General data

Overview

With SIRIUS power supplies we offer a full range of first-class products. The complete type series ensure uniform voltages and minimum downtimes. They cover all important input voltages worldwide.

Connection methods

4AV.. non-stabilized power supplies are available with screw terminals/flat connectors.

⊕	Screw terminals
	Flat connectors
	The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th
	□□□	□	□	□	□	–	□	□	□	□	□	–	□	□
Power supplies	**4 A V**													
Versions														
20 ... 26 Single-phase, filtered, t_a max. 60 °C/B, suitable for connection to public supply networks and industrial networks														
30 ... 35 Three-phase, filtered, t_a max. 60 °C/B, suitable for connection to public supply networks and industrial networks														
36, 38 Three-phase, unfiltered, t_a max. 60 °C/B, suitable for connection to public supply networks and industrial networks		□	□											
41 Single-phase, filtered, t_a = 40 °C/B, suitable for connection to industrial networks														
51 Three-phase, filtered, t_a = 40 °C/B, suitable for connection to industrial networks														
96 Three-phase, unfiltered, t_a = 50 °C/B														
98 Single-phase, unfiltered, t_a = 50 °C/B														
Power level				□	□									
Application							□							
Development status								□						
Impregnated transformer									□					
Serial number										□	□			
Connection type													□	
Mounting type/options														□
Example	**4 A V**	**2**	**0**	**0**	**0**	**–**	**2**	**E**	**B**	**0**	**0**	**–**	**0**	**A**

Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quote in the catalog in the Selection and ordering data.

Overview

4AV2, 4AV3, 4AV4 and 4AV5 power supplies deliver a non-stabilized DC voltage of 24 V DC based on single-phase or three-phase safety transformers with downstream rectifiers and capacitor filtering (4AV36 and 4AV38 without capacitor filtering).

Benefits

The rugged construction of the 4AV units makes them extremely reliable. They are extremely stable when confronted with external mains failures and have a damping effect on electromagnetic interference. They are also highly suitable for supplying capacitive loads, because when the loads are connected only minimal voltage dips occur.

Application

The 4AV2, 4AV3, 4AV4 and 4AV5 units are used for:

- Supplying general electrical loads
- Supplying control circuits
- Power supply to electronic controllers They comply with the requirements of EN 61131-2 "Programmable logic controllers – equipment specifications and tests" and are suitable for SIMATIC or other systems.

Rated power and rated current

The specifications in the selection tables are based on fixed reference conditions in which the devices have the rated power or rated current:

- Uninterrupted duty P_n
- Frequency AC 50 Hz to 60 Hz
- Installation altitude up to 1000 m above sea level
- Degree of protection IP00
- Ambient temperature t_a

Ambient conditions

The units are designed for mounting in enclosed controllers and electronics cabinets. They are climate-proof for installation in rooms with an external climate according to DIN 50010.

Limit values

- Ambient temperature with rated power and rated current for types:
  - 4AV2 and 4AV3: Up to +60 °C
  - 4AV4 and 4AV5: Up to +40 °C
  - Minimum value for all types: –25 °C
- Relative air humidity:
  - At +40 °C occasionally up to 100 %
  - Annual average up to 80 %
  - Occasional condensation possible

Technical specifications

Single- and three-phase DC power supplies

Direct voltage 24 V DC Limit values	EN 61131-2	Typical value				Conditions
		4AV2	4AV3	4AV4	4AV5	
Ripple	≤ 5 %	2.2 ... 2.7 %	4.2 %	3.0 ... 3.7 %	4.2 %	At rated current
Direct voltage 24 V DC						
• Upper limit	30 V	≤ 28.8 V	≤ 28.8 V	≤ 30 V	≤ 30 V	For mains overvoltage +6 % and no-load operation
• Lower limit						For mains undervoltage –10 % and rated current
- Arithmetic mean value	20.4 V	20.4 V	20.5 V	20.4 V	20.4 V	
- Lower peak value	19.2 V	19.3 V	19.3 V	19.2 V	19.2 V	
• Rated value		23.5 V	23.5 V	23.5 V	23.5 V	For rated mains voltage and rated current

Current-carrying capacity of the power supplies with 3RT1 contactors for DC operation

- Sizes S00 to S3 with DC solenoid systems:
  power at closing = power when closed. The DC power supplies can be loaded up to their rated currents.
- Sizes S6 to S12:
  When operating the rectifiers at –10 % mains undervoltage

Contactor	Number of 3RT1 [1] contactors that can be operated simultaneously with preloading																									
	4AV20/ 4AV21		4AV23		4AV22		4AV24		4AV26		4AV30		4AV31		4AV32		4AV33		4AV34		4AV35		4AV36		4AV38	
Type	①	②	①	②	①	②	①	②	①	②	①	②	①	②	①	②	①	②	①	②	①	②	①	②	①	②
3RT1. 5	--	--	--	--	1	1	2	1	3	1	2	1	3	2	4	2	7	5	8	5	14	10	22	16	42	30
3RT1. 6	--	--	--	--	1	1	1	1	2	1	1	1	2	1	2	1	4	3	4	3	7	5	11	8	22	15
3RT1. 7	--	--	--	--	--	--	1	--	1	--	1	--	1	1	2	1	3	2	3	2	5	4	9	6	16	12

① No-load operation

② Rated current

[1] The number of contactors can be significantly increased by using additional banks of capacitors which must be connected externally.

4AV Non-Stabilized Power Supplies

Filtered for Supply of Electronic Controls

General data

Primary-side short-circuit protection, secondary-side short-circuit and overload protection

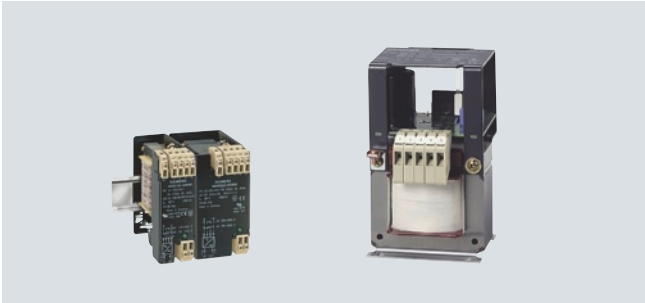
Rectifier unit	Ambient temperature t_a	Rated output current I_d	Primary-side protection against short-circuits (line protection) by means of motor starter protector[1)2)] or fuse								Secondary-side protection against short-circuit and overload by means of motor starter protector or fuse	
			Type	Rated input voltage U_{1N}								
				575 V (600 V)	500 V	460 V (480 V)	400 V (415 V)	230 V (240 V)	200 V	115 V (120 V)		
Type	°C	DC A									Type	
1-phase												
4AV21	60	1	3RV20 11-□□□10	--	--	--	0CA	0FA	--	0JA	Built-in electrical short-circuit/overload protection fuse	--
			Set value in A	--	--	--	0.24	0.4	--	0.9		
	40	1.2	3RV20 11-□□□10	--	--	--	0DA	0FA	--	0KA		
			Set value in A	--	--	--	0.29	0.48	--	1.1		
4AV20			3RV20 11-□□□10	--	--	--	0FA	0HA	--	1BA	3RV20 11-□□□10	1DA
	60	2.5	Set value in A	--	--	--	0.4	0.6	--	1.6	Set value in A	2.5
	40	3	Set value in A	--	--	--	0.48	0.72	--	1.9	Set value in A	3
4AV23			3RV20 11-□□□10	--	--	--	0HA	0JA	--	1CA	Built-in electrical short-circuit/overload protection fuse	--
	60	3.5	Set value in A	--	--	--	0.55	0.7	--	2		
	40	4.2	Set value in A	--	--	--	0.66	0.84	--	2.4		
4AV22			3RV20 11-□□□10	--	--	--	0HA	1AA	--	1DA	3RV20 11-□□□10	1GA
	60	5	Set value in A	--	--	--	0.6	1.1	--	2.4	Set value in A	5
	40	6	Set value in A	--	--	--	0.72	1.3	--	2.9	Set value in A	6
4AV24			3RV20 11-□□□10	--	--	--	1CA	1DA	--	1GA	3RV20 11-□□□10	1KA
	60	10	Set value in A	--	--	--	1.8	2.4	--	5	Set value in A	10
	40	12	Set value in A	--	--	--	2.2	2.9	--	6	Set value in A	12
4AV26			3RV20 11-□□□10	--	--	--	1CA	1EA	--	1HA	3RV20 21-□□□10	4BA
	60	15	Set value in A	--	--	--	2	3.2	--	6	Set value in A	15
	40	18	Set value in A	--	--	--	2.4	3.8	--	7.2	Set value in A	18
4AV41 01	40	1.5	3RV20 11-□□□10	--	--	--	0BA	0DA	--	--	Integrated blade-type fuse FK2	4 A
			Set value in A	--	--	--	0.15	0.27	--	--		
			Fuse gG in A	--	--	--	0.5	1	--	--		
4AV41 03	40	3	3RV20 11-□□□10	--	--	--	0GA	0HA	--	--	Integrated blade-type fuse FK2	7.5 A
			Set value in A	--	--	--	0.5	0.7	--	--		
			Fuse gG in A	--	--	--	1	2	--	--		
4AV41 06	40	6	3RV20 11-□□□10	--	--	--	0JA	0KA	--	--	Integrated blade-type fuse FK2	15 A
			Set value in A	--	--	--	0.8	1.2	--	--		
			Fuse gG in A	--	--	--	2	1	--	--		
4AV41 10	40	10	3RV20 11-□□□10	--	--	--	1BA	1CA	--	--	Integrated blade-type fuse FK2	25 A
			Set value in A	--	--	--	1.6	2.4	--	--		
			Fuse gG in A	--	--	--	4	4	--	--		
3-phase												
4AV30			3RV20 11-□□□10	0FA	0FA	0FA	0HA	0KA	0KA	--	3RV20 11-□□□10	1KA
	60	9/10	Set value in A	0.4	0.4	0.4	0.6	1	1	--	Set value in A	9/10
	40	11/12	Set value in A	0.48	0.48	0.48	0.72	1.2	1.2	--	Set value in A	11/12
4AV31			3RV20 11-□□□10	0HA	0HA	0HA	0KA	1BA	1CA	--	3RV20 21-□□□10	4BA
	60	13.5/15	Set value in A	0.6	0.6	0.6	1	1.6	2	--	Set value in A	14/15
	40	16/18	Set value in A	0.72	0.72	0.72	1.2	1.9	2.4	--	Set value in A	16/18
4AV32			3RV20 11-□□□10	0HA	0KA	0KA	0KA	1BA	1DA	--	3RV10 31-□□□10	4DA
	60	18/20	Set value in A	0.6	1	1	1	1.6	2.4	--	Set value in A	18/20
	40	21.5/24	Set value in A	0.72	1.2	1.2	1.2	1.9	2.9	--	Set value in A	21.5/24
4AV33			3RV20 11-□□□10	1CA	1CA	1CA	1CA	1EA	1FA	--	3RV10 31-□□□10	4FA
	60	27/30	Set value in A	1.8	1.8	1.8	2	3.2	4	--	Set value in A	28/30
	40	32.5/36	Set value in A	2.2	2.2	2.2	2.4	3.8	4.8	--	Set value in A	32.5/36
4AV34			3RV20 11-□□□10	1CA	1CA	1CA	1DA	1GA	1GA	--	3RV10 41-□□□10	4HA
	60	36/40	Set value in A	2	2	2	2.4	5	5	--	Set value in A	36/40
	40	43/48	Set value in A	2.4	2.4	2.4	2.9	6	6	--	Set value in A	43/48
4AV35			3RV20 11-□□□10	1DA	1DA	1EA	1FA	1HA	1HA	--	3RV10 41-□□□10	4JA
	60	45/50	Set value in A	2.4	2.4	3.2	4	6	6	--	Set value in A	45/50
	40	54/60	Set value in A	2.9	2.9	3.8	4.8	7.2	7.2	--	Set value in A	54/60
4AV36			3RV20 11-□□□10	--	1HA	--	1HA	--	--	--	3RV10 41-□□□10	4MA
	60	80	Set value in A	--	6	--	6	--	--	--	Set value in A	80
	40	96	Set value in A	--	7.2	--	72	--	--	--	Set value in A	96
4AV38	60	150	3RV20 11-□□□10	--	1KA	--	1KA	--	--	--	3VL27 16-1DC33-0AA0	
			Set value in A	--	10	--	12	--	--	--	Set value in A	150/800
	40	180	3RV20 21-□□□10	--	4AA	--	4AA	--	--	--	3VL37 20-1DC36-0AA0	
			Set value in A	--	12	--	14	--	---	--	Set value in A	180/1000
4AV51 25	40	25	3RV20 11-□□□10	--	--	--	1BA	--	--	--	3RV10 31-□□□10	4EA
			Set value in A	--	--	--	1.6	--	--	--	Set value in A	25
			Fuse gG in A	--	--	--	2	--	--	--	Fuse gG in A	25
4AV51 35	40	35	3RV20 11-□□□10	--	--	--	1CA	--	--	--	3RV10 31-□□□10	4FA
			Set value in A	--	--	--	2.4	--	--	--	Set value in A	35
			Fuse gG in A	--	--	--	4	--	--	--	Fuse gG in A	35

1) In the event of a short-circuit on the feeder lines between the protective device and the input side of the unit, the rated short-circuit breaking capacity of the protection equipment must be taken into account with regard to the maximum possible prospective short-circuit current at the place of installation.

2) Circuit recommendation for single-phase power supplies, see circuit diagram on page 11/7.

Overview

- Rated output voltage U_{2N} 24 V DC according to EN 61131-2[1] and SIMATIC for input voltage +6 % to –10 % and load 0 % to 100 %
- Safety transformers according to EN 61558-2-6
- 4AV21, 4AV23: cULus at 60 °C, ;
  4AV20, 4AV22, 4AV24, 4AV26: cULus at 60 °C, ;
  4AV41:
- 4AV2: t_a = max. 60 °C/B,
  4AV41: t_a = 40 °C/B
- Varistor suppressor circuit
- Status LED
- EMC according to EN 62041:
  - 4AV2: Suitable for connection to the public supply (residential environments) and industrial networks (industrial environments):
  - 4AV4: Suitable for connection to industrial networks (industrial environments)
- Ripple < 5 %
- For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.



SIRIUS 4AV21, 4AV23 (left) and 4AV20, 4AV22 to 4AV24 (right) power supplies

[1] EN 61131-2: equipment specification for power supply and interface for programmable controllers. For limit values for 24 V DC see note on Technical Information on page 11/1.

Selection and ordering data

Rated input voltage U_{1N}[1] 230 (240)-115 (120) V, rated output voltage U_{2N} 24 V DC

cULus,

Rated output current I_d 60 °C/B EN 61558 cULus	40 °C/B EN 61558	DT[2]	Screw terminals/ flat connectors Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
DC A	DC A							kg
Integrated standard rail mounting								
1	1.2	▶	**4AV21 02-2EB00-0A**		1	1 unit	104	0.600
3.5	4.2	▶	**4AV23 02-2EB00-0A**		1	1 unit	104	0.900

[1] During operation at the mains voltages listed in brackets, the upper limit for 24 V DC according to EN 61131-2 at +6 % mains voltage is met for a basic load of 10 %. Under no-load operation, 30.6 V can be achieved.

[2] The delivery time class depends on the quantity, see page 11/5 "Options".

Rated input voltage U_{1N}[1] 400 (415) V, rated output voltage U_{2N} 24 V DC

cULus,

Rated output current I_d 60 °C/B EN 61558 cULus	40 °C/B EN 61558	DT[2]	Screw terminals/ flat connectors Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
DC A	DC A							kg
Integrated standard rail mounting								
1	1.2	▶	**4AV21 06-2EB00-0A**		1	1 unit	104	0.600
3.5	4.2	▶	**4AV23 06-2EB00-0A**		1	1 unit	104	0.900

[1] During operation at the mains voltages listed in brackets, the upper limit for 24 V DC according to EN 61131-2 at +6 % mains voltage is met for a basic load of 10 %. Under no-load operation, 30.6 V can be achieved.

[2] The delivery time class depends on the quantity, see page 11/5 "Options".

11

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

4AV Non-Stabilized Power Supplies

Filtered for Supply of Electronic Controls

SIRIUS 4AV2, 4AV4 power supplies, filtered, single-phase

Rated input voltage U_{1N}[1] 400 (415)-230 (240) V with tapping ±15 V, rated output voltage U_{2N} 24 V DC

***4AV2: cULus, ; 4AV41: ***

Rated output current I_d 60 °C/B EN 61558 cULus	40 °C/B EN 61558	DT[2]	Screw terminals/ flat connectors Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
DC A	DC A							kg
Screw mounting[3]								
2.5	3	▶	**4AV20 00-2EB00-0A**		1	1 unit	104	0.620
5	6	▶	**4AV22 00-2EB00-0A**		1	1 unit	104	0.600
10	12	▶	**4AV24 00-2EB00-0A**		1	1 unit	104	0.900
15	18	▶	**4AV26 00-2EB00-0A**		1	1 unit	104	2.300
--	1.5	D	**4AV41 01-2EB00-0A**		1	1 unit	104	0.300
--	3	▶	**4AV41 03-2EB00-0A**		1	1 unit	104	0.310
--	6	▶	**4AV41 06-2EB00-0A**		1	1 unit	104	0.510
--	10	▶	**4AV41 10-2EB00-0A**		1	1 unit	104	1.100
Standard rail mounting								
2.5	3	▶	**4AV20 00-2EB00-0A**		1	1 unit	104	0.620
5	6	D	**4AV22 00-2EB00-0B**		1	1 unit	104	0.600
10	12	D	**4AV24 00-2EB00-0B**		1	1 unit	104	0.900
--	1.5	D	**4AV41 01-2EB00-0B**		1	1 unit	104	0.300
--	3	▶	**4AV41 03-2EB00-0A**		1	1 unit	104	0.310
--	6	▶	**4AV41 06-2EB00-0A**		1	1 unit	104	0.510
--	10	D	**4AV41 10-2EB00-0B**		1	1 unit	104	1.100

1) During operation at the mains voltages listed in brackets, the upper limit for 24 V DC according to EN 61131-2 at +6 % mains voltage is met for a basic load of 10 %. Under no-load operation with types 4AV4, 31.4 V can be achieved.

2) The delivery time class depends on the quantity, see page 11/5 "Options".

3) Types 4AV20, 4AV41 03 and 4AV41 06 are equipped with an integrated standard rail mounting as standard.

Rated input voltage U_{1N} 400 (415)-230 (240)-115 (120) V, rated output voltage U_{2N} 24 V DC

***cULus, ***

Rated output current I_d 60 °C/B EN 61558 cULus	40 °C/B EN 61558	DT[1]	Screw terminals/ flat connectors Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
DC A	DC A							kg
Screw mounting[2]								
2.5	3	▶	**4AV20 01-2EB00-0A**		1	1 unit	104	0.620
5	6	▶	**4AV22 01-2EB00-0A**		1	1 unit	104	0.600
10	12	▶	**4AV24 01-2EB00-0A**		1	1 unit	104	0.900
15	18	▶	**4AV26 01-2EB00-0A**		1	1 unit	104	2.300
Standard rail mounting								
2.5	3	▶	**4AV20 01-2EB00-0A**		1	1 unit	104	0.620
5	6	D	**4AV22 01-2EB00-0B**		1	1 unit	104	0.600
10	12	D	**4AV24 01-2EB00-0B**		1	1 unit	104	0.900

1) The delivery time class depends on the quantity, see page 11/5 "Options".

2) Types 4AV20 are equipped with an integrated standard rail mounting as standard.

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