

Switchmode Chargers

Chargers

with exchangeable primary adapters
(MPP 15 and GPP 18/36)

All products conform to
IEC 60335 and IEC 60601-1

Applications

- Medical applications
- Electrical vehicles
- Stair lifts/patient lifts
- Mobile lighting
- Cleaning machines
- Professional photographic technology
- Mobile measuring technology
- Starter batteries
- Diving lamps

Characteristics

- Universal input 100-240 V AC
- Constant voltage, current limited
- Exchangeable primary adapters (MPP and GPP system)
- Low leakage current
- Low standby power
- LED charge indication
- Continuously short circuit proof
- Reverse polarity protection (not MPP 15 Li-Ion)
- 10KNTC, B = 3977 (GPP 18/36)
- Characteristics:
PP 8 = IU0U, MPP 15 = IOIU
GPP 18/36 = IU0

Technical data

Input voltage
Input current

100 to 240 V ($\pm 10\%$)
PP 8 (0.13 – 0.2 A), MPP 15 (0.25 – 0.3 A),
MPP 30 (0.4 – 0.5 A), GPP 18 (0.2 – 0.4 A)
GPP 36 (0.18 – 0.45 A)

Frequency
Efficiency
EMC

50 to 60 Hz
75 % at full load
Conforms to
EN 55011, EN 55022/B, FCC 47 part 15,
EN 61000-3-2, EN 61000-4-2, EN 61000-4-3,
EN 61000-4-4, EN 61000-4-5, EN 61000-4-6,
EN 61000-4-11

Output current tolerance

$\pm 10\%$

Environmental specification

Operating temperature

0 to 40° C at maximum load

Storage temperature

-40 to 70° C

Humidity

5 % to 95 % non condensing

Input transient susceptibility

Complies with IEC 61000 requirements

Safety specification

Standards

Fulfils Class II SELV for the following applications:
IEC 60601-1, IEC 60335-2-29,
UL 1310, UL 2601-1,
VDE, CE label

Reliability specification

MTBF calculation

200,000 hours at maximum load and an ambient temperature of 25° C (in accordance with MIL-HDBK-217)

Mechanical specification

Weight

PP 8 Li-Ion (125 g),
MPP 15 (140 g), MPP 30 (278 g),
GPP 18 (200 g), GPP 36 (320 g)

Plug connector

AC input:
(MPP/GPP) FRIWO exchangeable mains plug system, PP 8 (Euro, USA/Japan, UK)
DC output:
Universal output plug system (page 30)

Li-Ion

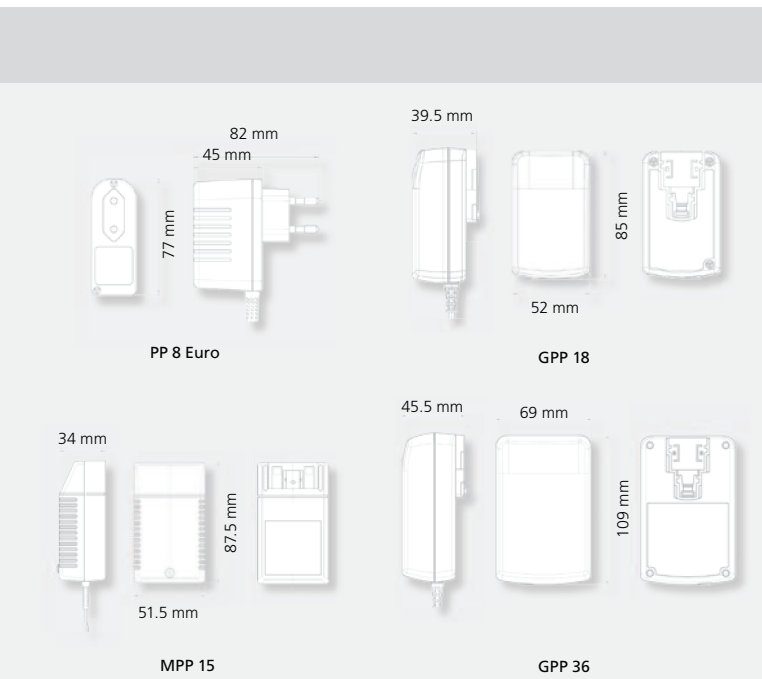


LiFePO₄

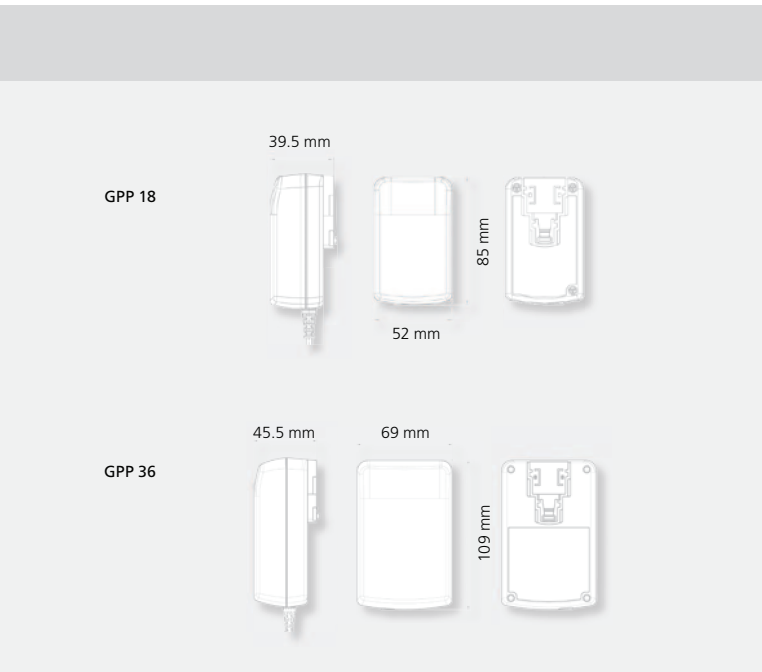


Product	FW Type	Approvals
PP 8 Li-Ion	FW 7574	CE, DVE, GS, C, SPS, US
MPP 15 Li-Ion	FW 7219	CE, DVE, GS, C, SPS, US
GPP 18 Li-Ion	FW 7290	CE, DVE, GS, C, SPS, US
GPP 36 Li-Ion	FW 7300	CE, DVE, GS, C, SPS, US
GPP 18 LiFePO ₄	FW 7290	CE, DVE, GS, C, SPS, US
GPP 36 LiFePO ₄	FW 7300	CE, DVE, GS, C, SPS, US

For primary adapters see page 30



Output data				EURO	USA/Jap.	UK	
Voltage	Current	cells	Capacity	Housing	Order No.	Order No.	Order No.
4.1 V	1000 mA	1	0.8 – 10 Ah	PP 8	1890124	1891148	1891149
4.1 V	600 mA	1	0.8 – 10 Ah	PP 8	1828253	1891150	1891151
4.2 V	1000 mA	1	0.8 – 10 Ah	PP 8	1829906	1891161	1891162
4.2 V	600 mA	1	0.8 – 10 Ah	PP 8	1829804	1891159	1891160
Worldwide							
8.4 V	800 mA	2	0.8 – 10 Ah	MPP 15	1826003		
12.6 V	800 mA	3	0.8 – 10 Ah	MPP 15	1826004		
16.8 V	800 mA	4	0.8 – 10 Ah	MPP 15	1826006		
with NTC							
8.4 V	800 mA	2	0.8 – 10 Ah	MPP 15	1826458		
12.6 V	800 mA	3	0.8 – 10 Ah	MPP 15	1826459		
16.8 V	800 mA	4	0.8 – 10 Ah	MPP 15	1826460		
4.2 V	3000 mA*	1	20 Ah	GPP 18	1832654		
8.4 V	1500 mA*	2	20 Ah	GPP 18	1832655		
4.2 V	4000 mA**	1	2.0 – 20 Ah	GPP 36	1834050		
8.4 V	3500 mA**	2	2.0 – 20 Ah	GPP 36	1834051		
12.6 V	2500 mA	3	2.0 – 20 Ah	GPP 36	1834052		
16.8 V	2000 mA	4	2.0 – 20 Ah	GPP 36	1834053		
21.0 V	1600 mA	5	2.0 – 20 Ah	GPP 36	1834054		



Output data					Worldwide
Voltage	Current	No. of cells	Capacity	Housing	Order No.
3.6 V	3000 mA*	1	20 Ah	GPP 18	1832654
7.2 V	1500 mA*	2	20 Ah	GPP 18	1832655
3.6 V	4000 mA**	1	20 Ah	GPP 36	1834055
7.2 V	3500 mA**	2	20 Ah	GPP 36	1834056
10.8 V	2500 mA**	3	20 Ah	GPP 36	1834057
14.4 V	2000 mA**	4	20 Ah	GPP 36	1834058
18.0 V	1600 mA**	5	20 Ah	GPP 36	1834059

* without NTC 1.5 A
** without NTC 1.6 A

Charge voltage can be adjusted for specific cell packs.
Please observe accu specification.

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(MPP 15/30 and GPP 18/36)

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IEC 60335 and IEC 60601-1

Applications

- Medical applications
- Electrical vehicles
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- Professional photographic technology
- Mobile measuring technology
- Starter batteries
- Diving lamps

Characteristics

- Universal input 100–240 V AC
- Constant voltage, current limited
- Exchangeable primary adapters (MPP and GPP system)
- Low leakage current
- Low standby power
- LED charge indication
- Continuously short circuit proof
- Reverse polarity protection (not PP 8 Pb)
- 10KNTC, B = 3977
- Characteristics: Pb = IU0U

Technical data

Input voltage
Input current

100 to 240 V ($\pm 10\%$),
PP 8 (0.13 – 0.2 A),
MPP 15 (0.25 – 0.3 A), MPP 30 (0.4 – 0.5 A),
GPP 18 (0.2 – 0.4 A) GPP 36 (0.18 – 0.45 A)

Frequency

50 to 60 Hz

Efficiency

75 % at full load

EMC

Conforms to
EN 55011, EN 55022/B, FCC 47 part 15,
EN 61000-3-2, EN 61000-4-2, EN 61000-4-3,
EN 61000-4-4, EN 61000-4-5, EN 61000-4-6,
EN 61000-4-11

Output current tolerance

$\pm 10\%$

Environmental specification

Operating temperature

0 to 40° C at maximum load

Storage temperature

-40 to 70° C

Humidity

5 % to 95 % non condensing

Input transient susceptibility

Complies with IEC 61000 requirements

Safety specification

Standards

Fulfils Class II SELV for the following applications:
IEC 60601-1 (NiCd/NiMH only MPP 15)
IEC 60335-2-29, UL 1310, UL 2601-1 (only Li-Ion),
VDE, CE label, CSA

Reliability specification

MTBF calculation

200,000 hours resp. 100,000 hours
(NiCd/NiMH) at maximum load
and an ambient temperature of 25° C
(in accordance with MIL-HDBK-217)

Mechanical specification

Weight approx.

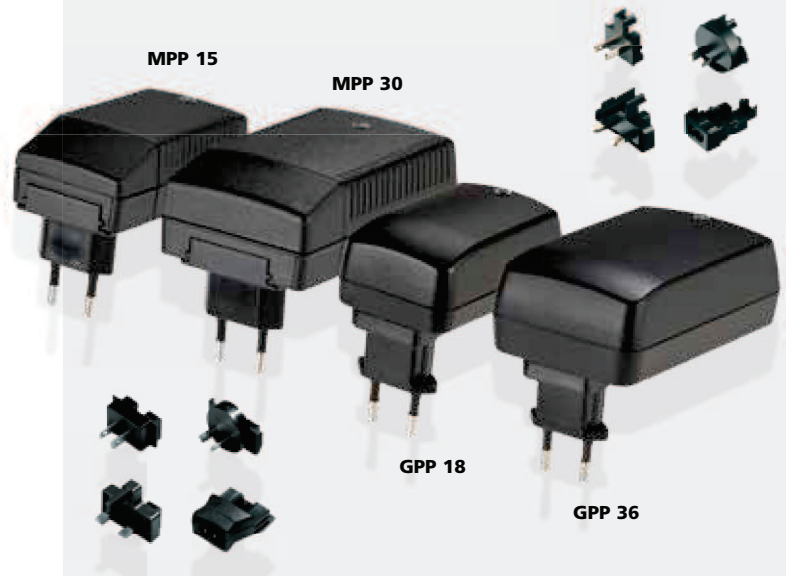
PP 8 Li-Ion (125 g),
MPP 15 (140 g), MPP 30 (278 g),
GPP 18 (200 g) GPP 36 (320 g)

Plug connector

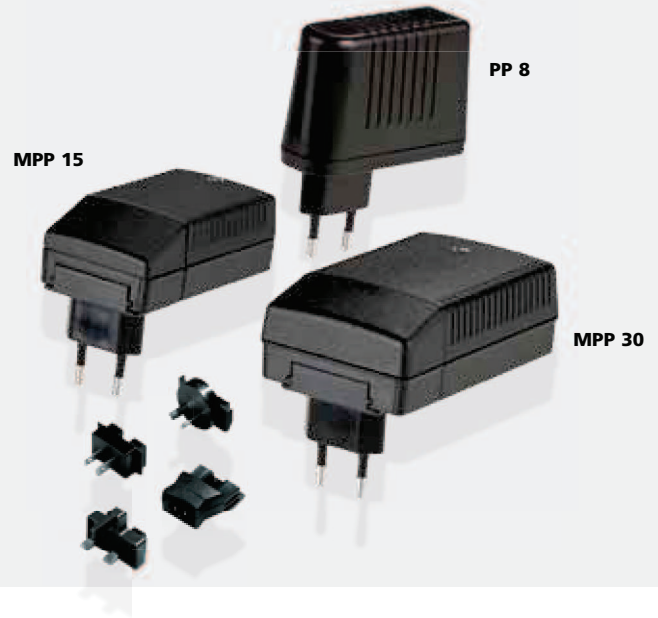
AC input:
(MPP/GPP) FRIWO exchangeable mains plug
system, PP 8 (Euro, USA/Japan, UK)
DC output:
Universal output plug system (page 30)

For primary adapters see page 30

NiCd/NiMH



Pb



Product

FW Type

Approvals

MPP 15
NiCd/NiMH

FW 7219



MPP 30
NiCd/NiMH

FW 7219



GPP 18
NiCd/NiMH

FW 7290



GPP 36
NiCd/NiMH

FW 7300



PP 8
Lead Acid

FW 7118



MPP 15
Lead Acid

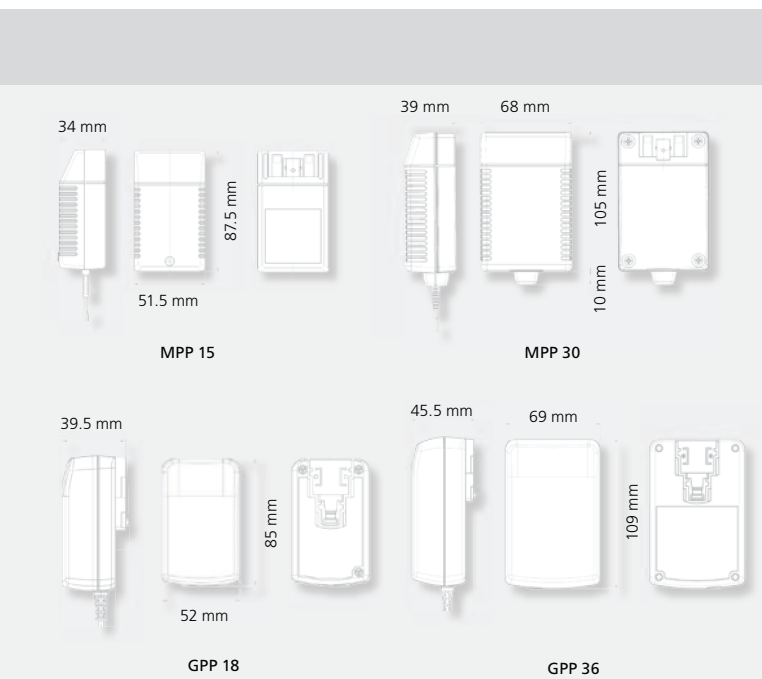
FW 7218



MPP 30
Lead Acid

FW 7318

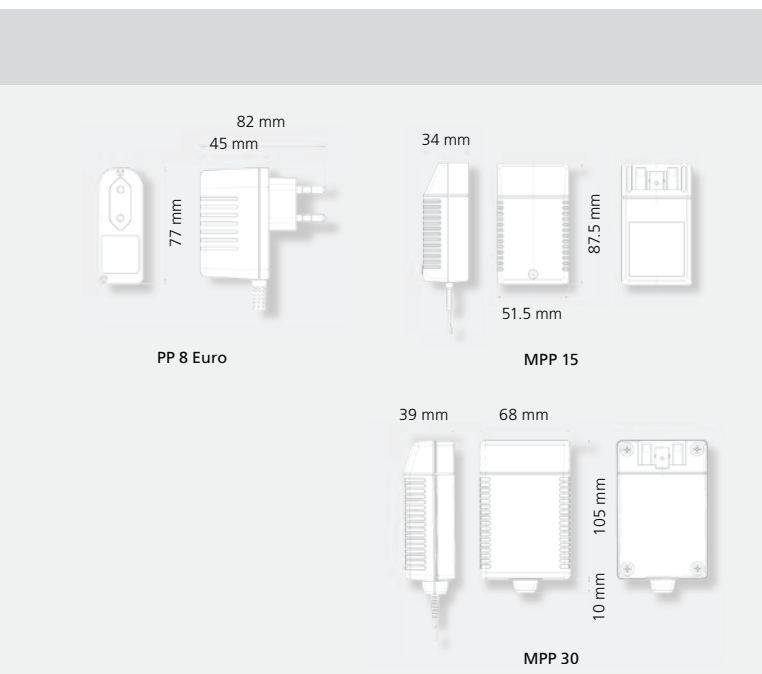




Output data				Switch-off criteria			Worldwide
Capacity	Current	Cells	Housing	TI	TG	-DU	Order No.
3.5 – 7.0 Ah	950 mA	10 – 20	MPP 30	·	·		1811894
2.8 – 7.0 Ah	1000 mA	10 – 12	MPP 30	·	·		1812609
2.5 – 4.5 Ah	1400 mA	8 – 12	MPP 30	·	·		1880408
2.5 – 10.0 Ah	2000 mA	5 – 6	MPP 30	·	·		1818681
1.0 – 10.0 Ah	800 mA	4 – 10	MPP 15	·	·	·	1826002
1.0 – 10.0 Ah	800 mA	4 – 10	MPP 15	·	·	·	1890127
2.0 – 35.0 Ah	1.5–3.0 A*	2 – 6	GPP 18	·	·	·	1832656
2.0 – 35.0 Ah	1.6–4.0 A**	2 – 12	GPP 36	·	·	·	1834049

Switch-off criteria: TI = time, TG = T. grad, -DU = -Delta-U

* without NTC 1.5 A
** without NTC 1.6 A



Output data					
Voltage	Current	Zellen	Capacity	Housing	Order No.
6 V	900 mA	3	2.4 – 16.0 Ah	PP 8 EU	1890125
6 V	900 mA	3	2.4 – 16.0 Ah	PP 8 UK	1824106
6 V	900 mA	3	2.4 – 16.0 Ah	PP 8 US	1824107
6 V	1600 mA	3	4.8 – 32.0 Ah	MPP 15	1890126
6 V	3000 mA	3	9.0 – 60.0 Ah	MPP 30	1890129
12 V	500 mA	6	1.5 – 10.0 Ah	PP 8 EU	1824396
12 V	500 mA	6	1.5 – 10.0 Ah	PP 8 US	1825090
12 V	1000 mA	6	3.0 – 20.0 Ah	MPP 15	1890240
12 V	2000 mA	6	6.0 – 40.0 Ah	MPP 30	1890243
24 V	500 mA	12	1.5 – 10.0 Ah	MPP 15	1890241
24 V	1000 mA	12	3.0 – 20.0 Ah	MPP 30	1890130
24 V	1500 mA	12	4.5 – 30.0 Ah	MPP 30	1890222

Charge voltage can be adjusted for specific cell packs.
Please observe accu specification.