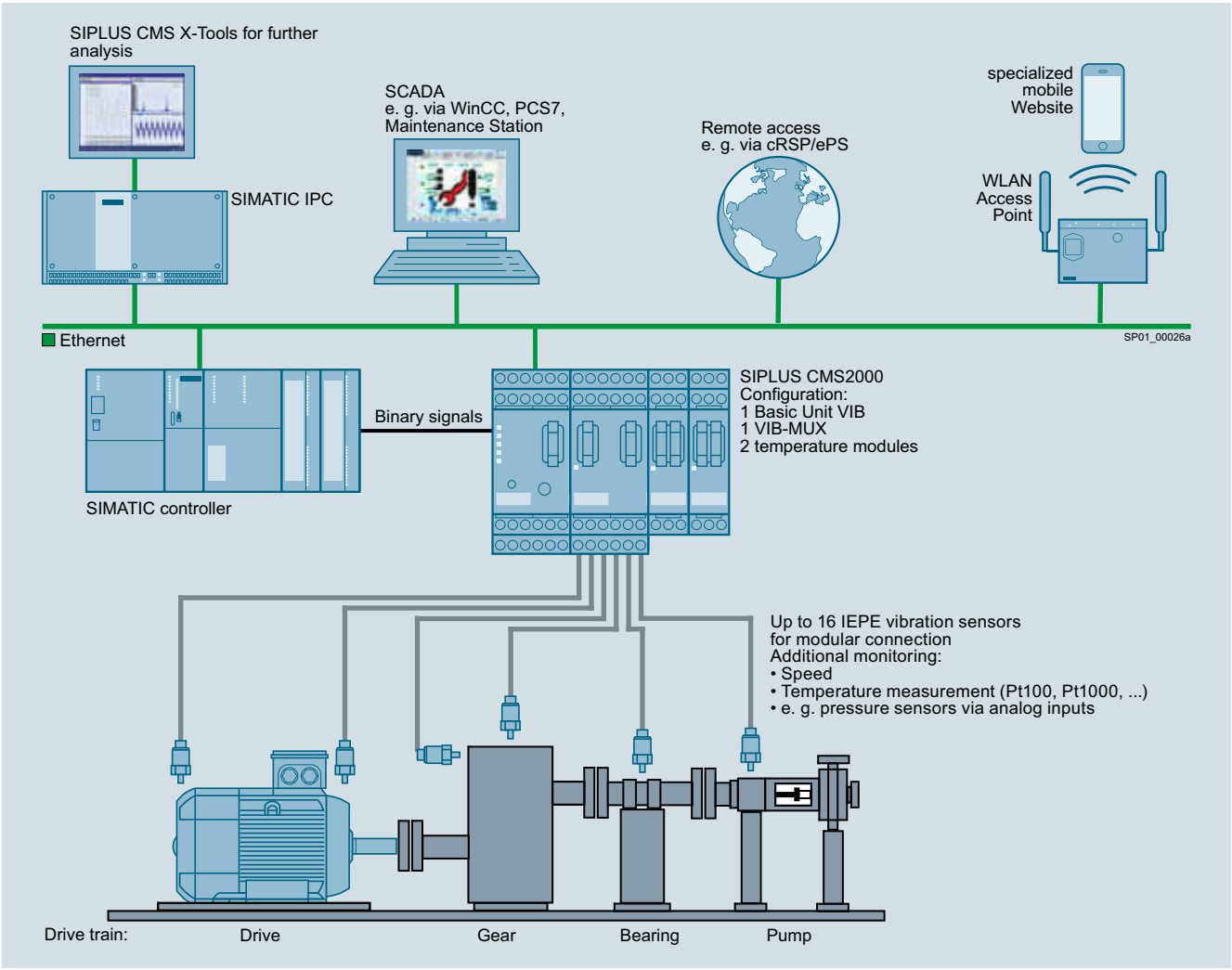
SIPLUS CMS2000 is modularly expandable, e.g. with the SIPLUS CMS2000 VIB-MUX expansion module and with the temperature module from the SIMOCODE range.

Design

The SIPLUS CMS2000 is a compact condition monitoring system that can be operated as a stand-alone or in combination with a remote service center (LAN interface).

The SIPLUS CMS2000 condition monitoring system comprises:

- SIPLUS CMS2000 Basic Unit VIB
- A maximum of two SIPLUS CMS2000 VIB-MUX expansion modules and/or additionally a maximum of two temperature modules



System configuration with SIPLUS CMS2000

Mode of operation

Application	
Mechanical components	Motors, generators, fans, pumps, etc.
Damage analysis	Imbalance, misalignment, roller bearings, etc.
Analysis methods	
Characteristic values	
• Bearing monitoring • Vibration monitoring	DKW, based on K(t) acc. to VDI 3832 RMS based on DIN ISO 10816-3
Vibration analysis	FFT, envelope curve, fingerprint comparison, trend analysis parameterizable

Monitoring function	
Characteristic values	Adjustable limit values for DKW and RMS: Warning, alarm
Frequency spectra	Adjustable warning and alarm bands
Analog inputs	Limit value monitoring
Temperature inputs	Limit value monitoring
Recording function	
Saving	Raw data recording: Manually or event-triggered, snapshot of the FFT, characteristic values, long-term trend recording
Output	
Outputs	Binary outputs e.g. for traffic light status indicator
Parameterization and visualization	Web browser

More information

For further product details, see

- "SIPLUS CMS2000 Condition Monitoring Systems" Operating Instructions, http://support.automation.siemens.com/WW/view/en/56901901
- www.siemens.com/siplus-cms

SIPLUS CMS2000 Basic Unit VIB

Overview

SIPLUS CMS2000 Basic Unit VIB

The SIPLUS CMS2000 Basic Unit VIB is used for:

- Monitoring of motors, generators, pumps, fans or other mechanical components
- Recording and analysis of vibrations, speed and temperature

It is modularly expandable via the system interface, e.g. using SIPLUS CMS2000 VIB-MUX expansion modules and temperature modules.

Design

The SIPLUS CMS2000 Basic Unit VIB comprises:

- Integrated diagnostics software
- Two IEPE interfaces for vibration sensors
- Two analog inputs, one of which can be parameterized as a speed input
- One speed input
- Two digital inputs, three digital outputs

The following accessories can also be ordered:

- Shield support for grounding the cable ends
- VIB-SENSOR vibration sensor for recording vibrations
- SIMOCODE connection cable and CABLE-MIL connecting cable in different lengths

Accessories, see page 15/120.

Function

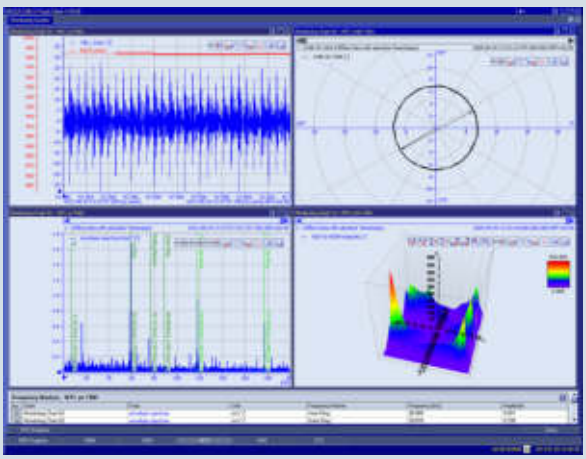
The following range of functions is available by default in the SIPLUS CMS2000 Basic Unit VIB:

- Characteristic values (bearing monitoring, vibration monitoring)
- Frequency-selective analysis using FFT, H-FFT
- Trend analysis
- Limit monitoring of frequency bands, process variables, temperature
- Recording with time stamp of trend values, raw data, frequency spectra, alarm log
- Easy damage localization based on fingerprint comparison
- Output of system and status messages
- Extraction of raw data for further diagnostics
- Web server and e-mail notification
- Time synchronization via LAN
- Diagnostics suppression via inhibit input

SIPLUS CMS X-Tools – the powerful analysis software

The raw data recorded on the SIPLUS CMS2000 Basic Unit VIB can be forwarded to the SIPLUS CMS X-Tools analysis software for detailed diagnostics (not included in the scope of supply, see http://support.automation.siemens.com/WW/view/en/46617980/133200 or www.siemens.com/siplus-cms).

SIPLUS CMS X-Tools can be used to logically combine the various parameters and signals – as the basis for expert diagnostics. The interface to management systems can be structured flexibly.



Representation via SIPLUS CMS X-Tools with raw signal, envelope curves spectrum, orbit representation and 2D histogram

Technical specifications

Type		**6AT8002-1AA00**
Product designation		SIPLUS CMS2000 Basic Unit VIB
Product description		Basic unit for monitoring vibrations in mechanical components based on characteristic values and frequency-selective analysis functions
General data		
IP degree of protection		IP20
Ambient temperature		
• During operation	°C	-20 … +65
• During storage	°C	-20 … +85
• During transport	°C	-20 … +85
Relative humidity without condensation during operation	%	5 … 95
Total active power loss, typical	W	2.6
Physical measurement principle		Vibration acceleration
Measuring range vibration frequency	kHz	0.002 … 10
Scanning frequency, maximum	kHz	46.875
Reference designations		
• According to DIN 40719 expanded according to IEC 204-2 according to IEC 750		P
• According to IEC 61346-2		P
Supply voltage		
Type of voltage of the supply voltage		DC
Supply voltage 1		
• At DC		24
Installation/fixing/dimensions		
Mounting position		Vertical
• Recommended		Vertical
Type of mounting		Standard mounting rails
Dimensions		
• Width	mm	45
• Height	mm	106
• Depth	mm	124
Inputs/outputs		
Number of analog inputs		2
Number of disable inputs		1
Number of speed inputs		1
Number of signaling outputs		3
Number of sensor inputs		
• For IEPE sensors		2
• For MEMS sensors		0
Number of trigger inputs		1
Product function monitoring of sensor inputs		Yes
Input voltage		
• At disable input with 24 V DC		Yes
• At speed input 24 V DC digital		Yes
• At trigger input with 24 V DC		Yes
Range of input voltage		
• At analog input -10 V ... +10 V		Yes
• At speed input -10 V ... +10 V		No
Range of input current		
• At analog input		
- 0 mA ... 20 mA		No
- 4 mA ... 20 mA		Yes
• At speed input		
- 0 mA ... 20 mA		No
- 4 mA ... 20 mA		No
Type of switching output of the signaling outputs		Electronic
Connections		
Type of electrical connection		
• Of the inputs and outputs		Screw terminals
• For auxiliary and control circuit		Screw terminals

SIPLUS CMS2000 Basic Unit VIB

Type		6AT8002-1AA00
Product designation		SIPLUS CMS2000 Basic Unit VIB
Product description		Basic unit for monitoring vibrations in mechanical components based on characteristic values and frequency-selective analysis functions
Terminals		
Product function		
• Removable terminal for main circuit		Yes
• Removable terminal for auxiliary and control circuit		Yes
Connectable conductor cross-section for auxiliary contacts		
• Solid	mm^2	0.5 … 4
• Finely stranded		
- With end sleeves	mm^2	0.5 … 2.5
- Without end sleeves	mm^2	0.5 … 2.5
Communications		
Product function bus communication		Yes
Type of data transmission		Exporting of raw data as WAV file for further analyses (e.g. using SIPLUS CMS X-Tools) can be downloaded via browser
Interface version		
• Ethernet interface		Yes
• SIMOCODE interface		Yes
Software/services		
Browser software required		Web browser
Service		
• As web server HTTP		Yes
• For open IE communication TCP/IP		Yes
Product function diagnostics via email		Yes
Structural design		
Type of hardware configuration		Modular construction, basic unit can be expanded by means of expansion modules
Material of the enclosure		Plastic
Memory capacity, total	Gigabyte	1
Approvals		
Certificate of suitability		CE, UL 508/UL 60947-4-1, CSA C22.2 No.142, C-Tick, KC, EAC

Selection and ordering data

Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Basic units						
SIPLUS CMS2000 Basic Unit VIB Basic unit for monitoring mechanical plant components through recording and analysis of vibrations, speed and temperature	D	**6AT8002-1AA00**		1	1 unit	477

6AT8002-1AA00

More information

For more product details refer to the "SIPLUS CMS2000 Basic Unit VIB" Operating Instructions, http://support.automation.siemens.com/WW/view/en/56902401.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

Overview

SIPLUS CMS2000 VIB-MUX expansion modules and temperature modules can be connected to the SIPLUS CMS2000 Basic Unit VIB via the SIMOCODE system interface.

SIPLUS CMS2000 VIB-MUX expansion modules

Up to two SIPLUS CMS2000 VIB-MUX expansion modules can be connected to SIPLUS CMS2000 Basic Unit VIB to expand the vibration channels. In this way, the number of vibration channels can be expanded modularly from 2 to a maximum of 16 channels.

The following configuration options are possible:

- Basic unit without expansion:
  2 time-synchronous, continuously sampled vibration channels
- Basic unit with one SIPLUS CMS2000 VIB-MUX:
  8 + 1: 8 channels via the SIPLUS CMS2000 VIB-MUX in multiplex mode, 1 channel continuous and independent of the channels connected to the SIPLUS CMS2000 VIB-MUX
- Basic unit with two SIPLUS CMS2000 VIB-MUX:
  16 vibration channels in multiplex mode

SIMOCODE connection cable for connecting the SIPLUS CMS2000 Basic Unit VIB to the SIPLUS CMS2000 VIB-MUX, see page 15/120.

SIPLUS CMS2000 VIB-MUX expansion module 6AT8002-2AA00

Temperature modules

Up to two temperature modules can be connected to the SIPLUS CMS2000 Basic Unit VIB.

Each temperature module has three inputs for the connection of up to three analog temperature sensors (sensor types: Pt100/Pt1000, KTY83/KTY84 or NTC).

SIMOCODE connection cable for connecting the SIPLUS CMS2000 Basic Unit VIB to the temperature modules, see page 15/120.

Temperature module 3UF7700-1AA00-0

Technical specifications

SIPLUS CMS2000 VIB-MUX expansion modules

Type		6AT8002-2AA00
Product designation		SIPLUS CMS2000 VIB-MUX
Product description		Circuit of 8 IEPE measurement inputs on one IEPE output in multiplex operation; channel control through the basic unit via the system interface
General data		
IP degree of protection		IP20
Ambient temperature		
• During operation	°C	-20 … +65
• During storage	°C	-25 … +85
• During transport	°C	-25 … +85
Relative humidity without condensation		
• During operation	%	5 … 95
Physical measurement principle		Vibration acceleration
Measuring range vibration frequency	kHz	0.002 … 10
Reference designations		
• According to DIN 40719 expanded according to IEC 204-2 according to IEC 750		P
• According to IEC 61346-2		P
Supply voltage		
Type of voltage of the supply voltage		DC
Supply voltage 1 at DC, rated value	V	24
Active power input, maximum	W	2.4
Installation/fixing/dimensions		
Mounting position		Vertical
• Recommended		Vertical
Type of mounting		Standard mounting rails
Dimensions		
• Width	mm	45
• Height	mm	106
• Depth	mm	124
Inputs/outputs		
Number of sensor inputs		
• For IEPE sensors		8
Number of outputs		1
Connections		
Type of electrical connection		
• Of the inputs and outputs		Screw terminals
• For auxiliary and control circuit		Screw terminals
Terminals		
Product function		
• Removable terminal for auxiliary and control circuit		Yes
• Removable terminal for main circuit		Yes
Connectable conductor cross-section for auxiliary contacts		
• Solid	mm^2	0.5 … 4
• Finely stranded		
- With end sleeves	mm^2	0.5 … 2.5
- Without end sleeves	mm^2	0.5 … 2.5
Communications		
Type of interface SIMOCODE interface		Yes
Structural design		
Material of the enclosure		Plastic
Approvals		
Certificate of suitability		CE, UL 508/UL 60947-4-1, CSA C22.2 No.142, C-Tick, KC, EAC

Temperature modules

Technical specifications, see Chapter 10 "Monitoring and Control Devices" → "SIMOCODE 3UF Motor Management and Control Devices" → "SIMOCODE pro 3UF7 Motor Management and Control Devices".

Selection and ordering data

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIPLUS CMS2000 VIB-MUX expansion modules							
 6AT8002-2AA00	Up to two SIPLUS CMS2000 VIB-MUX expansion modules can be connected to SIPLUS CMS2000 Basic Unit VIB. Up to 8 IEPE vibration channels can be connected to each expansion module.	D	**6AT8002-2AA00**		1	1 unit	477
Temperature modules							
 3UF7700-1AA00-0	Up to two temperature modules can be connected to the SIPLUS CMS2000 Basic Unit VIB. Each temperature module has three inputs for the connection of up to three temperature sensors.	►	**3UF7700-1AA00-0**		1	1 unit	42J

More information

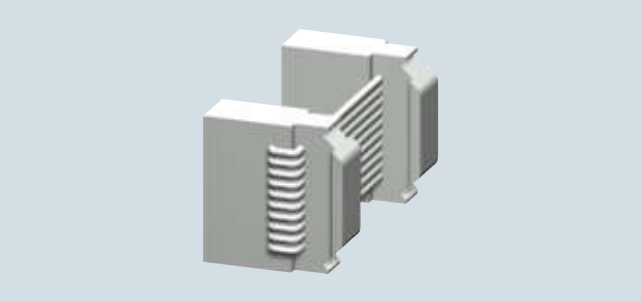
For more product details, see "SIPLUS CMS2000 Condition Monitoring Systems" Operating Instructions, http://support.automation.siemens.com/WW/view/en/56901901.

For more information about the 3UF7700-1AA00-0 temperature module, see Chapter 10 "Monitoring and Control Devices" → "SIMOCODE 3UF Motor Management and Control Devices" → "SIMOCODE pro 3UF7 Motor Management and Control Devices".

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

Overview

SIMOCODE connection cable

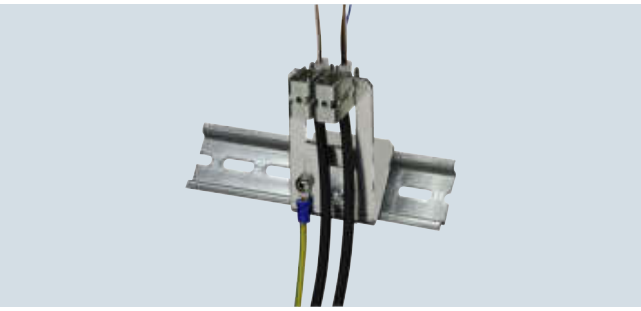


SIMOCODE connection cable 3UF7930-0AA00-0

The connection cable is used for connecting the SIPLUS CMS2000 Basic Unit VIB to the SIPLUS CMS2000 VIB-MUX expansion modules and the temperature modules via the SIMOCODE system bus interface.

The connection cable with a length of 0.025 m must be used for side-by-side mounting of the basic unit with SIPLUS CMS2000 VIB-MUX expansion modules or temperature modules on a TH 35-15 standard mounting rail according to IEC 60715.

Shield support



Shield support 6AT8002-4AA00

A separate shield support must be ordered for the EMC-compliant connection of signal and encoder cables to the SIPLUS CMS2000 Basic Unit VIB and the SIPLUS CMS2000 VIB-MUX expansion module.

The shield support comprises two shield clamps and five clamp terminals. One shield clamp is attached to the standard mounting rail above and below the basic unit. The sensor cable shields are connected to the sensor leads by means of the terminal clamps.

VIB-SENSOR S01 vibration sensor

VIB-SENSOR S01 vibration sensor 6AT8002-4AB00

The VIB-SENSOR S01 vibration sensor with IEPE (Integrated Electronics Piezo-Electric) interface can be connected directly to the SIPLUS CMS2000 Basic Unit VIB and the SIPLUS CMS2000 VIB-MUX expansion module.

The sensor detects vibration accelerations in the frequency range from 0.5 Hz to 15 kHz with a resolution of 100 mV/*g*.

A threaded screw with an M8 male thread for mounting at the measuring point is included in the scope of supply. The connection cable is connected to the vibration sensor via the MIL connector.

CABLE-MIL connection cable

CABLE-MIL connection cables 6AT8002-4AC03, 6AT8002-4AC10

The VIB-SENSOR S01 vibration sensor is connected to the SIPLUS CMS2000 Basic Unit VIB or the SIPLUS CMS2000 VIB-MUX expansion module by means of the CABLE-MIL connection cable.

This high-quality industrial cable is made of black polyurethane and is preassembled on one end with a MIL connector (MIL-C5015). The open cable end of the shielded two-wire cable is connected directly to the screw terminals of the basic unit.

The connection cable is available in lengths of 3 and 10 m.

Technical specifications

SIMOCODE connection cable

Type		**3UF7930-0AA00-0**
Product brand name		SIRIUS
Product designation		Connection cable
General data		
Ambient temperature		
• During operation	°C	-25 … +60
• During storage	°C	-40 … +80
• During transport	°C	-40 … +80
Relative humidity		
• During operation	%	5 … 95

Shield support

Type		**6AT8002-4AA00**
Product brand name		SIPLUS CMS
Product designation		SIPLUS CMS2000 shield support
General data		
Type of mounting		Standard mounting rails
Number of signal cables connectable to the shield support		3

VIB-SENSOR S01 vibration sensor

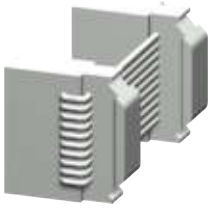
Type		**6AT8002-4AB00**
Product brand name		SIPLUS CMS
Product designation		VIB-SENSOR S01
General data		
Physical measurement principle		Piezo-quartz sensor with integrated evaluation electronics
Frequency of the sensor application		
• At ±3 dB	Hz	0.5 … 15 000
Sensitivity of the vibration acceleration sensor, typical	mV/*g*	100
Resolution of measured value of vibration acceleration of sensor, minimum	*g*	0.002
Measuring range vibration acceleration Full-scale value	*g*	50
Resonance frequency	kHz	23
Signal voltage		
• At DC	V	10 … 14
Type of power supply		IEPE 2 to 10 mA
Type of connection method		MIL-C5015
Cable length, maximum	m	80
Environmental conditions		
IP degree of protection		IP65
Operating temperature	°C	-50 … +120
Design		
Material of the enclosure		Stainless steel
Type of mounting, other mounting Note		Including mounting bolts UNF1/4-28 on M8

CABLE-MIL connection cable

Type		**6AT8002-4AC03**	**6AT8002-4AC10**
Product brand name		SIPLUS CMS	
Product designation		CABLE-MIL-300 connection cable	CABLE-MIL-1000 connection cable
Product category		Industrial cables	
General data			
Type of connection method		MIL-C5015/open cable end	
Type of insulation		Black polyurethane	
Type of shield		Braided shielding with stranded drain wire	
Operating temperature	°C	-25 … +122	
Cable length	m	3	10

Accessories

Selection and ordering data

	Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIMOCODE connection cable							
 3UF7930-0AA00-0	**Connection cable** For side-by-side mounting of SIPLUS CMS2000 Basic Unit VIB and SIPLUS CMS2000 VIB-MUX expansion modules or temperature modules 3UF7700-1AA00-0	►	**3UF7930-0AA00-0**		1	1 unit	42J
Shield support							
 6AT8002-4AA00	**SIPLUS CMS2000 shield support** For the EMC-compliant connection of signal and encoder cables to the SIPLUS CMS2000 Basic Unit VIB or the SIPLUS CMS2000 VIB-MUX expansion module	X	**6AT8002-4AA00**		1	1 unit	477
VIB-SENSOR S01 vibration sensor							
 6AT8002-4AB00	**VIB-SENSOR S01** Piezoelectric sensor for connection to the SIPLUS CMS2000 Basic Unit VIB or the SIPLUS CMS2000 VIB-MUX expansion module	D	**6AT8002-4AB00**		1	1 unit	477
CABLE-MIL connection cable							
 6AT8002-4AC03	For connection of VIB-SENSOR S01 vibration sensors to the SIPLUS CMS2000 Basic Unit VIB or the SIPLUS CMS2000 VIB-MUX expansion module						
	• **CABLE-MIL-300 connection cable** Length 3 m	D	**6AT8002-4AC03**		1	1 unit	477
	• **CABLE-MIL-1000 connection cable** Length 10 m	D	**6AT8002-4AC10**		1	1 unit	477

More information

For more product details, see "SIPLUS CMS2000 Condition Monitoring Systems" operating instructions, http://support.automation.siemens.com/WW/view/en/56901901.

* You can order this quantity or a multiple thereof.
Illustrations are approximate