

Power Supplies



11/2	Introduction
	4AV Non-Stabilized Power Supplies
	<u>Filtered for Supply of Electronic Controls</u>
11/4	General data
11/5	4AV2, 4AV4 power supplies, filtered, single-phase
11/7	4AV3, 4AV5 power supplies, filtered, three-phase
	<u>Unfiltered for Supply of General Loads</u>
11/9	4AV98 power supplies, unfiltered, single-phase
11/10	4AV96 power supplies, unfiltered, three-phase
	6EP Stabilized Power Supplies
	<u>SITOP 6EP Power Supplies</u>
11/11	LOGO!Power, single-phase
11/12	SITOP smart, single-phase and three-phase
11/13	SITOP modular basic units 24 V, single-phase, two-phase and three-phase
11/14	Add-on modules
11/15	Uninterruptible power supplies 24 V

Introduction

Overview

4AV non-stabilized power supplies



4AV21/23



4AV20/22/24/26



4AV4



4AV3



4AV5

Filtered for supply of electronic controls

Ripple		< 5 %	< 5 %	< 5 %	< 5 %	< 5 %
Phase		1	1	1	3	3
Rated input voltage	V AC	115 ... 415	115 ... 415	230 ... 415	200 ... 600	400 ... 415
Rated output voltage acc. to EN 61131-2 suitable for SIMATIC systems	V DC	24	24	24	24	24
Rated output current	A	1 ... 4.2	2.5 ... 18	1.5 ... 10	15 ... 180	25, 35
Connection		Screw terminals/ flat connectors	Screw terminals/ flat connectors or Cage Clamp terminals	Screw terminals/ flat connectors or Cage Clamp terminals	Screw terminals/ flat connectors	Screw terminals/ flat connectors
Mounting		Standard rail mounting	Screw and/or stan- dard rail mounting	Screw and/or stan- dard rail mounting	Screw mounting	Screw mounting
cULus approval at 60 °C		Yes	Yes	No	Partially	No



4AV98



4AV96

Unfiltered for supply of general loads

Ripple		48.3 %	< 5 %
Phase		1	3
Rated input voltage	V AC	230 or 400	400
Rated output voltage	V DC	24	30-27-24
Rated output current/ rated power		50 ... 500 W	4 ... 25 A
Connection		Screw/ flat connectors	Screw/ flat connectors
Mounting		Screw mounting	Screw mounting
cULus approval		No	No

6EP stabilized power supplies

6EP1
LOGO!Power6EP1
SITOP smart6EP1
SITOP modular6EP1
SITOP uninterruptible

Phase		1	1, 3	1, 2, 3	1
Rated input voltage	V	100 ... 240 AC	48 ... 220 DC, 120 ... 230 AC, 120/230 AC, 3 AC 400 ... 500	120/230 ... 500 AC, 120/230 AC, 3 AC 400 ... 500	24 DC
Rated output voltage	V DC	5, 12, 15, 24	24, 48, 3 ... 52	24	24
Rated output current	A	1.3 ... 6.3	0.375 ... 10	5 ... 40	6, 15, 40
Connection		Screw terminals	Screw terminals	Screw terminals	Screw terminals
Mounting		Standard rail mounting	Standard rail mounting	Standard rail mounting	Standard rail mounting
Approval		UL, cUL	UL, cUL	UL, cUL	UL, cUL

Further products for power supplies can be found in Catalog KT 10.1 or
on the Internet at <http://www.siemens.com/sirius-supplying> and <http://www.siemens.com/sitop>.

Options***Delivery time classes DT***

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

The standard transport time for Germany is 1 day (see "Explanations" page 4).

The delivery time class for 6EP1 power supplies does not depend on the quantity.

The quoted delivery time class for the 4AV power supplies is applicable to an order quantity of up to 5 units.

► Preferred type

This delivery time class applies with the degree of protection IP00, i. e. these units can be supplied immediately from stock¹⁾ 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 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 1 week.

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 3 weeks.

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 6 weeks.

Orders of power supplies with selectable input and output voltages

Please send your selection by e-mail with the basic Order No. and the required options specified in plain text to:

MD_Anfrage.aud@siemens.com

or by fax to: +49 (0)421/5125 333.

In response you will receive the complete Order No. for completing your order.

Ordering power supplies in customized versions or with special applications

Inquiries for customized power supplies not found in our catalog should be sent to:

MD_Anfrage.aud@siemens.com

or by fax to: +49 (0)421/5125 333.

In reply you will receive the complete Order No. which should be quoted in your order.

¹⁾ This is based on commercially available orders – normal order!

More information

More information about power supplies, transformers, fans, reactors and filters can be found on the Internet at

<http://www.siemens.com/sirius-supplying>

For products and information on

- Reactors and filters, see Catalog LV 60, Order No.: E86060-K2803-A101-A4-7600
- For 2CC and 2CQ axial fans, see Catalog LV 65, Order No.: E86060-K1865-A101-A1-7600

Transformers for converter systems from Siemens can be found in the following catalogs:

Catalog NC 60, SINUMERIK & SIMODRIVE
Order No.: E86060-K4460-A101-B2-7600

Catalog DA 65.10, SIMOVERT MASTERDRIVES Vector Control
Order No.: E86060-K5165-A101-A3-7600

Catalog DA 65.11, SIMOVERT MASTERDRIVES Motion Control
Order No.: E86060-K5165-A111-A3-7600

4AV Non-Stabilized Power Supplies

Filtered for Supply of Electronic Controls

General 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 isolating transformers with downstream rectifiers and capacitor filtering.

Note



Screw terminals



Cage Clamp terminals



Flat connectors

The terminals are indicated in the selection and ordering data by orange backgrounds.

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 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 ... 60 Hz
- Installation height 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.

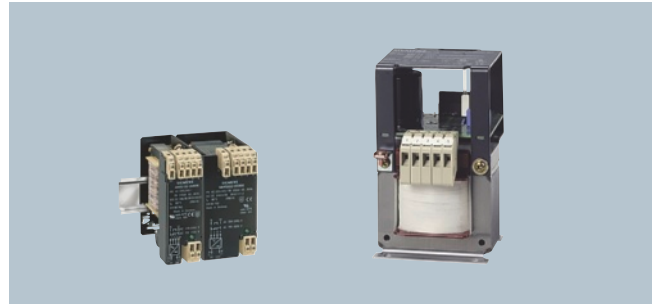
4AV Non-Stabilized Power Supplies

Filtered for Supply of Electronic Controls

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

Overview

- Rated output voltage U_{2N} 24 V DC according to EN 61131-2¹⁾ and SIMATIC at input voltage +6 % to -10 % and load 0 % to 100 %
- Safety transformer according to EN 61558-2-6
- 4AV21, 4AV23: **cFLus** at 60 °C, ;
4AV20, 4AV22, 4AV24, 4AV26: **cFLus** 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 %.



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

¹⁾ EN 61131-2: Equipment specification for power supply and interface for programmable controllers. For limit values for 24 V DC, see [Technical Information LV 1 T "Technical Specifications"](#).

Selection and ordering data

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

cFLus, 

PU (UNIT, SET, M) = 1
PS = 1 unit (You can order this quantity or a multiple thereof.)
PG = 104

Rated output current I_d		DT ²⁾	Screw terminals/ flat connectors	 	Cu weight per PU approx.	Total weight per PU approx.
60 °C/B	40 °C/B					
EN 61558	EN 61558		Order No.	Price per PU		
cFLus					kg	kg
A DC	A DC					
Integrated standard rail mounting						
1	1.2	▶	4AV21 02-2EB00-0A		0.600	1.500
3.5	4.2	▶	4AV23 02-2EB00-0A		0.900	2.500

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 11/3 "Options"](#).

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

cFLus, 

PU (UNIT, SET, M) = 1
PS = 1 unit (You can order this quantity or a multiple thereof.)
PG = 104

Rated output current I_d		DT ²⁾	Screw terminals/ flat connectors	 	Cu weight per PU approx.	Total weight per PU approx.
60 °C/B	40 °C/B					
EN 61558	EN 61558		Order No.	Price per PU		
cFLus					kg	kg
A DC	A DC					
Integrated standard rail mounting						
1	1.2	▶	4AV21 06-2EB00-0A		0.600	1.500
3.5	4.2	▶	4AV23 06-2EB00-0A		0.900	2.500

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 11/3 "Options"](#).

4AV Non-Stabilized Power Supplies

Filtered for Supply of Electronic Controls

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

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

4AV2: c $\mathcal{A}$ us, ; 4AV41: 

PU (UNIT, SET, M) = 1
PS = 1 unit (You can order this
quantity or a multiple thereof.)
PG = 104

Rated output current I_d		DT ²⁾	Screw terminals/ flat connectors		Cu weight per PU approx.	Total weight per PU approx.	DT ²⁾	Cage Clamp terminals		Cu weight per PU approx.	Total weight per PU approx.
60 °C/B	40 °C/B		Order No.	Price per PU				Order No.	Price per PU		
EN 61558	EN 61558										
c $\mathcal{A}$ us											
A DC	A DC				kg	kg				kg	kg
Screw mounting³⁾											
2.5	3	▶	4AV20 00-2EB00-0A		0.620	2.300	B	4AV20 00-2EB00-1A		0.620	2.300
5	6	▶	4AV22 00-2EB00-0A		0.600	4.900	B	4AV22 00-2EB00-1A		0.600	4.900
10	12	▶	4AV24 00-2EB00-0A		0.900	7.500	B	4AV24 00-2EB00-1A		0.900	7.500
15	18	▶	4AV26 00-2EB00-0A		2.300	9.800	B	4AV26 00-2EB00-1A		2.300	9.800
--	1.5	▶	4AV41 01-2EB00-0A		0.300	1.400	B	4AV41 01-2EB00-1A		0.300	1.400
--	3	▶	4AV41 03-2EB00-0A		0.310	2.300	B	4AV41 03-2EB00-1A		0.310	2.300
--	6	▶	4AV41 06-2EB00-0A		0.510	4.000	▶	4AV41 06-2EB00-1A		0.510	4.000
--	10	▶	4AV41 10-2EB00-0A		1.100	5.300	B	4AV41 10-2EB00-1A		1.100	5.300
Standard rail mounting											
2.5	3	▶	4AV20 00-2EB00-0A		0.620	2.300	B	4AV20 00-2EB00-1A		0.620	2.300
5	6	B	4AV22 00-2EB00-0B		0.600	4.900	B	4AV22 00-2EB00-1B		0.600	4.900
10	12	B	4AV24 00-2EB00-0B		0.900	7.500	B	4AV24 00-2EB00-1B		0.900	7.500
--	1.5	B	4AV41 01-2EB00-0B		0.300	1.400	B	4AV41 01-2EB00-1B		0.300	1.400
--	3	▶	4AV41 03-2EB00-0A		0.310	2.300	B	4AV41 03-2EB00-1A		0.310	2.300
--	6	▶	4AV41 06-2EB00-0A		0.510	4.000	▶	4AV41 06-2EB00-1A		0.510	4.000
--	10	B	4AV41 10-2EB00-0B		1.100	5.300	B	4AV41 10-2EB00-1B		1.110	5.300

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 11/3 "Options".

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

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

c $\mathcal{A}$ us, 

PU (UNIT, SET, M) = 1
PS = 1 unit (You can order this
quantity or a multiple thereof.)
PG = 104

Rated output current I_d		DT ¹⁾	Screw terminals/ flat connectors		Cu weight per PU approx.	Total weight per PU approx.	DT ¹⁾	Cage Clamp terminals		Cu weight per PU approx.	Total weight per PU approx.
60 °C/B	40 °C/B		Order No.	Price per PU				Order No.	Preis € per PU		
EN 61558	EN 61558										
c $\mathcal{A}$ us											
A DC	A DC				kg	kg				kg	kg
Screw mounting²⁾											
2.5	3	▶	4AV20 01-2EB00-0A		0.620	2.300	B	4AV20 01-2EB00-1A		0.620	2.300
5	6	▶	4AV22 01-2EB00-0A		0.600	4.900	B	4AV22 01-2EB00-1A		0.600	4.900
10	12	▶	4AV24 01-2EB00-0A		0.900	7.500	B	4AV24 01-2EB00-1A		0.900	7.500
15	18	▶	4AV26 01-2EB00-0A		2.300	9.800	B	4AV26 01-2EB00-1A		2.300	9.800
Standard rail mounting											
2.5	3	▶	4AV20 01-2EB00-0A		0.620	2.300	B	4AV20 01-2EB00-1A		0.620	2.300
5	6	B	4AV22 01-2EB00-0B		0.600	4.900	B	4AV22 01-2EB00-1B		0.600	4.900
10	12	B	4AV24 01-2EB00-0B		0.900	7.500	B	4AV24 01-2EB00-1B		0.900	7.500

¹⁾ The delivery time class depends on the quantity, see page 11/3 "Options".

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

4AV Non-Stabilized Power Supplies

Filtered for Supply of Electronic Controls

4AV3, 4AV5 power supplies,
filtered, three-phase

Overview

- Rated output voltage U_{2N} 24 V DC according to EN 61131-2¹⁾ and SIMATIC at input voltage +6 % to -10 % and load 0 % to 100 %
- Safety transformer according to EN 61558-2-6
- 4AV30 to 4AV35: **cFLus** at 60 °C, ;
4AV36, 4AV38, 4AV51: 
- 4AV3: t_a = max. 60 °C/B,
4AV51: t_a = 40 °C/B
- Varistor suppressor circuit
- Status LED
- EMC according to EN 62041:
 - 4AV3: Suitable for connection to the public supply (residential environments) and industrial networks (industrial environments)
 - 4AV5: Suitable for connection to industrial networks (industrial environments)
- Ripple < 5 %.



4AV30 to 4AV33 (left) and 4AV38 (right)

¹⁾ EN 61131-2: Equipment specification for power supply and interface for programmable controllers. For limit values for 24 V DC, see Technical Information LV 1 T "Technical specifications".

Selection and ordering data

Rated input voltage U_{1N} 400 (415) V
with tapping ± 20 V, Δ 230 V with tapping ± 10 V,
rated output voltage U_{2N} 24 V DC

cFLus, 

PU (UNIT, SET, M) = 1
PS = 1 unit (You can order this quantity or a multiple thereof.)
PG = 104

Rated output current I_d		Additional capacitance	Ripple	Backup time at $U_1 = U_{1N} - 10\%$	DT ¹⁾	Screw terminals/ flat connectors	  Price per PU	Cu weight per PU approx.	Total weight per PU approx.
60 °C/B EN 61558 cFLus	40 °C/B EN 61558								
A DC	A DC	μF	%	ms		Order No.		kg	kg
Standard versions									
10	12	--	< 5	--	▶	4AV30 00-2EB00-0A		1.600	5.000
15	18	--	< 5	--	▶	4AV31 00-2EB00-0A		1.600	6.500
20	24	--	< 5	--	▶	4AV32 00-2EB00-0A		2.400	8.000
30	36	--	< 5	--	▶	4AV33 00-2EB00-0A		2.600	11.000
40	48	--	< 5	--	▶	4AV34 00-2FB00-0A		4.900	17.000
50	60	--	< 5	--	▶	4AV35 00-2FB00-0A		4.100	21.000
Additional capacitors (aluminum electrolyte)									
10	12	10000	2	1	B	4AV30 00-2EB00-0C		1.600	5.200
15	18	10000	3	0.6	B	4AV31 00-2EB00-0C		1.600	6.700
20	24	10000	3	0.4	B	4AV32 00-2EB00-0C		2.400	8.200
30	36	10000	4	0.7	B	4AV33 00-2EB00-0C		2.600	11.200
40	48	10000	3	0.7	B	4AV34 00-2FB00-0C		4.900	17.200
50	60	10000	4	0.3	B	4AV35 00-2FB00-0C		4.100	21.200

¹⁾ The delivery time class depends on the quantity, see page 11/3 "Options".

Rated input voltage U_{1N} 400 (415) V
with tapping ± 20 V,
rated output voltage U_{2N} 24 V DC



PU (UNIT, SET, M) = 1
PS = 1 unit (You can order this quantity or a multiple thereof.)
PG = 104

Rated output current I_d		Ripple	DT ¹⁾	Screw terminals/ flat connectors	  Price per PU	Cu weight per PU approx.	Total weight per PU approx.
60 °C/B EN 61558	40 °C/B EN 61558						
A DC	A DC	%		Order No.		kg	kg
Standard versions							
--	25	< 5	A	4AV51 25-2EB00-0A		2.000	10.300
--	35	< 5	A	4AV51 35-2EB00-0A		3.400	14.500

¹⁾ The delivery time class depends on the quantity, see page 11/3 "Options".

4AV Non-Stabilized Power Supplies

Filtered for Supply of Electronic Controls

4AV3, 4AV5 power supplies,
filtered, three-phase

Rated input voltage U_{1N} 500-400 (415) V,
rated output voltage U_{2N} 24 V DC



PU (UNIT, SET, M) = 1
PS = 1 unit (You can order this quantity or a multiple thereof.)
PG = 104

Rated output current I_d		Additional capacitance	Ripple	Backup time at $U_1 = U_{1N} - 10\%$	DT ¹⁾	Screw terminals/ flat connectors	Price per PU	Cu weight per PU approx.	Total weight per PU approx.
60 °C/B EN 61558	40 °C/B EN 61558								
A DC	A DC	μF	%	ms		Order No.		kg	kg
Standard versions									
15	18	--	< 5	--	▶	4AV31 01-2EB00-0A		1.600	6.500
30	36	--	< 5	--	▶	4AV33 01-2EB00-0A		2.600	11.000
50	60	--	< 5	--	▶	4AV35 01-2FB00-0A		4.100	21.000
Additional capacitors (aluminum electrolyte)									
15	18	10000	3	0.6	B	4AV31 01-2EB00-0C		1.600	6.700
30	36	10000	4	0.7	B	4AV33 01-2EB00-0C		2.600	11.200
50	60	10000	4	0.3	B	4AV35 01-2FB00-0C		4.100	21.200

¹⁾ The delivery time class depends on the quantity, see page 11/3 "Options".

Rated input voltage U_{1N} 500-400 (415) V,
rated output voltage U_{2N} 24 V DC



PU (UNIT, SET, M) = 1
PS = 1 unit (You can order this quantity or a multiple thereof.)
PG = 104

Rated output current I_d		Additional capacitance	Ripple	Backup time at $U_1 = U_{1N} - 10\%$	DT ¹⁾	Screw terminals/ flat connectors	Price per PU	Cu weight per PU approx.	Total weight per PU approx.
60 °C/B EN 61558	40 °C/B EN 61558								
A DC	A DC	μF	%	ms		Order No.		kg	kg
Standard versions (unfiltered)									
80	96	--	< 5	--	▶	4AV36 01-2EB00-0A		8.600	32.000
150	180	--	< 5	--	▶	4AV38 01-2EB00-0A		14.400	46.000
Additional capacitors (aluminum electrolyte)									
80	96	2 × 10000	4	0.2	B	4AV36 01-2EB00-0C		8.600	32.400
150	180	3 × 10000	4	0.2	B	4AV38 01-2EB00-0C		14.400	46.600

¹⁾ The delivery time class depends on the quantity, see page 11/3 "Options".

Rated input voltage U_{1N}
575 (600)-500-460 (480)-400 (415)-230 (240)-200 V,
rated output voltage U_{2N} 24 V DC



PU (UNIT, SET, M) = 1
PS = 1 unit (You can order this quantity or a multiple thereof.)
PG = 104

Rated output current I_d		Additional capacitance	Ripple	Backup time at $U_1 = U_{1N} - 10\%$	DT ¹⁾	Screw terminals/ flat connectors	Price per PU	Cu weight per PU approx.	Total weight per PU approx.
60 °C/B EN 61558	40 °C/B EN 61558								
A DC	A DC	μF	%	ms		Order No.		kg	kg
Standard versions									
9	11	--	< 5	--	▶	4AV30 02-2EB00-0A		1.600	5.000
13.5	16	--	< 5	--	▶	4AV31 02-2EB00-0A		1.600	6.500
18	21.5	--	< 5	--	▶	4AV32 02-2EB00-0A		2.400	8.000
27	32.5	--	< 5	--	▶	4AV33 02-2EB00-0A		2.600	11.000
36	43	--	< 5	--	▶	4AV34 02-2FB00-0A		4.900	17.000
45	54	--	< 5	--	▶	4AV35 02-2FB00-0A		4.100	21.000
Additional capacitors (aluminum electrolyte)									
9	11	10000	2	1	B	4AV30 02-2EB00-0C		1.600	5.200
13.5	16	10000	3	0.6	B	4AV31 02-2EB00-0C		1.600	6.700
18	21.5	10000	3	0.4	B	4AV32 02-2EB00-0C		2.400	8.200
27	32.5	10000	4	0.7	B	4AV33 02-2EB00-0C		2.600	11.200
36	43	10000	3	0.7	B	4AV34 02-2FB00-0C		4.900	17.200
45	54	10000	4	0.3	B	4AV35 02-2FB00-0C		4.100	21.200

¹⁾ The delivery time class depends on the quantity, see page 11/3 "Options".

4AV Non-Stabilized Power Supplies

Unfiltered for Supply of General Loads

4AV98 power supplies,
unfiltered, single-phase

Overview

The 4AV98 power supplies comprise single-phase safety transformers according to EN 61558-2-6 with downstream bridge connection rectifiers without capacitor filtering.

- Rated output voltage U_d 24 V DC
- Safety transformer according to EN 61558-2-6
-
- $t_a = 50$ °C/B
- Varistor suppressor circuit
- Short-circuit and overload protection on the output side with top-mounted fuse
- Ripple 48 %.



4AV98

Application

The single-phase 4AV98 devices are especially suitable for supplying resistive and inductive loads whose operational voltages place no special demands with regard to ripple.

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 ... 60 Hz
- Installation height up to 1000 m above sea level
- Degree of protection IP00
- Ambient temperature t_a .

Ambient conditions

The devices are climate-proof for installation in rooms with an external climate to DIN 50010.

Limit values:

- Ambient temperature
 - At rated power or rated current: +50 °C
 - Minimum value: -25 °C.
- Relative air humidity
 - At +40 °C occasionally up to 100 %
 - Annual average up to 80 %
 - Occasional condensation possible.

Selection and ordering data

Rated input voltage U_{1N} 230 V,
rated output voltage U_d 24 V DC



Rated power P_{2N}	Voltage rise during no-load operation u_A	DT ¹⁾	Screw terminals/ flat connectors		PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.	Total weight per PU approx.
W	%		Order No.	Price per PU				kg	kg
50	24	C	4AV98 06-4CB00-2N		1	1 unit	104	0.200	0.900
80	18	C	4AV98 06-5CB00-2N		1	1 unit	104	0.300	1.600
125	14	C	4AV98 06-6CB00-2N		1	1 unit	104	0.400	2.300
200	11	C	4AV98 06-7CB00-2N		1	1 unit	104	0.600	3.300
315	10	C	4AV98 06-8CB00-2N		1	1 unit	104	1.100	4.900
500	9	C	4AV98 00-5CB00-2N		1	1 unit	104	1.700	10.000

¹⁾ The delivery time class depends on the quantity, see page 11/3 "Options".

Rated input voltage U_{1N} 400 V,
rated output voltage U_d 24 V DC



Rated power P_{2N}	Voltage rise during no-load operation u_A	DT ¹⁾	Screw terminals/ flat connectors		PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.	Total weight per PU approx.
W	%		Order No.	Price per PU				kg	kg
50	24	C	4AV98 07-0CB00-2N		1	1 unit	104	0.200	0.900
80	18	C	4AV98 07-1CB00-2N		1	1 unit	104	0.300	1.600
125	14	C	4AV98 07-2CB00-2N		1	1 unit	104	0.400	2.300
200	11	C	4AV98 07-3CB00-2N		1	1 unit	104	0.600	3.300
315	10	C	4AV98 07-4CB00-2N		1	1 unit	104	1.100	4.900
500	9	C	4AV98 02-5CB00-2N		1	1 unit	104	1.700	10.000

¹⁾ The delivery time class depends on the quantity, see page 11/3 "Options".

* You can order this quantity or a multiple thereof.

4AV Non-Stabilized Power Supplies

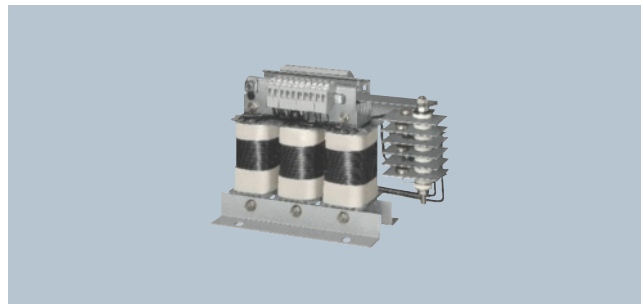
Unfiltered for Supply of General Loads

4AV96 power supplies,
unfiltered, three-phase

Overview

The 4AV96 power supplies comprise three-phase safety transformers according to EN 61558-2-6 with downstream bridge connection rectifiers without capacitor filtering.

- Rated output voltage U_d 30-27-24 V DC
- Safety transformer according to EN 61558-2-6
-
- Shield winding between input and output winding
- Varistor suppressor circuit
- Designed and approved according to VW equipment specification
- Ripple < 5 %.



4AV96

Application

VW approval

The 4AV96 three-phase units are designed and approved in accordance with the VW equipment specifications.

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 ... 60 Hz
- Installation height up to 1000 m above sea level
- Degree of protection IP00
- Ambient temperature t_a .

Ambient conditions

The devices are climate-proof for installation in rooms with an external climate to DIN 50010.

Limit values:

- Ambient temperature
 - At rated power or rated current: +50 °C
 - Minimum value: -25 °C.
- Relative air humidity
 - At +40 °C occasionally up to 100 %
 - Annual average up to 80 %
 - Occasional condensation possible.

Selection and ordering data

Rated input voltage U_{1N} 400 V with tapping ± 5 %, rated output voltage U_d 30-27-24 V DC



Rated output current I_d	Voltage rise during no-load operation u_A	Primary-side short-circuit and overload protection for the rectifier with motor starter protector		VW material No.	DT ¹⁾	Screw terminals/ flat connectors		PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.	Total weight per PU approx.
		Type	Set value at 400 V AC									
A DC	V		A			Order No.	Price per PU				kg	kg
4	3.5	3RV10 11-0EA10	0.28	6142	A	4AV96 04-1CB00-2N		1	1 unit	104	0.800	3.500
12	3.3	3RV10 11-0JA10	0.8	6141	A	4AV96 04-5CB00-2N		1	1 unit	104	1.400	6.900
25	3.1	3RV10 11-1CA10	1.8	6145	A	4AV96 04-2CB00-2N		1	1 unit	104	2.500	10.600

¹⁾ The delivery time class depends on the quantity, see page 11/3 "Options".

6EP Stabilized Power Supplies

SITOP 6EP Power Supplies

LOGO!Power,
single-phase

Overview

With LOGO!Power power supplies it is possible not only for 24 V loads to benefit from the advantages of a stabilized power supply - loads with a 5 V, 12 V and 15 V supply voltage can now do likewise. For each of these three voltages there are two levels of current available, and for 24 V there is even a 4 A version in a width of only 90 mm.

The primary switched power supplies can be used for a wide range of different applications: In automation systems for industry and buildings, solar technology, measurement and control, sensors, for supplying electronic circuits in TTL technology, etc.

Advantages of LOGO!Power power supplies:

- 2 performance classes, each with 5 V, 12 V and 15 V; 3 performances classes with 24 V
- Compact design with a width of 54 mm, 72 mm or 90 mm
- Flat step profile, ideal also for mounting in small distribution boards
- Design adapted to LOGO! microcontrollers
- Constant current in case of overloading, for reliable connection of difficult loads such as DC/DC converters and motors
- Large setting range for the output voltage, using potentiometers which are easy to reach from the front
- Green LED indicator for "output voltage OK"
- For universal use – in industry and public low-voltage systems – worldwide
- Wide range input from 85 V to 264 V AC for virtually any network in the world
- Large temperature range from –20 °C to +55 °C for universal use
- High EMC standards
- Extensive approvals and certifications according to CE, UL/cUL, FM and shipbuilding (GL and ABS)
- Constant stabilized output voltage protects connected loads
- Parallel switching option permitted to increase performance

Selection and ordering data

Version	Input Rated voltage U_e Rated	Output Rated voltage U_a Rated	Current rated value I_a Rated	Dimensions (W x H x D) mm	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
Power supplies 5 V											
3 A	100 ... 240 V AC (85 ... 264 V)	5 V DC $\pm 3\%$	3 A	54 x 90 x 55	▶	6EP1 311-1SH02			1	1 unit	0.170
6.3 A	100 ... 240 V AC (85 ... 264 V)	5 V DC $\pm 3\%$	6.3 A	72 x 90 x 55	▶	6EP1 311-1SH12			1	1 unit	0.250
Power supplies 12 V											
1.9 A	100 ... 240 V AC (85 ... 264 V)	12 V DC $\pm 3\%$	1.9 A	54 x 90 x 55	▶	6EP1 321-1SH02			1	1 unit	0.170
4.5 A	100 ... 240 V AC (85 ... 264 V)	12 V DC $\pm 3\%$	4.5 A	72 x 90 x 55	▶	6EP1 322-1SH02			1	1 unit	0.250
Power supplies 15 V											
1.9 A	100 ... 240 V AC (85 ... 264 V)	15 V DC $\pm 3\%$	1.9 A	54 x 90 x 55	▶	6EP1 351-1SH02			1	1 unit	0.170
4 A	100 ... 240 V AC (85 ... 264 V)	15 V DC $\pm 3\%$	4 A	72 x 90 x 55	▶	6EP1 352-1SH02			1	1 unit	0.250
Power supplies 24 V											
1.3 A	100 ... 240 V AC (85 ... 264 V)	24 V DC $\pm 3\%$	1.3 A	54 x 90 x 55	▶	6EP1 331-1SH02			1	1 unit	0.170
2.5 A	100 ... 240 V AC (85 ... 264 V)	24 V DC $\pm 3\%$	2.5 A	72 x 90 x 55	▶	6EP1 332-1SH42			1	1 unit	0.250
4 A	100 ... 240 V AC (85 ... 264 V)	24 V DC $\pm 3\%$	4 A	90 x 90 x 55	▶	6EP1 332-1SH51			1	1 unit	0.340



Enclosure
54 mm wide



Enclosure
72 mm wide



Enclosure
90 mm wide

For other units and versions, see Catalog KT 10.1.

6EP Stabilized Power Supplies

SITOP 6EP Power Supplies

SITOP smart,
single-phase and three-phase

Overview

Small in size, big in performance. The new SITOP smart series of power supplies needs a third less room over the width of a standard mounting rail than its predecessor, while its overload behavior has been improved to short-time max. 150 % of the output current. Numerous certifications make the power supplies suitable for universal use worldwide.

- Choice of power levels from 60 W to 240 W for universal use
- Compact design with a width of only 32.5 mm, 50 mm and 70 mm for a small mounting surface
- Easy standard rail mounting
- Smooth switching on of loads with high inrush current such as DC/DC converters and motors

- More performance thanks to permanent 120 % of rated power up to an ambient temperature of 45 °C
- Large setting range for output voltage up to 28 V, 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 add-on modules: redundancy module, SITOP select diagnostics module, DC UPS and battery modules

Selection and ordering data

	Version	Input Rated voltage U_e Rated	Output Rated voltage U_a Rated	Rated current I_a Rated	Dimensions (W x H x D) mm	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
Power supplies 24 V												
Limitation of input current harmonics according to EN 61000-3-2												
 6EP1 332-2BA10	2.5 A	120/230 V AC (85 ... 132 V/ 170 ... 264 V)	24 V DC ±3 %	2 A	32.5 x 125 x 125	▶	6EP1 332-2BA10		1	1 unit	400	0.320
Limitation of input current harmonics according to EN 61000-3-2												
 6EP1 333-2.A10	5 A	120/230 V AC (85 ... 132 V/ 170 ... 264 V)	24 V DC ±3 %	5 A	50 x 125 x 125	▶	6EP1 333-2BA01		1	1 unit	400	0.500
	5 A	120/230 V AC (85 ... 132 V/ 170 ... 264 V)	24 V DC ±3 %	5 A	50 x 125 x 125	▶	6EP1 333-2AA01		1	1 unit	400	0.500
Limitation of input current harmonics according to EN 61000-3-2												
 6EP1 334-2.A01	10 A	120/230 V AC (85 ... 132 V/ 170 ... 264 V)	24 V DC ±3 %	10 A	70 x 125 x 125	▶	6EP1 334-2BA01		1	1 unit	400	0.800
	10 A	120/230 V AC (85 ... 132 V/ 170 ... 264 V)	24 V DC ±3 %	10 A	70 x 125 x 125	▶	6EP1 334-2AA01		1	1 unit	400	0.750

The following SITOP versions provide standard solutions for small power requirements and applications with unusual voltages. Instead of the usual 24 V, the three-phase 48-V power supply double the voltage for powerful loads.

	Version	Input Rated voltage U_e Rated	Output Rated voltage U_a Rated	Rated current I_a Rated	Dimensions (W x H x D) mm	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
Power supplies 24 V												
 6EP1 731-2BA00, 6EP1 331-2BA10	0.375 A	48 ... 220 V DC (30 ... 264 V DC, 30 ... 187 V AC)	24 V DC ±3 %	0.375 A	22.5 x 80 x 91	▶	6EP1 731-2BA00		1	1 unit	400	0.140
	0.5 A	120 ... 230 V AC (93 ... 264 V AC)	24 V DC ±3 %	0.5 A	22.5 x 80 x 91	▶	6EP1 331-2BA10		1	1 unit	400	0.110
Power supplies 3 V ... 52 V												
 6EP1 353-2BA00	max. 10 A or 120 W	120/230 V AC (85 ... 132 V/ 170 ... 264 V)	3 ... 52 V DC ±1 %	10 A	75 x 125 x 125	▶	6EP1 353-2BA00		1	1 unit	400	0.900
Power supplies 48 V												
 6EP1 456-2BA00	10 A	3 AC 400 ... 500 V (360 ... 550 V)	48 V DC ±3 %	10 A	70 x 125 x 125	A	6EP1 456-2BA00		1	1 unit	400	1.200

For other units and versions, see Catalog KT 10.1.

* You can order this quantity or a multiple thereof.

6EP Stabilized Power Supplies

SITOP 6EP Power Supplies

SITOP modular basic units 24 V,
single-phase, two-phase and three-phase

Overview

Compact basic units for single-phase, two-phase or three-phase connections and output currents from 5 A to 40 A form the basis of the stabilized 24 V supply. Depending on the requirements, SITOP add-on modules can be connected in addition.

The compact design of the primary switched power supply requires only a small mounting surface. The rugged metal enclosure is also suitable for the harshest industrial applications. The standard mounting rail fixture is made likewise of metal. Mounting is therefore fast, easy and vibration-proof. Reliability and quality are further characteristics of the electronic design.

The large input voltage range and the international certifications enable operation in virtually any network worldwide. The single-phase basic units 5 A and 10 A have an ultra-wide input range up to 550 V, which even enables connection to 2 phases.

- Standard rail mounting
- 5 A and 10 A units with single-phase and two-phase connection (L1 and N, L1 and L2)
- Degree of noise suppression Class B
- Limitation of input current harmonics according to EN 61 000-3-2; (except 6EP1 337-3BA00)
- Adjustable output voltage up to 28.8 V
- 3-way status LED
- Selectable short-circuit response, constant current or latching disconnection
- Changeover for parallel operation
- 20 A and 40 A units with single-phase and three-phase connection and new 20 A device in compact design (70 mm wide)
- Can be combined with SITOP add-on modules: signaling module, redundancy module, SITOP select diagnostics module, buffer module, DC UPS and battery modules

Selection and ordering data

	Version	Input Rated voltage U_e Rated	Output Rated voltage U_a Rated	Rated cur- rent I_a Rated	Dimensions (W x H x D) mm	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
Power supplies 24 V												
 6EP1 331-3BA00	5 A	120/230 V ... 500 V AC (85 V ... 264 V/ 176 V ... 550 V)	24 V DC ±3 %	5 A	70 x 125 x 125	▶	6EP1 333-3BA00		1	1 unit	400	1.200
 6EP1 334-3BA00	10 A	120/230 V ... 500 V AC (85 V ... 264 V/ 176 V ... 550 V)	24 V DC ±3 %	10 A	90 x 125 x 125	▶	6EP1 334-3BA00		1	1 unit	400	1.400
 6EP1 336-3BA00	20 A	120/230 V AC (85 V ... 132 V/ 176 V ... 264 V)	24 V DC ±3 %	20 A	160 x 125 x 125	▶	6EP1 336-3BA00		1	1 unit	400	2.200
 6EP1 436-3BA01	20 A	3 AC 400 V ... 500 V (320 V ... 550 V)	24 V DC ±3 %	20 A	160 x 125 x 125	▶	6EP1 436-3BA00		1	1 unit	400	2.000
 6EP1 437-3BA00	20 A	3 AC 400 V ... 500 V (360 V ... 550 V)	24 V DC ±3 %	20 A	70 x 125 x 125	A	6EP1 436-3BA01		1	1 unit	400	1.200
	40 A	120/230 V AC (85 V ... 132 V/ 176 V ... 264 V)	24 V DC ±3 %	40 A	240 x 125 x 125	▶	6EP1 337-3BA00		1	1 unit	400	2.900
	40 A	3 AC 400 ... 500 V (320 ... 550 V)	24 V DC ±3 %	40 A	240 x 125 x 125	▶	6EP1 437-3BA00		1	1 unit	400	3.200

For other units and versions, see Catalog KT 10.1.

6EP Stabilized Power Supplies

SITOP 6EP Power Supplies

Add-on modules

Overview

The SITOP add-on modules offer further functions:

The **signaling module** can be snapped onto the side of the basic unit; with floating signaling contacts "Output voltage OK" and "Ready"; with signal input for remote ON/OFF switching of the basic unit.

The **redundancy module** uses diodes to disconnect the basic units from one another so that a redundant 24 V power supply can be constructed.

The **SITOP select diagnostics module** is used in combination with 24 V power supplies for distributing the load current among up to 4 current branches per module and for monitoring the in-

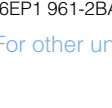
dividual partial currents. Overloads or short-circuits in individual branches are selectively switched off and the remaining load current paths remain unaffected. Rated current is adjustable from 2 A to 10 A, LED, group alarm contact, standard rail mounting.

The **buffer module** bridges mains interruptions in the range of milliseconds. 100 ms at 40 A, 800 ms at 5 A, up to max. 3 s at low load current; standard rail mounting in any part of the control cabinet.

Power supplies and add-on modules with

- ambient temperature 0 °C to +60 °C.

Selection and ordering data

	Input Rated voltage U_e Rated	Output Rated voltage U_a Rated	Rated current I_a Rated	Dimensions (W x H x D) mm	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
	Signaling modules										
	--	--	--	25 x 125 x 125	▶	6EP1 961-3BA10		1	1 unit	400	0.150
	Redundancy modules										
	24 V DC (24 V ... 28.8 V)	U_e – approx. 0.5 V	20 A	70 x 125 x 125	▶	6EP1 961-3BA20		1	1 unit	400	1.000
	SITOP select diagnostics modules, 4-fold										
	24 V DC	23.5 V DC	2 A ... 10 A	72 x 90 x 90	▶	6EP1 961-2BA00		1	1 unit	400	0.400
	Buffer modules										
	24 V DC (24 V ... 28.8 V)	U_e – approx. 1 V	40 A	70 x 125 x 125	▶	6EP1 961-3BA00		1	1 unit	400	1.200

For other units and versions, see Catalog KT 10.1.

6EP Stabilized Power Supplies

SITOP 6EP Power Supplies

Uninterruptible power supplies 24 V

Overview

Mains failures of a longer duration can be buffered without any interruption at all by combining a DC UPS module with at least one battery module and a SITOP power supply.

Protection and monitoring functions ensure a high level of availability, and the integrated battery management guarantees a long endurance of the maintenance-free battery modules.

DC UPS modules with

- Interfaces for communication in PC-automated installations
- Ambient temperature 0 °C to +60 °C (natural convection)

Battery modules

- 2.5 Ah: ambient temperature -40 °C to +60 °C
- 3.2 Ah to 12 Ah: ambient temperature +5 °C to +40 °C

Selection and ordering data

	Version	Input Rated voltage U_e Rated	Output Rated voltage U_a Rated	Rated current I_a Rated	Dimensions (W x H x D)	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	mm											kg
	DC UPS modules											
	6 A	24 V DC (22 ... 29 V)	24 V DC (mains operation: 21.5 V ... 28.5 V, battery operation: 27.0 V ... 18.5 V)	6 A	50 x 125 x 125	▶	6EP1 931-2DC21		1	1 unit	400	0.400
	With serial interface				50 x 125 x 125	▶	6EP1 931-2DC31		1	1 unit	400	0.450
	With USB interface				50 x 125 x 125	▶	6EP1 931-2DC42		1	1 unit	400	0.450
6EP1 931-2.C..	15 A	24 V DC (22 ... 29 V)	24 V DC (mains operation: 21.5 V ... 28.5 V, battery operation: 27.0 V ... 18.5 V)	15 A	50 x 125 x 125	▶	6EP1 931-2EC21		1	1 unit	400	0.400
	With serial interface				50 x 125 x 125	▶	6EP1 931-2EC31		1	1 unit	400	0.450
	With USB interface				50 x 125 x 125	▶	6EP1 931-2EC42		1	1 unit	400	0.450
	40 A	24 V DC (22 ... 29 V)	24 V DC (mains operation: 21.5 V ... 28.5 V, battery operation: 27.0 V ... 18.5 V)	40 A	102 x 125 x 125	▶	6EP1 931-2FC21		1	1 unit	400	1.100
	With USB interface				102 x 125 x 125	▶	6EP1 931-2FC42		1	1 unit	400	1.100
6EP1 931-2FC..												

6EP1 931-2-C..

6EP1 931-2FC..

6EP Stabilized Power Supplies

SITOP 6EP Power Supplies

Uninterruptible power supplies 24 V

	Version	Charging voltage At +25 °C U_{Charge}	Output Rated voltage $U_{\text{a Rated}}$	Dimensions (W x H x D) mm	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
Battery modules											
<i>For DC UPS modules 6 A and 15 A</i>											
 6EP1 935-6MC01	1.2 Ah	27.0 V DC	24 V DC (end of charge voltage: 27.0 V, exhaustive discharge protection: 18.5 V)	96 x 106 x 108	▶	6EP1 935-6MC01		1	1 unit	400	1.650
 6EP1 935-6MD31	2.5 Ah/ high temperature rechargeable battery	27.7 V DC	24 V DC (end of charge voltage: 27.7 V, exhaustive discharge protection: 18.5 V)	265 x 151 x 91	▶	6EP1 935-6MD31		1	1 unit	400	3.800
 6EP1 935-6MD11	3.2 Ah	27.0 V DC	24 V DC (end of charge voltage: 27.0 V, exhaustive discharge protection: 18.5 V)	190 x 151 x 82	▶	6EP1 935-6MD11		1	1 unit	400	3.200
<i>For DC UPS modules 6 A to 40 A</i>											
 6EP1 935-6ME21	7 Ah	27.0 V DC	24 V DC (end of charge voltage: 27.0 V, exhaustive discharge protection: 18.5 V)	186 x 168 x 121	▶	6EP1 935-6ME21		1	1 unit	400	6.000
 6EP1 935-6MF01	12 Ah	27.0 V DC	24 V DC (end of charge voltage: 27.0 V, exhaustive discharge protection: 18.5 V)	253 x 168 x 121	▶	6EP1 935-6MF01		1	1 unit	400	9.000

For other units and versions, see Catalog KT 10.1.