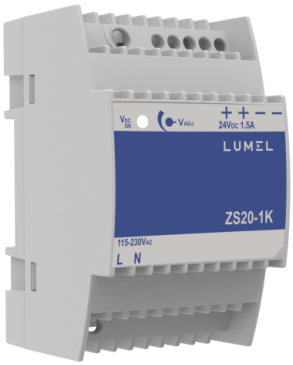
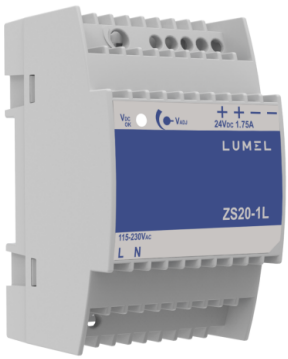
LUMEL
EVERYTHING COUNTS

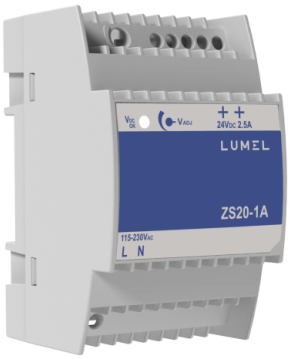
ZS20-1A, ZS20-1B, ZS20-1C, ZS20-1K, ZS20-1L, ZS20-1P

POWER SUPPLIES

- Universal AC input range 90-264 V
- Universal DC input range 124-370 V
- High efficiency up to 87%
- Boost power capability 150%
- Hiccup mode
- Build-in "Power good" relay (ZS20-1B, ZS20-1C only)
- Isolation class II
- Suitable for indoor use
- DIN rail and Wall mounting







CE
ROHS

Power Supplies: One Solution, Many Application

Power Supplies Selection Chart

	Model	Size	Description
	ZS20-1P	18x90x62 mm	I/P.:- Single-Phase: 115-230 VAC, O/P:- 24VDC / 0.63A, 15W
	ZS20-1K	54x90x62 mm	I/P.:- Single-Phase: 115-230 VAC, O/P:- 24VDC / 1.5A, 36W
	ZS20-1L	54x90x62 mm	I/P.:- Single-Phase: 115-230 VAC, O/P:- 24VDC / 1.75A, 45W
	ZS20-1A	54x90x62 mm	I/P:- Single-Phase: 115-230 VAC, O/P:- 24VDC / 2.50A, 60W
	ZS20-1B	55x110x105 mm	I/P.:- Single-Phase: 115-230 VAC, O/P:- 24VDC / 5.0A, 120W
	ZS20-1C	55x110x105 mm	I/P.:- Single-Phase: 115-230 VAC, O/P:- 24VDC / 7.5A, 180W

More Flexibility In Input Voltage Wide Range

The power supplies ZS20-1B and ZS20-1C are suitable to wide range input voltage. With a single type it is therefore possible to meet almost all application and consequently improve design and inventory management.

More Power: "Power Boost"

As an example, ZS20-1C is a 24V dc Power supply that features acontinuous duty current of 5A at 60℃ and a Power Boost of 150%, equivalent to 7.5A for at least 3min.
This features allows the use of a smaller size instrument to power demanding loads such as motors, solenoid valves, lamps and other loads with transient overload behavior which would otherwise required an oversize power supply.

More Power At Changing Rated Temperature

As an example, ZS20-1C can be the right solution for two design cases in different temperature conditions:

1) 7.5A, 24V dc in continuous duty at 40℃.
2) 5A, 24V dc in continuous duty at 60℃ + Power Boost 7.5A for at least 3 min.

Three Modes for Output Protection ON SITE

Hiccup Mode Automatic Restart

This is the default factory setting of all Zs20 units. In case of short-circuiting or overloading, the output current is interrupted. The device tries again to re-establish output voltage and normal condition about every 2 second till the problem is cleared.

Manual Reset Manual Restart By Operator

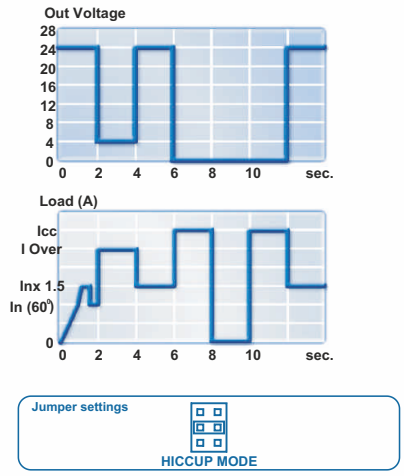
In case of short-circuit or overload, the output current is interrupted. In order to restart the output it is necessary to switch-off the input circuit for about 1 minute.
This protection mode is particularly suggested in application where safety procedures require that reset be carried out only be an authorized person.

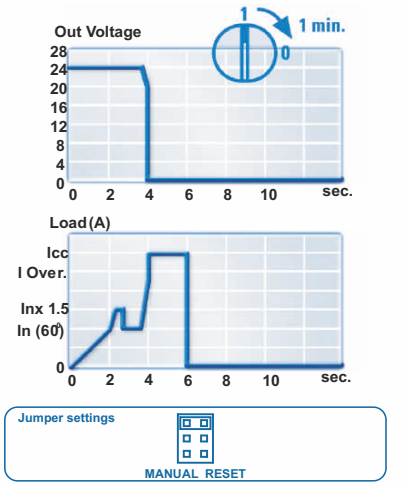
Continuous Output Mode

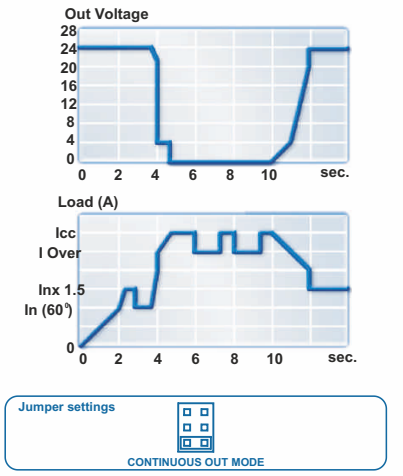
In case of short –circuit or overload, the output current is kept at high values with near zero voltage. In case of short circuit the current can reach up to 3 times the rated current at 60℃. This protection mode is used to meet the requirements of demanding loads such as motors, solenoid valves, lamps, PLC with highly capacitive input circuits and other loads with marked transient overload behavior.

LUMEL
EVERYTHING COUNTS

Power Supplies: One Solution, Many Application

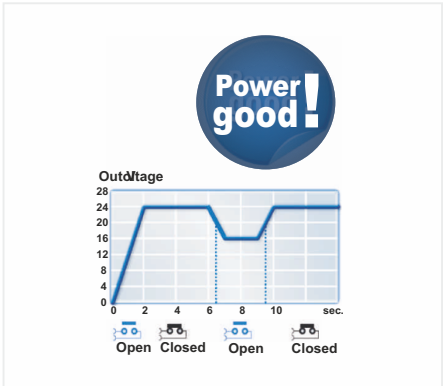






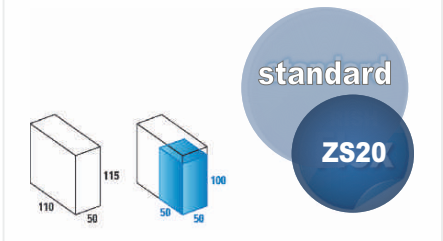
"Power Good" Relay For Monitoring The Output Voltage Level

Output voltage is continuously monitored. The units ZS20-1C and ZSC20-1B are equipped with Power Good relay. The NO contact triggers any time the output voltage level goes below 20VDC. This feature is particularly useful in redundant applications.



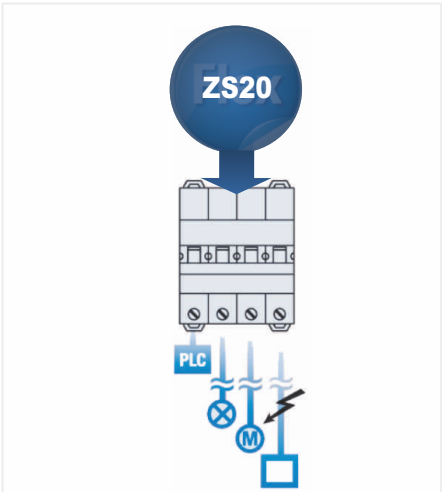
Reduced Dimensions & Snap-on DIN Rail Bracket

The higher performances obtained with the ZS20 Line, allow almost half dimensions as conventional technology and higher performances. An example is ZS20-1A 60W with maximum current till 6A. In permanent duty at 40°C it can deliver 3A at 24V DC. All ZS20 units feature the new DIN rail mounting bracket, easy to use and safe against heavy loading and vibrations.



Output Circuits Protected By Magneto-thermic Circuit Breakers

Standard output circuit breakers can be triggered quickly and reliably with ZS20 technology, which allows three times the nominal current at 60°C. Defective current paths are selectively disconnected, the defect is limited and the important parts of the system remain in operation. This together with the 50% overload capacity in compliance with EN60204-1 allows to safely manage any overload and short circuit condition.



Applications In Compliance With The Standard EN 60204-

ZS20 units comply with the standard requirement that an overload of 50% over the nominal current be withstand by the power supply for at least 1 hour to allow the tripping of magneto-thermic switches on the output. These features allows the implementation of "Control of commands and Emergency stops" by means of industrial PC's, PLC, remote I/O, etc. required by the standard. LUMEL supplies a table for the sizing and length of connecting cable and the choice of proper magneto thermic switches.

A New Way To Make And Use Power Supplies

Yet another strong proposition by LUMEL for power supplies and power continuity specialists. LUMEL aim is to provide designers and users with a complete range of solutions in power supplies and power continuity products, focusing on both standard special application. Our target is to deliver problem free solutions so that you can safely dedicate your attention to the reset of the automation project. The ZS20 tehnology is the result of these corner stones of our corporate identity. Designed taking into account the pressure to optimal use of space, ZS20 units are very compact in size. The wide input voltage range allows to have just one article for many applications and minimize stock.

ZS20 is based on semi-resonant switching circuit which allows efficiency up to 87% and a very dynamic and robust power supply to a wide range of loads such as PLC, sensors, motors, resistive/inductive loads etc. The ZS20 range conforms with the highest quality standards and guarantees a reliable and durable operation with a MTBF upto 5,00,000 hours and a 3 year warranty.

POWER SUPPLIES

LUMEL
EVERYTHING COUNTS

Section	Power Supplies			
Data	Model	ZS20-1P	ZS20-1K	ZS20-1L
	Input Type	1-Phase	1-Phase	1-Phase
	Rating	24V / 0.63A	24V / 1.5A	24V / 1.75A
Input Data	Input Voltage	115 / 230 V AC	115 / 230 V AC	115 / 230 V AC
	Input Voltage Range AC	85 ... 264 VAC	85 ... 264 VAC	85 ... 264 VAC
	Input Voltage Range DC	120 ... 370 VDC	120 ... 370 VDC	120 ... 370 VDC
	Turn on delay after applying mains Voltage	1 second	1 second	1 second
	Frequency	45 ... 65 Hz	45 ... 65 Hz	45 ... 65 Hz
	Line Regulation	< ± 0.5 %	< ± 0.5 %	< ± 0.5 %
	Load Regulation	< ±0.5 % (change in load, static 10 % ... 90 %	< ±0.5 % (change in load, static 10 % ... 90 %	< ±0.5 % (change in load, static 10 % ... 90 %
	Input Current	0.3 A (230 VAC), 0.4 A (115 VAC)	0.48 A (230 VAC), 0.88 A (115 VAC)	0.55 A (230 VAC), 0.95 A (115 VAC)
	Inrush Current	≤ 36 A Typically	≤ 36 A Typically	≤ 36 A Typically
	Internal Fuse	T2 A	T4 A	T4 A
	External Fuse	10 A (curve B)	10 A (curve B)	10 A (curve B)
Output Data	Output Voltage Range	24 VDC +/-3%	24 VDC +/-3%	24 VDC +/-3%
	Adjustment Range (Vadj)	—	22 - 27 Vdc	22-27 VDC
	Start up with Capacitive Load	—	—	—
	Output Current (@ 40°C)	0.63A @ 40°C	1.5A @ 40°C	1.75A @ 40°C
	Output Current (@ 50°C)	0.63A @ 50°C, 0.48A @ 60°C	1.5A @ 50°C, 1.125A @ 60°C	1.75A @ 50°C, 1.41A @ 60°C
	Power Boost (@ 60°C) for 3 minutes	0.63 A	1.5 A	1.75 A
	Power	15W	36W	45W
	Hold Up Time	≥ 50 msec (230 VAC)	≥ 50 msec (230 VAC)	≥ 30 msec (230 VAC)
	Parallel Connection	No	No	No
	Derating	from 50°C 2.5% /°C	from 50 °C 2.5% / °C	from 50°C 2.5% /°C
	Efficiency	> 87 % (for 230 VAC and nominal values)	> 87 % (for 230 VAC and nominal values)	> 87 % (for 230 VAC and nominal values)
	Dissipation Power Load Max (W)	2.24 W	4.4 W	2.24 W
	Output Over Voltage Protection	35 VDC	35 VDC	35 VDC
	Protection	short circuit, overload, over voltage, over temperature	short circuit, overload, over voltage, over temperature	short circuit, overload, over voltage, over temperature
	Protection Modes	Hiccup	Hiccup	Hiccup
	Ripple and Noise	≤ 150 mVpp (with nominal values)	≤ 150 mVpp (with nominal values)	≤ 150 mVpp (with nominal values)
	Short Circuit Current (Permanent)	Not Available	Not Available	Not Available
	Resistance to reverse feed	max 35 VDC	max 35 VDC	max 35 VDC
General Data	Relay Power Good	Not Available	Not Available	Not Available
	RoHS Compliant	Yes	Yes	Yes
	Isolation Voltage (IN/OUT)	3000 VAC	3000 VAC	3000 VAC
	Isolation Voltage (IN/PE)	—	—	—
	Isolation Voltage (OUT/PE)	—	—	—
	MTBF	> 1 100 000 hrs according to IEC 61709	> 450 000 hrs according to IEC 61709	> 1 100 000 hrs according to IEC 61709
	Safety Approvals	CE	CE	CE
Mounting	Type	DIN Rail	DIN Rail	DIN Rail
	Position (Recommended)	Vertical	Vertical	Vertical
	Location	Indoor	Indoor	Indoor
	Environment (Preferred)	Dust Protected Panels	Dust Protected Panels	Dust Protected Panels
Compliance	Norms and Certifications	According to EMC and Low voltage	According to EMC and Low voltage	According to EMC and Low voltage
	Electrical Safety	- According to IEC/EN 60950 (VDE 0805) & EN 50178 (VDE 0160) for assembling device. - Input / Output separation: SELV EN60950-1 and PELV EN 60204-1. Double or reinforced insulation. - IEC/ EN 60950 for Installation according	- According to IEC/EN 60950 (VDE 0805) & EN 50178 (VDE 0160) for assembling device. - Input / Output separation: SELV EN60950-1 and PELV EN 60204-1. Double or reinforced insulation. - IEC/ EN 60950 for Installation according	- According to IEC/EN 60950 (VDE 0805) & EN 50178 (VDE 0160) for assembling device. - Input / Output separation: SELV EN60950-1 and PELV EN 60204-1. Double or reinforced insulation. - IEC/ EN 60950 for Installation according
	EMC Immunity	EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5,	EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5,	EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5,
	EMC Emission	EN61000-6-4, EN61000-3-2	EN61000-6-4, EN61000-3-2	EN61000-6-4, EN61000-3-2
	Standards Confirmity	EN 60204-1 Safety of Electrical Equipment Machines	EN 60204-1 Safety of Electrical Equipment Machines	EN 60204-1 Safety of Electrical Equipment Machines
External Data	Operating Temperature	-30 to +70°C	-30 to +70°C	-30 to +70°C
	Storage Temperature	-40 ... 85 °C	-40 ... 85 °C	-40 ... 85 °C
	Operating Humidity	95% at +25°C,	95% at +25°C,	95% at +25°C,
	Pollution Degree Environment	2	2	2
	Degree of Protection	IP 20	IP 20	IP 20
	Class of Protection	II	II	II
	Cooling	Free Air Convention	Free Air Convention	Free Air Convention
	Connection Terminal Blocks	Screw Type 2.5 mm	Screw Type 2.5 mm	Screw Type 2.5 mm
	Climatic Class	3K3	3K3	3K3
	Dimensions	18 x 90 x 62 mm	54 x 90 x 62 mm	54 x 90 x 62 mm
	Weight	0.2 kg approx.	0.25 kg approx.	0.25 kg approx.

POWER SUPPLIES

LUMEL
EVERYTHING COUNTS

Power Supplies				
Data	Model	ZS20-1A	ZS20-1B	ZS20-1C
	Input Type	1-Phase	1-Phase	1-Phase
	Rating	24V / 2.5A	24V / 5A	24V / 7.5A
Input Data	Input Voltage	115 / 230 V AC	115 ... 230 V AC	115 ... 230 V AC
	Input Voltage Range AC	85 ... 264 VAC	85 ... 264 VAC	85 . . . 264 VAC
	Input Voltage Range DC	120 ... 370 VDC	125 ... 350 VDC	125 . . . 350 VDC
	Turn on delay after applying mains Voltage	1 second	2 seconds	1.5 seconds
	Frequency	45 ... 65 Hz	45 ... 65 Hz	45 . . . 65 Hz
	Line Regulation	< ± 1 %		< 0.1 % (change in input voltage ± 10%
	Load Regulation	< ±1 % (change in load, static 10 % ... 90 %	< 0.1 % (change in input voltage ± 10 %)	< 1% (change in load, static 10% . . . 90%
	Input Current	0.8 A (230 VAC), 1.4 A (115 VAC)	1.1 A (230 VAC), 2.8 A (115 VAC)	1.5 A (230 VAC), 2.8 A (115 VAC)
	Inrush Current	≤ 36 A Typically	≤ 36 A Typically	≤ 36 A Typically
	Internal Fuse	T4 A	T4 A	T4 A
	External Fuse	10 A (curve B)	10 A (curve B)	10 A (curve B)
Output Data	Output Voltage Range	24 VDC +/-3%	24 VDC +/-3%	24 VDC +/-3%
	Adjustment Range (Vadj)	22 - 27 Vdc	22 - 27 Vdc	22 - 27 VDC
	Start up with Capacitive Load	—	≤ 50.000µF	≤ 50.000µF
	Output Current (@ 40°C)	2.5A @ 40°C	5A @ 40°C	7.5A @ 40°C
	Output Current (@ 50°C)	2.0A @ 50 C, 1.875A @ 60°C	4A @ 50°C, 3A @ 60°C	6.5A @ 50 °C, 5A @ 60°C
	Power Boost (@ 60°C) for 3 minutes	2.5 A	4.5 A	7.5 A
	Power	60W	95 ... 120 W	120 ... 180 W
	Hold Up Time	≥ 20 msec (230 VAC)	≥ 20 msec (230 VAC)	≥ 20 msec (230 VAC)
	Parallel Connection	No	No	No
	Derating	from 50 ºC 2.5% / °C	from 60 ºC 2.5% / °C	from 60°C 2.5% /°C
	Efficiency	> 87 % (for 230 VAC and nominal values)	> 87 % (for 230 VAC and nominal values)	> 87 % (for 230 VAC and nominal values)
	Dissipation Power Load Max (W)	8.9 W	17 W	25 W
	Output Over Voltage Protection	—	—	35 VDC
	Protection	short circuit, overload, over voltage, over temperature	short circuit, overload (EN 60204-1), over voltage, over temperature	short circuit, overload (EN 60204-1), over voltage, over temperature
	Protection Modes	Hiccup	Hiccup	Hiccup
	Ripple and Noise	≤ 150 mVpp (with nominal values)	≤ 120 mVpp (with nominal values)	≤ 120 mVpp (with nominal values)
	Resistance to reverse feed	—	—	max 35 VDC
	Short Circuit Current (Permanent)	Not Available	Not Available	Not Available
General Data	Relay Power Good	Not Available	Trigger 30VDC	Trigger 30 VDC
	RoHS Compliant	Yes	Yes	Yes
	Isolation Voltage (IN/OUT)	3000 VAC	3000 VAC	3000 VAC
	Isolation Voltage (IN/PE)	—	1605 VAC	1605 VAC
	Isolation Voltage (OUT/PE)	—	500 VAC	500 VAC
	MTBF	> 300 000 hrs according to IEC 61709	> 500 000 hrs according to IEC 61709	> 500 000 hrs according to IEC 61709
	Safety Approvals	CE	CE	CE
Mounting	Type	DIN Rail	DIN Rail	DIN Rail
	Position (Recommended)	Vertical	Vertical	Vertical
	Location	Indoor	Indoor	Indoor
	Environment (Preferred)	Dust Protected Panels	Dust Protected Panels	Dust Protected Panels
Compliance	Norms and Certifications	According to EMC and Low voltage	According to EMC 89/336/EEC and Low voltage 93/68/EEC	According to EMC 89/336/EEC and Low voltage 93/68/EEC
	Electrical Safety	- According to IEC/EN 60950 (VDE 0805) & EN 50178 (VDE 0160) for assembling device. - Input / Output separation: SELV EN60950-1 and PELV EN 60204-1. Double or reinforced insulation. - IEC/ EN 60950 for Installation according	- According to IEC/EN 60950 (VDE 0805) & EN 50178 (VDE 0160) for assembling device. - Input / Output separation: SELV EN60950-1 and PELV EN 60204-1. Double or reinforced insulation. - IEC/ EN 60950 for Installation according	- According to IEC/EN 60950 (VDE 0805) & EN 50178 (VDE 0160) for assembling device. - Input / Output separation: SELV EN60950-1 and PELV EN 60204-1. Double or reinforced insulation. - IEC/ EN 60950 for Installation according
	EMC Immunity	EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5,	EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5,	EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5,
External Data	EMC Emission	EN61000-6-4, EN61000-3-2	EN61000-6-4, EN61000-3-2	EN61000-6-4, EN61000-3-2
	Standards Confirmity	EN 60204-1 Safety of Electrical Equipment Machines	EN 60204-1 Safety of Electrical Equipment Machines	EN 60204-1 Safety of Electrical Equipment Machines
	Operating Temperature	-30 to +70°C	-25 to +70°C	-25 to +70°C
	Storage Temperature	-40 ... 85 °C	-40 ... 85 °C	-40 ... 85 °C
	Operating Humidity	95% at +25°C,	95% at +25°C,	95% at +25°C,
	Pollution Degree Environment	2	2	2
	Degree of Protection	IP 20	IP 20	IP 20
	Class of Protection	II	I, with PE connected	I, with PE connected
	Cooling	Free Air Convention	Through Grid on housing & Metal caing	Through Grid on housing & Metal caing
	Connection Terminal Blocks	Screw Type 2.5 mm	Screw Type 2.5 mm	Screw Type 2.5 mm
	Climatic Class	3K3	3K3	3K3
	Dimensions	54 x 90 x 62 mm	55 x 110 x 105 mm	55 x 110 x 105 mm
	Weight	0.25 kg approx.	0.5 kg approx.	0.50 kg approx.

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