

LOGO! logic module

LOGO!Power

LOGO!Power

Application



The power supplies of the LOGO!Power range are primary switched-mode devices that are optimally matched to the LOGO! logic modules in their functionality and design.

Depending on the power rating required, the LOGO!Power units are available in two sizes and the new generation is now even more compact despite increased functionality. The width of the small version is only 54 mm instead of 72 mm and the large size has shrunk from 126 mm to 72 mm. An extremely compact 4 A power supply with a width of only 90 mm now supplements the

24 V range. A LED indicates whether the output voltage is o.k., and in the event of an overload or short-circuit, the primary switched-mode regulators supply a constant current, that is, without restart attempts.

LOGO!Power naturally supplies the small LOGO! control modules. But these power supplies can also be used elsewhere. As well as being system power supplies, the LOGO!Power modules are also suitable for supplying other loads in the low-end performance range. With the wide-range input 85 V to 264 V AC and radio interference level B, they can be used universally in the most diverse application areas in the low-end performance range. Because the benefits of the primary switched-mode regulators convince all along the line.

For example:

- Improved protection of connected loads through the regulated output voltage
- Low power losses in the control cabinet thanks to high efficiency
- Compact design and low weight.

And LOGO!Power is also predestined for networking devices in standard low-voltage distribution boards

- Can be installed on 35-mm mounting rail
- Low installation depth and stepped profile of the design.

The power supplies naturally comply with the relevant European and American regulations.

Technical specifications LOGO!Power 12 V

	12 V/1.9 A	12 V/4.5 A
Order No.	6EP1 321-1SH02	6EP1 322-1SH02
Input	Single-phase AC	Single-phase AC
Rated voltage $V_{in \text{ rated}}$	100-240 V AC wide-range input	100-240 V AC wide-range input
Voltage range	85 ... 264 V AC	85 ... 264 V AC
Overvoltage resistance	$2.3 \times V_{in \text{ rated}}/1.3 \text{ ms}$	$2.3 \times V_{in \text{ rated}}/1.3 \text{ ms}$
Mains buffering at $I_{out \text{ rated}}$	> 40 ms at $V_{in} = 187 \text{ V}$	> 40 ms at $V_{in} = 187 \text{ V}$
Rated line frequency, rated line-frequency range	50/60 Hz; 47 ... 63 Hz	50/60 Hz; 47 ... 63 Hz
Rated current $I_{in \text{ rated}}$	0.53 ... 0.3 A	1.13 ... 0.61 A
Switch-on current limit (+25 °C)	< 15 A	< 30 A
$I^2 t$	< 0.8 A ² s	< 3 A ² s
Integrated line-side fuse	Internal	Internal
Recommended circuit breaker (IEC 898) in mains supply line	From 16 A Characteristic B or from 10 A Characteristic C	From 16 A Characteristic B or from 10 A Characteristic C
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Rated voltage $V_{out \text{ rated}}$	12 V DC	12 V DC
Total tolerance, static	±3 %	±3 %
• Static mains compensation	Approx. 0.2 %	Approx. 0.1 %
• Static load smoothing	Approx. 1.5 %	Approx. 1.5 %
Residual ripple	< 200 m V_{pp} (typ. 10 m V_{pp})	< 200 m V_{pp} (typ. 10 m V_{pp})
Spikes (bandwidth approx. 20 MHz)	< 300 m V_{pp} (typ. 30 m V_{pp})	< 300 m V_{pp} (typ. 40 m V_{pp})
Adjustment range	10.5 ... 16.1 V	10.5 ... 16.1 V
Status display	Green LED for output voltage OK	Green LED for output voltage OK
Response on activation/deactivation	No overshoot of V_{out} (soft start)	No overshoot of V_{out} (soft start)
Starting delay/voltage rise	< 0.5 s/typ. 15 ms	< 0.5 s/typ. 10 ms

Technical specifications LOGO!Power 12 V (continued)

	12 V/1.9 A	12 V/4.5 A
Order No.	6EP1 321-1SH02	6EP1 322-1SH02
Rated current I_{outrated}	1.9 A	4.5 A
Current range to +55 °C	0 ... 1.9 A	0 ... 4.5 A
Parallel switching for enhanced performance	Yes	Yes
Efficiency		
Efficiency at $V_{\text{outrated}}, I_{\text{out rated}}$	Typ. 80 %	Typ. 85 %
Power loss at $V_{\text{outrated}}, I_{\text{out rated}}$	Typ. 5 W	Typ. 10 W
Closed-loop control		
Dyn. mains compensation ($V_{\text{out rated}} \pm 15 \%$)	< 0.2 % V_{out}	< 0.2 % V_{out}
Dyn. load smoothing ($I_{\text{out}}: 10/90/10 \%$)	Typ. $\pm 3 \%$ V_{out}	Typ. $\pm 4.2 \%$ V_{out}
Load step settling time		
• 10 to 90 %	Typ. 20 ms	Typ. 20 ms
• 90 to 10 %	Typ. 20 ms	Typ. 20 ms
Protection and monitoring		
Current limit	Typ. 2.5 A	Typ. 5.9 A
Short-circuit protection	Constant current characteristic	Constant current characteristic
Sustained short-circuit current rms value	< 4 A	< 8 A
Overload/short-circuit indicator	-	-
Safety		
Primary/secondary electrical isolation	Yes, safety extra-low output voltage V_{out} to EN 60950 and EN 50178	Yes, safety extra-low output voltage V_{out} to EN 60950 and EN 50178
Protection class	Class II (without PE conductor)	Class II (without PE conductor)
CE marking	Yes	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 14), File E197259; cURus-Recognized (UL 60950, CSA C22.2 No. 60950), File E151273	cULus-Listed (UL 508, CSA C22.2 No. 14), File E197259; cURus-Recognized (UL 60950, CSA C22.2 No. 60950), File E151273
FM approval	Class I Div. 2, Group A, B, C, D T4	Class I Div. 2, Group A, B, C, D T4
Marine approval	GL, ABS	GL, ABS
Degree of protection (EN 60529)	IP20	IP20
EMC		
Emitted interference	EN 55022 Class B	EN 55022 Class B
Supply-harmonics limitation	Not applicable	Not applicable
Noise immunity	EN 61000-6-2	EN 61000-6-2
Operating data		
Ambient temperature range	-20 ... +55 °C with natural convection	-20 ... +55 °C with natural convection
Transport/storage temperature range	-40 ... +70 °C	-40 ... +70 °C
Humidity class	Climatic class 3K3 to EN 60721, no condensation	Climatic class 3K3 to EN 60721, no condensation
Mechanics		
Connections		
• Supply input L1, N	One screw-type terminal each for 0.5 ... 2.5 mm ² single-core/finely stranded	One screw-type terminal each for 0.5 ... 2.5 mm ² single-core/finely stranded
• Output +		
• Output -	2 screw-type terminals each for 0.5 ... 2.5 mm ²	2 screw-type terminals each for 0.5 ... 2.5 mm ²
Dimensions (W x H x D) in mm	54 x 90 x 55	72 x 90 x 55
Weight, approx.	Approx. 0.17 kg	Approx. 0.25 kg
Installation	Snaps onto DIN rail EN 60715 35x7,5/15	Snaps onto DIN rail EN 60715 35x7,5/15

LOGO! logic module

LOGO!Power

LOGO!Power

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Technical specifications LOGO!Power 24 V

	24 V/1.3 A	24 V/2.5 A	24 V/4 A
Order No.	6EP1 331-1SH02	6EP1 332-1SH42	6EP1 332-1SH51
Input	Single-phase AC	Single-phase AC	Single-phase AC
Rated voltage $V_{in rated}$	100-240 V AC wide-range input	100-240 V AC wide-range input	100-240 V AC wide-range input
Voltage range	85 ... 264 V AC	85 ... 264 V AC	85 V to 264 V AC
Overvoltage resistance	$2.3 \times V_{in rated} / 1.3 \text{ ms}$	$2.3 \times V_{in rated} / 1.3 \text{ ms}$	$2.3 \times V_{in rated} / 1.3 \text{ ms}$
Mains buffering at $I_{out rated}$	> 40 ms at $V_{in} = 187 \text{ V}$	> 40 ms at $V_{in} = 187 \text{ V}$	> 40 ms at $V_{in} = 187 \text{ V}$
Rated line frequency, rated line-frequency range	50/60 Hz; 47 ... 63 Hz	50/60 Hz; 47 ... 63 Hz	50/60 Hz; 47 ... 63 Hz
Rated current $I_{in rated}$	0.7-0.35 A	1.22-0.66 A	1.95-0.97 A
Switch-on current limit (+25 °C)	< 15 A	< 30 A	< 30 A
$I^2 t$	< 0.8 A ² s	< 3 A ² s	< 2.5 A ² s
Built-in line-side fuse	Internal	Internal	Internal
Recommended miniature circuit breaker (IEC 898) in the mains power input	From 16 A, Characteristic B or from 10 A, Characteristic C	From 16 A, Characteristic B or from 10 A, Characteristic C	From 16 A, Characteristic B or from 10 A, Characteristic C
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Rated voltage $V_{out rated}$	24 V DC	24 V DC	24 V DC
Total tolerance, static	±3 %	±3 %	±3 %
• Static mains compensation	Approx. 0.1 %	Approx. 0.1 %	Approx. 0.1 %
• Static load smoothing	Approx. 1.5 %	Approx. 1.5 %	Approx. 1.5 %
Residual ripple	< 200 mV _{pp} (typ. 10 mV _{pp})	< 200 mV _{pp} (typ. 10 mV _{pp})	< 200 mV _{pp} (typ. 10 mV _{pp})
Spikes (bandwidth approx. 20 MHz)	< 300 mV _{pp} (typ. 20 mV _{pp})	< 300 mV _{pp} (typ. 40 mV _{pp})	< 300 mV _{pp} (typ. 80 mV _{pp})
Adjustment range	22.2 V to 26.4 V	22.2 V to 26.4 V	22.2 V to 26.4 V
Status display	Green LED for output voltage OK	Green LED for output voltage OK	Green LED for output voltage OK
Response on activation/deactivation	No overshoot of V_{out} (soft start)	No overshoot of V_{out} (soft start)	No overshoot of V_{out} (soft start)
Startup delay/voltage rise	< 0.5 s/typ. 15 ms	< 0.5 s/typ. 10 ms	< 0.5 s/typ. 35 ms
Rated current $I_{out rated}$	1.3 A	2.5 A	4 A
Current range to +55 °C	0 ... 1.3 A	0 ... 2.5 A	0 ... 4 A
Parallel switching for enhanced performance	Yes	Yes	Yes
Efficiency			
Efficiency at $V_{out rated}$, $I_{out rated}$	Typ. 82 %	Typ. 87 %	Typ. 89 %
Power loss at $V_{out rated}$, $I_{out rated}$	Typ. 7 W	Typ. 9 W	Typ. 12 W
Closed-loop control			
Dynamic line smoothing ($V_{in rated} \pm 15 \%$)	< 0.2 % V_{out}	< 0.2 % V_{out}	< 0.2 % V_{out}
Dynamic load smoothing (I_{out} : 10/90/10 %)	±1.5 % V_{out}	±1.5 % V_{out}	±1.5 % V_{out}
Load-step settling time			
• 10 at 90 %	Typ. 20 ms	Typ. 20 ms	Typ. 20 ms
• 90 at 10 %	Typ. 20 ms	Typ. 20 ms	Typ. 20 ms
Protection and monitoring			
Current limit	Typically 2 A	Typically 3.4 A	Typically 4.7 A
Short-circuit protection	Constant-current characteristic	Constant-current characteristic	Constant-current characteristic
Sustained short-circuit current rms value	< 4 A	< 8 A	< 10 A
Overload/short-circuit indicator	-	-	-

Technical specifications LOGO!Power 24 V (continued)

	24 V/1.3 A	24 V/2.5 A	24 V/4 A
Power supply, type	6EP1 331-1SH02	6EP1 332-1SH42	6EP1 332-1SH51
Input	Single-phase AC	Single-phase AC	Single-phase AC
Safety			
Primary/secondary electrical isolation	Yes, safety extra-low output voltage V_{out} to EN 60950 and EN 50178	Yes, safety extra-low output voltage V_{out} to EN 60950 and EN 50178	Yes, safety extra-low output voltage V_{out} to EN 60950 and EN 50178
Protection class	Class II (without protective conductor)	Class II (without protective conductor)	Class II (without protective conductor)
German Technical Inspectorate approval	Yes; CB scheme	Yes; CB scheme	Yes; CB scheme
CE marking	Yes	Yes	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 14), File E197259; cURus-Recognized (UL 60950, CSA C22.2 No. 60950), File E151273	cULus-Listed (UL 508, CSA C22.2 No. 14), File E197259; cURus-Recognized (UL 60950, CSA C22.2 No. 60950), File E151273	cULus-Listed (UL 508, CSA C22.2 No. 14), File E197259; cURus-Recognized (UL 60950, CSA C22.2 No. 60950), File E151273
FM approval	Class I Div. 2, Group A, B, C, D T4	Class I Div. 2, Group A, B, C, D T4	Class I Div. 2, Group A, B, C, D T4
Marine approval	GL, ABS	GL, ABS	GL, ABS
Degree of protection (EN 60529)	IP20	IP20	IP20
EMC			
Emitted interference	EN 55022 Class B	EN 55022 Class B	EN 55022 Class B
Supply-harmonics limitation	Not applicable	Not applicable	EN 61000-3-2
Noise immunity	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2
Operating data			
Ambient temperature range	-20 ... +55 °C with natural convection	-20 ... +55 °C with natural convection	-20 ... +55 °C with natural convection
Transport/storage temperature range	-40 ... +70 °C	-40 ... +70 °C	-40 ... +70 °C
Humidity class	Climate class 3K3 to EN 60721, no condensation	Climate class 3K3 to EN 60721, no condensation	Climate class 3K3 to EN 60721, no condensation
Mechanics			
Supply input connections L1, N	Solid/finely-stranded per screw-type terminal for 0.5 mm ... 2.5 mm ²	Solid/finely-stranded per screw-type terminal for 0.5 mm ... 2.5 mm ²	Solid/finely-stranded per screw-type terminal for 0.5 mm ... 2.5 mm ²
Connections			
• Output +	Per 2 screw-type terminals for 0.5 mm ... 2.5 mm ²	Per 2 screw-type terminals for 0.5 mm ... 2.5 mm ²	Per 2 screw-type terminals for 0.5 mm ... 2.5 mm ²
• Output -			
Dimensions (W x H x D) in mm	54 x 90 x 55	72 x 90 x 55	90 x 90 x 55
Weight, approx	Approx. 0.17 kg	Approx. 0.25 kg	Approx. 0.34 kg
Installation	Snaps onto DIN rail 60715 35x7,5/15	Snaps onto DIN rail EN 60715 35x7,5/15	Snaps onto DIN rail EN 60715 35x7,5/15

Ordering Data

	Order No.		Order No.
LOGO!Power 12 V 1.9 A	6EP1 321-1SH02	LOGO!Power 24 V 1.3 A	6EP1 331-1SH02
Input 100 - 240 V AC Output 12 V DC, 1.9 A		Input 100 - 240 V AC Output 24 V DC, 1.3 A	
LOGO!Power 12 V 4.5 A	6EP1 322-1SH02	LOGO!Power 24 V 2.5 A	6EP1 332-1SH42
Input 100 - 240 V AC Output 12 V DC, 4.5 A		Input 100 - 240 V AC Output 24 V DC, 2.5 A	
		LOGO!Power 24 V 4 A	6EP1 332-1SH51
		Input 100 - 240 V AC Output 24 V DC, 4 A	