

CONNECTING COMPETENCE.



ELECTRONIC (INDUSTRIAL-) POWER SUPPLY



EFFICIENT – RELIABLE – FUNCTIONAL

POWER SUPPLY LP4

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POWER SUPPLY LP4

FACTS

The new durable generation of SCHRACK-electronic power supplies LP4 for applications in the industrial area. With compact sizes and the possibility to mount on Rail-DIN makes the power supply to an all rounder, which is also available with UPS function. Furthermore beside their high efficiency, they also control optimized battery charging function for the batteries. With this feature it is easy to increase the battery life time.

These DC power supplies can be used for all applications where you need a fail-safe control, e.g.: measurement stations, controls, displays,...



- RAIL DIN MOUNTING
- OVERLOAD AND SHORT CIRCUIT PROTECTION
- HIGH DEGREE OF EFFICIENCY

- OUTPUT CURRENT FROM 3A UNTIL 20A
- STABILIZED SUPPLY
- 230 VAC → 24 VDC (ADJUSTABLE)



- PARALLEL CONNECTION POSSIBLE
- 1PHASE AND 3PHASE VERSION AVAILABLE
- OVER TEMPERATURE PROTECTION



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- COMPACT SIZE
- STATUS INDICATION



- PROTECTIONS AGAINST
 - SHORT CIRCUIT
 - REVERSE POLARITY CONNECTION
 - OVER LOAD
 - DEEP BATTERY DISCHARGE

■ STANDARDS AND CERTIFICATION

The devices are tested according to IEC/EN60950 and must be installed according to IEC/EN60950.

Furthermore the devices are appropriate according to EN60204-1.

Transient immunity acc. to:

- EN 61000-4-2: interference resistance against electrostatic discharge
- EN 61000-4-3: interference resistance against electrostatic field from 80 MHz until 4 GHz
- EN 61000-4-4: interference resistance against fast transients burst
- EN 61000-4-5: interference resistance against surge voltage 1,2/50 μ s and 10/700 μ s
- EN 61000-4-6: interference resistance against high-frequency noise voltage from 9 kHz until 230 MHz
- EN 61000-4-11: interference resistance against voltage swing and short interwithtent of the power supply

- LOW RESIDUAL RIPPLE $\leq 60\text{mV}_{\text{pp}}$
- DEEP DISCHARGE IMPOSSIBLE

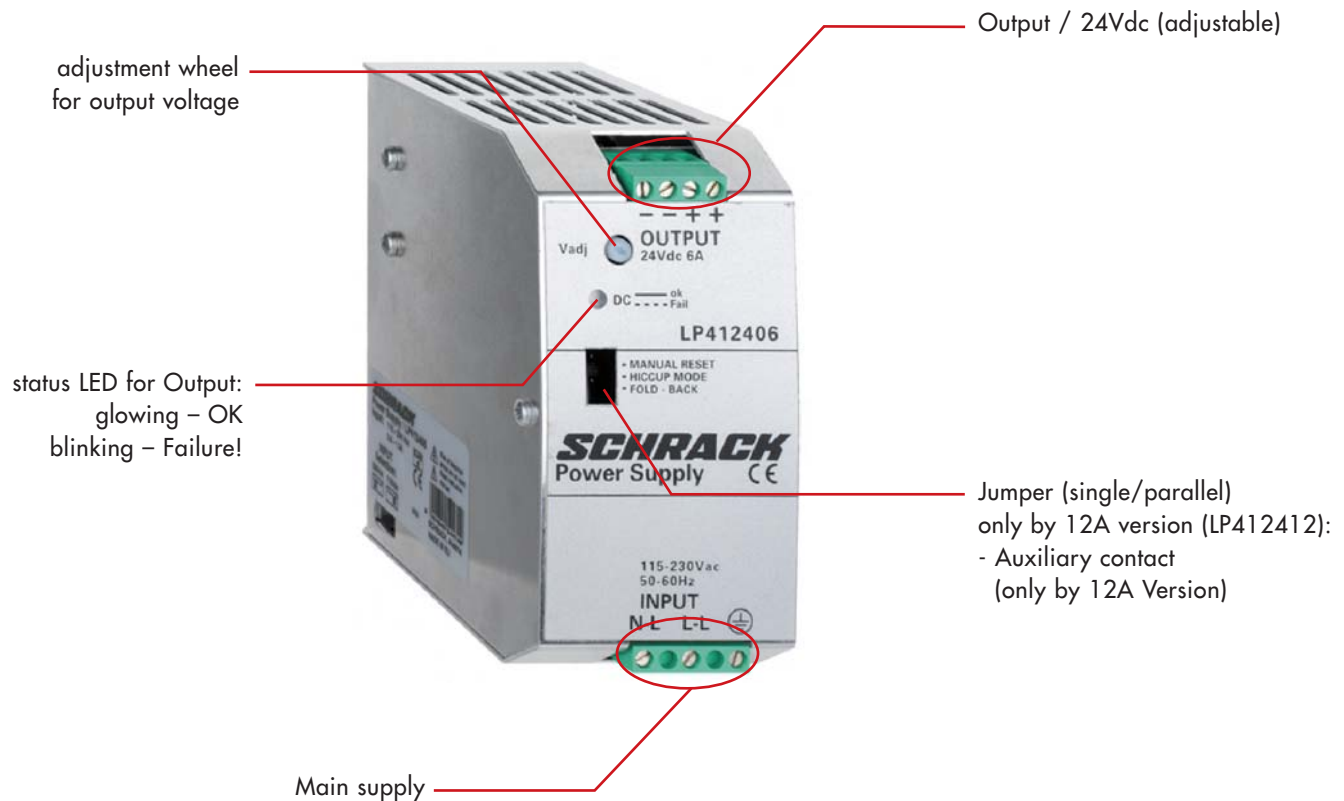


- ALL IN ONE – BATTERY CHARGER AND BACK UP
- BATTERY MONITORING
- OPTIMIZED CHARGING FOR A LONG LIFE TIME

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POWER SUPPLY WITH CONTINUOUS OUTPUT VOLTAGE OF 24VDC – LP41, LP43



FEATURES

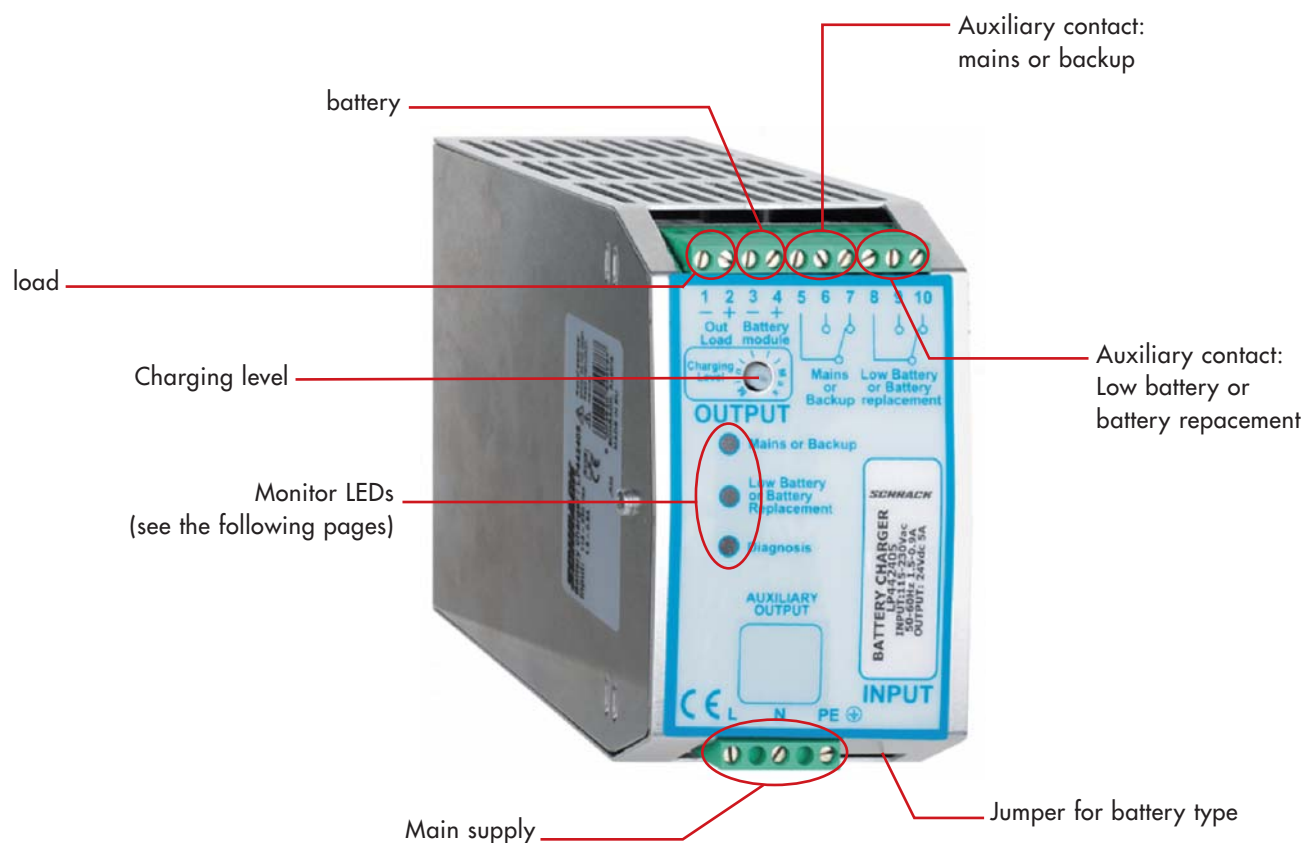
The power supplies without UPS function can be supplied with 115 VAC or 230 VAC. The output voltage is adjustable from 22 to 27 VDC and can set by using a screw driver.



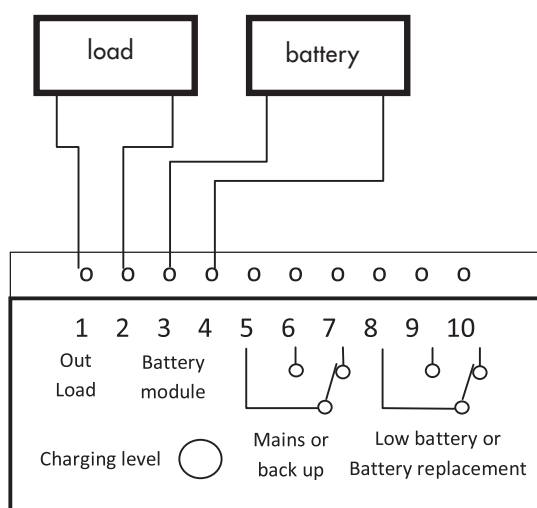
POWER SUPPLY LP4

POWER SUPPLY WITH UNINTERRUPTED POWER SUPPLY – LP44

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CONNECTION

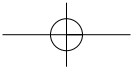


There are 2 potential-free contacts available. With the contacts 5,6 and 7 the supply can be monitored. If the main supply is ok the contact 5 and 6 will close. In battery mode contacts 5 and 7 will close. The second two-way contact is used for battery monitoring. If the battery is ok then the contact 8 and 9 is closed. If the battery should be replaced or the capacity is too low then the contact 8 and 10 will be closed.

MAX. LOAD FOR AUXILIARY CONTACTS

nominal values: 120 VAC / 1A 30 VDC/1A

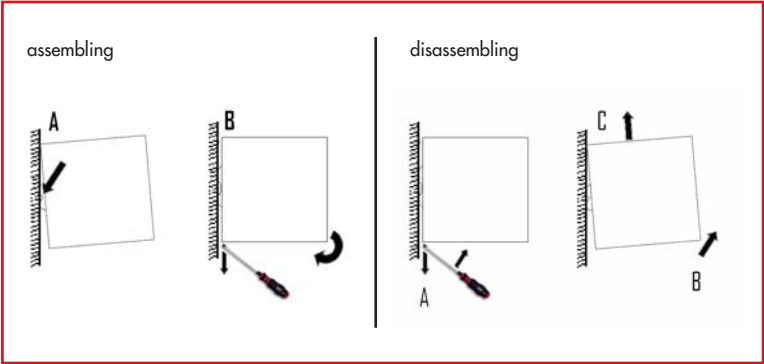
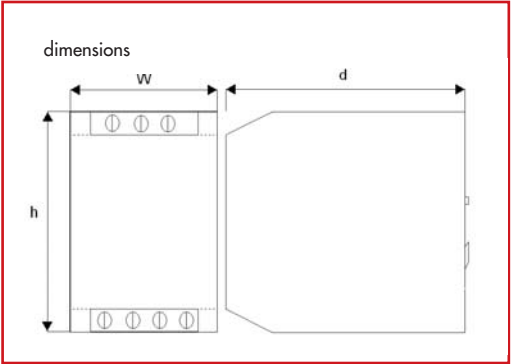
max. switch voltage/-current: 240 VAC / 60 VDC – 1A



POWER SUPPLY LP4

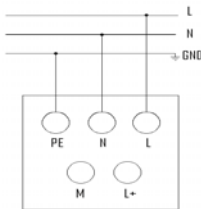
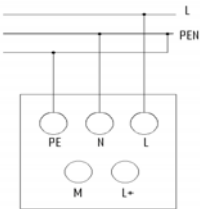
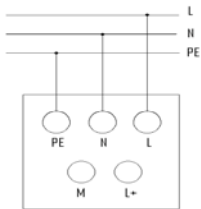
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DIMENSIONS AND INSTALLATION

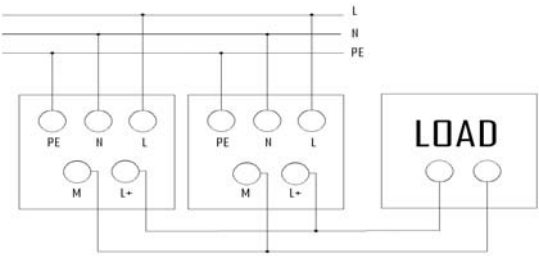
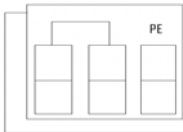


LP412403 24VDC 3A	LP412406 24VDC 6A	LP412412 24VDC 12A	LP432420 24VDC 20A	LP442405 + UPS Function 24VDC 5A	LP442410 + UPS Function 24VDC 10A
55 x 110 x 105 (W x H x D)	55 x 110 x 105 (W x H x D)	65 x 115 x 135 (W x H x D)	185 x 125 x 140 (W x H x D)	65 x 115 x 135 (W x H x D)	100 x 115 x 135 (W x H x D)

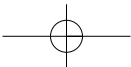
CONNECTION (1 PHASE POWER SUPPLY)



Notice:
Bridge only for LP4422410 (24 VDC, 10A; with UPS function) in case of 115Vac supply.

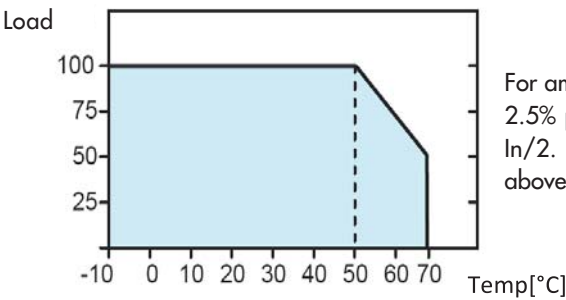


Only for power supplies without UPS function. The equal current share between the parallel devices has to be tested first with a small load. It is only allowed to connect the same models/types in parallel.



POWER SUPPLY LP4

THERMAL BEHAVIOUR



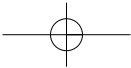
For ambient temperature above 50°C, the output current must be reduced by 2.5% per Kelvin increase in temperature. At 70°C the output current will be $I_n/2$. The equipment does not switch off in case of ambient temperature above 70°C.

CABLE CONNECTION

	solid	stranded (+ core cable ends)	max. torque	stripping length
Input terminal	0,2 – 2,5 mm²	0,2 – 2,5 mm²	0,5 – 0,6 Nm	7 mm
Output terminal	0,2 – 2,5 mm²	0,2 – 2,5 mm²	0,5 – 0,6 Nm	7 mm
Auxiliary contact	0,2 – 2,5 mm²	0,2 – 2,5 mm²	0,5 – 0,6 Nm	7 mm

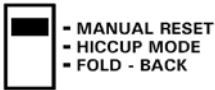
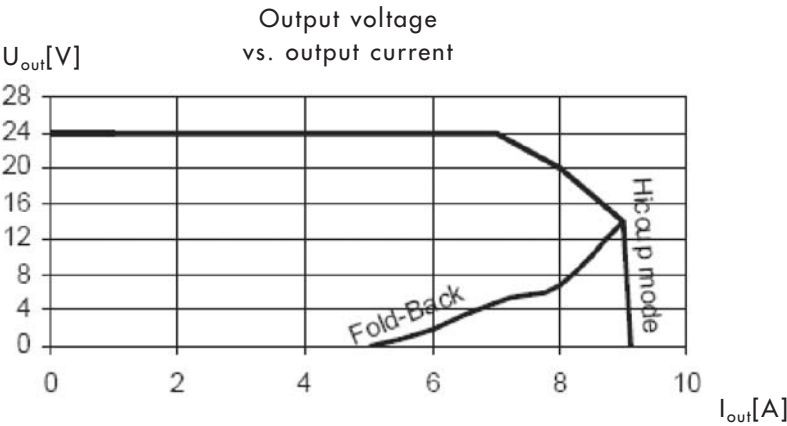
(valid for LP41 and LP44)

Other modules must have a minimum vertical distance of 10 cm to this power supply in order to guarantee sufficient natural convection. Depending on ambient temperature and load, the temperature of the housing can get very high!

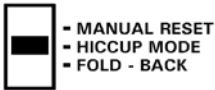


POWER SUPPLY LP4

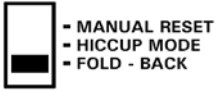
- POWER SUPPLY LP41, LP43
- 3 DIFFERENT OPTIONS TO PROTECT THE SECONDARY SIDE



Device does not start automatically.
LED "DC": Switch off when is in overload range.

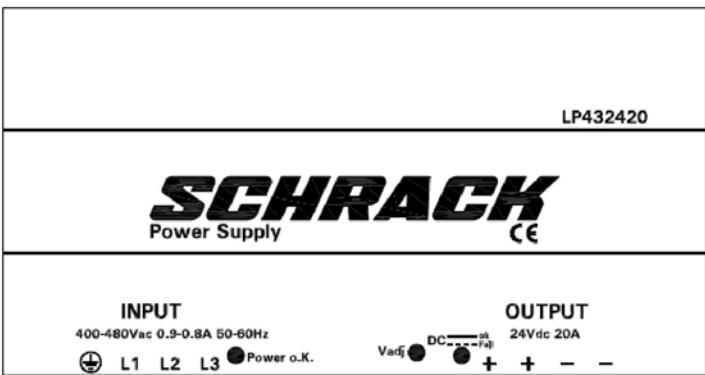
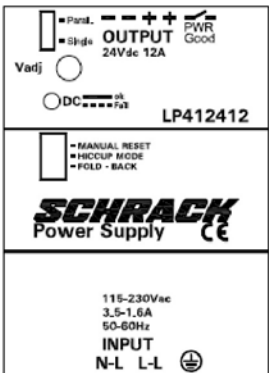
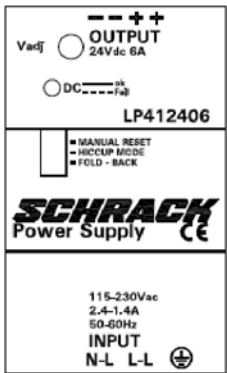


Device starts automatically.
LED "DC": Blink when is in overload range.
The device tries to start again after a short time, if it is a failure on the primary side.

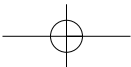


Device starts automatically.
LED "DC": Switch off when is in overload range.
Should be used if you have special loads (e.g. capacity).

Additional to all other functions the LP412412 device has an auxiliary contact (nominal values: 120 VAC/1A, 30 VDC/1A), which monitored the status of the secondary side. If it is necessary to use two 12A devices parallel, it is necessary to set the jumper from single to parallel.



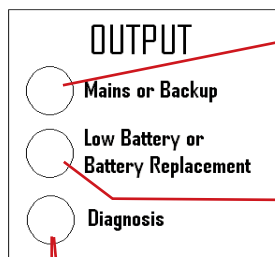
(without option for secondary protection)



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POWER SUPPLY LP44



MONITORING LED FOR MAIN SUPPLY OR BACKUP:

- LED glows: main supply OFF – battery supply ON
- LED does not glow: main supply ON

MONITORING LED FOR BATTERY:

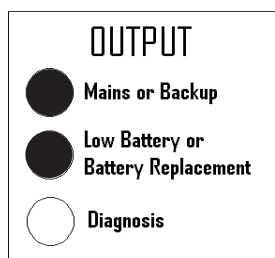
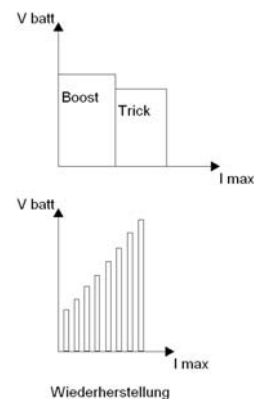
- LED glows: The battery is not OK or the capacity is under 30%

3 CHARGING MODES ACC. TO DIN41773

- Boost (fast charging): flash every 2 sec.
- Trickle (normal charging): flash every 1 sec.
- Recovery: flash every 0,5 sek.

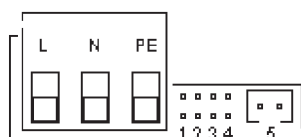
INDICATION OF MALFUNCTIONS:

- 1 x flash = Reverse polarity, wrong battery voltage
- 2 x flashes = Disconnected battery
- 3 x flashes = Battery element in short circuit
- 4 x flashes = Overload
- 5 x flashes = Battery to be replaced

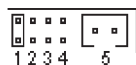


Example: The mains or backup LED and the LB/BR LED are glowing, then the main supply is OFF and either the battery is not ok or the capacity is too low. The load is switched off.

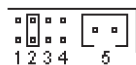
BATTERY TYPE CONFIGURATION



Open Lead Acid: Trickle 2.23V Boost 2.40V



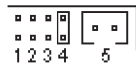
Sealed Lead Acid (1): Trickle 2.25 Boost 2.40V



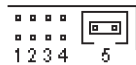
Sealed Lead Acid (2): Trickle 2.27 Boost 2.40V



Gel: Trickle 2.30V Boost 2.40V



No battery life test



Without jumper: no boost charging

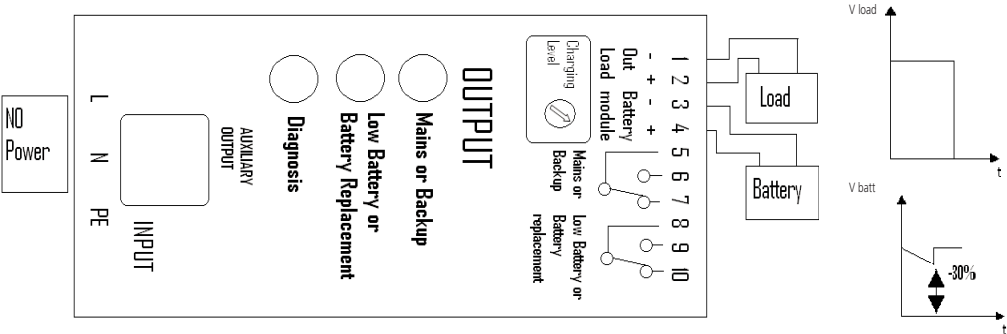
If jumper 5 is set, the system will automatically restart in battery mode after battery exchange.

If jumper 5 not set, the system will not restart, before the main supply will return.

Also suitable for NiCd batteries.

POWER SUPPLY LP4

DEEP DISCHARGE IMPOSSIBLE – ALSO WITHOUT MAIN SUPPLY

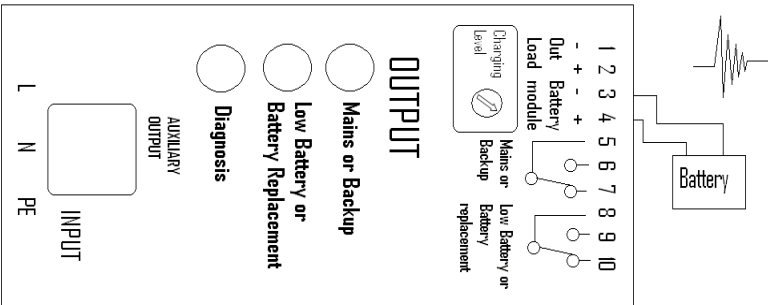


CONTINUOUS TESTING OF THE BATTERY

- DURING TRICKLE CHARGE THE QUALITY (RESISTANCE) OF THE BATTERY CONNECTION IS CHECKED EVERY 20 SEC
- DURING TRICKLE CHARGE THE INTERNAL RESISTANCE OF THE BATTERY IS CHECKED EVERY 4 HOURS
- APPROPRIATE VOLTAGE CHECK, TO PREVENT CONNECTION OF WRONG BATTERY TYPES
- END OF CHARGING CHECK
- REVERSE POLARITY CHECK

STATUS CHECK BATTERY

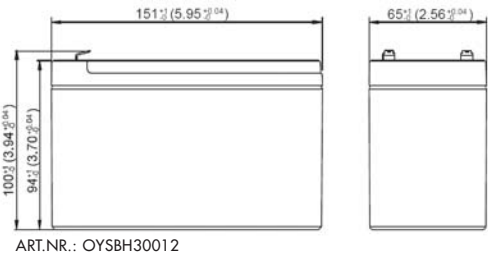
The device sends an continuous impulse for battery check. The return signal will analysed and processed.



MISCELLANEOUS

We recommend using high quality batteries, for example:
2 pcs. SCHRACK Pb Batterie 5J 12V/300W High current; Art.No.: OYSBH30012

DIMENSIONS AND CONNECTION



CONNECTION: FLAT CONNECTION 6,3 mm

POWER SUPPLY LP4

TECHNICAL DETAILS

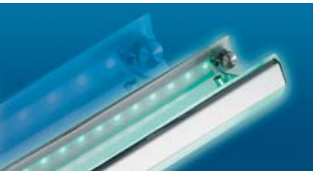
Art.no. Techn. data	Power supply				Battery charger	
	LP412403	LP412406	LP412412	LP432420	LP442405	LP442410
Input voltage	115-230VAC	115-230VAC	115-230VAC	400-500VAC	115-230VAC	115-230VAC
Input current (115VAC/230VAC)	1,0/0,6A	2,6/1,3A	3,3/2,2A	0,95/0,85A	1,5/0,9A	3,5/1,6A
Frequency	47-63Hz	47-63Hz	47-63Hz	47-63Hz	47-63Hz	47-63Hz
Internal fuse	T 4 A	T 4 A	T 10 A	F 4 A	F 4 A	F 6 A
Output voltage (adjustable)	24VDC (22-27VDC)	24VDC (22-27VDC)	24VDC (22-27VDC)	24VDC (22-27VDC)	24VDC	24VDC
Continous current (<50°C)	3A ± 3%	6A ± 3%	12A ± 3%	20A ± 3%	5A ± 3%	10A ± 3%
Max. output current	5A ± 3%	9A ± 3%	16A ± 3%	35A ± 5%	5,5A ± 5%	11A ± 5%
Efficiency	≥ 91%	≥ 91%	≥ 91%	≥ 86%	≥ 82%	≥ 83%
Climatic behaviours	-25 + 70°C 95% at 25°C	-25 + 70°C 95% at 25°C	-25 + 70°C 95% at 25°C	-10 + 70°C 95% at 25°C	-10 + 70°C 95% at 25°C	-10 + 70°C 95% at 25°C
Short circuit prot., Overload protection	✓	✓	✓	✓	✓	✓
Protection class	I with PE	I with PE	I with PE	I with PE	I with PE	I with PE
Degree of protection	IP20	IP20	IP20	IP20	IP20	IP20
Weight	~ 0,5 kg	~ 0,6 kg	~ 0,7 kg	~ 2,1 kg	~ 0,6 kg	~ 0,85 kg
dimension (a x b x h) [mm]	55x110x105	55x110x105	65x115x135	185x125x140	65x115x135	100x115x135
Charging voltage	-	-	-	-	27,5-28,8 (at In)	27,5-28,8 (at In)
Charging current	-	-	-	-	1 – 5A	2 – 10A
Battery type	-	-	-	-	up to 50Ah	up to 100Ah

(All specifications are subject to change without notice)

THE COMPANY

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