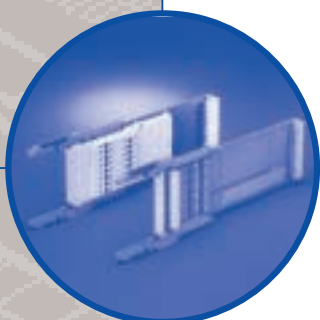
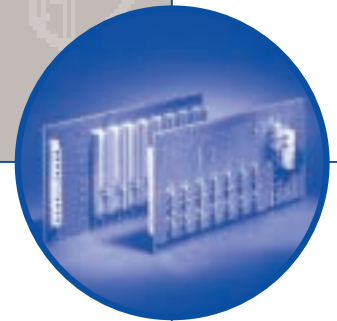


# Power Supplies, Backplanes / Test Adapters and Microcomputer Packaging Systems

**Schroff**<sup>®</sup>

Last update: 02/2003

3





# 19" compatible power supplies overview

Power supply units..... 3.10.0

19" compatible.....3.11.0

Open frame.....3.12.0

Power systems.....3.13.0

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Microcomputer packaging systems (MPS) ..... 3.30.0

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113-00-004

## Application

19" compatible power supplies are used to supply controls and systems with the required direct voltage. They are pluggable power supplies with a compact design and high efficiency.

3.3, 5, 12, 15, 24, 48 and 60 volts are available as standard output voltages.

Other output voltages available on request.

## Electrical design

The inputs and outputs are on the rear side using standardized male connectors to DIN 41612.

A primary fuse is mounted in the power supplies.

Operation is displayed at the front with LEDs.

## Mechanical design

Power supplies are 3 or 6 units (U) and a printed board depth of 160 mm.

Depending on the output power, the power supplies have a width of 6 to 28 units (HP).

## Heat dissipation

Power supply heat dissipation is achieved without fans, and is possible up to an ambient temperature of 70°C. Output derating is from 40°C to 50°C.

## Standards/approvals

The power supplies are CE-certified and UL- and VDE/LGA-approved. Approval to EN 60950 applies to AC mains operation.

The exterior dimensions of the systems correspond to the 19" standard DIN 41494, Part 1 and the mounting dimensions for the plug-in units to DIN 41494 Part 5.

# 19" compatible power supplies overview

## AC/DC-switched mode power supplies

*ecopower* - cost-optimized  
*maxpower* - high performance  
*maxpowerPRO* - extremely high performance,  
Compact PCI

- 1 ... 4 output voltages
- 50 to 350 W



11399014

## AC/DC linear control systems

High control accuracy  
and low residual ripple

- 1 ... 3 output voltages
- 8 to 58 W



11300001

## AC/DC non-regulated, screened

power supply with basic specification  
made on the output voltage

- 24 V output voltage
- 84 and 240 W



11300001

## DC/DC converters

Controlled direct voltage converter

- 1 ... 4 output voltages
- 20 to 350 W

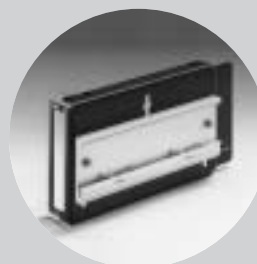
*maxpowerPRO* - extremely high performance,  
Compact PCI



11396005

## Accessories for 19"-compatible power supplies

- Connector H 15 F
- Keying/coding
- EMC contact strips
- Wall/horizontal rail installation



11395007

## AC/DC switched mode power supplies

Single, 50 W .....	3.11.2
Single, 80 W .....	3.11.4
Single, 100 W .....	3.11.6
Single, 130 W .....	3.11.8
Dual, 80 W .....	3.11.10
Dual, 100 W .....	3.11.12
Triple, 80 W .....	3.11.14
Triple, 100 W .....	3.11.16
Triple, 130 W .....	3.11.18
Triple, 150 / 224 W .....	3.11.20
Quad, 250 W .....	3.11.22
Quad, 350 W .....	3.11.24

## AC/DC linear control systems

Single, 8 - 60 W ..	3.11.26
Dual, 10 - 58 W ..	3.11.28
Triple, 7 - 39 W ..	3.11.30

## AC/DC non-regulated

Single, 84 W .....	3.11.32
Single, 240 W .....	3.11.34

## DC/DC converters

Single, 20 to 120 W .....	3.11.36
Dual, 55 to 72 W ..	3.11.38
Triple, 64 to 70 W .....	3.11.40
Quad, 250 W .....	3.11.42
Quad, 350 W .....	3.11.44

## Accessories

Mating connector female connector H 15 F .....	3.11.46
Keying/coding .....	3.11.47
Guide rails .....	3.11.47
Z-rails .....	3.11.47
EMC contact strips .....	3.11.48
Wall/horizontal rail installation .....	3.11.49



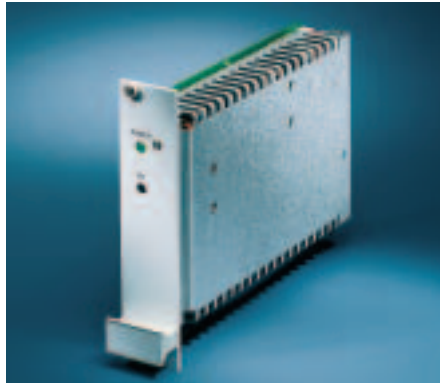
# 19" compatible AC/DC switched mode

Power supply units..... 3.10.0  
**19" compatible.....3.11.0**  
 Open frame.....3.12.0  
 Power systems.....3.13.0  
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Backplanes/  
test adapters .. 3.20.0

Microcomputer  
packaging systems  
(MPS) ..... 3.30.0

Appendix..... 3.90.0



11396002

**Single, 50 W**

**ecopower**

- 19" compatible AC/DC switched mode power supplies, pluggable 3 U x 160 mm deep
- Wide range mains input voltage range (wide range from 90 – 264 V<sub>AC</sub> and 130 – 340 V<sub>DC</sub>)
- 1 output voltage
- Redundancy operation with integrated decoupling diode
- Even current share in the event of parallel operation via current share bus (CSB)
- Signalling: Output voltage OK
- For industrial and telecommunications applications
- High reliability and long life
- Cost-optimized

**ERG**  
EN 60950



100 x 160 mm

171.93

2.5

DJM0084

PSA46292

Pin	Connection
4	Output + V <sub>1</sub>
6	
8	
8	Sense + V <sub>1</sub>
10	Sense 0V V <sub>1</sub>
12	Output 0V V <sub>1</sub>
14	
16	
18	-
20	-
22	CSB
24	Output OK
26	-
28	L
30	N
32	PE ⊕

**Note**

The front panel is not included in delivery.

Voltage in V	Output data with T <sub>U</sub> = 0 ... 50 °C			Height in U	Width A in HP	Power supply Type	Order No. <sup>1)</sup>	
	Current in A	Power output in W	Mains voltage 90 – 264 V <sub>AC</sub>				Front panel <sup>2)</sup> EMC	
5	9.0	45	3	6	SEK 105	<b>13100-043</b>	<b>21006-943</b>	
12	4,2	51			SEK 112	<b>13100-044</b>		
15	3,4				SEK 115	<b>13100-041</b>		
24	2,1				SEK 124	<b>13100-045</b>		
48	1,1				53	SEK 148		<b>13100-046</b>

<sup>1)</sup> Please order front panel separately

<sup>2)</sup> Front anodised, rear side chromated, slotted on both sides for mounting EMC contact strips in the event of increased EMC requirements  
(3 U EMC contact strips, 10 units, Order No. 21101-705)

**Mating connector H15F with FASTON connection, Order No. 69001-733**

# 19" compatible AC/DC switched mode



## Technical data

Input parameters						
Mains voltage	Nominal values $V_{AC}$	100 – 240 $V_{AC}$				
	Operating-ranges	90 – 264 $V_{AC}$ 128 – 370 $V_{DC}$				
Mains nominal current at 90 $V_{AC}$ /187 $V_{AC}$	1.3/0.6 A					
Mains frequency range	Type 48 – 62 Hz					
Mains input current in accordance with	EN 61000-3-2 + A14					
Efficiency	Type 69 – 80 %					
Switch-on current $I_p$ (with 230 $V_{AC}$ )	< 20 A					
Discharge current	$\leq$ 500 $\mu$ A					
Output parameters						
Output power [W]	45	51			53	
Output voltage $\Delta V$ [V]	factory set	5	12	15	24	48
	Adjustment range	4.2–6	11–13.5	13.5–16.5	21–25.5	43–50
Output current (with 90 – 264 $V_{AC}$ ) [A]	0 ... 50°C	9.0	4.2	3.4	2.1	1.1
	70°C	6.0	2.9	2.4	1.5	0.8
Short-circuit current [A]	< 11	< 6	< 4.5	< 3	< 2	
Over-voltage protection OVP (shuts power supply off), automatically resets [V]	6 $\pm$ 0.3	14 $\pm$ 0.5	17 $\pm$ 0.5	27 $\pm$ 1	52 $\pm$ 2	
Residual ripple with [mV <sub>PP</sub> ]	100 Hz	20	< 100	< 100	< 100	< 150
	Clock frequency (100 kHz)	< 40	< 50	< 50	< 50	< 60
Interference voltage (BW: 100 MHz) [mV <sub>PP</sub> ]	< 100	< 200	< 200	< 200	< 200	
Load control, static (load change 0 – 100 %) [mV]	< 50	< 50	< 50	< 100	< 100	
Mains control 90 – 264 V [mV]	< 10	< 25	< 25	< 100	< 100	
Temperature coefficient	-0.015 %/K					
CSB and output decoupled via diode	Mounted					
Dynamic control deviations (load change: 50 ... 100 % with 100 Hz; $di/dt = 0,135$ A/ $\mu$ s)						
Control time at $0.01 \times V_1$ Nominal	< 1.5 ms					
Overshoot and under-shoot amplitude [mV]	< 500	< 250	< 300	< 500		

Protection and monitoring facilities		
Switch-on time	< 0.8 s	
Mains fuse, high breaking sluggish	4 A/250 $V_{AC}$ , 5 × 20 mm, DIN EN 60127-2/V	
Power failure bridging at $V_{AC} = 187$ $V_{AC}$ and 100 % load	> 30 ms	
Remote sense compensated	Max. 0.5 V	
Characteristic current-limiting curve	U/I	
"Output voltage ok" signalling	Output OK, open collector signal, low active, max. 55 V/50 mA	
Test and environmental conditions		
Climatic test to	IEC 68-2-38	
Shock and vibration test in accordance with acceleration of 2 g	EN 60068-2-6	
Height 3 U/ depth 160 mm	Width 6 HP	
Weight (mass)	0.55 kg	
CE	Interference emission	EN 50081-1, EN 55011 Class B, EN 55022 Class B
	Interference immunity, degree of severity 3	EN 50082-2, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6
	Safety, class of protection 1	EN 60950 (ERG)
High voltage test to EN 60950	Input-output	4.3 kV <sub>DC</sub>
	Input PE	2.2 kV <sub>DC</sub>
	Output PE	0.7 kV <sub>DC</sub>
UL 1950	No. E 153809	
Power supply maintenance-free	Yes	
Cooling	Convection	
Operation/storage ambient temperature	0 ... 70°C / -20 ... +85°C	
MTBF at full load, $T_U = 40^\circ\text{C}$	500,000 h	

## AC/DC switched mode power supplies

Single, 50 W .....	3.11.2
Single, 80 W .....	3.11.4
Single, 100 W .....	3.11.6
Single, 130 W .....	3.11.8
Dual, 80 W .....	3.11.10
Dual, 100 W .....	3.11.12
Triple, 80 W .....	3.11.14
Triple, 100 W .....	3.11.16
Triple, 130 W .....	3.11.18
Triple, 150 / 224 W .....	3.11.20
Quad, 250 W .....	3.11.22
Quad, 350 W .....	3.11.24

## AC/DC linear control systems

Single, 8 – 60 W ..	3.11.26
Dual, 10 – 58 W ...	3.11.28
Triple, 7 – 39 W ...	3.11.30

## AC/DC non-regulated

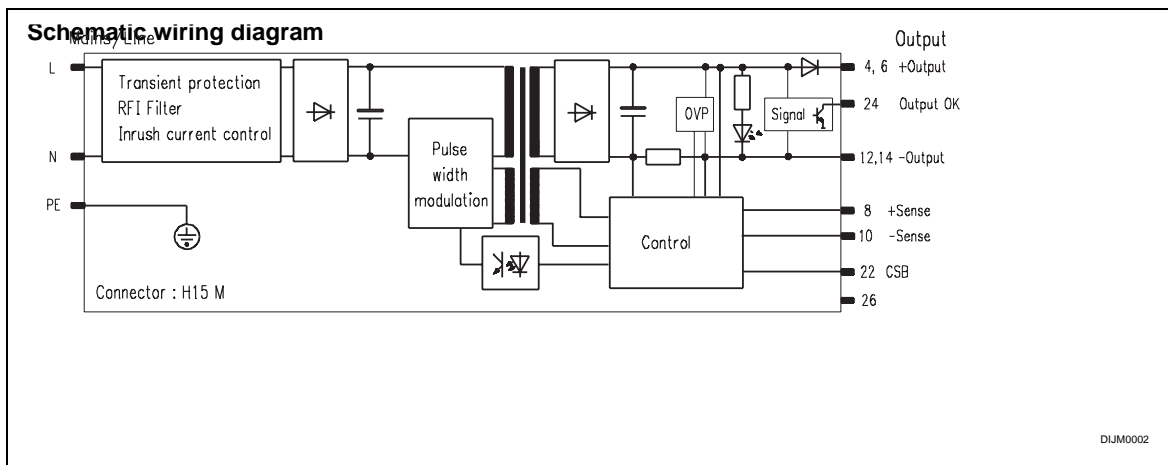
Single, 84 W .....	3.11.32
Single, 240 W .....	3.11.34

## DC/DC converters

Single, 20 to 120 W .....	3.11.36
Dual, 55 to 72 W ..	3.11.38
Triple, 64 to 70 W .....	3.11.40
Quad, 250 W .....	3.11.42
Quad, 350 W .....	3.11.44

## Accessories

Mating connector female connector H 15 F .....	3.11.46
Keying/coding .....	3.11.47
Guide rails .....	3.11.47
Z-rails .....	3.11.47
EMC contact strips .....	3.11.48
Wall/horizontal rail installation .....	3.11.49





# 19" compatible AC/DC switched mode

Power supply units..... 3.10.0

19" compatible.....3.11.0

Open frame.....3.12.0

Power systems.....3.13.0

Uninterruptable power supplies (UPS) .....3.14.0

Backplanes/ test adapters .. 3.20.0

Microcomputer packaging systems (MPS) ..... 3.30.0

Appendix..... 3.90.0



11399005



**Single, 80 W**

**ecopower**

- 19" compatible AC/DC switched mode power supplies, pluggable 3 U
- Wide range mains input voltage range (90 – 254 V<sub>AC</sub> and 100 – 360 V<sub>DC</sub>)
- Power factor correction (PFC) to EN 61000-3-2
- 1 output voltage
- Redundancy operation with integrated decoupling diode
- Even current share in the event of parallel operation via current share bus (CSB)
- Signalling: Output voltage OK
- For industrial and telecommunications applications
- International approvals EN 60950, UL
- High reliability and long life
- Cost-optimized

100 x 160 mm

DUM0084

PSA46292

Pin	Connection
4	Output + V <sub>1</sub>
6	Sense + V <sub>1</sub>
8	Sense 0V V <sub>1</sub>
10	Output 0V V <sub>1</sub>
12	–
14	–
16	–
18	–
20	–
22	CSB
24	Output OK
26	–
28	L
30	N
32	PE ⊕

**Note**

The front panel is not included in delivery.

Voltage in V	Output data at T <sub>U</sub> = 0 ... 50 °C			Height in U	Width A in HP	Order No. <sup>1)</sup>	
	Current (with 190 V) in A	Power output in W	Power supply Type			Mains voltage 90 – 254 V <sub>AC</sub>	Front panel <sup>2)</sup> EMC
3,3	14,0	46	3	6	SEM 103	<b>13100-054</b>	<b>21006-943</b>
5	14,0	70			SEM 105	<b>13100-055</b>	
12	6,5	78			SEM 112	<b>13100-056</b>	
15	5,2				SEM 115	<b>13100-057</b>	
24	3,4	82			SEM 124	<b>13100-058</b>	

<sup>1)</sup> Please order front panel separately

<sup>2)</sup> Front anodised, rear side chromated, slotted on both sides for mounting EMC contact strips in the event of increased EMC requirements  
(3 U EMC contact strips, Order No. 21101-705, 10 pieces)

**Mating connector H15F with FASTON connection, Order No. 69001-733**

# 19" compatible AC/DC switched mode



## Technical data

Input parameters						
Mains-voltage	Nominal values $V_{AC}$	100 – 240 $V_{AC}$				
	Operating-ranges	90 – 254 $V_{AC}$ 100 – 360 $V_{DC}$				
Mains nominal current at 90 $V_{AC}$		1.4 A				
Mains frequency range		50 – 60 Hz				
Power Factor Correction in accordance with		EN 61000-3-2				
Efficiency type		58 %	64 %	75 %	77 %	
Switch-on current $I_p$ (with 230 $V_{AC}$ )		< 15 A				
Output parameters at 190/90 $V_{AC}$						
Output power max. (50 °C) [W]		46/38	70/58	78/66	82/67	
Output voltage [V]	factory set	3.3	5	12	15	24
	Adjustment range $\Delta V$	2.7–3.5	5–5.5	11.5–15.7		21.8–25.3
Output current [A]	0 ... 50 °C	14/11.5	14/11.5	6.5/5.5	5.2/4.4	3.4/2.8
	70 °C	10.5/9	10.5/9	4.7/4.3	3.8/3.4	2.6/2.2
Current limitation shuts the output off after approx. 20 ms, automatically resets after approx. 2 s, shuts power supply off following longer overload		Permanently short-circuit resistant				
Residual ripple/ Interference voltage (BW: 30 MHz) [mV <sub>PP</sub> ]		< 80			< 150	
Mains and load control, static (load change 0 – 100 %) [mV <sub>PP</sub> ]		< 25		< 120		
Temperature coefficient		-0.015 %/K				
CSB and output decoupled via diode		mounted				
Dynamic control deviations (load change: 10 ... 100 % with 100 Hz; $dI/dt = 0.25 A/\mu s$ )						
Control time at $0.01 \times V_{1\text{Nominal}}$ [ms]		<0.5	<0.2	<0.25	<0.1	
Overshoot and under-shoot amplitude [mV]		< 250				

Protection and monitoring facilities						
Switch-on time		< 1.5 s				
Mains fuse		4 A/250 $V_{AC}$ , 5 × 20 mm, EN 60127-2/V				
Power failurebridging at $V_{AC} = 90 V_{AC}$ and 100 % load		> 20 ms				
Over-voltage protection OVP set to		7.2 V	8.2 V	19.3 V	34.2 V	
Remote sense compensated		Max. 0.5 V				
"Output voltage ok" signalling		"Output OK" signal, active high				
High level [V]		3.3	5	12	15	20
Time delay		100 – 250 ms				
Test and environmental conditions						
Climatic test to		IEC 68-2-38				
Shock and vibration test in accordance with acceleration of 2 g		EN 60068-2-6				
Height 3 U/ depth 160 mm		Width 6 HP				
Weight (mass)		0.55 kg				
CE	Interference emission	EN 50081-1, EN 55011 Class B, EN 55022 Class B				
	Interference immunity, degree of severity 3	EN 50082-2, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6				
	Safety, class of protection 1	EN 60950 (VDE)				
High voltage test to EN 60950	Input-output	4.3 kV <sub>DC</sub>				
	Input PE	2.2 kV <sub>DC</sub>				
	Output PE	0.7 kV <sub>DC</sub>				
UL 1950		applied for				
Power supply maintenance-free		Yes				
Cooling		Convection				
Operation/storage ambient temperature		0 ... 70 °C / -20 ... +85 °C				
MTBF at full load, $T_U = 40 °C$		410,000 h (5 V – 240.000 h)				

## AC/DC switched mode power supplies

Single, 50 W .....	3.11.2
Single, 80 W .....	3.11.4
Single, 100 W .....	3.11.6
Single, 130 W .....	3.11.8
Dual, 80 W .....	3.11.10
Dual, 100 W .....	3.11.12
Triple, 80 W .....	3.11.14
Triple, 100 W .....	3.11.16
Triple, 130 W .....	3.11.18
Triple, 150 / 224 W .....	3.11.20
Quad, 250 W .....	3.11.22
Quad, 350 W .....	3.11.24

## AC/DC linear control systems

Single, 8 – 60 W ..	3.11.26
Dual, 10 – 58 W ...	3.11.28
Triple, 7 – 39 W ...	3.11.30

## AC/DC non-regulated

Single, 84 W .....	3.11.32
Single, 240 W .....	3.11.34

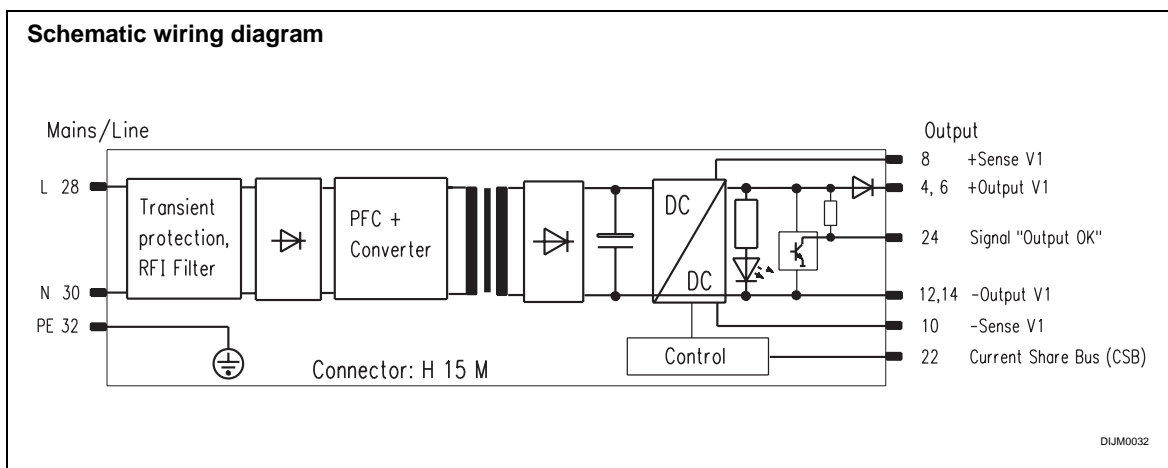
## DC/DC converters

Single, 20 to 120 W .....	3.11.36
Dual, 55 to 72 W ..	3.11.38
Triple, 64 to 70 W .....	3.11.40
Quad, 250 W .....	3.11.42
Quad, 350 W .....	3.11.44

## Accessories

Mating connector female connector H 15 F .....	3.11.46
Keying/coding .....	3.11.47
Guide rails .....	3.11.47
Z-rails .....	3.11.47
EMC contact strips .....	3.11.48
Wall/horizontal rail installation .....	3.11.49

## Schematic wiring diagram





# 19" compatible AC/DC switched mode

Power supply units..... 3.10.0

19" compatible.....3.11.0

Open frame.....3.12.0

Power systems.....3.13.0

Uninterruptable power supplies (UPS) .....3.14.0

Backplanes/ test adapters .. 3.20.0

Microcomputer packaging systems (MPS) ..... 3.30.0

Appendix..... 3.90.0



11399005



Single, 100 W

*maxpower*

- High performance
- 19" compatible AC/DC switched mode power supplies, pluggable 3 U
- Wide range mains input voltage (90 – 254 V<sub>AC</sub> and 100 – 360 V<sub>DC</sub>)
- Power factor correction (PFC) to EN 61000-3-2
- 1 output voltage
- Redundancy operation with integrated decoupling diode
- Even current share in the event of parallel operation via current share bus (CSB)
- Signalling: Output voltage OK
- For industrial and telecommunications applications
- International approvals EN 60950, UL
- High reliability and long life
- Cost-optimized

100 x 160 mm

DUM0084

PSA46292

Pin	Connection
4	Output + V <sub>1</sub>
6	Sense + V <sub>1</sub>
8	Sense 0V V <sub>1</sub>
10	Output 0V V <sub>1</sub>
12	-
14	-
16	-
18	-
20	-
22	CSB
24	Output OK
26	-
28	L
30	N
32	PE ⊕

**Note**

The front panel is not included in delivery.

Voltage in V	Output data at T <sub>U</sub> = 0 ... 50 °C			Height in U	Width A in HP	Order No. <sup>1)</sup>	
	Current (with 190 V <sub>AC</sub> ) in A	Power output in W	Power supply Type			Mains voltage 90 – 254 V <sub>AC</sub>	Front panel <sup>2)</sup> EMC
5	16,0	80	3	6	MAX 105	<b>13100-102</b>	<b>21006-943</b>
12	8.3	100			MAX 112	<b>13100-103</b>	
15	6.6	99			MAX 115	<b>13100-104</b>	
24	4.2	101			MAX 124	<b>13100-105</b>	

<sup>1)</sup> Please order front panel separately

<sup>2)</sup> Front anodised, rear side chromated, slotted on both sides for mounting EMC contact strips in the event of increased EMC requirements  
(3 U EMC contact strips, Order No. 21101-705, 10 pieces)

**Mating connector H15F with FASTON connection, Order No. 69001-733**

# 19" compatible AC/DC switched mode



## Technical data

Input parameters					
Mains-voltage	Nominal values $V_{AC}$	100 – 240 $V_{AC}$			
	Operating-ranges	90 – 254 $V_{AC}$ 100 – 360 $V_{DC}$			
Mains nominal current at 90 $V_{AC}$	1.6 A				
Mains frequency range	50 – 60 Hz				
Power factor correction in accordance with	EN 61000-3-2				
Efficiency type		63 %	75 %	77 %	
Switch-on current $I_P$ (with 230 $V_{AC}$ )	< 20 A				
Output parameters at 190/90 $V_{AC}$					
Output power max. (50 °C) [W]		80/65	100/72	100/80	
Output voltage [V]	factory set	5	12	15	24
	Adjustment range $\Delta V$	4.95–5.5	11.5–15.7	21.8–25.3	
Output current [A]	0 ... 50 °C	16/13	8.3/6	6.6/4.8	4.2/3.2
	70 °C	12/10.5	6/4.8	4.8/3.8	3.2/2.6
Current limitation shuts the output off after approx. 10 ms, automatically resets after approx. 2 s, shuts power supply off following longer overload.	Permanently short-circuit protected				
Residual ripple/ Interference voltage (BW: 30 MHz) [mV <sub>PP</sub> ]		< 50	< 50	< 60	
Mains and load control, static (load change 0 – 100 %) [mV <sub>PP</sub> ]		< 20	< 80	< 100	< 80
Temperature coefficient	-0.015 %/K				
CSB and output decoupled via diode	mounted				
Dynamic control deviations (load change: 10 ... 100 % with 100 Hz; $dI/dt = 0.25$ A/μs)					
Control time at $0.01 \times V_{1\text{Nominal}}$ [ms]		< 0.8	< 0.2	< 0.1	
Overshoot and undershoot amplitude	< 300 mV				

## Protection and monitoring facilities

Switch-on time	< 0.8 s			
Mains fuse	4 A/250 $V_{AC}$ , 5 × 20 mm, EN 60127-2/V			
Power failurebridging at $V_{AC} = 90$ $V_{AC}$ and 100 % load	>14 ms	>14 ms	>10 ms	>16 ms
	<8.2 V	<19 V	<34 V	
	Remote sense compensated			
	Max. 0.5 V			
"Output voltage ok" signalling	"Output OK" signal, active high			
	High level [V]	5	12	15
Time delay	100 – 250 ms			

## Test and environmental conditions

Climatic test to	IEC 68-2-38			
Shock and vibration test in accordance with acceleration of 2 g	EN 60068-2-6			
Height 3 U/ depth 160 mm	Width 6 HP			
Weight (mass)	0.55 kg			
CE	Interference emission	EN 50081-1, EN 55011 Class B,		
	Interference immunity, degree of severity 3	EN 50082-2, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-11		
	Safety, class of protection 1	EN 60950		
High voltage test to EN 60950	Input-output	4.3 kV <sub>DC</sub>		
	Input PE	2.2 kV <sub>DC</sub>		
	Output PE	0.7 kV <sub>DC</sub>		
UL 1950	applied for			
Power supply maintenance-free	Yes			
Cooling	Convection			
Operation/storage ambient temperature	0 ... 70 °C / -20 ... +85 °C			
MTBF at full load, $T_U = 40$ °C	280,000 h (5 V – 220,000 h)			

## AC/DC switched mode power supplies

Single, 50 W .....	3.11.2
Single, 80 W .....	3.11.4
Single, 100 W .....	3.11.6
Single, 130 W .....	3.11.8
Dual, 80 W .....	3.11.10
Dual, 100 W .....	3.11.12
Triple, 80 W .....	3.11.14
Triple, 100 W .....	3.11.16
Triple, 130 W .....	3.11.18
Triple, 150 / 224 W .....	3.11.20
Quad, 250 W .....	3.11.22
Quad, 350 W .....	3.11.24

## AC/DC linear control systems

Single, 8 – 60 W ..	3.11.26
Dual, 10 – 58 W ...	3.11.28
Triple, 7 – 39 W ...	3.11.30

## AC/DC non-regulated

Single, 84 W .....	3.11.32
Single, 240 W .....	3.11.34

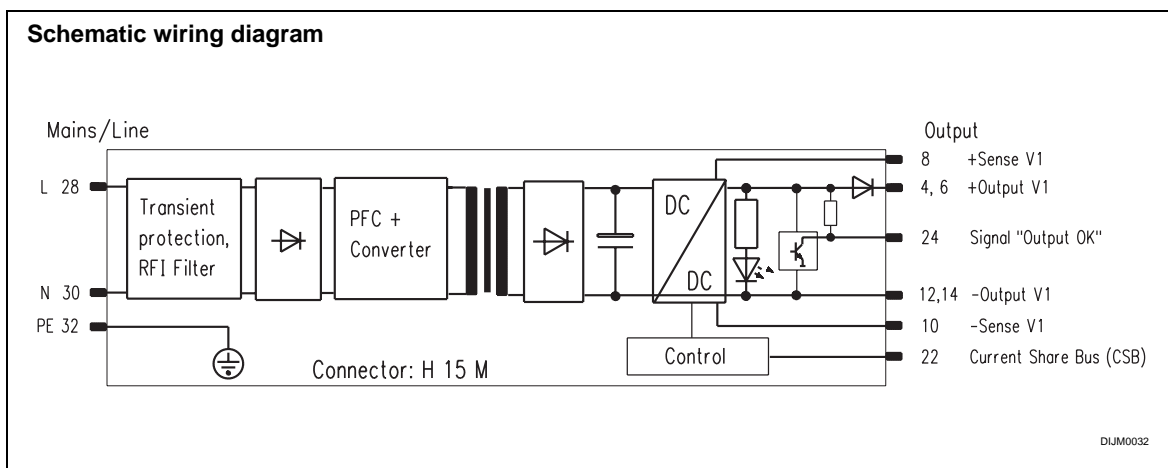
## DC/DC converters

Single, 20 to 120 W .....	3.11.36
Dual, 55 to 72 W ..	3.11.38
Triple, 64 to 70 W .....	3.11.40
Quad, 250 W .....	3.11.42
Quad, 350 W .....	3.11.44

## Accessories

Mating connector female connector H 15 F .....	3.11.46
Keying/coding .....	3.11.47
Guide rails .....	3.11.47
Z-rails .....	3.11.47
EMC contact strips .....	3.11.48
Wall/horizontal rail installation .....	3.11.49

## Schematic wiring diagram





# 19" compatible AC/DC switched mode

Power supply units..... 3.10.0

19" compatible.....3.11.0

Open frame.....3.12.0

Power systems.....3.13.0

Uninterruptable power supplies (UPS) .....3.14.0

Backplanes/ test adapters .. 3.20.0

Microcomputer packaging systems (MPS) ..... 3.30.0

Appendix..... 3.90.0



11399008



**Single, 130 W**

**ecopower**

- 19" compatible AC/DC switched mode power supplies, pluggable 3 U
- Wide range mains input voltage (90 – 254 V<sub>AC</sub> and 100 – 360 V<sub>DC</sub>)
- Power factor correction (PFC) to EN 61000-3-2
- 1 output voltage
- Redundancy operation with integrated decoupling diode
- Even current share in the event of parallel operation via current share bus (CSB)
- Signalling: Output voltage OK
- For industrial and telecommunications applications
- International approvals EN 60950, UL
- High reliability and long life
- Cost-optimized

100 x 160 mm

DUM0084

Pin	Connection
4	Output + V <sub>1</sub>
6	
8	Sense + V <sub>1</sub>
10	Sense 0V V <sub>1</sub>
12	
14	Output 0V V <sub>1</sub>
16	
18	
20	
22	CSB
24	Output OK
26	-
28	L
30	N
32	PE ⊕

PSA46292

**Note**

The front panel is not included in delivery.

Voltage in V	Output data at T <sub>U</sub> = 0 ... 50 °C			Height in U	Width A in HP	Order No. <sup>1)</sup>	
	Current (with 190 V <sub>AC</sub> ) in A	Power output in W	Power supply Type			Mains voltage 90 – 254 V <sub>AC</sub>	Front panel <sup>2)</sup> EMC
3.3	22,0	72	3	12	SEG 103	<b>13100-090</b>	<b>21006-946</b>
5		110			SEG 105	<b>13100-091</b>	
12	11,0	132			SEG 112	<b>13100-092</b>	
15	8.8				SEG 115	<b>13100-093</b>	
24	5.5		SEG 124	<b>13100-094</b>			

<sup>1)</sup> Please order front panel separately

<sup>2)</sup> Front anodised, rear side chromated, slotted on both sides for mounting EMC contact strips in the event of increased EMC requirements  
(3 U EMC contact strips, Order No. 21101-705, 10 pieces)

**Mating connector H15F with FASTON connection, Order No. 69001-733**

# 19" compatible AC/DC switched mode



## Technical data

Input parameters						
Mains-voltage	Nominal values $V_{AC}$	100 – 240 $V_{AC}$				
	Operating-ranges	90 – 254 $V_{AC}$ 100 – 360 $V_{DC}$				
Mains nominal current at 90 $V_{AC}$	2 A					
Mains frequency range	50 – 60 Hz					
Power factor correction in accordance with	EN 61000-3-2					
Efficiency type	65 %	69 %	80 %	83 %		
Switch-on current $I_p$ (with 230 $V_{AC}$ )	< 20 A					
Output parameters at 190/90 $V_{AC}$						
Output power (50 °C) [W]	72/66	110/100	132/120	132/120		
Output voltage [V]	factory set	3.3	5	12	15	24
	Adjustment range $\Delta V$	2.6–3.5	4.6–5.3	10.6–15.4		21.8–26
Output current [A]	0 ... 50 °C	22/20	11/10	8.8/8	5.5/5	
	UL values	20/18	10.5/9	8.4/7.2	5.5/5	
Current limitation shuts the output off after approx. 5 ms, automatically resets after approx. 2 s, shuts power supply off following longer overload.	Permanently short-circuit resistant					
Residual ripple/ Interference voltage (BW: 30 MHz) [ $mV_{PP}$ ]	< 200					
Mains and load control, static (load change 0 – 100 %) [ $mV_{PP}$ ]	< 10	< 20	< 100			
Temperature coefficient	-0.015 %/K					
CSB and output decoupled via diode	mounted					
Dynamic control deviations (load change: 10 ... 100 % with 100 Hz; $dI/dt = 0.25 A/\mu s$ )						
Control time at $0.01 \times V_{1\text{Nominal}}$ [ms]	< 0.5					
Overshoot and undershoot amplitude [mV]	< 250					

Protection and monitoring facilities					
Switch-on time	< 1.5 s	< 0.8 s			
Mains fuse	4 A/250 $V_{AC}$ , 5 × 20 mm, EN 60127-2/V				
Power failure bridging at 100 % load	SEG 103, -105, -124 > 20 ms SEG 112 > 10 ms SEG 115 > 5 ms				
Over-voltage protection OVP limits output voltage to	<7.2 V	<8.2 V	<19.5 V	<34.2 V	
Remote sense compensated	Max. 0.5 V				
"Output voltage ok" signalling	"Output OK" signal, active high				
High level [V]	3.3	5	12	15	20
Time delay	100 – 250 ms				
Test and environmental conditions					
Climatic test to	IEC 68-2-38				
Shock and vibration test in accordance with acceleration of 2 g	EN 60068-2-6				
Height 3 U/ depth 160 mm	Width 12 HP				
Weight (mass)	0.9 kg				
CE	Interference emission	EN 50081-1, EN 55011 Class B,			
	interference immunity,	EN 50082-2, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6,			
	Safety, class of protection 1	EN 60950			
High voltage test to EN 60950	Input-output	4.3 $kV_{DC}$			
	Input PE	2.2 $kV_{DC}$			
	Output PE	0.7 $kV_{DC}$			
UL 1950	applied for				
Power supply maintenance-free	Yes				
Cooling	Convection				
Operation/storage ambient temperature	0 ... 70 °C / -20 ... +85 °C				
MTBF at full load, $T_U = 40 °C$	310,000 h (5 V – 230,000 h)				

## AC/DC switched mode power supplies

Single, 50 W .....	3.11.2
Single, 80 W .....	3.11.4
Single, 100 W .....	3.11.6
Single, 130 W .....	3.11.8
Dual, 80 W .....	3.11.10
Dual, 100 W .....	3.11.12
Triple, 80 W .....	3.11.14
Triple, 100 W .....	3.11.16
Triple, 130 W .....	3.11.18
Triple, 150 / 224 W .....	3.11.20
Quad, 250 W .....	3.11.22
Quad, 350 W .....	3.11.24

## AC/DC linear control systems

Single, 8 – 60 W ..	3.11.26
Dual, 10 – 58 W ...	3.11.28
Triple, 7 – 39 W ...	3.11.30

## AC/DC non-regulated

Single, 84 W .....	3.11.32
Single, 240 W .....	3.11.34

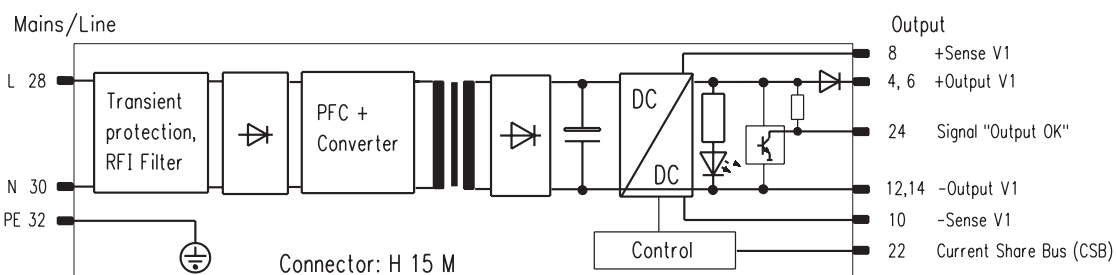
## DC/DC converters

Single, 20 to 120 W .....	3.11.36
Dual, 55 to 72 W ..	3.11.38
Triple, 64 to 70 W .....	3.11.40
Quad, 250 W .....	3.11.42
Quad, 350 W .....	3.11.44

## Accessories

Mating connector female connector H 15 F .....	3.11.46
Keying/coding .....	3.11.47
Guide rails .....	3.11.47
Z-rails .....	3.11.47
EMC contact strips .....	3.11.48
Wall/horizontal rail installation .....	3.11.49

## Schematic wiring diagram



DJUM0032



# 19" compatible AC/DC switched mode

Power supply units..... 3.10.0  
**19" compatible.....3.11.0**  
 Open frame.....3.12.0  
 Power systems.....3.13.0  
 Uninterruptable power supplies (UPS) .....3.14.0

Backplanes/  
 test adapters .. 3.20.0

Microcomputer packaging systems (MPS) ..... 3.30.0

Appendix..... 3.90.0



11399006

**Dual, 80 W**

**ecopower**

- 19" compatible AC/DC switched mode power supplies, pluggable 3 U
- Wide range mains input voltage (90 – 254 V<sub>AC</sub> and 100 – 360 V<sub>DC</sub>)
- Power factor correction (PFC) to EN 61000-3-2
- 2 output voltages
- For industrial applications
- International approvals EN 60950, UL
- High reliability and long life
- Cost-optimized



Pin	Connection
4	
6	
8	
10	
12	
14	
16	Output + V <sub>1</sub>
18	Output 0V V <sub>1</sub>
20	Output + V <sub>2</sub>
22	Output 0V V <sub>2</sub>
24	
26	
28	L
30	N
32	PE ⊕

**Note**

The front panel is not included in delivery.

Voltage in V		Output data at T <sub>U</sub> = 0 ... 50 °C			Height in U	Width A in HP	Power supply Type	Order No. <sup>1)</sup>	
V <sub>1</sub>	V <sub>2</sub>	Current (with 190 V <sub>AC</sub> ) in A		Mains voltage				Front panel <sup>2)</sup> EMC	
		I <sub>1</sub>	I <sub>2</sub>	Power output in W			90 – 254 V <sub>AC</sub>		
+5	+12	7	3.5	75	3	8	SEM 2512	<b>13100-066</b>	<b>21006-945</b>
+5	+24	7	1.8	78			SEM 2524	<b>13100-067</b>	
+12	-12	3.5	3.5	84			SEM 212	<b>13100-064</b>	
+15	-15	2.8	2.8				SEM 215	<b>13100-068</b>	

<sup>1)</sup> Please order front panel separately

<sup>2)</sup> Front anodised, rear side chromated, slotted on both sides for mounting EMC contact strips in the event of increased EMC requirements (3 U EMC contact strips, Order No. 21101-705, 10 pieces)

**Mating connector H15F with FASTON connection, Order No. 69001-733**

# 19" compatible AC/DC switched mode



## Technical data

Input parameters					
Mains-voltage	Nominal values $V_{AC}$	100 – 240 $V_{AC}$			
	Operating-ranges	90 – 254 $V_{AC}$ 100 – 360 $V_{DC}$			
Mains nominal current at 90 $V_{AC}$		1.4 A			
Mains frequency range		50 – 60 Hz			
Power factor correction in accordance with		EN 61000-3-2			
Efficiency type		74 – 80 %			
Switch-on current $I_p$ (with 230 $V_{AC}$ )		< 15 A			
Output parameters at		190/90 $V_{AC}$			
Output power max.		75 – 84 / 66 – 72 W			
Output voltage [V]		$V_1, V_2$			
	factory set	5	12	15	24
	Adjustment-range $\Delta V$	4.95–5.5	11.5–15.7		24–25.2
Output current [A]	0 ... 50°C $V_1$	7/6	3.5/3	2.8/2.4	1.8/1.3
	$V_2$		3.5/3	2.8/2.4	
	70°C $V_1$	5/4	2.7/2.2	2.2/1.8	1/0.8
	$V_2$		2.7/2.2	2.2/1.8	
Current limitation shuts the output off after approx. 20 ms, automatically resets after approx. 2 s		Permanently short-circuit protected			
Residual ripple/interference voltage (BW: 30 MHz) [mV <sub>PP</sub> ]		< 150			
Mains and load control, static (load change 0 – 100 %) [mV <sub>PP</sub> ]		< 100	< 120	< 150	< 100
Temperature coefficient		-0.015 %/K			
Dynamic control deviations					
(load change: 10 ... 100 % with 100 Hz; $dI/dt = 0.25$ A/ $\mu$ s)					
Control time at $0.01 \times V_1$ Nominal [ms]		< 0.3			
Overshoot and undershoot amplitude [mV]		< 200	< 250	< 100	

Protection and monitoring facilities				
Switch-on time		< 1.5 s		
Mains fuse		4 A/250 $V_{AC}$ , 5 × 20 mm, EN 60127-2/V		
Power failurebridging at $V_{AC} = 90$ $V_{AC}$ and 100 % load		> 20 ms		
Over-voltage protection OVP		7.5 V	18 V	30 V
Test and environmental conditions				
Climatic test to		IEC 68-2-38		
Shock and vibration test in accordance with acceleration of 2 g		EN 60068-2-6		
Height 3 U/depth 160 mm		Width 8 HP		
Weight (mass)		0.55 kg		
CE	Interference emission	EN 50081-1, EN 55011 Class B,		
	interference-immunity, degree of severity 3	EN 50082-2, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6,		
	Safety, class of protection 1	EN 60950		
High voltage test to EN 60950	Input-output	4.3 kV <sub>DC</sub>		
	Input PE	2.2 kV <sub>DC</sub>		
	Output PE	0.7 kV <sub>DC</sub>		
UL 1950		applied for		
Power supply maintenance-free		Yes		
Cooling		Convection		
Operation/storage ambient temperature		0 ... 70°C / -20 ... +85°C		
MTBF at full load, $T_U = 40^\circ\text{C}$		350,000 h		

## AC/DC switched mode power supplies

Single, 50 W .....	3.11.2
Single, 80 W .....	3.11.4
Single, 100 W .....	3.11.6
Single, 130 W .....	3.11.8
Dual, 80 W .....	3.11.10
Dual, 100 W .....	3.11.12
Triple, 80 W .....	3.11.14
Triple, 100 W .....	3.11.16
Triple, 130 W .....	3.11.18
Triple, 150 / 224 W .....	3.11.20
Quad, 250 W .....	3.11.22
Quad, 350 W .....	3.11.24

## AC/DC linear control systems

Single, 8 – 60 W ..	3.11.26
Dual, 10 – 58 W ...	3.11.28
Triple, 7 – 39 W ...	3.11.30

## AC/DC non-regulated

Single, 84 W .....	3.11.32
Single, 240 W .....	3.11.34

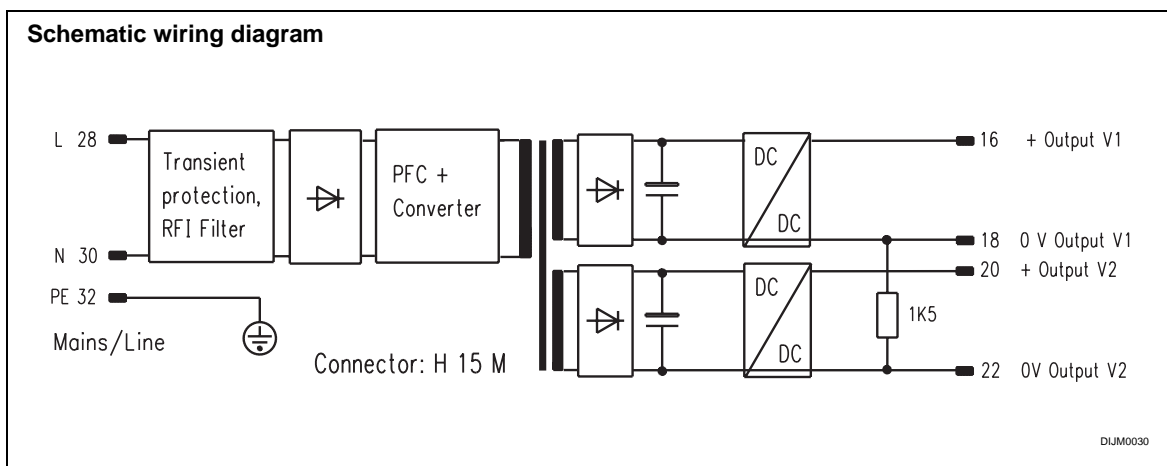
## DC/DC converters

Single, 20 to 120 W .....	3.11.36
Dual, 55 to 72 W ..	3.11.38
Triple, 64 to 70 W .....	3.11.40
Quad, 250 W .....	3.11.42
Quad, 350 W .....	3.11.44

## Accessories

Mating connector female connector H 15 F .....	3.11.46
Keying/coding .....	3.11.47
Guide rails .....	3.11.47
Z-rails .....	3.11.47
EMC contact strips .....	3.11.48
Wall/horizontal rail installation .....	3.11.49

## Schematic wiring diagram





# 19" compatible AC/DC switched mode

Power supply units..... 3.10.0

19" compatible.....3.11.0

Open frame.....3.12.0

Power systems.....3.13.0

Uninterruptable power supplies (UPS) .....3.14.0

Backplanes/ test adapters .. 3.20.0

Microcomputer packaging systems (MPS) ..... 3.30.0

Appendix..... 3.90.0



11300010

**Dual, 100 W**

*maxpower*

- 19" compatible AC/DC switched mode power supplies, pluggable 3 U
- Wide range mains input voltage (90 – 254 V<sub>AC</sub> and 100 – 360 V<sub>DC</sub>)
- Power factor correction (PFC) to EN 61000-3-2
- 2 output voltages
- For industrial applications
- International approvals EN 60950, UL
- High reliability and long life
- Cost-optimized



100 x 160 mm

DUM0084

PSA46292

Pin	Connection
4	
6	
8	
10	-
12	
14	
16	Output + V <sub>1</sub>
18	Output 0V V <sub>1</sub>
20	Output + V <sub>2</sub>
22	Output 0V V <sub>2</sub>
24	
26	-
28	L
30	N
32	PE ⊕

**Note**

The front panel is not included in delivery.

Output data at T <sub>U</sub> = 0 ... 50 °C					Order No. <sup>1)</sup>				
Voltage in V		Current (with 190 V) in A		Power output in W	Height in U	Width A in HP	Power supply Type	Mains voltage 90 – 254 V <sub>AC</sub>	Front panel <sup>2)</sup> EMC
V <sub>1</sub>	V <sub>2</sub>	I <sub>1</sub>	I <sub>2</sub>						
+5	+12	9	4	93	3	8	MAX 2512	<b>13100-112</b>	<b>21006-945</b>
+5	+24	9	2				MAX 2524	<b>13100-114</b>	
+12	-12	4.2	4.2	MAX 212			<b>13100-115</b>		
+15	-15	3.4	3.4	MAX 215			<b>13100-116</b>		

<sup>1)</sup> Please order front panel separately

<sup>2)</sup> Front anodised, rear side chromated, slotted on both sides for mounting EMC contact strips in the event of increased EMC requirements (3 U EMC contact strips, Order No. 21101-705, 10 pieces)

**Mating connector H15F with FASTON connection, Order No. 69001-733**

# 19" compatible AC/DC switched mode



## Technical data

Input parameters					
Mains-voltage	Nominal values $V_{AC}$	100 – 240 $V_{AC}$			
	Operating-ranges	90 – 254 $V_{AC}$ 100 – 360 $V_{DC}$			
Mains nominal current at 90 $V_{AC}$		1.4 A			
Mains frequency range		50 – 60 Hz			
Power factor correction in accordance with		EN 61000-3-2			
Efficiency type		73 – 80 %			
Switch-on current $I_p$ (with 230 $V_{AC}$ )		< 15 A			
Output parameters at		190/90 $V_{AC}$			
Output power max.		93 – 102 / 77 – 82 W			
Output voltage [V]		$V_1, V_2$			
	factory set	5	12	15	24
	Adjustment-range $\Delta V$	4.95–5.5	11.5–15.7		24–25.2
Output current [A]	0 ... 50°C $V_1$ $V_2$	9/7	4.2/3.4 4.2/3.4	3.4/2.7 3.4/2.7	2/1.6
	70°C $V_1$ $V_2$	6/5	3.2/2.5 3.2/2.5	2.6/2 2.6/2	1.5/1.2
Current limitation shuts the output off after approx. 20 ms, automatically resets after approx. 2 s		Permanently short-circuit protected			
Residual ripple/interference voltage (BW: 30 MHz) [mV <sub>PP</sub> ]		< 100	< 80	< 100	
		< 100	< 150	< 150	< 100
Mains and load control, static (load change 0 – 100 %) [mV <sub>PP</sub> ]		< 100	< 150	< 150	< 100
Temperature coefficient		-0.015 %/K			
Dynamic control deviations (load change: 10 ... 100 % with 100 Hz; $dI/dt = 0.25$ A/ $\mu$ s)					
Control time at $0.01 \times V_1$ Nominal		< 0.8 ms			
Overshoot and undershoot amplitude		< 250 mV			

Protection and monitoring facilities		5 V   12 V   15 V   24 V			
Switch-on time		< 1.5 s			
Mains fuse		4 A/250 $V_{AC}$ , 5 × 20 mm, EN 60127-2/V			
Power failure bridging at $V_{AC} = 90$ $V_{AC}$ and 100 % load		> 10 ms	> 7 ms	> 20 ms	
	Over-voltage protection OVP (shuts power supply off)	7.5 V	18 V	30 V	
Test and environmental conditions					
Climatic test to		IEC 68-2-38			
Shock and vibration test in accordance with acceleration of 2 g		EN 60068-2-6			
Height 3 U/depth 160 mm		Width 8 HP			
Weight (mass)		0.55 kg			
CE	Interference emission	EN 50081-1, EN 55011 Class B,			
	interference-immunity, degree of severity 3	EN 50082-2, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6,			
	Safety, class of protection 1	EN 60950			
High voltage test to EN 60950	Input-output	4.3 kV <sub>DC</sub>			
	Input PE	2.2 kV <sub>DC</sub>			
	Output PE	0.7 kV <sub>DC</sub>			
UL 1950		applied for			
Power supply maintenance-free		Yes			
Cooling		Convection			
Operation/storage ambient temperature		0 ... 70°C / -20 ... +85°C			
MTBF at full load, $T_U = 40^\circ\text{C}$		250,000 h			

## AC/DC switched mode power supplies

Single, 50 W .....	3.11.2
Single, 80 W .....	3.11.4
Single, 100 W .....	3.11.6
Single, 130 W .....	3.11.8
Dual, 80 W .....	3.11.10
Dual, 100 W .....	3.11.12
Triple, 80 W .....	3.11.14
Triple, 100 W .....	3.11.16
Triple, 130 W .....	3.11.18
Triple, 150 / 224 W .....	3.11.20
Quad, 250 W .....	3.11.22
Quad, 350 W .....	3.11.24

## AC/DC linear control systems

Single, 8 – 60 W ..	3.11.26
Dual, 10 – 58 W ...	3.11.28
Triple, 7 – 39 W ...	3.11.30

## AC/DC non-regulated

Single, 84 W .....	3.11.32
Single, 240 W .....	3.11.34

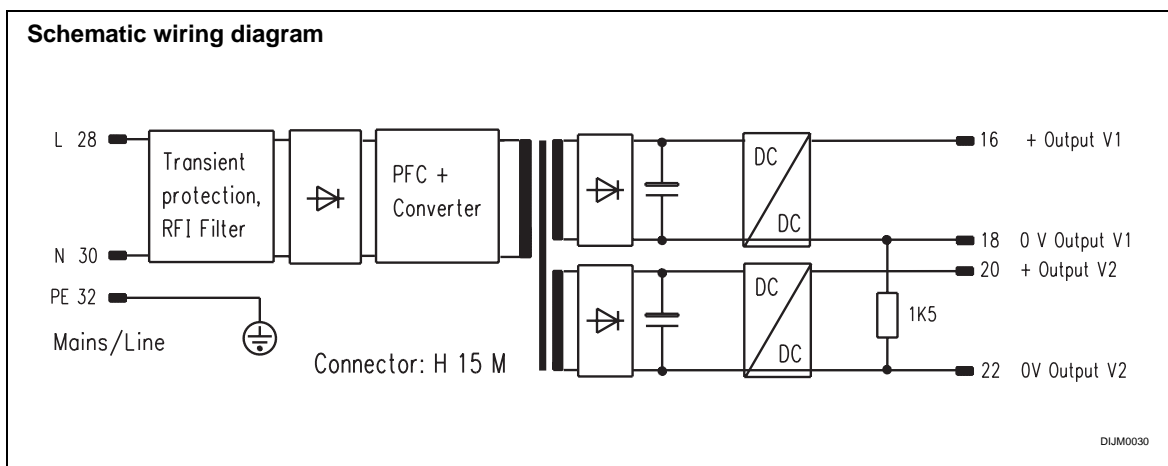
## DC/DC converters

Single, 20 to 120 W .....	3.11.36
Dual, 55 to 72 W ..	3.11.38
Triple, 64 to 70 W .....	3.11.40
Quad, 250 W .....	3.11.42
Quad, 350 W .....	3.11.44

## Accessories

Mating connector female connector H 15 F .....	3.11.46
Keying/coding .....	3.11.47
Guide rails .....	3.11.47
Z-rails .....	3.11.47
EMC contact strips .....	3.11.48
Wall/horizontal rail installation .....	3.11.49

## Schematic wiring diagram





# 19" compatible AC/DC switched mode

Power supply units..... 3.10.0

19" compatible.....3.11.0

Open frame.....3.12.0

Power systems.....3.13.0

Uninterruptable power supplies

(UPS) .....3.14.0

Backplanes/  
test adapters .. 3.20.0

Microcomputer  
packaging systems  
(MPS) ..... 3.30.0

Appendix..... 3.90.0



11399007

**Triple, 80 W**

**ecopower**

- 19" compatible AC/DC switched mode power supplies, pluggable 3 U
- Wide range mains input voltage (90 – 254 V<sub>AC</sub> and 100 – 360 V<sub>DC</sub>)
- Power factor correction (PFC) to EN 61000-3-2
- 3 output voltages
- Signalling: Output voltage OK
- For industrial applications
- International approvals EN 60950, UL
- High reliability and long life
- Cost-optimized



100 x 160 mm

DUM0084

PSA46292

Pin	Connection
4	Output + V <sub>1</sub>
6	Sense + V <sub>1</sub>
8	Sense 0V V <sub>1</sub>
10	Output 0V V <sub>1</sub> (V <sub>2</sub> )
12	Output + V <sub>2</sub>
14	Output 0V V <sub>2</sub> (V <sub>1</sub> )
16	Output + V <sub>3</sub>
18	Output 0V V <sub>3</sub>
20	Output - V <sub>3</sub>
22	Output OK
24	-
26	-
28	L
30	N
32	PE ⊕

**Note**

The front panel is not included in delivery.

Output data at T <sub>U</sub> = 0 ... 50 °C							Order No. <sup>1)</sup>				
Voltage in V			Current (with 190 V <sub>AC</sub> ) in A			Power output in W	Height in U	Width A in HP	Power supply Type	Mains voltage 90 – 254 V <sub>AC</sub>	Front panel <sup>2)</sup> EMC
V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>						
+5	+12	-12	7	1,9	1,9	81	3	8	SEM 312	<b>13100-069</b>	<b>21006-945</b>
+5	+15	-15	7	1.5	1.5	80			SEM 315	<b>13100-070</b>	

<sup>1)</sup> Please order front panel separately

<sup>2)</sup> Front anodised, rear side chromated, slotted on both sides for mounting EMC contact strips in the event of increased EMC requirements  
(3 U EMC contact strips, Order No. 21101-705, 10 pieces)

**Mating connector H15F with FASTON connection, Order No. 69001-733**

# 19" compatible AC/DC switched mode



## Technical data

Input parameters		
Mains-voltage	Nominal values $V_{AC}$	100 – 240 $V_{AC}$
	Operating-ranges	90 – 254 $V_{AC}$ 100 – 360 $V_{DC}$
Mains nominal current at 90 $V_{AC}$		1.4 A
Mains frequency range		50 – 60 Hz
Power factor correction in accordance with		EN 61000-3-2
Efficiency type		> 74 %
Switch-on current $I_p$ (with 230 $V_{AC}$ )		< 15 A
Output parameters at 190/90 $V_{AC}$		
Output power max. (50°C) [W]	35/25	45/31
Output voltage [V]	factory set	$V_1$ 5 V, $V_2, V_3$ $\pm 12$ V, $\pm 15$ V
	Adjustment-range $\Delta V$	4.95–5.5, 11.5–15.7, 11.5–15.7
Output current [A]	0 ... 50°C	7/6.5, 1.9/1.4, 1.5/1.1
	70°C	5/5, 1.3/1, 1.0/0.8
Current limitation shuts the output off after approx. 20 ms, automatically resets after approx. 0.5 s		Permanently short-circuit protected
Residual ripple/interference voltage (BW: 30 MHz) [ $mV_{PP}$ ]	< 120	< 300
Mains and load control, static (load change 0 – 100 %) [ $mV_{PP}$ ]	< 50	< 120
Temperature coefficient	-0.015 %/K	
Dynamic control deviations (load change: 10 ... 100 % with 100 Hz; $di/dt = 0.25$ A/ $\mu$ s)		
Control time at $0.01 \times V_1$ Nominal [ms]	< 0.8	
Overshoot and undershoot amplitude [ $mV$ ]	< 250	

Protection and monitoring facilities		
Switch-on time	< 1.5 s	
Mains fuse	4 A/250 $V_{AC}$ , 5 × 20 mm, EN 60127-2/V	
Power failure bridging at $V_{AC} = 90$ $V_{AC}$ and 100 % load	> 20 ms	
Over-voltage protection OVP (shuts power supply off)	$V_1$ : 7.5 V	
"Output voltage ok" signalling	"Output OK" signal, active high	
Test and environmental conditions		
Climatic test to	IEC 68-2-38	
Shock and vibration test in accordance with acceleration of 2 g	EN 60068-2-6	
Height 3 U/depth 160 mm	Width 8 HP	
Weight (mass)	0.55 kg	
CE	Interference emission	EN 50081-1, EN 55011 Class B,
	interference-immunity, degree of severity 3	EN 50082-2, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6,
	Safety, class of protection 1	EN 60950 (VDE)
High voltage test to EN 60950	Input-output	4.3 kV $_{DC}$
	Input PE	2.2 kV $_{DC}$
	Output PE	0.7 kV $_{DC}$
UL 1950	E 153809	
Power supply maintenance-free	Yes	
Cooling	Convection	
Operation/storage ambient temperature	0 ... 70°C / -20 ... +85°C	
MTBF at full load, $T_U = 40$ °C	300,000 h	

## AC/DC switched mode power supplies

Single, 50 W .....	3.11.2
Single, 80 W .....	3.11.4
Single, 100 W .....	3.11.6
Single, 130 W .....	3.11.8
Dual, 80 W .....	3.11.10
Dual, 100 W .....	3.11.12
Triple, 80 W .....	3.11.14
Triple, 100 W .....	3.11.16
Triple, 130 W .....	3.11.18
Triple, 150 / 224 W .....	3.11.20
Quad, 250 W .....	3.11.22
Quad, 350 W .....	3.11.24

## AC/DC linear control systems

Single, 8 – 60 W ..	3.11.26
Dual, 10 – 58 W ...	3.11.28
Triple, 7 – 39 W ...	3.11.30

## AC/DC non-regulated

Single, 84 W .....	3.11.32
Single, 240 W .....	3.11.34

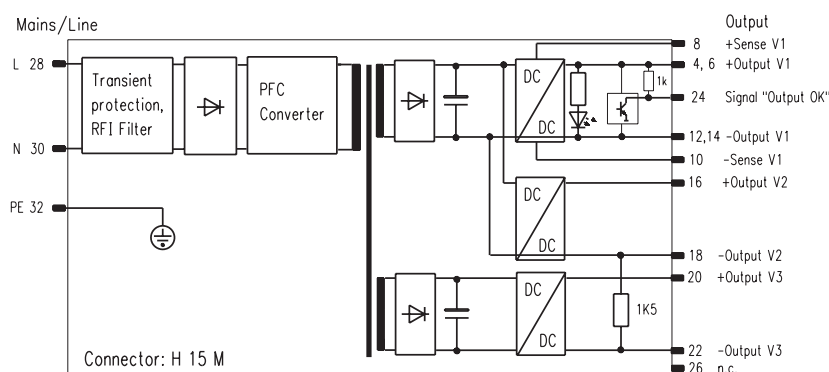
## DC/DC converters

Single, 20 to 120 W .....	3.11.36
Dual, 55 to 72 W ..	3.11.38
Triple, 64 to 70 W .....	3.11.40
Quad, 250 W .....	3.11.42
Quad, 350 W .....	3.11.44

## Accessories

Mating connector female connector H 15 F .....	3.11.46
Keying/coding .....	3.11.47
Guide rails .....	3.11.47
Z-rails .....	3.11.47
EMC contact strips .....	3.11.48
Wall/horizontal rail installation .....	3.11.49

## Schematic wiring diagram



DJUM0026



# 19" compatible AC/DC switched mode

Power supply units..... 3.10.0  
**19" compatible.....3.11.0**  
 Open frame.....3.12.0  
 Power systems.....3.13.0  
 Uninterruptable power supplies (UPS) .....3.14.0

Backplanes/ test adapters .. 3.20.0

Microcomputer packaging systems (MPS) ..... 3.30.0

Appendix..... 3.90.0



11300011

**Triple, 100 W**

**maxpower**

- 19" compatible AC/DC switched mode power supplies, pluggable 3 U
- Wide range mains input voltage (90 – 254 V<sub>AC</sub> and 100 – 360 V<sub>DC</sub>)
- Power factor correction (PFC) to EN 61000-3-2
- 3 output voltages
- Signalling: Output voltage OK
- For industrial applications
- International approvals EN 60950, UL
- High reliability and long life
- Cost-optimized



DUM0084

PSA46292

Pin	Connection
4	Output + V <sub>1</sub>
6	Sense + V <sub>1</sub>
8	Sense 0V V <sub>1</sub>
10	Output 0V V <sub>1</sub> (V <sub>2</sub> )
12	Output + V <sub>2</sub>
14	Output 0V V <sub>2</sub> (V <sub>1</sub> )
16	Output + V <sub>3</sub>
18	Output 0V V <sub>3</sub>
20	Output - V <sub>3</sub>
22	Output OK
24	-
26	-
28	L
30	N
32	PE ⊕

**Note**

The front panel is not included in delivery.

Output data at T <sub>U</sub> = 0 ... 50 °C							Order No. <sup>1)</sup>				
Voltage in V			Current (with 190 V <sub>AC</sub> ) in A			Power output	Height	Width A	Power supply	Mains voltage	Front panel <sup>2)</sup> EMC
V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	in W	in U	in HP	Type	90 – 254 V <sub>AC</sub>	
+5	+12	-12	8	2.5	2.5	100	3	8	MAX 312	<b>13100-122</b>	<b>21006-945</b>
+5	+15	-15	8	2,0	2,0				MAX 315	<b>13100-123</b>	

<sup>1)</sup> Please order front panel separately

<sup>2)</sup> Front anodised, rear side chromated, slotted on both sides for mounting EMC contact strips in the event of increased EMC requirements

3 U EMC contact strips, Order No. 21101-705, 10 pieces

**Mating connector H15F with FASTON connection, Order No. 69001-733**

# 19" compatible AC/DC switched mode



## Technical data

Input parameters		190/90 V <sub>AC</sub>	
Mains-voltage	Nominal values V <sub>AC</sub>	100 – 240 V <sub>AC</sub>	
	Operating-ranges	90 – 254 V <sub>AC</sub> 100 – 360 V <sub>DC</sub>	
Mains nominal current at 90 V <sub>AC</sub>		1.4 A	
Mains frequency range		50 – 60 Hz	
Power factor correction in accordance with		EN 61000-3-2	
Efficiency type		> 73 %	
Switch-on current I <sub>p</sub> (with 230 V <sub>AC</sub> )		< 15 A	
Output parameters at		190/90 V <sub>AC</sub>	
Output power max. (50°C) [W]		40/35	60/38.4
Output voltage [V]		V <sub>1</sub>	V <sub>2</sub> , V <sub>3</sub>
	factory set	5 V	± 12 V, ± 15 V
	Adjustment-range Δ V	4.95–5.5	11.5–15.7, 11.5–15.7
Output current [A]	0 ... 50°C	8/7	2.5/1.6, 2/1.3
	70°C	6/5.5	1.5/1.2, 1.2/1
Current limitation shuts the output off after approx. 20 ms, automatically resets after approx. 0.5 s		Permanently short-circuit protected	
Residual ripple/interference voltage (BW: 30 MHz) [mV <sub>PP</sub> ]		< 80	< 150
Mains and load control, static (load change 0 – 100 %) [mV <sub>PP</sub> ]		< 25	< 120
Temperature coefficient		-0.015 %/K	
Dynamic control deviations (load change: 10 ... 100 % with 100 Hz; di/dt = 0.25 A/μs)			
Control time at 0.01 × V <sub>1 Nominal</sub> [ms]		< 0.8	
Overshoot and undershoot amplitude [mV]		< 250	

Protection and monitoring facilities		
Switch-on time	< 1.5 s	
Mains fuse, high breaking sluggish	4 A/250 V <sub>AC</sub> , 5 × 20 mm, DIN EN 60127-2/V	
Power failure bridging at V <sub>AC</sub> = 90 V <sub>AC</sub> and 100 % load V <sub>1</sub> /V <sub>2,3</sub>	> 16 ms/5 ms	
Over-voltage protection OVP (shuts power supply off, diode alloyed through) set to	< 7.2 V, –	
Remote sense compensated	Max. 0.5 V	
"Output voltage ok"	"Output OK" signal, active high signalling	
Test and environmental conditions		
Climatic test to	IEC 68-2-38	
Shock and vibration test in accordance with acceleration of 2 g	EN 60068-2-6	
Height 3 U/depth 160 mm	Width 8 HP	
Weight (mass)	0.55 kg	
CE	Interference emission	EN 50081-1, EN 55011 Class B,
	interference-immunity, degree of severity 3	EN 50082-2, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6,
	Safety, class of protection 1	EN 60950
High voltage test to EN 60950	Input-output	4.3 kV <sub>DC</sub>
	Input PE	2.2 kV <sub>DC</sub>
	Output PE	0.7 kV <sub>DC</sub>
UL 1950		applied for
Power supply maintenance-free		Yes
Cooling		Convection
Operation/storage ambient temperature		0 ... 70°C / -20 ... +85°C
MTBF at full load, T <sub>U</sub> = 40°C		220,000 h

## AC/DC switched mode power supplies

Single, 50 W .....	3.11.2
Single, 80 W .....	3.11.4
Single, 100 W .....	3.11.6
Single, 130 W .....	3.11.8
Dual, 80 W .....	3.11.10
Dual, 100 W .....	3.11.12
Triple, 80 W .....	3.11.14
Triple, 100 W .....	3.11.16
Triple, 130 W .....	3.11.18
Triple, 150 / 224 W .....	3.11.20
Quad, 250 W .....	3.11.22
Quad, 350 W .....	3.11.24

## AC/DC linear control systems

Single, 8 – 60 W ..	3.11.26
Dual, 10 – 58 W ...	3.11.28
Triple, 7 – 39 W ...	3.11.30

## AC/DC non-regulated

Single, 84 W .....	3.11.32
Single, 240 W .....	3.11.34

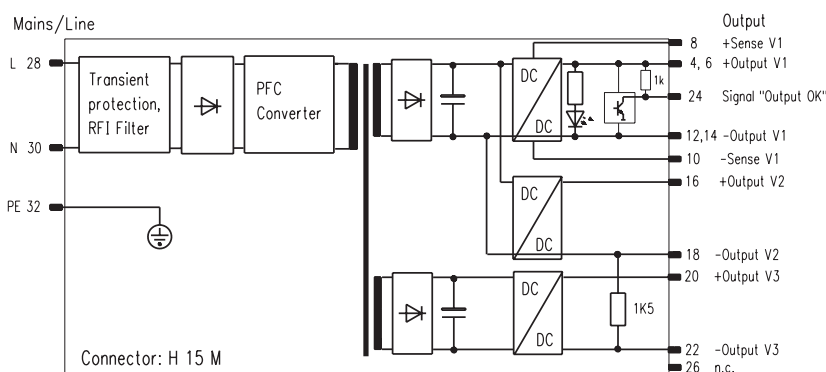
## DC/DC converters

Single, 20 to 120 W .....	3.11.36
Dual, 55 to 72 W ..	3.11.38
Triple, 64 to 70 W .....	3.11.40
Quad, 250 W .....	3.11.42
Quad, 350 W .....	3.11.44

## Accessories

Mating connector female connector H 15 F .....	3.11.46
Keying/coding .....	3.11.47
Guide rails .....	3.11.47
Z-rails .....	3.11.47
EMC contact strips .....	3.11.48
Wall/horizontal rail installation .....	3.11.49

## Schematic wiring diagram



DJUM0026



# 19" compatible AC/DC switched mode

Power supply units..... 3.10.0

19" compatible.....3.11.0

Open frame.....3.12.0

Power systems.....3.13.0

Uninterruptable power supplies (UPS) .....3.14.0

Backplanes/ test adapters .. 3.20.0

Microcomputer packaging systems (MPS) ..... 3.30.0

Appendix..... 3.90.0



11399009

**Triple, 130 W**

**ecopower**

- 19" compatible AC/DC switched mode power supplies, pluggable 3 U
- Wide range mains input voltage (90 – 254 V<sub>AC</sub> and 100 – 360 V<sub>DC</sub>)
- Power factor correction (PFC) to EN 61000-3-2
- 3 output voltages
- Signalling: Output voltage OK
- For industrial applications
- International approvals EN 60950, UL
- High reliability and long life
- Cost-optimized



100 x 160 mm

DUM0084

PSA46292

Pin	Connection
4	Output + V <sub>1</sub>
6	
8	Sense + V <sub>1</sub>
10	Sense 0V V <sub>1</sub>
12	
14	Output 0V V <sub>1</sub> (V <sub>2,3</sub> )
16	Output + V <sub>2</sub>
18	
20	Output 0V V <sub>2,3</sub> (V <sub>1</sub> )
22	Output - V <sub>3</sub>
24	Output OK
26	-
28	L
30	N
32	PE ⊕

**Note**

The front panel is not included in delivery.

Output data at mains voltage 190 V, T <sub>U</sub> = 0 ... 50 °C							Order No. <sup>1)</sup>				
Voltage in V			Current (with 190 V <sub>AC</sub> ) in A			Power output in W	Height in U	Width A in HP	Power supply Type	Mains voltage	Front panel <sup>2)</sup> EMC
V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>					90 – 254 V <sub>AC</sub>	
+5	+12	-12	16	2.8	1.4	132	3	12	SEG 312	<b>13100-078</b>	<b>21006-946</b>
+5	+15	-15	16	2.2	1.1	132			SEG 315	<b>13100-079</b>	

<sup>1)</sup> Please order front panel separately

<sup>2)</sup> Front anodised, rear side chromated, slotted on both sides for mounting EMC contact strips in the event of increased EMC requirements  
(3 U EMC contact strips, Order No. 21101-705, 10 pieces)

**Mating connector H15F with FASTON connection, Order No. 69001-733**

# 19" compatible AC/DC switched mode



## Technical data

Input parameters				
Mains-voltage (wide range input)	Nominal values $V_{AC}$	100 – 240 $V_{AC}$		
	Operating-ranges	90 – 254 $V_{AC}$ 100 – 360 $V_{DC}$		
Mains nominal current at 90 $V_{AC}$	2 A			
Mains frequency range	50 – 60 Hz			
Power factor correction in accordance with	EN 61000-3-2			
Efficiency type	75 %			
Switch-on current $I_p$ (with 230 $V_{AC}$ )	< 15 A			
Output parameters at		190/90 $V_{AC}$		
Output power max. (50°C) [W]	80/65	67/33		
Output voltage [V]	factory set	$V_1$	$V_2, V_3$	
	Adjustment-range $\Delta V$	5 V	$\pm 12 V$	$\pm 15 V$
Output current [A]	0 ... 50°C	4.6–5.3	11.1–15.8	
	70°C	16/13	2.8/1.4	2.2/1.1
	UL values (50°C)	11/8	2/1	1.6/0.67
Current limitation shuts the output off after approx. 14 ms, automatically resets after approx. 0.2 s	Permanently short-circuit protected			
Residual ripple/interference voltage (BW: 30 MHz) [mV <sub>PP</sub> ]	< 250		< 350	
Mains and load control, static (load change 0 – 100 %) [mV <sub>PP</sub> ]	< 30		< 90	
Temperature coefficient	-0.015 %/K			
Dynamic control deviations				
(load change: 10 ... 100 % with 100 Hz; $U_3$ : 20 ... 100 %; $di/dt = 0.25 A/\mu s$ )				
Control time at $0.01 \times V_{1 \text{ Nominal}}$ [ms]	< 0.5			
Overshoot and undershoot amplitude [mV]	< 250	< 250/550	< 300	

Protection and monitoring facilities			
Switch-on time	< 2 s		
Mains fuse	4 A/250 $V_{AC}$ , 5 × 20 mm, EN 60127-2/V		
Power failure bridging at 100 % load	> 5 ms		
Over-voltage protection OVP typically limits output voltage to	6.3 V	13 V	16.2 V
Remote sense compensated per line	Max. 0.25 V		
"Output voltage ok" signalling	active high		
High level	5 V		
Time delay	100 – 250 ms		
Test and environmental conditions			
Climatic test to	IEC 68-2-38		
Shock and vibration test in accordance with acceleration of 2 g	EN 60068-2-6		
Height 3 U/depth 160 mm	Width 12 HP		
Weight (mass)	0.8 kg		
CE	Interference-emission	EN 50081-1, EN 55011 Class B,	
	interference-immunity, degree of severity 3	EN 50082-2, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6	
	Safety, class of protection 1	EN 60950	
High voltage test to EN 60950	Input-output	4.3 kV <sub>DC</sub>	
	Input PE	2.2 kV <sub>DC</sub>	
	Output PE	0.7 kV <sub>DC</sub>	
	Output-output	0.7 kV <sub>DC</sub>	
UL 1950	applied for		
Power supply maintenance-free	Yes		
Cooling	Convection		
Operation/storage ambient temperature	0 ... 70°C / -20 ... +85°C		
MTBF at full load, $T_U = 40^\circ C$	200,000 h		

## AC/DC switched mode power supplies

Single, 50 W .....	3.11.2
Single, 80 W .....	3.11.4
Single, 100 W .....	3.11.6
Single, 130 W .....	3.11.8
Dual, 80 W .....	3.11.10
Dual, 100 W .....	3.11.12
Triple, 80 W .....	3.11.14
Triple, 100 W .....	3.11.16
Triple, 130 W .....	3.11.18
Triple, 150 / 224 W .....	3.11.20
Quad, 250 W .....	3.11.22
Quad, 350 W .....	3.11.24

## AC/DC linear control systems

Single, 8 – 60 W ..	3.11.26
Dual, 10 – 58 W ...	3.11.28
Triple, 7 – 39 W ...	3.11.30

## AC/DC non-regulated

Single, 84 W .....	3.11.32
Single, 240 W .....	3.11.34

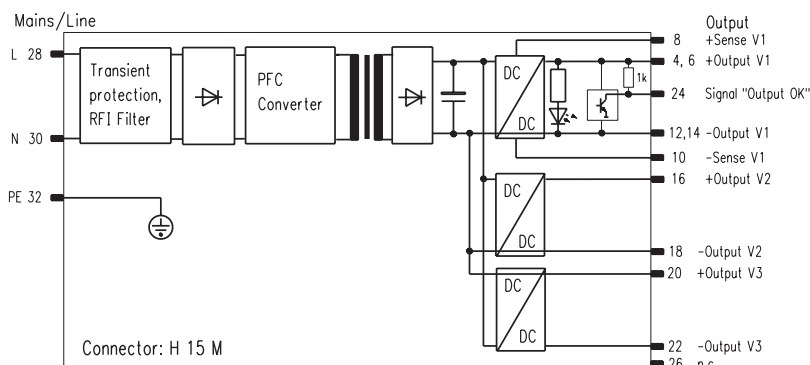
## DC/DC converters

Single, 20 to 120 W .....	3.11.36
Dual, 55 to 72 W ..	3.11.38
Triple, 64 to 70 W .....	3.11.40
Quad, 250 W .....	3.11.42
Quad, 350 W .....	3.11.44

## Accessories

Mating connector female connector H 15 F .....	3.11.46
Keying/coding .....	3.11.47
Guide rails .....	3.11.47
Z-rails .....	3.11.47
EMC contact strips .....	3.11.48
Wall/horizontal rail installation .....	3.11.49

## Schematic wiring diagram



DJUM0074



# 19" compatible AC/DC switched mode

Power supply units..... 3.10.0

19" compatible.....3.11.0

Open frame.....3.12.0

Power systems.....3.13.0

Uninterruptable power supplies (UPS) .....3.14.0

Backplanes/ test adapters .. 3.20.0

Microcomputer packaging systems (MPS) ..... 3.30.0

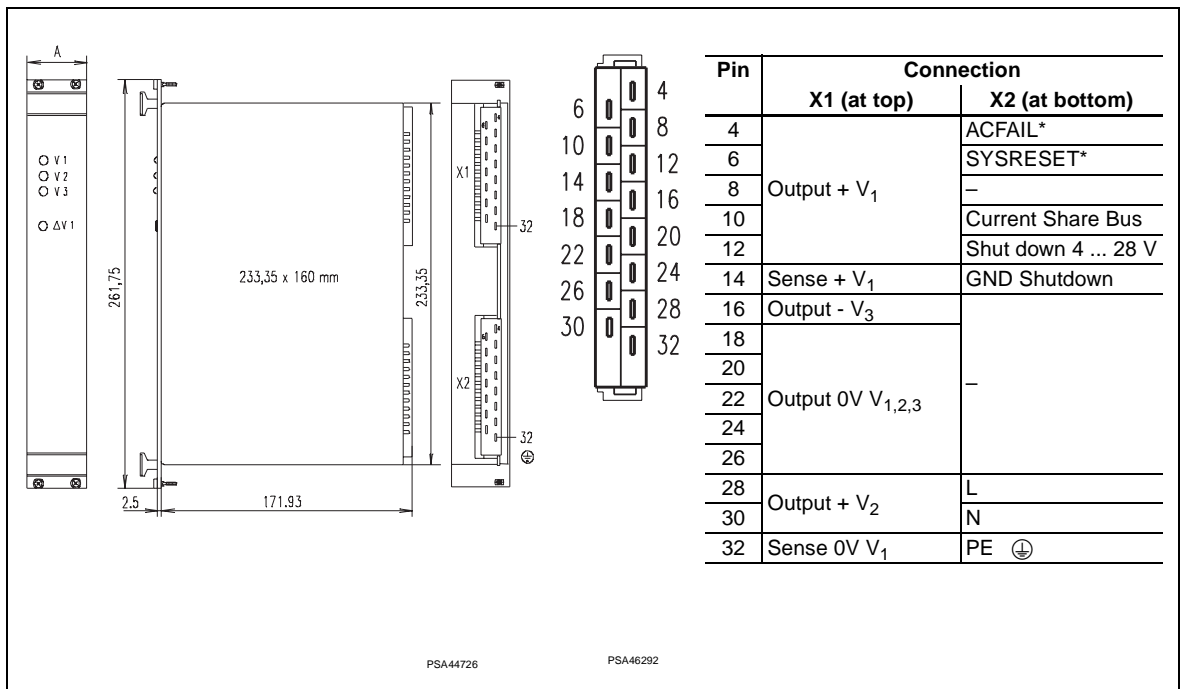
Appendix..... 3.90.0



11301002

## Triple, 150 / 224 W

- MPS series
- 19" compatible AC/DC switched mode power supplies, pluggable 6 U, for VME bus and other applications
- Wide range input voltage (90 – 264 V<sub>AC</sub> and 130 – 350 V<sub>DC</sub>)
- Power factor correction (PFC) to EN 61000-3-2
- 3 output voltages
- VME bus signalling
- For industrial applications
- International approvals EN 60950, UL
- High reliability and long life



Output data at T <sub>U</sub> = 0 ... 40 °C							Order No. incl. mounted EMC Front panel <sup>1)</sup>			
Voltage in V			Current in A			Power output in W total (V <sub>2</sub> +V <sub>3</sub> )	Height in U	Width A in HP	Power supply Type	Mains voltage
V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>				90 – 264 V <sub>AC</sub>	
+5	+12	-12	20	4,0	3,0	150 (60)	6	8	MPS 015	<b>13100-205</b>
+5	+12	-12	28	7,0	3,0	224 (84)		12	MPS 022	<b>13100-203</b>
+5	+15	-15	28	5,6	2,4	224 (84)		12	MPS 022/15	<b>13100-204</b>

<sup>1)</sup> Front panel: Front anodised, rear side chromated, slotted on both sides for mounting EMC contact strips in the event of increased EMC requirements (6 U EMC contact strips, Order No. 21101-707, 10 pieces)

**Mating connector H15F (2× necessary) with FASTON connection, Order No. 69001-733**

# 19" compatible AC/DC switched mode



## Technical data

Input parameters						
Mains voltage (wide range input)	90 – 264 V <sub>AC</sub> , 130 – 350 V <sub>AC</sub>					
Mains nominal current at 90 V <sub>AC</sub> /187 V <sub>AC</sub>	MPS 015: 1.4 / 0.8 A, MPS 022: 1.9 / 1.2 A, MPS 022/15: 1.9/1.2 A					
Mains frequency range	47 – 63 Hz					
Power Factor Correction (PFC)	EN 61000-3-2					
Efficiency 115 V <sub>AC</sub> /230 V <sub>AC</sub>	70 % / 75 %					
Switch-on current at 230 V <sub>AC</sub>	< 20 A					
Leakage current	≤ 500 µA					
Output parameters						
Output power at 40°C total unit/ auxiliary voltages V <sub>2,3</sub>	MPS 015: 150 W / max. 60 W MPS 022: 224 W / max. 84 W					
Output voltage	metallically separated	V <sub>1</sub>	V <sub>2</sub> , V <sub>3</sub>			
	factory set	5	+12	-12	+15	-15
	Adjustment range in V	4.5 ... 5.5	11.5 ... 13		13 ... 16	
Output current 0 ... 40°C	MPS 015 (UL values) in A	20 (18)	4 (3)	3 (2)	3.2 (2.4)	2.4 (1.6)
	MPS 022 (UL values) in A	28 (23)	7 (3.5)	3 (2)	5.6 (2.8)	2.4 (1.6)
Basic load	10 % × I <sub>1Nomin al</sub>	–				
Current limitation	U/I curve					
Over-load protection	Permanently short-circuit protected					
Over-voltage protection shuts unit off, automatically resets	OVP, 6.25 V ± 10 %	–				
Remote sense compensated (+ V <sub>1</sub> )	< 0.5 V	–				
Residual ripple at	100 Hz	< 10 mV <sub>PP</sub>				
	Clock-frequency	< 50 mV <sub>PP</sub>				
Interference voltage (BW: 100 MHz)	< 100 mV <sub>PP</sub>					
Load control, static (load change 0 – 100 %)	< 0.1 %	+12, +15 V: < ±1 % -12, -15 V: < ±1 %				
	Mains control at ± 15 % change in mains voltage	5 mV				
External OFF with 4–28 V <sub>DC</sub> or switch	Connectors X2					
Output decoupled via diode	V <sub>1</sub>					

Dynamic control deviations		
(load change: 10 ... 100 % with 100 Hz; di/dt = 0.135 A/µs)		
Overall control time	< 0.5 ms	
Cross-control	< 0.1 % (V <sub>1</sub> ), < 0.5 % (V <sub>2,3</sub> )	
Overshoot and undershoot amplitude	< 400 mV (V <sub>1</sub> ), < 300 mV (V <sub>2,3</sub> )	
Other characteristics		
Mains fuse 115/230 V <sub>AC</sub>	4 A/250 V, 5 × 20 mm, EN 60127-2/V	
Power failurebridging at V <sub>IN</sub> = 93 V <sub>AC</sub> and 100 % load	> 16 ms	
SYSRESET*, ACFAIL* signal	Active low, open collector, 48 mA/5 V	
Climatic test to	IEC 68-2-38	
Shock and vibration in accordance with acceleration of 2 g	EN 60068-2-6	
Weight (mass) MPS 015/ MPS 022	1.3 kg/2.4 kg	
Dimensions: Height 3 U/ width [HP]	MPS 015 – 8 HP MPS 022 – 12 HP	
CE (during the EMC measurements, the power supply was mounted in a case)	EMC interference-emission	EN 50081-1, EN 55011 Class B, EN 55022 Class B
	EMC interference-immunity, degree of severity 3	EN 50082-2, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6,
	Safety, class of protection 1	EN 60950 (LGA)
Test voltage to EN 60950	Input-output	4.3 kV <sub>DC</sub>
	Input PE	2.2 kV <sub>DC</sub>
	Output PE	0.7 kV <sub>DC</sub>
Safety	UL 1950	
Cooling	Convection	
Operation/storage ambient temperature	0 ... 70°C / -20 ... +85°C	
MTBF at full load, T <sub>U</sub> = 40°C	330,000 h (UL value)	

## AC/DC switched mode power supplies

Single, 50 W .....	3.11.2
Single, 80 W .....	3.11.4
Single, 100 W .....	3.11.6
Single, 130 W .....	3.11.8
Dual, 80 W .....	3.11.10
Dual, 100 W .....	3.11.12
Triple, 80 W .....	3.11.14
Triple, 100 W .....	3.11.16
Triple, 130 W .....	3.11.18
Triple, 150 / 224 W .....	3.11.20
Quad, 250 W .....	3.11.22
Quad, 350 W .....	3.11.24

## AC/DC linear control systems

Single, 8 – 60 W ..	3.11.26
Dual, 10 – 58 W ...	3.11.28
Triple, 7 – 39 W ...	3.11.30

## AC/DC non-regulated

Single, 84 W .....	3.11.32
Single, 240 W .....	3.11.34

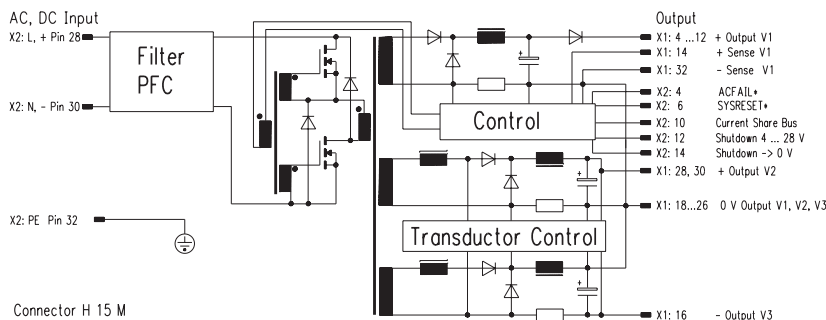
## DC/DC converters

Single, 20 to 120 W .....	3.11.36
Dual, 55 to 72 W ..	3.11.38
Triple, 64 to 70 W .....	3.11.40
Quad, 250 W .....	3.11.42
Quad, 350 W .....	3.11.44

## Accessories

Mating connector female connector H 15 F .....	3.11.46
Keying/coding .....	3.11.47
Guide rails .....	3.11.47
Z-rails .....	3.11.47
EMC contact strips .....	3.11.48
Wall/horizontal rail installation .....	3.11.49

## Schematic wiring diagram





# 19" compatible AC/DC switched mode

Power supply units..... 3.10.0

19" compatible.....3.11.0

Open frame.....3.12.0

Power systems.....3.13.0

Uninterruptable power supplies

(UPS) .....3.14.0

Backplanes/  
test adapters .. 3.20.0

Microcomputer  
packaging systems  
(MPS) ..... 3.30.0

Appendix..... 3.90.0

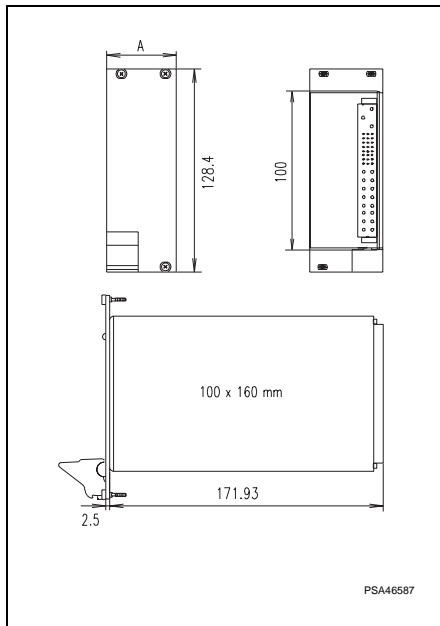


11300003

**Quad, 250 W**

**maxpowerPRO**

- 19" compatible AC/DC switched mode power supplies, pluggable 3 U, for compact PCI and other applications
- Wide range input voltage (90 – 264 V<sub>AC</sub>, 48 V<sub>DC</sub> see under DC/DC converters)
- Power factor correction (PFC) to EN 61000-3-2
- 4 output voltages
- Connectors P 47
- Outputs redundant with current share bus
- Hot swap
- Compact PCI signalling
- For industrial and telecommunications applications
- International approvals EN 60950, UL, cUL
- High reliability and long life



Output data at T <sub>U</sub> = 0 ... 50 °C									Order No. (1 unit)			
Voltage				Current <sup>1)</sup>				Power output in W total (V <sub>1</sub> + V <sub>2</sub> )	Height in U	Width A in HP	Power supply incl. mounted EMC Front panel <sup>2)</sup> Type	Mains voltage 90 – 254 V <sub>AC</sub>
V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	V <sub>4</sub>	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	I <sub>4</sub>					
5	3.3	+12	-12	25	25	5	1.5	250 (150)	3	8	CPCI 250	<b>13100-141</b>

<sup>1)</sup> with forced cooling in the system from 2 m/s

<sup>2)</sup> Front panel: Front anodised, rear side chromated, slotted on both sides for mounting EMC contact strips in the event of increased EMC requirements, IEL handle (3 U EMC contact strips, Order No. 21101-853, 10 pieces)

### Accessories

Mating connector/intermediate plate 3 U,  
**Order No. 23098-104**

# 19" compatible AC/DC switched mode



## Technical data

Input parameters					
Mains-voltage (wide range input)	Nominal values $V_{AC}$	100 – 240 $V_{AC}$			
	Operating-ranges	90 – 254 $V_{AC}$			
Mains nominal current 115 $V_{AC}$ /220 $V_{AC}$	3.2 A/1.6 A				
Mains frequency range	50 – 60 Hz				
Power factor correction in accordance with	EN 61000-3-2				
Efficiency type	> 70 %				
Switch-on current $I_p$ (with 230 $V_{AC}$ )	< 20 A				
Output parameters					
Output power max.: Convection/forced cooling with 2 m/s	75 W/150 W		48 W/78 W		
Output voltage [V]	$V_1$	$V_2$	$V_3$	$V_4$	
	factory set	5 V	3.3 V	12 V	-12 V
	Tolerance	± 50 mV			
Output current [A] 0 ... 50 °C	Convection	15	15	3	1
	Cooling 2 m/s	25	25	5	1.5
	Derating 50 – 70 °C	2 %/K			
Overcurrent protection	all outputs at 120 %				
Residual ripple/interference voltage (bandwidth = BW)	50 mV <sub>PP</sub> (BW: 20 MHz)		< 100 mV (BW: 20 MHz)		
Load control	+5 % -3 %		± 5 %		
Mains control, static	1 %				
Cross-control	1 %				
Temperature coefficient	-0.02 %/K (0 – 50 °C)				
Connectors, offset 2.54 mm	Positronic P47				
Dynamic control deviations (load change: 50 ... 100 % with 100 Hz; dI/dt = 0.25 A/μs)					
Control time at $0.01 \times V_{1 \text{ Nominal}}$	< 1.5 ms				
Overshoot and undershoot amplitude	< 5 %				

Protection and monitoring facilities		
Switch-on time	< 4 s	
Mains fuse internal	6.3 A/250 $V_{AC}$ , 5 × 20 mm, DIN 41571	
Power failure bridging at 90 $V_{AC}$ and 100 % load	20 ms	
Switch power supply on/off externally	"INH" = Inhibit ("EN" = Enable) normal high, drive low (high) to turn off (on) (max. 15 V/150 μA)	
Over-voltage protection OVP shuts power supply off, restart	120 – 130 % at $V_{1,2}$	
Remote sense compensated per line	Max. 0.25 V	
Current share with one cable connection	$V_1, V_2, V_3$ , "ISH" signal, tolerance ± 10 %	
Power failure signalling	TTL signal, active high	
"DEG" signal if temperature outside of range (option)	"HIGH" < 50 °C; "LOW" > 50 °C, tolerance ± 5 %	
Power down "FAIL" signal at 70 °C, automatic restart (option)	"HIGH" < 70 °C; "LOW" > 70 °C, tolerance ± 5 %	
Two-color LED, fault/OK status	red/green	
Test and environmental conditions		
Climatic test to	IEC 68-2-38	
Shock and vibration in accordance with acceleration of 2 g	EN 60068-2-6	
Height 3 U/depth 160 mm	Width 8 HP	
Weight (mass)	2 kg	
CE	Interference emission	CISPR22 Class B, EN 50081-1, EN 55011 Class B,
	Interference immunity, degree of severity 3	EN 50082-2, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6,
	Safety, class of protection 1	EN 60950
High voltage test to EN 60950	Input-output	4.3 kV <sub>DC</sub>
	Input PE	2.2 kV <sub>DC</sub>
Safety	UL 1950, cUL, TÜV & CE (applied for)	
Power supply maintenance-free	Yes	
Necessary cooling for the power supply	2 m/s	
Operation/storage ambient temperature	10 ... 70 °C / -40 ... +85 °C	
Relative humidity, non-condensing	20 % – 95 %	
MTBF	200,000 h (50 °C)	

## AC/DC switched mode power supplies

Single, 50 W .....	3.11.2
Single, 80 W .....	3.11.4
Single, 100 W .....	3.11.6
Single, 130 W .....	3.11.8
Dual, 80 W .....	3.11.10
Dual, 100 W .....	3.11.12
Triple, 80 W .....	3.11.14
Triple, 100 W .....	3.11.16
Triple, 130 W .....	3.11.18
Triple, 150 / 224 W .....	3.11.20
Quad, 250 W .....	3.11.22
Quad, 350 W .....	3.11.24

## AC/DC linear control systems

Single, 8 – 60 W ..	3.11.26
Dual, 10 – 58 W ...	3.11.28
Triple, 7 – 39 W ...	3.11.30

## AC/DC non-regulated

Single, 84 W .....	3.11.32
Single, 240 W .....	3.11.34

## DC/DC converters

Single, 20 to 120 W .....	3.11.36
Dual, 55 to 72 W ..	3.11.38
Triple, 64 to 70 W .....	3.11.40
Quad, 250 W .....	3.11.42
Quad, 350 W .....	3.11.44

## Accessories

Mating connector female connector H 15 F .....	3.11.46
Keying/coding .....	3.11.47
Guide rails .....	3.11.47
Z-rails .....	3.11.47
EMC contact strips .....	3.11.48
Wall/horizontal rail installation .....	3.11.49



# 19" compatible AC/DC switched mode

Power supply units..... 3.10.0  
**19" compatible.....3.11.0**  
 Open frame.....3.12.0  
 Power systems.....3.13.0  
 Uninterruptable power supplies (UPS) .....3.14.0

Backplanes/ test adapters .. 3.20.0

Microcomputer packaging systems (MPS) ..... 3.30.0

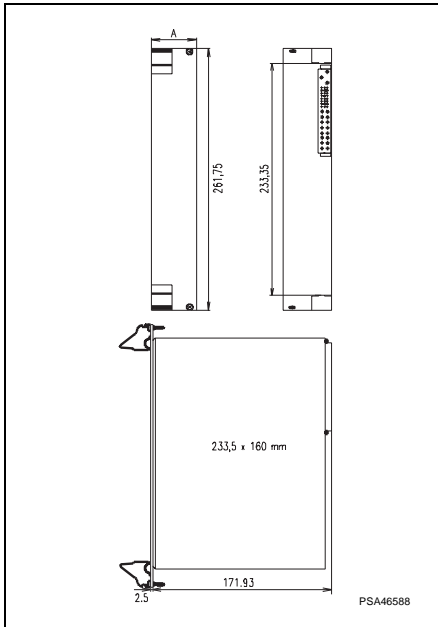
Appendix..... 3.90.0



11300009

## Quad, 350 W *maxpowerPRO*

- 19" compatible AC/DC switched mode power supplies, pluggable 6 U, for compact PCI and other applications
- Wide range input voltage (90 – 264 V<sub>AC</sub>)
- Power factor correction (PFC) to EN 61000-3-2
- 4 output voltages
- Connectors P 47
- Redundancy operation with current share bus
- Hot swap
- Compact PCI signalling
- For industrial applications
- International approvals EN 60950, UL
- High reliability and long life



Output data at T <sub>U</sub> = 0 ... 50 °C										Order No. incl. mounted EMC front panel <sup>1)</sup>		
Voltage in V				Current in A				Power output in W total <sup>2)</sup>	Height in U	Width A in HP	Power supply Type	Mains voltage
V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	V <sub>4</sub>	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	I <sub>4</sub>				90 – 254 V <sub>AC</sub>	
5	3.3	+12	-12	30	45	12	3	350	6	8	PCI 3-4	<b>11098-141</b>

<sup>1)</sup> Front side anodised, rear side chromated, slotted on both sides incl. EMC contact strips in the event of increased EMC requirements, two IEL handles (6 U EMC contact strips, Order No. 21101-856, 10 pieces)

<sup>2)</sup> Forced cooling, total capacity V<sub>1</sub> + V<sub>2</sub> = 200 W

### Accessories

A 3 U backplane is required for interconnection between power supply and backplane. For assembly into a 6 U system, we offer other solutions - available upon request.

Description see backplanes - Power Bus 3 U, 1 piece, **Order No. 23098-105**

# 19" compatible AC/DC switched mode



## Technical data

Input parameters				
Mains-voltage (wide range input)	Nominal values	100 – 240 V <sub>AC</sub>		
	Operating-ranges	90 – 264 V <sub>AC</sub>		
Mains frequency range	47 – 63 Hz			
Power factor correction in accordance with	EN 61000-3-2			
Efficiency type	74 %			
Switch-on current I <sub>P</sub> 115/ 230 V	18/36 A			
Output parameters				
Output power max.	350 W			
Output voltages [V]	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	V <sub>4</sub>
	5 V	3.3 V	12 V	-12 V
Output currents 0 ... 50 °C [A]	30	45	12/15	3
	Residual ripple/interference voltage			
				1 % or 100 mV
Load control with/without sense	0.5 % / 2 %			
Overshoot	1 % switch on/switch off 3 % load change 50 – 100 %			
Mains control, static	0.1 %			
Power failure bridging at 100 % load	20 ms			
Temperature coefficient	0.02 %/K			
Connection connectors	DIN M24/8			
Basic load	not necessary			

Protection and monitoring facilities		
Switch-on time	< 4 s	
Mains fuse internal	10 A/250 V <sub>AC</sub>	
Switch power supply on/off externally	Inhibit (enable) normal high, drive low (high) to turn off (on)	
Over-voltage protection (OVP)	all outputs 125 % of the mains voltage; reset via off/on or inhibit/enable	
Over-temperature protection	Automatic shut-off with automatic return	
Overcurrent protection	All outputs 105 – 125 % auto recovery	
Remote sense compensated per line	V <sub>1</sub> , V <sub>2</sub> , max. 0.5 V	
Current share	V <sub>1</sub> , V <sub>2</sub> , V <sub>3</sub>	
Power failure signal	TTL signal, active high	
Temperature outside of range signal	TTL signal, active high	
Two-color LED, fault/OK status	red/green	
Test and environmental conditions		
Climatic test to	IEC 68-2-38	
Shock and vibration in accordance with	EN 60068-2-6	
Height 6 U/depth 160 mm	Width 8 HP	
Weight (mass)	2.3 kg	
CE	Interference emission	FCC Part 15, EN 55022
	Interference immunity	EN 50082-1, EN 61000-4-2, EN 61000-4-4, EN 61000-4-5, EN 61000-3-2, EN 61000-3-3
	Safety, class of protection 1	EN 60950
High voltage test to EN 60950	Input-output	4.3 kV <sub>DC</sub>
	Input PE	2.2 kV <sub>DC</sub>
Safety	UL, cUL, TÜV & CE	
Power supply maintenance-free	Yes	
Necessary cooling for the power supply	400 lfm, forced	
Operation/storage ambient temperature	0 ... 50°C / -40 ... +85°C	
Relative humidity, non-condensing	95 %	
MTBF at 25 °C	250,000 h (Bellcore STD.)	

## AC/DC switched mode power supplies

Single, 50 W .....	3.11.2
Single, 80 W .....	3.11.4
Single, 100 W .....	3.11.6
Single, 130 W .....	3.11.8
Dual, 80 W .....	3.11.10
Dual, 100 W .....	3.11.12
Triple, 80 W .....	3.11.14
Triple, 100 W .....	3.11.16
Triple, 130 W .....	3.11.18
Triple, 150 / 224 W .....	3.11.20
Quad, 250 W .....	3.11.22
Quad, 350 W .....	3.11.24

## AC/DC linear control systems

Single, 8 – 60 W ..	3.11.26
Dual, 10 – 58 W ...	3.11.28
Triple, 7 – 39 W ...	3.11.30

## AC/DC non-regulated

Single, 84 W .....	3.11.32
Single, 240 W .....	3.11.34

## DC/DC converters

Single, 20 to 120 W .....	3.11.36
Dual, 55 to 72 W ..	3.11.38
Triple, 64 to 70 W .....	3.11.40
Quad, 250 W .....	3.11.42
Quad, 350 W .....	3.11.44

## Accessories

Mating connector female connector H 15 F .....	3.11.46
Keying/coding .....	3.11.47
Guide rails .....	3.11.47
Z-rails .....	3.11.47
EMC contact strips .....	3.11.48
Wall/horizontal rail installation .....	3.11.49



# 19" compatible AC/DC linear control systems

Power supply units..... 3.10.0

19" compatible.....3.11.0

Open frame.....3.12.0

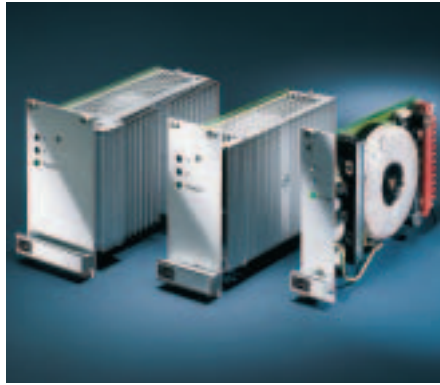
Power systems.....3.13.0

Uninterruptable power supplies (UPS) .....3.14.0

Backplanes/ test adapters .. 3.20.0

Microcomputer packaging systems (MPS) ..... 3.30.0

Appendix..... 3.90.0



11397001



## Single, 8 - 60 W

- 19" compatible AC/DC power supply, pluggable 3 U
- Mains input voltage 230 V<sub>AC</sub> (can be converted to 115 V<sub>AC</sub> with conversion kit, see below)
- 1 output voltage
- High control accuracy
- Low residual ripple and very low-interference
- Suitable for medical applications (8 mm safety clearances)
- High reliability and long life
- PSM, PSG
  - Output voltage can be externally remote controlled (1 ... 10 V)
  - Conversion of the control curve for sensitive loads (U/I - Fold Back)
  - Current measurement via shunt

100 x 160 mm

171.93

128.4

100

32

2.5

DUM0084

PSA46292

Pin	PSK single	PSM, PSG single
4	Sense + V <sub>1</sub>	Sense + V <sub>1</sub>
6	Output + V <sub>1</sub>	Output + V <sub>1</sub>
8	Output 0V V <sub>1</sub>	Output 0V V <sub>1</sub>
10	Sense 0V V <sub>1</sub>	Sense 0V V <sub>1</sub>
12		Optional: Redundancy diode
14		External on/off
16		GND
18		V remote input + V <sub>C</sub>
20		V-shunt + V <sub>S</sub>
22		V-shunt - V <sub>S</sub>
24		-
26		-
28	L	L
30	N	N
32	PE ⊕	PE ⊕

### Note

The front panel is not included in delivery.

Voltage in V	Output data at T <sub>U</sub> = 0 ... 50 °C			Power supply Type	Order No. (1 unit) <sup>1)</sup>	
	Current in A	Power output in W	Width A in HP		Mains voltage <sup>4)</sup> 230 V <sub>AC</sub>	Front panel <sup>2)</sup> EMC anodised
5	1.5	8	6	PSK 105 <sup>3)</sup>	<b>13105-001</b>	<b>21005-475</b>
	4.0	20	10	PSM 105	<b>13105-006</b>	<b>21005-473</b>
	6.0	30	14	PSG 105	<b>13105-011</b>	<b>21005-474</b>
12	1.1	13	6	PSK 112 <sup>3)</sup>	<b>13105-002</b>	<b>21005-475</b>
	2.8	31	10	PSM 112	<b>13105-007</b>	<b>21005-473</b>
	4.2	50	14	PSG 112	<b>13105-012</b>	<b>21005-474</b>
15	1.0	15	6	PSK 115 <sup>3)</sup>	<b>13105-003</b>	<b>21005-475</b>
	2.2	33	10	PSM 115	<b>13105-008</b>	<b>21005-473</b>
	3.5	53	14	PSG 115	<b>13105-013</b>	<b>21005-474</b>
24	0.6	16	6	PSK 124 <sup>3)</sup>	<b>13105-004</b>	<b>21005-475</b>
	1.5	36	10	PSM 124	<b>13105-009</b>	<b>21005-473</b>
	2.5	60	14	PSG 124	<b>13105-014</b>	<b>21005-474</b>

<sup>1)</sup> Please order front panel and other accessories separately

<sup>2)</sup> Front anodised, rear side chromated, slotted on both sides for mounting EMC contact strips in the event of increased EMC requirements  
(3 U EMC contact strips, Order No. 21101-705, 10 pieces)

<sup>3)</sup> Without case

<sup>4)</sup> Mains voltage conversion kit 230 V to 115 V (Order No. 43105-999)

**Mating connector H15F with FASTON connection, Order No. 69001-733**

# 19" compatible AC/DC linear control systems



## Technical data

Input parameters					
Mains voltage (with conversion kit)	Nominal values $V_{IN}$ (operating ranges)	115 (103.5 ... 126.5) $V_{AC}$ 230 (207 ... 253) $V_{AC}$			
Mains nominal current at 230 $V_{AC}$		PSK 0.16 A, PSM 0.36 A, PSG 0.45 A			
Mains frequency range		48 – 62 Hz			
Mains input current in accordance with		EN 61000-3-2 + A14			
Efficiency type		40 ... 65 %			
Current at switch-on		< 15 A (PSK < 3 A)			
Discharge current		< 50 $\mu$ A			
Output parameters					
Output voltage (potentiometer V at front)	factory set	5	12	15	24
	Adjustment range [V]	4.75 ... 5.25	11.5 ... 12.5	13.5 ... 15.5	23 ... 25.0
Output current at 50 °C (70 °C), max. current can be adjusted with front potentiometer C (50 ... 150 %)	PSK [A]	1.5 (0.9)	1.1 (0.7)	1.0 (0.6)	0.6 (0.4)
	PSM [A]	4.0 (2.4)	2.8 (1.7)	2.2 (1.3)	1.5 (0.9)
	PSG [A]	6.0 (3.7)	4.2 (2.5)	3.5 (2.0)	2.5 (1.5)
Derating from 50 to 70 °C		2 %/K			
Residual ripple		$\leq$ 2 mV			
Load control, static ( $I_L = 0 \dots I_{1Nominal}$ )		< 0.01 %			
Mains control at $\pm$ 10 % change in mains voltage		< 0.01 %			
Overall control time, tolerance 0.1 % $\times V_{1Nominal}$ load change 0 ... 100 % $di/dt = 0.135$ A/ $\mu$ s		$\leq$ 50 $\mu$ s			
Temperature coefficient		0.01 %/K			
Output can be externally shut off with voltage		4 ... 24 $V_{DC} \rightarrow$ GND			
Output can be switched in series and in parallel (optionally with diode for redundancy operation)		Yes (PSM, PSG)			
Output can be remote controlled		1 ... 10 V ~ 0.1 ... 1 $\times V_{Nominal}$ (PSM, PSG)			
Measurement resistance (shunt) corresponds to		~ 10 mV/A (PSM, PSG)			

## Protection and monitoring facilities

Power failure bridging at 100 % load	$V_{IN} = 207$ V, PSK > 10 ms, PSM > 7 ms, PSG > 6 ms $V_{IN} = 230$ V, PSK > 16 ms, PSM > 10 ms, PSG > 8 ms
Current limitation	Yes
Over-load protection, short-circuit current controlled max.	$I_1$ Nom. + 15 %
Over-voltage protection OVP (shuts power supply off), automatic response value approx.	$V_1 + 20$ %
Over-temperature protection of the series pass transistor	Yes
Remote sense compensated per line (with $V_{1Nominal}$ )	Max. 0.5 V
Air and creepage distance Primary-secondary side/ Primary PE	$\geq$ 8 mm / $\geq$ 4 mm
Output voltage present, LED green	LED POWER

## Other characteristics

Climatic test to	IEC 68-2-38
Shock and vibration	EN 60068-2-6
Dimensions: Height 3 U	Width: PSK 6 HP, PSM 10 HP, PSG 14 HP
Weight (mass)	PSK 0.8 kg, PSM 1.6 kg, PSG 1.9 kg

CE	EMC interference-emission	EN 50081-1, EN 55011 Class B, EN 55022 Class B
	EMC interference-immunity, degree of severity 3	EN 50082-2, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5
	Safety, class of protection 1	EN 60950 (LGA for PSK, PSM, PSG) EN 60601-1 (PSK)
Test voltage to EN 60950	Input-output	4.3 kV <sub>DC</sub>
	Input PE	2.2 kV <sub>DC</sub>
	Output PE	0.7 kV <sub>DC</sub>
Toroidal transformer (low emission)		EN 60742
Power supply maintenance-free		Yes
Cooling		Convection
Operation/storage ambient temperature		0 ... 70 °C / -20 ... +85 °C
Relative humidity, non-condensing (operation/storage)		30 ... 80 % / 10 ... 95 %
MTBF at full load, $T_U = 40$ °C		PSK 1,100,000 h PSM/PSG 730,000 h

## AC/DC switched mode power supplies

Single, 50 W .....	3.11.2
Single, 80 W .....	3.11.4
Single, 100 W .....	3.11.6
Single, 130 W .....	3.11.8
Dual, 80 W .....	3.11.10
Dual, 100 W .....	3.11.12
Triple, 80 W .....	3.11.14
Triple, 100 W .....	3.11.16
Triple, 130 W .....	3.11.18
Triple, 150 / 224 W .....	3.11.20
Quad, 250 W .....	3.11.22
Quad, 350 W .....	3.11.24

## AC/DC linear control systems

Single, 8 – 60 W ..	3.11.26
Dual, 10 – 58 W ...	3.11.28
Triple, 7 – 39 W ...	3.11.30

## AC/DC non-regulated

Single, 84 W .....	3.11.32
Single, 240 W .....	3.11.34

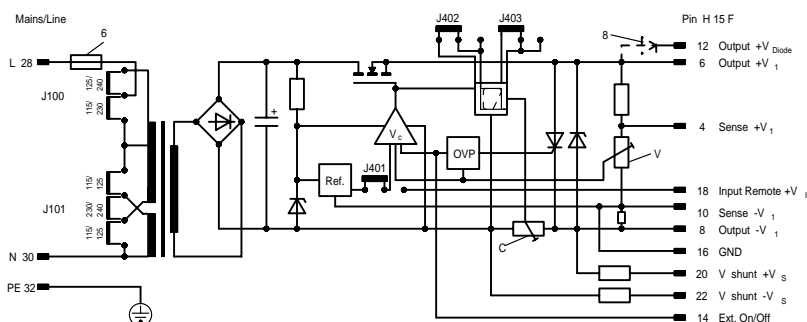
## DC/DC converters

Single, 20 to 120 W .....	3.11.36
Dual, 55 to 72 W ..	3.11.38
Triple, 64 to 70 W .....	3.11.40
Quad, 250 W .....	3.11.42
Quad, 350 W .....	3.11.44

## Accessories

Mating connector female connector H 15 F .....	3.11.46
Keying/coding .....	3.11.47
Guide rails .....	3.11.47
Z-rails .....	3.11.47
EMC contact strips .....	3.11.48
Wall/horizontal rail installation .....	3.11.49

## Schematic wiring diagram



MPA45030



# 19" compatible AC/DC linear control systems

Power supply units..... 3.10.0

19" compatible.....3.11.0

Open frame.....3.12.0

Power systems.....3.13.0

Uninterruptable power supplies (UPS) .....3.14.0

Backplanes/ test adapters .. 3.20.0

Microcomputer packaging systems (MPS) ..... 3.30.0

Appendix..... 3.90.0



11300001

## Dual, 10 – 58 W

- 19" compatible AC/DC power supply, pluggable 3 U
- Mains input voltage 230 V<sub>AC</sub> (can be converted to 115 V<sub>AC</sub> with conversion kit, see below)
- 2 output voltages (galvanically separated)
- High control accuracy
- Low residual ripple and very low-interference
- Suitable for medical applications (8 mm safety clearances)
- High reliability and long life



Pin	Male connector H15
4	Sense + V <sub>1</sub>
6	Output + V <sub>1</sub>
8	Output 0V V <sub>1</sub>
10	Sense 0V V <sub>1</sub>
12	Sense + V <sub>2</sub>
14	Output + V <sub>2</sub>
16	Output 0V V <sub>2</sub>
18	Sense 0V V <sub>2</sub>
20	
22	
24	-
26	
28	L
30	N
32	PE ⊕

### Note

Outputs metalically separated. The front panel is not included in delivery.

Output data at T <sub>J</sub> = 0 ... 50 °C						Order No. <sup>1)</sup>		
Voltage in V		Current in A		Power output in W	Width A in HP	Power supply Type	Mains voltage <sup>4)</sup> 230 V <sub>AC</sub>	Front panel <sup>2)</sup> EMC
V <sub>1</sub>	V <sub>2</sub>	I <sub>1</sub>	I <sub>2</sub>					
5	5	1.4	1.4	14	10	PSM 205	<b>13105-021</b>	<b>21005-477</b>
		0.4	0.4	10	6	PSK 212 <sup>3)</sup>	<b>13105-017</b>	<b>21005-476</b>
12	12	1.0	1.0	24	10	PSM 212	<b>13105-022</b>	<b>21005-477</b>
		1.5	1.5	36	14	PSG 212	<b>13105-027</b>	<b>21005-478</b>
15	15	0.4	0.4	12	6	PSK 215 <sup>3)</sup>	<b>13105-018</b>	<b>21005-476</b>
		1.0	1.0	30	10	PSM 215	<b>13105-023</b>	<b>21005-477</b>
		1.5	1.5	45	14	PSG 215	<b>13105-028</b>	<b>21005-478</b>
24	24	1.2	1.2	58	14	PSG 224	<b>13105-029</b>	<b>21005-478</b>

<sup>1)</sup> Please order front panel and other accessories separately

<sup>2)</sup> Front anodised, rear side chromated, slotted on both sides for mounting EMC contact strips in the event of increased EMC requirements  
(3 U EMC contact strips, Order No. 21101-705, 10 pieces)

<sup>3)</sup> Without case

<sup>4)</sup> Mains voltage conversion kit 230 V to 115 V (Order No. 43105-999)

**Mating connector H15F with FASTON connection, Order No. 69001-733**

# 19" compatible AC/DC linear control systems



## Technical data

Input parameters		Output parameters		
Mains voltage (with conversion kit)	Nominal values $V_{IN}$ (operating ranges)	115 (103.5 ... 126.5) $V_{AC}$ 230 (207 ... 253) $V_{AC}$		
Mains nominal current at 230 $V_{AC}$		PSK 0.16 A, PSM 0.35 A, PSG 0.45 A		
Mains frequency range		48 – 62 Hz		
Mains input current in accordance with		EN 61000-3-2 + A14		
Efficiency type		40 ... 60 %		
Current at switch-on		< 15 A (PSK < 3 A)		
Discharge current		< 50 $\mu$ A		
		$V_{1,2}$		
Output voltage (potentiometer $V_{1,2}$ at front)	factory set	12	15	24
	Adjustment range [V]	11.5 ... 12.5	13.5 ... 15.5	23 ... 25.0
Output current at 50 °C (70 °C), max. current can be adjusted with front potentiometer $C_{1,2}$ (50 ... 150 %)	PSK [A]	0.4 (0.2)	0.4 (0.2)	0.3 (0.15)
	PSM [A]	1.0 (0.6)	1.0 (0.6)	0.6 (0.4)
	PSG [A]	1.5 (0.9)	1.5 (0.9)	1.2 (0.8)
Derating from 50 to 70 °C approx.		2 %/K		
Residual ripple		$\leq$ 2 mV		
Load control, static ( $I_{1,2} = 0 \dots I_{1,2 \text{ Nominal}}$ )		< 0.01 %		
Mains control at $\pm$ 10 % change in mains voltage		< 0.01 %		
Overall control time, tolerance 0.1 % $\times V_{1/2 \text{ Nominal}}$ load change 0 ... 100 % $di/dt = 0.135 \text{ A}/\mu\text{s}$		$\leq$ 50 $\mu\text{s}$		
Temperature coefficient		0.01 %/K		
Output can be switched in series and in parallel		Yes		

## Protection and monitoring facilities

Power failure bridging at 100 % load	$V_{IN} = 207 \text{ V}$ , PSK > 10 ms, PSM > 7 ms, PSG > 6 ms $V_{IN} = 230 \text{ V}$ , PSK > 16 ms, PSM > 10 ms, PSG > 8 ms	
Current limitation	Constant current	
Over-load protection, short-circuit current controlled max.	$I_{1/2 \text{ Nominal}} + 15 \%$	
Over-voltage protection OVP (shuts power supply off), automatic response value approx.	$V_{1/2} + 20 \%$	–
Over-temperature protection of the series pass transistors	Yes	
Remote sense compensated per line (with $V_{1/2 \text{ Nominal}}$ )	Max. 0.5 V	
Air and creepage distance Primary-secondary side/ Primary PE	$\geq$ 8 mm / $\geq$ 4 mm	
Output voltage present, LED green	LED POWER	

## Test and environmental conditions

Test voltage to EN 60950	Input-output	4.3 kV <sub>DC</sub>
	Input PE	2.2 kV <sub>DC</sub>
	Output PE	0.7 kV <sub>DC</sub>
Climatic test to	IEC 68-2-38	
Shock and vibration in accordance with (acceleration of 2 g)	EN 60068-2-6	
Dimensions: Height 3 U	Width: PSK 6 HP, PSM 10 HP, PSG 14 HP	
Weight (mass)	PSK 0.8 kg, PSM 1.6 kg, PSG 1.9 kg	
Electromagnetic compatibility CE	Interference-emission	EN 50081-1, EN 55011 Class B, EN 55022 Class B
	Interference-immunity, degree of severity 3	EN 50082-2, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5
	Safety, class of protection 1	EN 60950 (PSM, PSG) EN 60601-1 (PSM, PSG)
Toroidal transformer (low emission) to	EN 60742	
Power supply maintenance-free	Yes	
Cooling	Convection	
Operation/storage ambient temperature	0 ... 70 °C / -20 ... +85 °C	
Relative humidity, non-condensing (operation/storage)	30 ... 80 % / 10 ... 95 %	
MTBF at full load, $T_U = 40 \text{ °C}$	PSK 960.000 h PSM / PSG 580.000 h	

## AC/DC switched mode power supplies

Single, 50 W .....	3.11.2
Single, 80 W .....	3.11.4
Single, 100 W .....	3.11.6
Single, 130 W .....	3.11.8
Dual, 80 W .....	3.11.10
Dual, 100 W .....	3.11.12
Triple, 80 W .....	3.11.14
Triple, 100 W .....	3.11.16
Triple, 130 W .....	3.11.18
Triple, 150 / 224 W .....	3.11.20
Quad, 250 W .....	3.11.22
Quad, 350 W .....	3.11.24

## AC/DC linear control systems

Single, 8 – 60 W ..	3.11.26
Dual, 10 – 58 W ...	3.11.28
Triple, 7 – 39 W ...	3.11.30

## AC/DC non-regulated

Single, 84 W .....	3.11.32
Single, 240 W .....	3.11.34

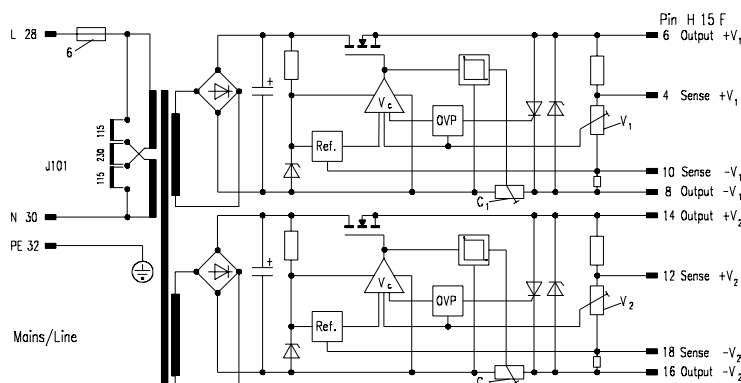
## DC/DC converters

Single, 20 to 120 W .....	3.11.36
Dual, 55 to 72 W ..	3.11.38
Triple, 64 to 70 W .....	3.11.40
Quad, 250 W .....	3.11.42
Quad, 350 W .....	3.11.44

## Accessories

Mating connector female connector H 15 F .....	3.11.46
Keying/coding .....	3.11.47
Guide rails .....	3.11.47
Z-rails .....	3.11.47
EMC contact strips .....	3.11.48
Wall/horizontal rail installation .....	3.11.49

## Schematic wiring diagram



DIA45096



# 19" compatible AC/DC linear control systems

Power supply units..... 3.10.0

19" compatible.....3.11.0

Open frame.....3.12.0

Power systems.....3.13.0

Uninterruptable power supplies (UPS) .....3.14.0

Backplanes/ test adapters .. 3.20.0

Microcomputer packaging systems (MPS) ..... 3.30.0

Appendix..... 3.90.0



11300002

## Triple, 7 - 39 W

- 19" compatible AC/DC power supply, pluggable 3 U
- Mains input voltage 230 V<sub>AC</sub> (can be converted to 115 V<sub>AC</sub> with conversion kit, see below)
- 3 output voltages (galvanically separated)
- High control accuracy
- Low residual ripple and very low-interference
- Suitable for medical applications (8 mm safety clearances)
- High reliability and long life



100 x 160 mm

DUM0084

PSA46292

Pin	Connection
4	Sense + V <sub>1</sub> (PSM, PSG)
6	Output + V <sub>1</sub>
8	Output 0V V <sub>1</sub>
10	Sense 0V V <sub>1</sub> (PSM, PSG)
12	Output + V <sub>2</sub>
14	Output - V <sub>2</sub>
16	Output + V <sub>3</sub>
18	Output - V <sub>3</sub>
20	Data save
22	Power failure
24	0 V for pin 20, 22
26	-
28	L
30	N
32	PE ⊕

### Note

The front panel is not included in delivery.

Output data at T <sub>U</sub> = 0 ... 50 °C								Order No. (1 unit) <sup>1)</sup>		
Voltage in V			Current in A			Power output in W	Width in HP	Power supply Type	Mains voltage <sup>4)</sup> 230 V <sub>AC</sub>	Front panel <sup>2)</sup> EMC anodised
V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>					
5	12	12	0.5	0.2	0.2	8	6	PSK 312 <sup>3)</sup>	<b>13105-051</b>	<b>21005-470</b>
			1.5	0.5	0.5	20	10	PSM 312	<b>13105-052</b>	<b>21005-451</b>
			3.0	1.0	1.0	39	14	PSG 312	<b>13105-053</b>	<b>21005-439</b>

<sup>1)</sup> Please order front panel and other accessories separately

<sup>2)</sup> Front anodised, rear side chromated, slotted on both sides for mounting EMC contact strips in the event of increased EMC requirements  
(3 U EMC contact strips, Order No. 21101-705, 10 pieces)

<sup>3)</sup> Without case

<sup>4)</sup> Mains voltage conversion kit 230 V to 115 V (Order No. 43105-999)

**Mating connector H15F with FASTON connection, Order No. 69001-733**

# 19" compatible AC/DC linear control systems



## Technical data

Input parameters			
Mains voltage (with conversion kit)	Nominal values $V_{IN}$ (operating-ranges)	115 V <sub>AC</sub> (103.5 ... 126.5) 230 V <sub>AC</sub> (207 ... 253)	
Mains nominal current at 230 V <sub>AC</sub>		PSK 0.11 A, PSM 0.3 A, PSG 0.4 A	
Mains frequency range		48 – 62 Hz	
Mains input current in accordance with		EN 61000-3-2 + A14	
Efficiency type		PSK 40 ... 46 %, PSM, PSG 45 ... 52 %	
Current at switch-on		< 15 A (PSK < 2 A)	
Discharge current		< 50 µA	
Output parameters			
		$V_1$	$V_{2,3}$
Output voltage (potentiometer $V_{1,2,3}$ at front)	factory set	5 V	12 V, 15 V
	Adjustment-range	4.755.25 ... V	12 ... 15.5 V
Output current at 50 °C (70 °C)	PSK	0.5 (0.3) A	0.2 (0.1) A
	PSM	1.5 (0.8) A	0.5 (0.3) A
	PSG	3 (1.5) A	1 (0.6) A
Load control, static ( $I_1=0...I_1$ Nominal)	PSK	≤ 0.2 %	≤ 0.3 %
	PSM	≤ 0.01 %	≤ 1 %
	PSG	≤ 0.01 %	≤ 2 %
Residual ripple		≤ 2 mV	
Mains control at ± 10 % change in mains voltage		< 0.01 %	< 0.2 %
Overall control time, tolerance 0.1 % × $V_{1/2}$ Nominal, load change 0 ... 100 % $di/dt = 0.135$ A/µs		≤ 50 µs	
Temperature coefficient		0.05 %/K	
Remote sense (PSM, PSG) compensated		Max. 0.5 V	–

## Protection and monitoring facilities

Power failure bridging at 100 % load	$V_{IN} = 207$ V, PSK, PSM > 10 ms, PSG > 7 ms, $V_{IN} = 230$ V, PSK, PSM > 15 ms, PSG > 12 ms
Over-voltage protection OVP for 5 V in the case of PSM and PSG	$V_{Nominal} + 20$ %
Current limitation	Constant current
Over-load protection, short-circuit current controlled max.	$I_1$ type: PSK: $I_{nom.} + 20$ %, PSM/PSG: $I_{nom.} + 50$ %, $I_{2,3}$ type: 2 A
Over-temperature protection of the series pass transistor	Yes
Air and creepage distance Primary-secondary side/ Primary PE	≥ 8 mm / ≥ 4 mm
Power failure signals	Power failure, save data: Active low, open collector
Output voltage present, LED green	LED POWER $V_1, V_2, V_3$

## Test and environmental conditions

Climatic test to	IEC 68-2-38	
Shock and vibration in accordance with (acceleration of 2 g)	EN 60068-2-6	
Dimensions: Height 3 U	Width: PSK 6 HP, PSM 10 HP, PSG 14 HP	
Weight (mass)	PSK 0.8 kg, PSM 1.6 kg, PSG 1.9 kg	
CE	EMC interference-emission	EN 50081-1, EN 55011 Class B, EN 55022 Class B
	EMC interference-immunity, degree of severity 3	EN 50082-2, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5
	Safety, class of protection 1	EN 60950
Test voltage to EN 60950	Input-output	4.3 kV <sub>DC</sub>
	Input PE	2.2 kV <sub>DC</sub>
	Output PE	0.7 kV <sub>DC</sub>
	Output-output	0.7 kV <sub>DC</sub>
Toroidal transformer (low emission) to	EN 60742	
Power supply maintenance-free	Yes	
Cooling	Convection	
Operation/storage ambient temperature	0 ... 70 °C / -20 ... +85 °C	
Relative humidity, non-condensing (operation/storage)	30 ... 80 % / 10 ... 95 %	
MTBF at full load, $T_U = 40$ °C	PSK 850,000 h PSM/PSG 470,000 h	

## AC/DC switched mode power supplies

Single, 50 W .....	3.11.2
Single, 80 W .....	3.11.4
Single, 100 W .....	3.11.6
Single, 130 W .....	3.11.8
Dual, 80 W .....	3.11.10
Dual, 100 W .....	3.11.12
Triple, 80 W .....	3.11.14
Triple, 100 W .....	3.11.16
Triple, 130 W .....	3.11.18
Triple, 150 / 224 W .....	3.11.20
Quad, 250 W .....	3.11.22
Quad, 350 W .....	3.11.24

## AC/DC linear control systems

Single, 8 – 60 W ..	3.11.26
Dual, 10 – 58 W ..	3.11.28
Triple, 7 – 39 W ..	3.11.30

## AC/DC non-regulated

Single, 84 W .....	3.11.32
Single, 240 W .....	3.11.34

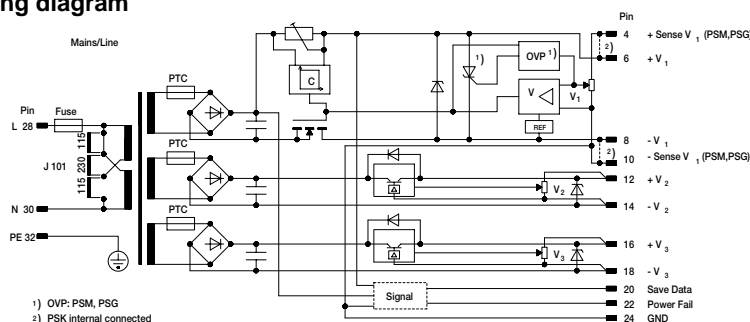
## DC/DC converters

Single, 20 to 120 W .....	3.11.36
Dual, 55 to 72 W ..	3.11.38
Triple, 64 to 70 W .....	3.11.40
Quad, 250 W .....	3.11.42
Quad, 350 W .....	3.11.44

## Accessories

Mating connector female connector H 15 F .....	3.11.46
Keying/coding .....	3.11.47
Guide rails .....	3.11.47
Z-rails .....	3.11.47
EMC contact strips .....	3.11.48
Wall/horizontal rail installation .....	3.11.49

## Schematic wiring diagram





# 19" compatible AC/DC non-regulated

Power supply units..... 3.10.0  
**19" compatible.....3.11.0**  
 Open frame.....3.12.0  
 Power systems.....3.13.0  
 Uninterruptable power supplies (UPS) .....3.14.0

Backplanes/  
 test adapters .. 3.20.0

Microcomputer packaging systems (MPS) ..... 3.30.0

Appendix..... 3.90.0



11396005

## Single, 84 W

- 19" compatible AC/DC power supply, pluggable 3 U
- Mains input voltage 230 V<sub>AC</sub> (can be converted to 115 V<sub>AC</sub>)
- 1 output voltage
- High reliability and long life



100 x 160 mm

DUM0084

Pin	Connection
4	Output + V <sub>1</sub>
6	
8	
10	Output 0V V <sub>1</sub>
12	
14	
16	
18	-
20	
22	
24	
26	L
28	
30	N
32	PE ⊕

PSA46292

### Note

The front panel is not included in delivery.

Output data at T <sub>U</sub> = 0 ... 50 °C				Order No. <sup>1)</sup>		
Voltage	Current	Power output	Width	Power supply	Mains voltage	Front panel <sup>2)</sup> EMC
in V	in A	in W	in HP	Type	230 V <sub>AC</sub>	
24	3.5	84	14	PGG 124	<b>11005-190</b>	<b>21005-472</b>

<sup>1)</sup> Please order front panel and other accessories separately

<sup>2)</sup> Front anodised, rear side chromated, slotted on both sides for mounting EMC contact strips in the event of increased EMC requirements  
 (3 U EMC contact strips, Order No. 21101-705, 10 pieces)

**Mating connector H15F with FASTON connection, Order No. 69001-733**

Other output voltages available on request

# 19" compatible AC/DC non-regulated



## Technical data

### Input parameters

Mains voltage (can be converted)	115/230 V <sub>AC</sub> ± 10 %
Mains frequency range	48 – 62 Hz
Mains input current in accordance with	EN 61000-3-2 + A14

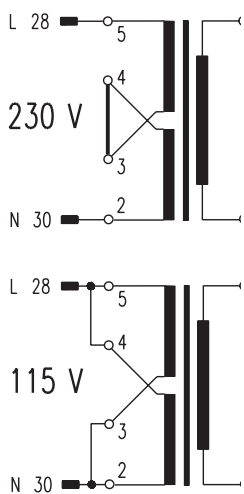
### Output parameters

Output voltage (U <sub>max.</sub> )	24 V ± 10 %	
Output current (I <sub>max.</sub> )	3 A	
Residual ripple	See diagram	
Power failure bridging	U <sub>E Nominal</sub>	Type 20 ms
	U <sub>E Nominal</sub> - 10 %	Type 12 ms
Derating from 50 – 70 °C	2 %/K	

### Other data

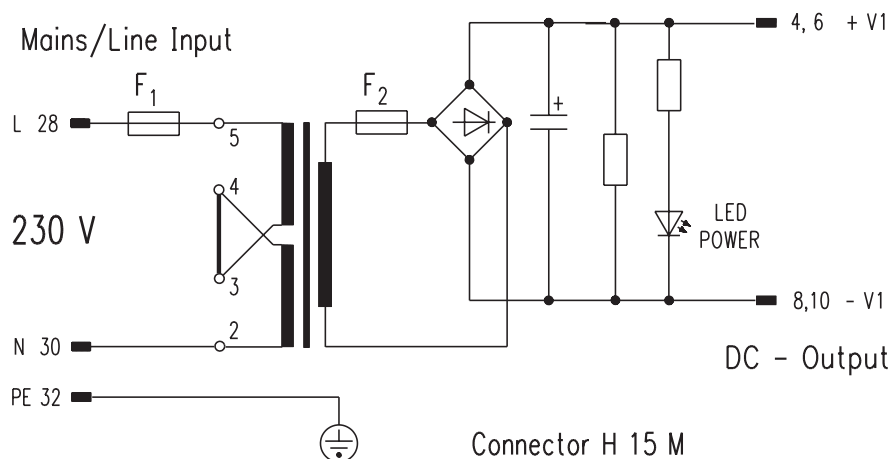
Test voltage to EN 60950	Input-output	4.3 kV <sub>DC</sub>
	Input PE	2.2 kV <sub>DC</sub>
	Output PE	0.7 kV <sub>DC</sub>
Climatic test to	IEC 68-2-38	
Shock and vibration in accordance with acceleration of 2 g	EN 60068-2-6	
Suppression	VDE 0871 curve K	
Class of protection (VDE 0100)	Class 1	
Power supply maintenance-free	Yes	
Cooling	Convection	
Ambient temperature T <sub>U</sub>	Operation	0 ... 70 °C
	Storage	-40 ... +85 °C

## Mains voltage switch-over



from DUM0047

## Schematic wiring diagram



PSA46589

## AC/DC switched mode power supplies

Single, 50 W .....	3.11.2
Single, 80 W .....	3.11.4
Single, 100 W .....	3.11.6
Single, 130 W .....	3.11.8
Dual, 80 W .....	3.11.10
Dual, 100 W .....	3.11.12
Triple, 80 W .....	3.11.14
Triple, 100 W .....	3.11.16
Triple, 130 W .....	3.11.18
Triple, 150 / 224 W .....	3.11.20
Quad, 250 W .....	3.11.22
Quad, 350 W .....	3.11.24

## AC/DC linear control systems

Single, 8 – 60 W ..	3.11.26
Dual, 10 – 58 W ...	3.11.28
Triple, 7 – 39 W ...	3.11.30

## AC/DC non-regulated

Single, 84 W .....	3.11.32
Single, 240 W .....	3.11.34

## DC/DC converters

Single, 20 to 120 W .....	3.11.36
Dual, 55 to 72 W ..	3.11.38
Triple, 64 to 70 W .....	3.11.40
Quad, 250 W .....	3.11.42
Quad, 350 W .....	3.11.44

## Accessories

Mating connector female connector H 15 F .....	3.11.46
Keying/coding .....	3.11.47
Guide rails .....	3.11.47
Z-rails .....	3.11.47
EMC contact strips .....	3.11.48
Wall/horizontal rail installation .....	3.11.49



# 19" compatible AC/DC non-regulated

Power supply units..... 3.10.0

19" compatible.....3.11.0

Open frame.....3.12.0

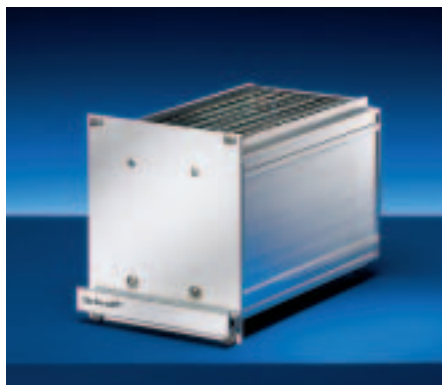
Power systems.....3.13.0

Uninterruptable power supplies (UPS) .....3.14.0

Backplanes/ test adapters .. 3.20.0

Microcomputer packaging systems (MPS) ..... 3.30.0

Appendix..... 3.90.0



11399012

## Single, 240 W

- 19" compatible AC/DC power supply, pluggable 3 U
- Mains input voltage 230 V<sub>AC</sub> (can be converted to 115 V<sub>AC</sub>)
- 1 output voltage
- Can be connected in series, parallel and redundancy operation
- Auxiliary voltage output (24 V/0.1 A) short-circuit protected, without galvanic separation
- Reset function (external on/off)
- High reliability and long life



100 x 160 mm

DJM0084

PSA46292

Pin	Connection
4	Output + V <sub>1</sub>
6	
8	Output 0V V <sub>1</sub>
10	
12	-
14	Reset, external on/off
16	-
18	Auxiliary voltage +V <sub>2</sub>
20	Auxiliary voltage -V <sub>2</sub>
22	
24	-
26	
28	L
30	N
32	PE ⊕

### Note

The front panel is not included in delivery.

Output data at T <sub>U</sub> = 0 ... 50 °C				Order No. (1 unit) <sup>1)</sup>		
Voltage	Current	Capacity	Width:	Power supply	Mains voltage	Front panel <sup>2)</sup> EMC
in V	in A	in W	in HP	Type	230 V <sub>AC</sub>	
24	10	240	28	PUG 124	<b>11005-262</b>	<b>21005-479</b>

<sup>1)</sup> Please order front panel and other accessories separately

<sup>2)</sup> Front anodised, rear side chromated, slotted on both sides for mounting EMC contact strips in the event of increased EMC requirements  
(3 U EMC contact strips, Order No. 21101-705, 10 pieces)

**Mating connector H15F with FASTON connection, Order No. 69001-733**

Other output voltages available on request

# 19" compatible AC/DC non-regulated



## Technical data

Input parameters		
Mainsvoltage (can be converted)	115/230 V <sub>AC</sub> ± 10 %	
Mains frequency range	48 – 62 Hz	
Mains input current in accordance with	EN 61000-3-2 + A14	
Efficiency	78 %	
Mains nominal current at 230 V <sub>AC</sub>	1.62 A	
Output parameters		
Output voltage	24 V ± 3 %	
Output current (I <sub>1</sub> /I <sub>2</sub> )	10/0.1 A	
Residual ripple	< 2.4 V	
Auxiliary voltage	24 V, 0.1 A	
Power failure bridging	Type 9 ms, 12 ms at 0.8 × I <sub>nom</sub>	
Other data		
Current limitation	Type 25 A	
Voltage clamping adjustable in idling mode	24 V, 0.1 A	
Over-temperature protection	Yes	
Test voltage to EN 60950	Input-output	4.3 kV <sub>DC</sub>
	Input PE	2.2 kV <sub>DC</sub>
	Output PE	0.7 kV <sub>DC</sub>
Climatic test to	IEC 68-2-38	
Shock and vibration in accordance with acceleration of 2 g	EN 60068-2-6	
Safety to EN 60950	VDE No. 1641	
Suppression	VDE 0875, Part 3	
Class of protection (VDE 0100)	Class 1	
Power supply maintenance-free	Yes	
Cooling	Convection	
Ambient temperature T <sub>U</sub>	Operation	0 ... 70°C
	Storage	-40 ... +85°C

## AC/DC switched mode power supplies

Single, 50 W .....	3.11.2
Single, 80 W .....	3.11.4
Single, 100 W .....	3.11.6
Single, 130 W .....	3.11.8
Dual, 80 W .....	3.11.10
Dual, 100 W .....	3.11.12
Triple, 80 W .....	3.11.14
Triple, 100 W .....	3.11.16
Triple, 130 W .....	3.11.18
Triple, 150 / 224 W .....	3.11.20
Quad, 250 W .....	3.11.22
Quad, 350 W .....	3.11.24

## AC/DC linear control systems

Single, 8 – 60 W ..	3.11.26
Dual, 10 – 58 W ...	3.11.28
Triple, 7 – 39 W ...	3.11.30

## AC/DC non-regulated

Single, 84 W .....	3.11.32
Single, 240 W .....	3.11.34

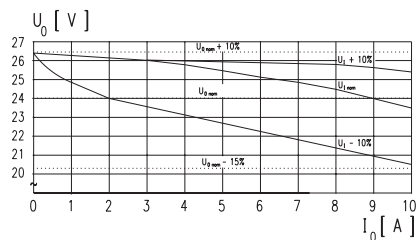
## DC/DC converters

Single, 20 to 120 W .....	3.11.36
Dual, 55 to 72 W ..	3.11.38
Triple, 64 to 70 W .....	3.11.40
Quad, 250 W .....	3.11.42
Quad, 350 W .....	3.11.44

## Accessories

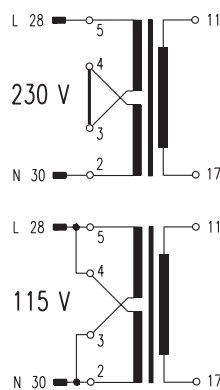
Mating connector female connector	
H 15 F .....	3.11.46
Keying/coding .....	3.11.47
Guide rails .....	3.11.47
Z-rails .....	3.11.47
EMC contact strips .....	3.11.48
Wall/horizontal rail installation .....	3.11.49

## Load behaviour



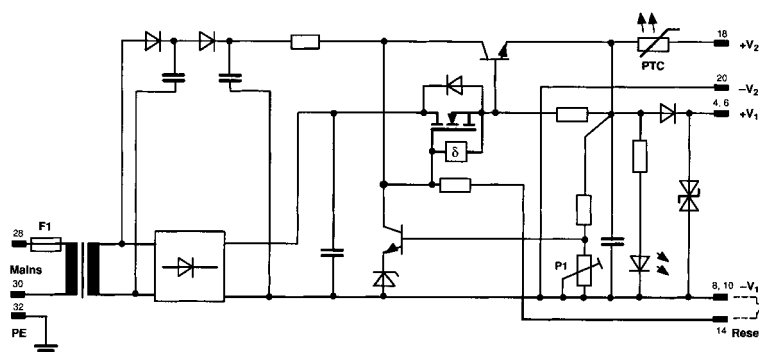
DJM0085

## Mains voltage switch-over



from DJM0047

## Schematic wiring diagram



A4/783



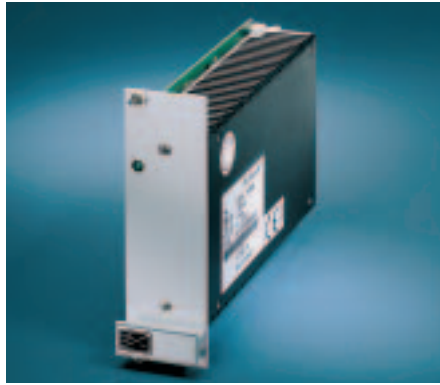
# 19" compatible DC/DC converters

Power supply units..... 3.10.0  
**19" compatible.....3.11.0**  
 Open frame.....3.12.0  
 Power systems.....3.13.0  
 Uninterruptable power supplies (UPS) .....3.14.0

Backplanes/ test adapters .. 3.20.0

Microcomputer packaging systems (MPS) ..... 3.30.0

Appendix..... 3.90.0



11396008

## Single, 20 to 120 W

- DC series
- Input voltage from 9 to 160 V<sub>DC</sub> (4 ranges)
- 19" compatible DC/DC switched mode power supplies (3 U)
- 1 output voltage
- Galvanic separation between primary and secondary circuit
- International approvals EN 60950, CE
- High reliability and long life



Dimensions: A, 128.4, 100, 32, 100 x 160 mm, 171.93, 2.5, DUM0084, PSA46292

Pin	Connection
4	Ext. on/of (DCM, DCG)
6	Current share (DCM, DCG)
8	Sense 0V V <sub>1</sub>
10	Sense + V <sub>1</sub>
12	Output + V <sub>1</sub>
14	Output + V <sub>1</sub>
16	Output 0V V <sub>1</sub>
18	Output 0V V <sub>1</sub>
20	
22	-
24	
26	+ U <sub>E</sub> (DCM, DCG)
28	+ U <sub>E</sub>
30	0V U <sub>E</sub>
32	PE ⊕

### Note

The front panel is not included in delivery.

Output data at T <sub>U</sub> = 0 ... 50 °C					DC input voltage – Order No. (1 unit) <sup>1)</sup>					
Voltage in V	Current in A	Power output in W	Height in U	Width in HP	Power supply Type	A 8.5 – 18 V <sub>DC</sub>	W 18 – 40 V <sub>DC</sub>	C 40 – 80 V <sub>DC</sub>	D 80 – 160 V <sub>AC</sub>	Front panel anodised
5	4	20	3	4	DCK 105	<b>13103-800<sup>3)</sup></b>	<b>13103-801</b>	<b>13103-802</b>	<b>13103-803</b>	<b>21008-154</b>
	10	50		8	DCM 105	<b>13103-820</b>	<b>13103-821</b>	<b>13103-822</b>	<b>13103-823</b>	<b>21008-151</b>
	20	100		10	DCG 105	<b>13103-840<sup>4)</sup></b>	<b>13103-841</b>	<b>13103-842</b>	<b>13103-843</b>	<b>21008-150</b>
12	2	24		4	DCK 112	<b>13103-804<sup>3)</sup></b>	<b>13103-805</b>	<b>13103-806</b>	<b>13103-807</b>	<b>21008-154</b>
	5	60		8	DCM 112	<b>13103-824</b>	<b>13103-825</b>	<b>13103-826</b>	<b>13103-827</b>	<b>21008-151</b>
	9	108		10	DCG 112	<b>13103-844<sup>4)</sup></b>	<b>13103-845</b>	<b>13103-846</b>	<b>13103-847</b>	<b>21008-150</b>
15	1.5	24		4	DCK 115	<b>13103-808<sup>3)</sup></b>	<b>13103-809</b>	<b>13103-810</b>	<b>13103-811</b>	<b>21008-154</b>
	4	60		8	DCM 115	<b>13103-828</b>	<b>13103-829</b>	<b>13103-830</b>	<b>13103-831</b>	<b>21008-151</b>
	7	105		10	DCG 115	<b>13103-848<sup>4)</sup></b>	<b>13103-849</b>	<b>13103-850</b>	<b>13103-851</b>	<b>21008-150</b>
24	1	24		4	DCK 124	<b>13103-812<sup>3)</sup></b>	<b>13103-813</b>	<b>13103-814</b>	<b>13103-815</b>	<b>21008-154</b>
	2.5	60	8	DCM 124	<b>13103-832</b>	<b>13103-833</b>	<b>13103-834</b>	<b>13103-835</b>	<b>21008-151</b>	
	5	120	10	DCG 124	<b>13103-852<sup>4)</sup></b>	<b>13103-853</b>	<b>13103-854</b>	<b>13103-855</b>	<b>21008-150</b>	

<sup>1)</sup> Please order front panel and other accessories separately, EMC front panel available on request

<sup>3)</sup> DCK U<sub>EDC</sub> = 10.8 – 18 V, open design, case available on request

<sup>4)</sup> In the case of input voltages from 8.5 ... 10.8 volts (longer than 3 minutes), the output power must be reduced by 10 %/volts.

# 19" compatible DC/DC converters



## Technical data

Input parameters				
Input voltages (range)	8.5 – 18 V (A)	18 – 40 V (B)	40 – 80 V (C)	80 – 160 V (D)
Fuse DCM, DCG, (DCK)	25 A (6.3 A)	10 A (4 A)	6.3 A (1.6 A)	3.15 A (0.8 A)
Efficiency	70 – 85 %			
Output parameters				
Output voltages (adjustment range $\pm 5\%$ )	5 V	12 V	15 V	24 V
Residual ripple	< 15 mV <sub>SS</sub> DCK, < 20 mV <sub>SS</sub> DCM, DCG			
Interference voltage (total of all interference parts)	Type < 50 mV			
Mains control (with $V_{IN}$ )	< 0.1 %			
Load control ( $I_{OUT} = 0 \dots 100\%$ )	< 0.2 %			
Control time	< 1 ms at $I_{OUT} = 20 \dots 80\%$			
Temperature coefficient	$\pm 0.025\%/K$			
Power reduction, derating	from +50 °C 3 %/K			
Current limitation	110 % $I_{Nominal}$			
SD external switching on/off	DCM, DCG, TTL compatible			
Remote sense compensated	Max. 0.25 V/line			
DCM, DCG parallel switching	Load sharing, connect all pins 6 with short lines, connect sense directly to load line at connector			
Other data				
Over-voltage protection	Input > 100 % of $U_E$ max., output 125 % $\pm 10\%$ $U_{NOM}$			
Weight (mass)	DCK 0.3 kg, DCM 0.7 kg, DCG 1 kg			
Electromagnetic compatibility, CE	Interference emission	EN 50081-1, EN 55011 Class B, EN 55022 Class B		
	Interference immunity (degree of severity)	EN 50082-2, EN 61000-4-2 (4), EN 61000-4-3 (10 V/m), EN 61000-4-4 (4), EN 61000-4-5 (3), EN 61000-4-11		
	Safety	EN 60950		
Operating display	Green LED for $V_1$			
Cooling	Convection			
Ambient temperature $T_U$ operation	0 ... 70 °C			

## AC/DC switched mode power supplies

Single, 50 W .....	3.11.2
Single, 80 W .....	3.11.4
Single, 100 W .....	3.11.6
Single, 130 W .....	3.11.8
Dual, 80 W .....	3.11.10
Dual, 100 W .....	3.11.12
Triple, 80 W .....	3.11.14
Triple, 100 W .....	3.11.16
Triple, 130 W .....	3.11.18
Triple, 150 / 224 W .....	3.11.20
Quad, 250 W .....	3.11.22
Quad, 350 W .....	3.11.24

## AC/DC linear control systems

Single, 8 – 60 W ..	3.11.26
Dual, 10 – 58 W ...	3.11.28
Triple, 7 – 39 W ...	3.11.30

## AC/DC non-regulated

Single, 84 W .....	3.11.32
Single, 240 W .....	3.11.34

## DC/DC converters

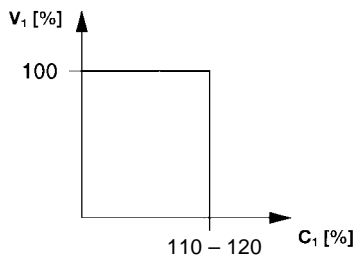
Single, 20 to 120 W .....	3.11.36
Dual, 55 to 72 W ..	3.11.38
Triple, 64 to 70 W .....	3.11.40
Quad, 250 W .....	3.11.42
Quad, 350 W .....	3.11.44

## Accessories

Mating connector female connector	
H 15 F .....	3.11.46
Keying/coding .....	3.11.47
Guide rails .....	3.11.47
Z-rails .....	3.11.47
EMC contact strips .....	3.11.48
Wall/horizontal rail installation .....	3.11.49

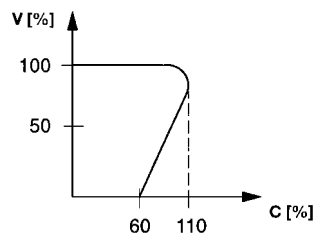
### Current limitation

DCM, DCG



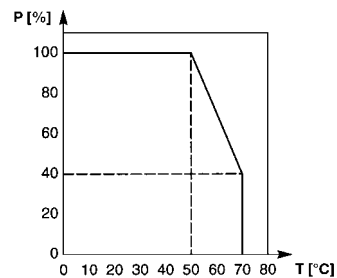
ELKC3878

DCK



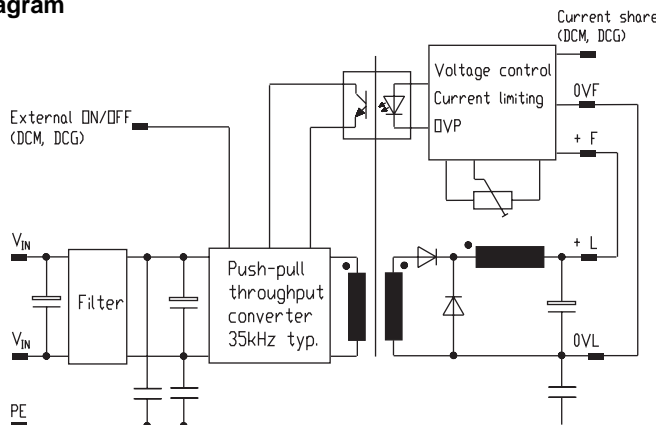
ELKC3877

### Temperature-dependent output limitation



61\_34\_1

### Schematic wiring diagram



ELKC3873



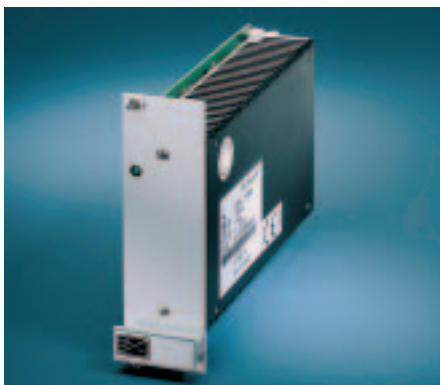
# 19" compatible DC/DC converters

Power supply units..... 3.10.0  
**19" compatible.....3.11.0**  
 Open frame.....3.12.0  
 Power systems.....3.13.0  
 Uninterruptable power supplies (UPS) .....3.14.0

Backplanes/  
test adapters .. 3.20.0

Microcomputer packaging systems (MPS) ..... 3.30.0

Appendix..... 3.90.0



11396008

## Dual, 55 to 72 W

- DC series
- Input voltage from 9 to 160 V<sub>DC</sub> (4 ranges)
- 19" compatible DC/DC switched mode power supplies (3 U)
- 2 output voltages
- Galvanic separation between primary and secondary circuit
- International approvals EN 60950, CE
- High reliability and long life



Dimensions: 128.4 mm height, 100 mm depth, 171.93 mm width, 2.5 mm mounting hole offset.

Pin configurations: DUM0084 (left), PSA46292 (right).

Pin	Connection
4	
6	
8	
10	
12	Sense GND
14	
16	
18	
20	
22	Output + V <sub>1</sub>
24	
26	
28	GND - V <sub>1,2</sub>
30	
32	
	Output + V <sub>2</sub>
	Sense + V <sub>2</sub>
	Sense + V <sub>1</sub>
	+ U <sub>E</sub>
	- U <sub>E</sub>
	PE ⊕

**Note**  
The front panel is not included in delivery.

Output data at T <sub>U</sub> = 0 ... 50 °C					DC input voltage – Order No. <sup>1)</sup>					
Voltage in V	Current in A	Power output in W	Height in U	Width in HP	Power supply Type	A	W	C	D	Front panel
V <sub>1</sub> /V <sub>2</sub>	I <sub>1</sub> /I <sub>2</sub>					8.5–18 V <sub>DC</sub>	18–40 V <sub>DC</sub>	40–80 V <sub>DC</sub>	80–160 V <sub>AC</sub>	anodised
+5/+12	5/3	61	3	8	DCM 2512	<b>13103-860</b>	<b>13103-861</b>	<b>13103-862</b>	<b>13103-863</b>	<b>21008-153</b>
+5/+15	5/2	55			DCM 2515	<b>13103-864</b>	<b>13103-865</b>	<b>13103-866</b>	<b>13103-867</b>	
+12/-12	3/3	72			DCM 212	<b>13103-868</b>	<b>13103-869</b>	<b>13103-870</b>	<b>13103-871</b>	
+15/-15	2/2	60			DCM 215	<b>13103-872</b>	<b>13103-873</b>	<b>13103-874</b>	<b>13103-875</b>	

<sup>1)</sup> Please order front panel and other accessories separately, EMC front panel available on request

Mating connector H15F with FASTON connection, Order No. 69001-733

# 19" compatible DC/DC converters



## Technical data

Input parameters				
Input voltages (range)	8.5 – 18 V (A)	18 – 40 V (B)	40 – 80 V (C)	80 – 160 V (D)
Fuse	25 A	10 A	6.3 A	3,15 A
Efficiency	70 – 85 %			
Output parameters				
Output voltages (adjustment range $\pm 5\%$ )	5 V	12 V	15 V	24 V
Residual ripple	< 25 mVss			
Interference voltage (total of all interference parts)	Type < 80 mV			
Mains control (with $V_{IN}$ )	< 0.2 %			
Load control ( $I_{OUT} = 0 \dots 100\%$ )	< 0.2 %			
Control time	< 1 ms at $I_{OUT} = 20 \dots 80\%$			
Temperature coefficient	$\pm 0.025\%/K$			
Power reduction, derating	from +50 °C 3 %/K			
Current limitation	110 % $I_{Nominal}$			
Remote sense compensated	Max. 0.25 V/line			
Other data				
Over-voltage protection, automatically resetting	Input > 100 % of $U_E$ max., output 125 % $\pm 10\%$ $U_{NOM}$			
Weight (mass)	0.45 kg			
Electromagnetic compatibility, CE	Interference emission, depending on installation	EN 50081-1, EN 55011 Class B, EN 55022 Class B		
	Interference immunity (degree of severity)	EN 50082-2, EN 61000-4-2 (4), EN 61000-4-3 (10 V/m), EN 61000-4-4 (4), EN 61000-4-5 (3), EN 61000-4-6 (10 V), EN 61000-4-11		
	Safety	EN 60950, IEC 950		
Operating display	Green LED for $V_{1,2}$			
Cooling	Convection			
Ambient temperature $T_U$ operation	0 ... 70 °C			

## AC/DC switched mode power supplies

Single, 50 W .....	3.11.2
Single, 80 W .....	3.11.4
Single, 100 W .....	3.11.6
Single, 130 W .....	3.11.8
Dual, 80 W .....	3.11.10
Dual, 100 W .....	3.11.12
Triple, 80 W .....	3.11.14
Triple, 100 W .....	3.11.16
Triple, 130 W .....	3.11.18
Triple, 150 / 224 W .....	3.11.20
Quad, 250 W .....	3.11.22
Quad, 350 W .....	3.11.24

## AC/DC linear control systems

Single, 8 – 60 W ..	3.11.26
Dual, 10 – 58 W ...	3.11.28
Triple, 7 – 39 W ...	3.11.30

## AC/DC non-regulated

Single, 84 W .....	3.11.32
Single, 240 W .....	3.11.34

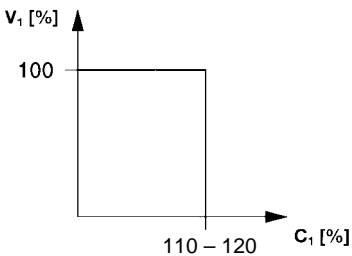
## DC/DC converters

Single, 20 to 120 W .....	3.11.36
Dual, 55 to 72 W ..	3.11.38
Triple, 64 to 70 W .....	3.11.40
Quad, 250 W .....	3.11.42
Quad, 350 W .....	3.11.44

## Accessories

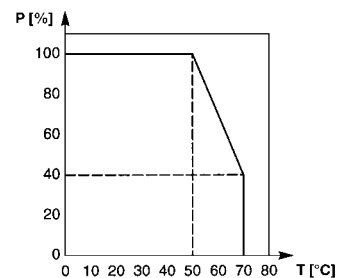
Mating connector female connector H 15 F .....	3.11.46
Keying/coding .....	3.11.47
Guide rails .....	3.11.47
Z-rails .....	3.11.47
EMC contact strips .....	3.11.48
Wall/horizontal rail installation .....	3.11.49

### Current limitation



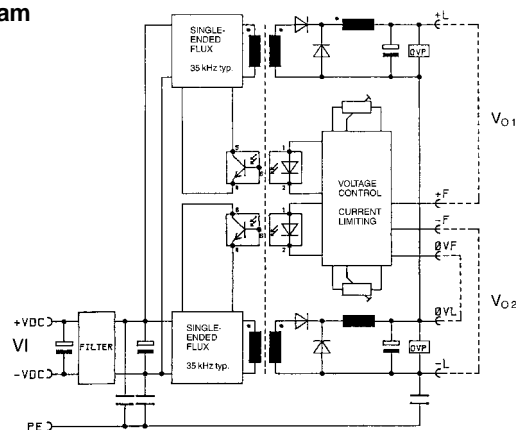
ELKC3878

### Temperature-dependent output limitation



61\_34\_1

### Schematic wiring diagram



ELKC3874



# 19" compatible DC/DC converters

- Power supply units..... 3.10.0
- 19" compatible.....3.11.0**
- Open frame.....3.12.0
- Power systems.....3.13.0
- Uninterruptable power supplies (UPS) .....3.14.0
- Backplanes/ test adapters .. 3.20.0
- Microcomputer packaging systems (MPS) ..... 3.30.0
- Appendix..... 3.90.0



11396008

## Triple, 64 to 70 W

- DC series
- Input voltage from 8.5 to 160 V<sub>DC</sub> (4 ranges)
- 19" compatible DC/DC switched mode power supplies (3 U)
- 3 output voltages
- Galvanic separation between primary and secondary circuit
- International approvals EN 60950, CE
- High reliability and long life



100 x 160 mm

DUM0084

PSA46292

Pin	Connection
4	internally assigned
6	internally assigned
8	+ 5 V
10	0V
12	+ 5 V
14	0V
16	internally assigned
18	0V
20	Output V <sub>2</sub>
22	Output V <sub>3</sub>
24	internally assigned
26	SD
28	+ U <sub>E</sub>
30	- U <sub>E</sub>
32	PE ⊕

**Note**  
The front panel is not included in delivery.

Output data at T <sub>U</sub> = 0 ... 50 °C					DC input voltage – Order No. (1 unit) <sup>1)</sup>				Front panel	
Voltage in V	Current in A	Power output in W	Height in U	Width in HP	A	W	C	D		
V <sub>1</sub> /V <sub>2</sub> /V <sub>3</sub>	I <sub>1</sub> /I <sub>2</sub> /I <sub>3</sub>				Type	8.5–18 V <sub>DC</sub>	18–40 V <sub>DC</sub>	40–80 V <sub>DC</sub>	80–160 V <sub>AC</sub>	<b>21096-195</b>
+5/+12/-12	8/3/1	88	3	8	DCM 312 eco	<b>13103-888</b>	<b>13103-889</b>	<b>13103-890</b>	<b>13103-891</b>	
+5/+15/-15	8/1/1	70			DCM 315 eco	<b>13103-892</b>	<b>13103-893</b>	<b>13103-894</b>	<b>13103-895</b>	

<sup>1)</sup> Please order front panel and other accessories separately, EMC front panel available on request

**Mating connector H15F with FASTON connection, Order No. 69001-733**

# 19" compatible DC/DC converters



## Technical data

Input parameters	
Input voltages (range)	8.5 – 18 V (A)   18 – 40 V (B)   40 – 80 V (C)   80 – 160 V (D)
Fuse	25 AT   10AT   6.3 AT   6.3 AT
Efficiency	80 – 85 %
Output parameters	
Adjustment range $V_1$	$5 V \pm 5 \%$
Residual ripple	$< 50 mV_{SS}$ , $< 10 mV_{SS}$ at $\pm 15 V$
Interference voltage (total of all interference parts)	Type $< 100 mV_{SS}$
Mains control (with $V_{IN min.}$ )	$V_1 < 0.2 \%$ , $V_{2,3} < 0.5 \%$
Load control ( $I_{OUT} = 0 \dots 100 \%$ )	See diagram
Control time	$< 1 ms$ at $I_{OUT} = 20 \dots 80 \%$
Temperature coefficient	$\leq 0.025 \%/K$
Power reduction, derating	from $+50 \text{ }^\circ\text{C}$ 3 %/K
Current limitation	110 % $I_{Nominal}$
SD external switching on/off	TTL compatible
Other data	
Over-voltage protection, automatically recurring	Input $> 100 \%$ of $U_E$ max., output $125 \% \pm 5 \%$ for $V_1$ , $V_{2,3}$ transzorb diode
Weight (mass)	0.5 kg
Electromagnetic compatibility, CE	Interference emission, depending on installation
	Interference immunity (degree of severity)
	Safety
Operating display	Green LED for $V_1$
Cooling	Convection
Ambient temperature $T_U$ operation	0 ... 70 °C

## AC/DC switched mode power supplies

Single, 50 W .....	3.11.2
Single, 80 W .....	3.11.4
Single, 100 W .....	3.11.6
Single, 130 W .....	3.11.8
Dual, 80 W .....	3.11.10
Dual, 100 W .....	3.11.12
Triple, 80 W .....	3.11.14
Triple, 100 W .....	3.11.16
Triple, 130 W .....	3.11.18
Triple, 150 / 224 W .....	3.11.20
Quad, 250 W .....	3.11.22
Quad, 350 W .....	3.11.24

## AC/DC linear control systems

Single, 8 – 60 W ..	3.11.26
Dual, 10 – 58 W ...	3.11.28
Triple, 7 – 39 W ...	3.11.30

## AC/DC non-regulated

Single, 84 W .....	3.11.32
Single, 240 W .....	3.11.34

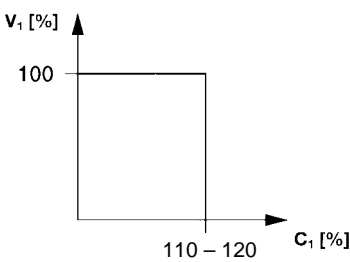
## DC/DC converters

Single, 20 to 120 W .....	3.11.36
Dual, 55 to 72 W ..	3.11.38
Triple, 64 to 70 W .....	3.11.40
Quad, 250 W .....	3.11.42
Quad, 350 W .....	3.11.44

## Accessories

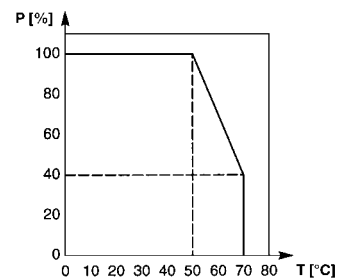
Mating connector female connector	
H 15 F .....	3.11.46
Keying/coding .....	3.11.47
Guide rails .....	3.11.47
Z-rails .....	3.11.47
EMC contact strips .....	3.11.48
Wall/horizontal rail installation .....	3.11.49

### Current limitation



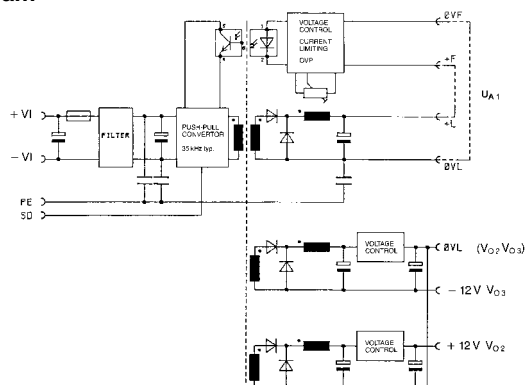
ELKC3878

### Temperature-dependent output limitation



61\_34\_1

### Schematic wiring diagram



ELKC3875



# 19" compatible DC/DC converters

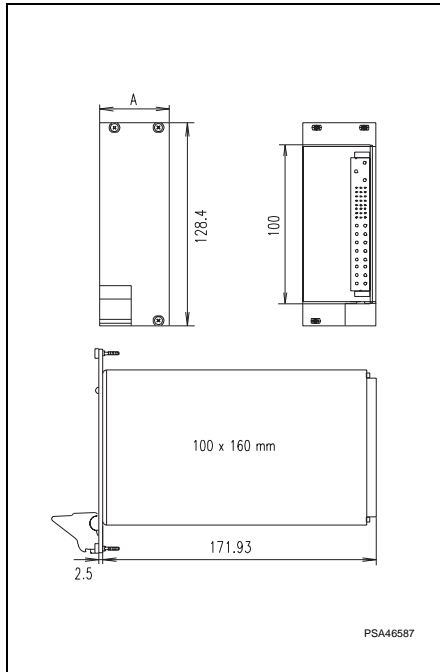
Power supply units..... 3.10.0  
**19" compatible.....3.11.0**  
 Open frame.....3.12.0  
 Power systems.....3.13.0  
 Uninterruptable power supplies (UPS) .....3.14.0  
  
 Backplanes/ test adapters .. 3.20.0  
  
 Microcomputer packaging systems (MPS) ..... 3.30.0  
  
 Appendix..... 3.90.0



11300003

## Quad, 250 W *maxpowerPRO*

- 19" compatible DC/DC switched mode power supplies, pluggable 3 U, for compact PCI and other applications
- Input voltage 48 V<sub>DC</sub>
- 4 output voltages
- Connectors P 47
- Outputs redundant with current share bus
- Hot swap
- Compact PCI signalling
- For industrial and telecommunications applications
- International approvals EN 60950, UL, TÜV, cUL
- High reliability and long life



PSA46587

Output data at T <sub>U</sub> = 0 ... 50 °C									Order No. (1 unit)			
Voltage				Current <sup>1)</sup>				Capacity	Height	Width A	Power supply incl. mounted EMC front panel <sup>2)</sup>	Mains voltage
in V				in A				in W	in U	in HP		
V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	V <sub>4</sub>	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	I <sub>4</sub>	Total (V <sub>1</sub> + V <sub>2</sub> )			Type	36 – 72 V <sub>DC</sub>
5	3.3	+12	-12	25	25	5	1.5	250 (150)	3	8	CPCI 250 DC	<b>13100-142</b>

<sup>1)</sup> With forced cooling in the system from 2 m/s

<sup>2)</sup> Front panel: Front panel anodised, rear side chromated, slotted on both sides for mounting EMC contact strips in the event of increased EMC requirements, IEL handle  
 (3 U EMC contact strips, Order No. 21101-853, 10 pieces)

### Accessories

Mating connector/intermediate plate 3 U,  
**Order No. 23098-105**

# 19" compatible DC/DC converters



## Technical data

Input parameters					
Input voltage	Nominal value	48 V <sub>DC</sub>			
	Operating-ranges	36 – 72 V <sub>DC</sub>			
Input current	9.4 A				
Efficiency type-dependent, typical	> 70 %				
Output parameters					
Output power max.: Convection/forced cooling with 2 m/s	75/150 W		48/78 W		
Output voltage [V]	factory set	V <sub>1</sub> 5 V	V <sub>2</sub> 3.3 V	V <sub>3</sub> 12 V	V <sub>4</sub> -12 V
	Tolerance	± 50 mV			
Output current [A] 0 ... 50 °C	Convection	15	15	3	1
	Cooling 2 m/s	25	25	5	1.5
	Derating 50 – 70 °C	2 %/K			
Overcurrent protection	all outputs at 120 %				
Residual ripple/ interference voltage (bandwidth = BW)	50 mV <sub>pp</sub> (BW: 20 MHz)		< 100 mV (BW: 20 MHz)		
Load control	+5 % -3 %		± 5 %		
Cross-control	1 %				
Temperature coefficient	-0.02 %/K (0 – 50 °C)				
Connection two connectors, offset 2.54 mm	(DIN M-8+24), Positronic P47				
Dynamic control deviations (load change: 50 ... 100 % with 100 Hz; di/dt = 0.25 A/μs)					
Overall control time, tolerance 1 % × V <sub>Nominal</sub>	< 1.5 ms				
Overshoot and undershoot amplitude	< 5 %				

Protection and monitoring facilities		
Switch-on time	< 4 s	
Mains fuse internal	10 A/250 V <sub>AC</sub> , 5 × 20 mm, DIN 41571	
Switch power supply on/off externally	"INH" = Inhibit ("EN" = Enable) normal high, drive low (high) to turn off (on) (max. 15 V/ 150 μA)	
Over-voltage protection OVP shuts power supply off, restart	120 – 130 % at V <sub>1,2</sub>	
Remote sense compensated per line	Max. 0.25 V	
Current share with one cable connection	V <sub>1</sub> , V <sub>2</sub> , V <sub>3</sub> , "ISH" signal, tolerance ± 10 %	
Power failure signalling	TTL signal, active high	
"DEG" signal if temperature outside of range (option)	"HIGH" < 50 °C; "LOW" > 50 °C, tolerance ± 5 %	
Power down "FAIL" signal at 70 °C, automatic restart (option)	"HIGH" < 70 °C; "LOW" > 70 °C, tolerance ± 5 %	
Two-color LED, fault/OK status	red/green	
Test and environmental conditions		
Climatic test to	IEC 68-2-38	
Shock and vibration in accordance with	EN 60068-2-6, acceleration of 2 g	
Height 3 U/depth 160 mm	Width 8 HP	
Weight (mass)	2 kg	
CE	Interference emission	CISPR22 Class B, EN 50081-1, EN 55011 Class B
	Interference immunity, degree of severity 3	EN 50082-2, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6
	Safety, class of protection 1	EN 60950
High voltage test to EN 60950	Input-output	4.3 kV <sub>DC</sub>
	Input PE	2.2 kV <sub>DC</sub>
Safety	UL 1950, cUL, TÜV & CE (applied for)	
Power supply maintenance-free	Yes	
Necessary cooling for the power supply	2 m/s	
Operation/storage ambient temperature	10 ... 70 °C / -40 ... +85 °C	
Relative humidity, non-condensing	20 °C – 95 °C	
MTBF	200,000 h (50 °C)	

## AC/DC switched mode power supplies

Single, 50 W .....	3.11.2
Single, 80 W .....	3.11.4
Single, 100 W .....	3.11.6
Single, 130 W .....	3.11.8
Dual, 80 W .....	3.11.10
Dual, 100 W .....	3.11.12
Triple, 80 W .....	3.11.14
Triple, 100 W .....	3.11.16
Triple, 130 W .....	3.11.18
Triple, 150 / 224 W .....	3.11.20
Quad, 250 W .....	3.11.22
Quad, 350 W .....	3.11.24

## AC/DC linear control systems

Single, 8 – 60 W ..	3.11.26
Dual, 10 – 58 W ...	3.11.28
Triple, 7 – 39 W ...	3.11.30

## AC/DC non-regulated

Single, 84 W .....	3.11.32
Single, 240 W .....	3.11.34

## DC/DC converters

Single, 20 to 120 W .....	3.11.36
Dual, 55 to 72 W ..	3.11.38
Triple, 64 to 70 W .....	3.11.40
Quad, 250 W .....	3.11.42
Quad, 350 W .....	3.11.44

## Accessories

Mating connector female connector H 15 F .....	3.11.46
Keying/coding .....	3.11.47
Guide rails .....	3.11.47
Z-rails .....	3.11.47
EMC contact strips .....	3.11.48
Wall/horizontal rail installation .....	3.11.49



# 19" compatible DC/DC converters

Power supply units..... 3.10.0  
**19" compatible.....3.11.0**  
 Open frame.....3.12.0  
 Power systems.....3.13.0  
 Uninterruptable power supplies (UPS) .....3.14.0  
  
 Backplanes/ test adapters .. 3.20.0  
  
 Microcomputer packaging systems (MPS) ..... 3.30.0  
  
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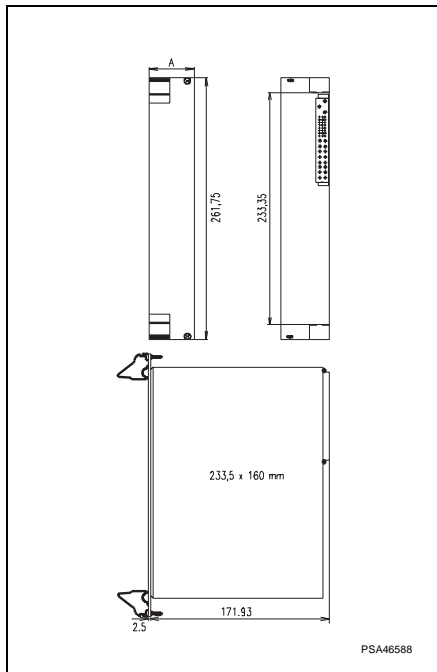


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**Quad, 350 W**

**maxpowerPRO**

- 19" compatible DC/DC switched mode power supplies, pluggable 6 U, for compact PCI and other applications
- Input voltage 48 V<sub>DC</sub>
- 4 output voltages
- Connectors P 47
- Redundancy operation with current share bus
- Hot swap
- Compact PCI signalling
- For industrial applications
- International approvals EN 60950, UL
- High reliability and long life



PSA46588

Output data at T <sub>U</sub> = 0 ... 50 °C											Order No. incl. mounted EMC front panel <sup>1)</sup>	
Voltage in V				Current in A				Power output <sup>2)</sup> in W	Height in U	Width A in HP	Power supply Type	Mains voltage
V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	V <sub>4</sub>	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	I <sub>4</sub>	Total				
5	3.3	+12	-12	30	45	12	3	350	6	8	PCI-3-4DC	36 – 72 V <sub>DC</sub>
												<b>11098-142</b>

<sup>1)</sup> Front side panel anodised, rear side chromated, slotted on both sides incl. EMC contact strips in the event of increased EMC requirements, two IEL handles (6 U EMC contact strips, Order No. 21101-855, 10 pieces)

<sup>2)</sup> Forced cooling, total output power V<sub>1</sub> + V<sub>2</sub> = 200 W

### Accessories

A 3 U backplane is required for interconnection between power supply and backplane. For assembly into a 6 U system, we offer other solutions - available upon request.

Description see backplanes - Power Bus 3 U, 1 piece, **Order No. 23098-105**

# 19" compatible DC/DC converters



## Technical data

Input parameters				
Input voltage	Nominal value	48 V <sub>DC</sub>		
	Operating-range	40 – 72 V <sub>DC</sub>		
Efficiency, typical		75 %		
Output parameters				
Output power max.		350 W		
Output voltages	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	V <sub>4</sub>
	5 V	3.3 V	12 V	-12 V
Output current 0 ... 50°C	30 A	45 A	12 A	43 A
	Residual ripple/ interference voltage			
		1 % or 100 mV <sub>SS</sub>		
Load control with/without sense		0.5 %/2 %		
Overshoot		1 % switch on/switch off 3 % load change 50 – 100 %		
Mains control, static		0.1 %		
Power failure bridging at 100 % load		20 ms		
Temperature coefficient		-0.02 %/K		
Connection connectors		DIN M24/8		
Basic load		not necessary		

Protection and monitoring facilities		
Switch-on time	< 4 s	
Mains fuse internal	10 A/250 V <sub>AC</sub>	
Switch power supply on/off externally	Inhibit (enable) normal high, drive low (high) to turn off (on)	
Over-voltage protection (OVP)	all outputs 125 % of the mains voltage; reset via off/on or inhibit/enable	
Over-temperature protection	Automatic shut-off with automatic return	
Overcurrent protection	all outputs	
Remote sense compensated per line	V <sub>1</sub> , V <sub>2</sub> , max. 0.5 V	
Current share	V <sub>1</sub> , V <sub>2</sub> , V <sub>3</sub> ,	
Signal: Power failure	TTL signal, active high	
Signal: Temperature outside of range	TTL signal, active high	
Two-color LED, fault/OK status	red/green	
Test and environmental conditions		
Climatic test to	IEC 68-2-38	
Shock and vibration in accordance with	EN 60068-2-6	
Height 3 U/depth 160 mm	Width 8 HP	
Weight (mass)	2.3 kg	
CE	Interference emission	CISPR22 Class B, FCC Part 15, EN 55022
	Interference immunity	EN 50082-1, EN 61000-4-2, EN 61000-4-4, EN 61000-4-5, EN 61000-3-2, EN 61000-3-3
	Safety, class of protection 1	EN 60950
High voltage test to EN 60950	Input-output	4.3 kV <sub>DC</sub>
	Input PE	2.2 kV <sub>DC</sub>
Safety		UL, cUL, TÜV & CE
Power supply maintenance-free		Yes
Necessary cooling for the power supply		400 lfm, forced
Operation/storage ambient temperature		0 ... 50°C / -40 ... +85°C
Relative humidity, non-condensing		95 %
MTBF at 25 °C		250,000 h (Bellcore STD.)

## AC/DC switched mode power supplies

Single, 50 W .....	3.11.2
Single, 80 W .....	3.11.4
Single, 100 W .....	3.11.6
Single, 130 W .....	3.11.8
Dual, 80 W .....	3.11.10
Dual, 100 W .....	3.11.12
Triple, 80 W .....	3.11.14
Triple, 100 W .....	3.11.16
Triple, 130 W .....	3.11.18
Triple, 150 / 224 W .....	3.11.20
Quad, 250 W .....	3.11.22
Quad, 350 W .....	3.11.24

## AC/DC linear control systems

Single, 8 – 60 W ..	3.11.26
Dual, 10 – 58 W ...	3.11.28
Triple, 7 – 39 W ...	3.11.30

## AC/DC non-regulated

Single, 84 W .....	3.11.32
Single, 240 W .....	3.11.34

## DC/DC converters

Single, 20 to 120 W .....	3.11.36
Dual, 55 to 72 W ..	3.11.38
Triple, 64 to 70 W .....	3.11.40
Quad, 250 W .....	3.11.42
Quad, 350 W .....	3.11.44

## Accessories

Mating connector female connector H 15 F .....	3.11.46
Keying/coding .....	3.11.47
Guide rails .....	3.11.47
Z-rails .....	3.11.47
EMC contact strips .....	3.11.48
Wall/horizontal rail installation .....	3.11.49



# 19" compatible accessories

Power supply units ..... 3.10.0

19" compatible ..... 3.11.0

Open frame ..... 3.12.0

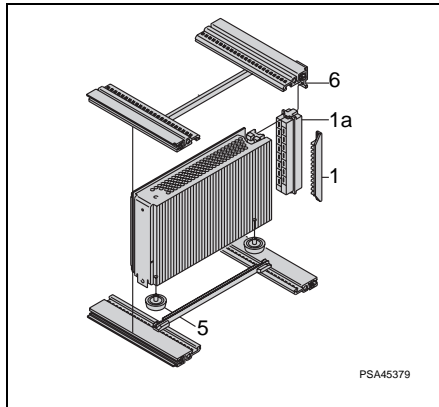
Power systems ..... 3.13.0

Uninterruptable power supplies (UPS) ..... 3.14.0

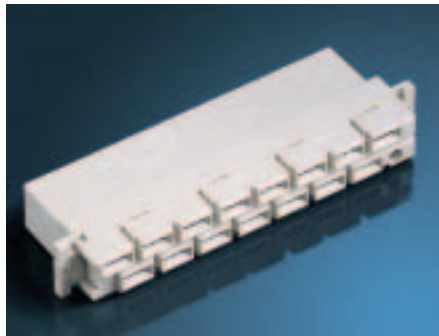
Backplanes/ test adapters .. 3.20.0

Microcomputer packaging systems (MPS) ..... 3.30.0

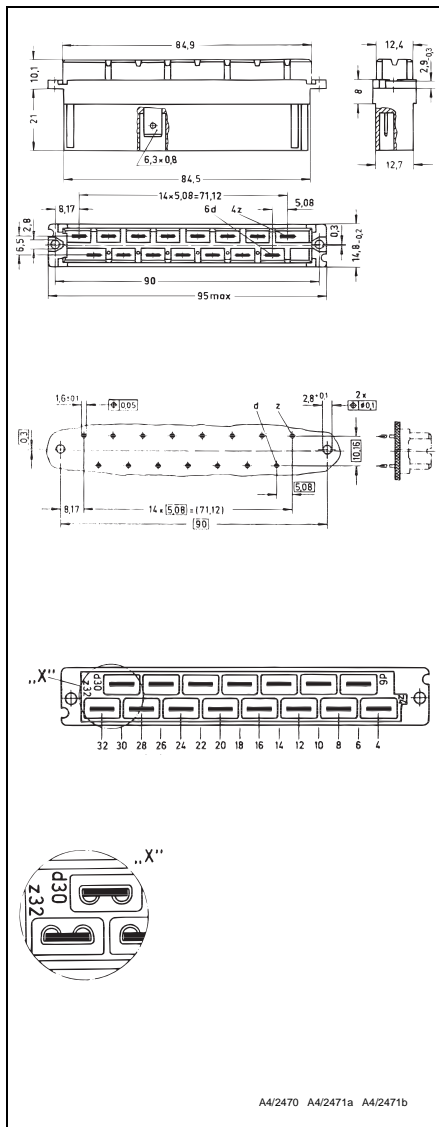
Appendix ..... 3.90.0



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## Accessories

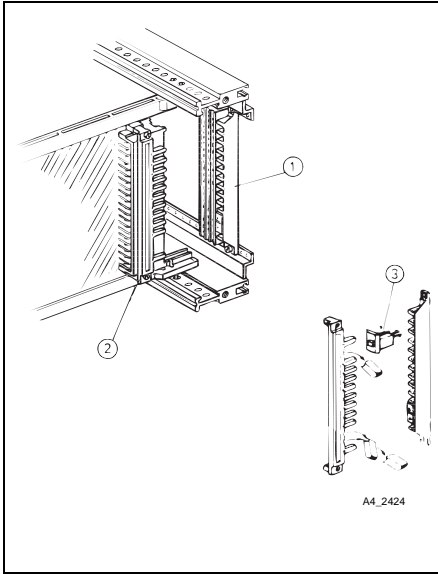
- Mating connector, female connector, H 15 F (Item 1a)
- Keying/coding (Item 1)
- Guide rails (Item 5)
- Z-rails (Item 6)
- EMC contact strips for front panel
- Wall/horizontal rail installation
- Voltage adapter boards for compact PCI power supplies, see Chapter entitled Backplanes – power bus

## Mating connector, female connector, H 15 F

- Mating connector for wiring the inputs/outputs (6.3 mm FASTON)
- In all 19" power supplies, the male connector(s) is (are) pin 32 with advanced earthing contact

Item	Qty	Description	Description	Order No.
1a	1	Mating connector female connector H 15 F	Wiring with Faston connector 6.3 × 0.8 mm	<b>69001-733</b>

# 19" compatible accessories



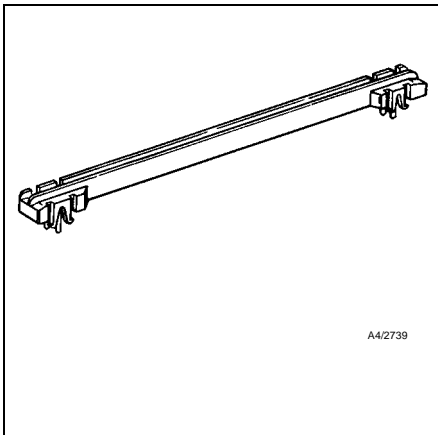
## Keying/coding

- Mechanical keying/coding prevents the insertion of a power supply in the incorrect position
- Connector keying/coding with with a comb strip (Item 2, fixed to power supply – except for MPS and DC series) and contact strip (assembly to the horizontal rail)
- Space requirement 4 HP
- With 2 keying/coding pins 66, and with 6 keying/coding pins, 924 keying/coding possibilities

Item	Qty	Description	Description	Order No.
1	1	Contact strip	Crastin (UL 94-V-0)	<b>60800-123</b>
3	2	Keying/coding pin		

### Note

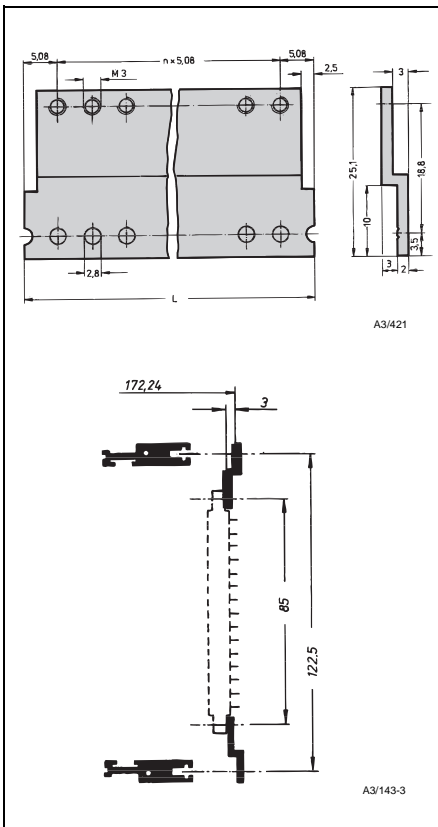
Item 2 is mounted at the power supply as standard



## Guide rails

- For engaging into horizontal rails, see Item 5
- Groove width 2 mm
- 2 versions for light and heavy power supplies

Description	Description	Board length mm	Order No.
Guide rail	Standard version for light power supplies < 1.2 kg	160	<b>60817-103</b>
		220	<b>60817-149</b>
	Reinforced version for heavy power supplies > 1.2 kg	160	<b>60817-102</b>
		220	<b>60817-085</b>



## Z-rails

- For fixing the mating connector onto the rear horizontal rail (Item 6)
- Serves to create the standard mounting depth of the power supplies
- Short Z-rails 4 HP width

Qty	Description	Description	Order No.
1	Z-rails	4 HP (20.32 mm)	<b>30822-166</b>

## AC/DC switched mode power supplies

- Single, 50 W .....3.11.2
- Single, 80 W .....3.11.4
- Single, 100 W .....3.11.6
- Single, 130 W .....3.11.8
- Dual, 80 W .....3.11.10
- Dual, 100 W .....3.11.12
- Triple, 80 W .....3.11.14
- Triple, 100 W .....3.11.16
- Triple, 130 W .....3.11.18
- Triple, 150 / 224 W .....3.11.20
- Quad, 250 W .....3.11.22
- Quad, 350 W .....3.11.24

## AC/DC linear control systems

- Single, 8 – 60 W ..3.11.26
- Dual, 10 – 58 W ...3.11.28
- Triple, 7 – 39 W ...3.11.30

## AC/DC non-regulated

- Single, 84 W .....3.11.32
- Single, 240 W .....3.11.34

## DC/DC converters

- Single, 20 to 120 W .....3.11.36
- Dual, 55 to 72 W ..3.11.38
- Triple, 64 to 70 W .....3.11.40
- Quad, 250 W .....3.11.42
- Quad, 350 W .....3.11.44

## Accessories

- Mating connector female connector H 15 F .....3.11.46
- Keying/coding .....3.11.47
- Guide rails .....3.11.47
- Z-rails .....3.11.47
- EMC contact strips .....3.11.48
- Wall/horizontal rail installation .....3.11.49



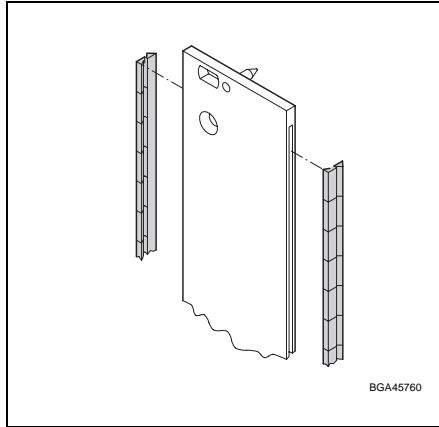
# 19" compatible accessories

Power supply units..... 3.10.0  
**19" compatible.....3.11.0**  
 Open frame.....3.12.0  
 Power systems.....3.13.0  
 Uninterruptable power supplies (UPS) .....3.14.0

Backplanes/ test adapters .. 3.20.0

Microcomputer packaging systems (MPS) ..... 3.30.0

Appendix..... 3.90.0

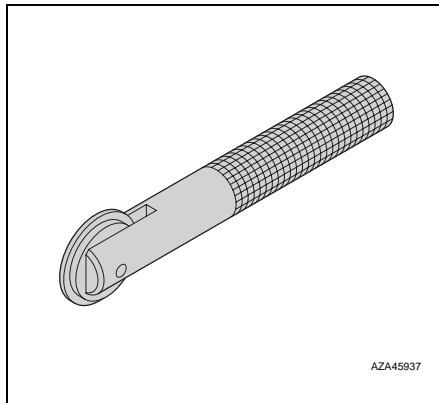


## EMC contact strips

For shielded front panels with slots.

Material: Stainless steel

Height U	Length mm	Qty	Order No.
3	97	10	<b>21101-705</b>
		100	<b>21101-706</b>
4	142	10	<b>21101-713</b>
		100	<b>21101-714</b>
6	232	10	<b>21101-707</b>
		100	<b>21101-708</b>



## Assembly tool for EMC contact strips

Material: Aluminium

Order No. (1 piece) **24560-270**

# 19" compatible accessories

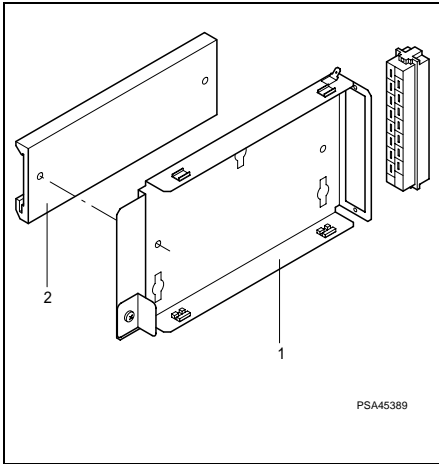


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## Wall/horizontal rail installation

- Suitable for 19" compatible power supplies with 3 U
- Wall-mounting bracket can be mounted in any position using screws, power supply is pushed in.
- Horizontal rail bracket is screwed onto the wall-mounting bracket – the 19" power supply can therefore be clipped onto the horizontal rail with lip.

Item	Qty	Description	Description	Order No.
1	1	Wall-mounting bracket	Steel	<b>11000-001</b>
2	1	Horizontal rail bracket	Al	<b>11000-002</b>



PSA45389

### Note

Female connector H 15 F is also required.

### AC/DC switched mode power supplies

- Single, 50 W .....3.11.2
- Single, 80 W .....3.11.4
- Single, 100 W .....3.11.6
- Single, 130 W .....3.11.8
- Dual, 80 W .....3.11.10
- Dual, 100 W .....3.11.12
- Triple, 80 W .....3.11.14
- Triple, 100 W .....3.11.16
- Triple, 130 W .....3.11.18
- Triple, 150 / 224 W .....3.11.20
- Quad, 250 W .....3.11.22
- Quad, 350 W .....3.11.24

### AC/DC linear control systems

- Single, 8 – 60 W ..3.11.26
- Dual, 10 – 58 W...3.11.28
- Triple, 7 – 39 W...3.11.30

### AC/DC non-regulated

- Single, 84 W .....3.11.32
- Single, 240 W .....3.11.34

### DC/DC converters

- Single, 20 to 120 W .....3.11.36
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- Triple, 64 to 70 W .....3.11.40
- Quad, 250 W .....3.11.42
- Quad, 350 W .....3.11.44

### Accessories

- Mating connector female connector H 15 F .....3.11.46
- Keying/coding .....3.11.47
- Guide rails .....3.11.47
- Z-rails .....3.11.47

- EMC contact strips .....3.11.48
- Wall/horizontal rail installation .....3.11.49

New

# 19" compatible AC/DC switched mode



Power Supply  
19" compatible..... 38



11302001



Single 42 W

*slimpower*

- Width only 3 HP
- 1 output voltage
- Low Emission
- 19" compatible AC/DC switch controller, pluggable 3HP/ 3 U, DIN 41494, part 5)
- High performance
- Redundancy operation with integrated decoupling diode
- Current share in parallel operation via Current Share Bus operation
- Wide range mains input voltage (range from 85 – 254 V<sub>AC</sub> and 120 – 360 V<sub>DC</sub>)
- Signal: output voltage OK
- For measuring, controlling, regulating, studio and industrial applications
- High reliability and long service life
- Cost-optimized

113 02 502

Pin	Connection
4	Output + V <sub>1</sub>
6	
8	Sensor line + V <sub>1</sub>
10	Sensor line 0 V V <sub>1</sub>
12	Output 0 V V <sub>1</sub>
14	
16	
18	
20	Output OK
22	
24	
26	
28	L
30	N
32	PE ⊕

PSA46292

**Note**

Delivery does not include a front panel.

Voltage in V	Output data at T <sub>ambient</sub> = 0 ... 50 °C				Power supply type	Order No. <sup>1)</sup>	
	Current in A	Power in W	Height in U	Width A in HP		Mains/line voltage 90 – 254 V <sub>AC</sub>	Front panel <sup>2)</sup> EMC version
5	6.0	30	3	3	SLE 105	<b>13100-136</b>	<b>21006-959</b>
12	3.5	42			SLE 112	<b>13100-137</b>	
15	2.8	41			SLE 115	<b>13100-138</b>	
24	1.7	41			SLE 124	<b>13100-139</b>	

<sup>1)</sup> Please order front panel separately

<sup>2)</sup> Front anodised, rear chromated, slotted on both side for mounting EMC contact strips in the case of increased EMC requirements (3 U EMC contact strips, 10 pieces, Order No. 21101-705)

Mating-connector H15F with FASTON connection, 1 piece, Order No. 69001-733

New

# 19" compatible AC/DC switched mode



Power supply  
19" compatible

AC/DC switched mode  
power supply

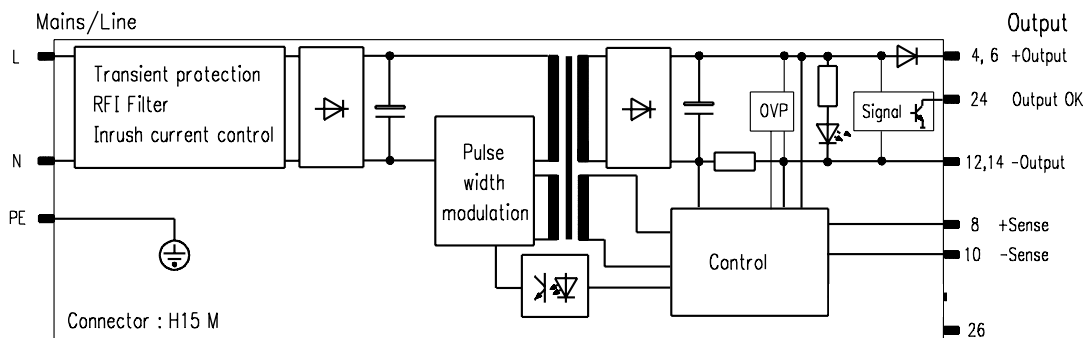
Single adjustable,  
100 W .....1

## Technical data

Input variables					
Mains/line voltage	Rated values $V_{AC}$	100 – 240 $V_{AC}$			
	Working range	85 – 254 $V_{AC}$ 120 – 360 $V_{DC}$			
Rated mains current at 90 $V_{AC}$ / 230 $V_{AC}$		0,9 / 0,4 A			
Mains frequency range		50 – 60 Hz			
Input current according to		EN 61000-3-2 + A14			
Efficiency		typ. 70 – 80 %			
Current at switch-on $I_P$ (at 230 $V_{AC}$ )		< 20 A			
Discharge current		$\leq 500 \mu A$			
Output variables					
$> 190 V_{AC} / > 85 V_{DC}$					
Output power [W]		30 / 30	42 / 32	41 / 34	
Output voltage [V]	factory setting	5	12	15	24
	Adjustment range $\Delta V$	4,3 – 6,0	11,1 – 15,5	22,8 – 25,7	
Output current [A] at $T_{ambient}$	0 ... 50°C	6,0 / 6,0	3,5 / 2,7	2,8 / 2,1	1,7 / 1,4
	70°C	4,0 / 4,0	2,0 / 2,0	1,6 / 1,6	1,0 / 1,0
Current limitation, resistant to permanent short-circuit, U/I curve up to $V_1 \geq [V]$ if $V_1$ after long overload becomes smaller, the power supply goes in the hic up mode		1,5	4,5	4,5	7,0
Overvoltage protection (OVP, power supply switches off, automatically returning, factory setting [V])		6,1 $\pm 0,3 V$	16,1 $\pm 0,75 V$		26,4 $\pm 1,25$
Residual ripple included Interference voltage (BW: 30 MHz) typ. [mV <sub>PP</sub> ] max. [mV <sub>PP</sub> ]		7 10	9 15	10 15	
Mains and load control, static (load change 0 – 100 %) [mV <sub>PP</sub> ]		< 10		< 15	
Temperature coefficient		-0,015 %/K			
output controlled via diode		built-in, CS- operating possible			
Dynamic control deviations					
(Load change: 50 ... 100 % with 100 Hz; $di/dt = 0,25 A/\mu s$ )					
Total control time, tolerance $0,01 \times V_1 N_{enn}$ [ms]		< 1,5			
Overshoot and undershoot amplitude [mV]		< 300	< 250		

Switch-on time					
Switch-on time		< 1,5 s			
Mains fuse slow		2 A / 250 $V_{AC}$ , IEC 60127-3 / IV			
Power failure bridging for $V_{AC} = 230 V_{AC}$ and 100 % load		> 20 ms			
Remote sense compensation		max. 0,5 V			
Current limitation curve		U/I			
Signal "output voltage ok"		"Output OK"			
High level factory setting [V], "LOW" active with internal resistor, adjustable on Open Collector "LOW" or "HIGH" active		5	12	15	24
Testing and environmental conditions					
Climatic test based on		IEC 68-2-38			
Shock and vibration test based on acceleration 2 g		EN 60068-2-6			
Dimensions		Height 3 U / Depth 160 mm / Width 3 HP			
Weight		0,27 kg			
CE	Interference emission	EN 50081-1: EN 55011 class B, EN 55022 class B			
	Interference immunity	EN 61000-6-2			
	Safety, protection class 1	EN 60950, to UL 1950			
High voltage test complying with EN 60950	Input-Output	4,3 kV <sub>DC</sub>			
	Input PE	2,2 kV <sub>DC</sub>			
	Output PE	0,7 kV <sub>DC</sub>			
Power supply, maintenance-free		Yes			
Cooling type		Convection			
Ambient temperature operation/storage		0 ... 70°C / -20 ... +85°C			
MTBF at full load, $T_{ambient} = 40^\circ C$		> 400.000 h			

## Circuit diagram



DJM0002

New

# 19" compatible AC/DC switch controller

**Case**  
ratiopacPRO/-air ..... 4

**Power Supply**  
19" compatible..... 38

**Backplanes**  
CompactPCI..... 46



11399005



## Single adjustable, 100 W *maxpower*

- Large adjustment range of output voltage
- High performance
- Redundancy operation with integrated decoupling diode
- Active power factor correction (PFC) complying with EN 61000-3-2
- Active current share in parallel operation via Current Share Bus (CSB)
- 19" compatible AC/DC switch controller 3 U
- Large mains input voltage range (wide range from 90 – 254 V<sub>AC</sub> and 100 – 360 V<sub>DC</sub>)
- Signal: output voltage OK
- For industrial and telecommunications applications
- High reliability and long service life
- Cost-optimized

100 x 160 mm

DUM0084

PSA46292

Pin	Connection
4	Output + V <sub>1</sub>
6	
8	
8	Sensor line + V <sub>1</sub>
10	Sensor line 0 V V <sub>1</sub>
12	Output 0 V V <sub>1</sub>
14	
16	
18	-
20	-
22	CSB
24	Output OK
26	-
28	L
30	N
32	PE ⊕

**Note**  
Delivery does not include a front panel.

Voltage range (basic setting) in V	Output data at T <sub>ambient</sub> = 0 ... 50 °C				Order No. <sup>1)</sup>		
	Voltage / Current	Power in W	Height in U	Width A in HP	Power supply Type	Mains/line voltage 90 – 254 V <sub>AC</sub>	Front panel <sup>2)</sup> EMC version
4.5 – 17 (12)	max. 5.9 A	100	3	6	MAX LR	<b>13100-133</b>	<b>21006-954</b>
16 – 30 (24)	max. 3.4 A	102			MAX UR	<b>13100-134</b>	

<sup>1)</sup> Please order front panel separately

<sup>2)</sup> Front anodised, rear chromated, slotted on both side for mounting EMC contact strips in the case of increased EMC requirements  
(3 U EMC contact strips, 10 units, Order No. 21101-705)

**Mating-connector H15F with FASTON connection, Order No. 69001-733**

# 19" compatible AC/DC switch controller



Power supply  
19" compatible

AC/DC switched mode  
power supply

Single adjustable,  
100 W .....38

DC/DC converter

Single, 100 W .....40

Dual, 100 W .....42

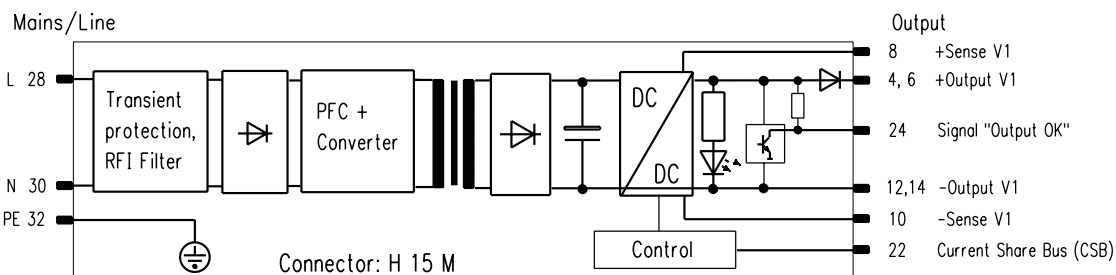
Triple, 100 W .....44

## Technical data

Input variables			
Mains/line voltage	Rated values $V_{AC}$	100 – 240 $V_{AC}$	
	Working range	90 – 254 $V_{AC}$	
Rated mains current at 90 $V_{AC}$		1.6 A	
Mains frequency range		50 – 60 Hz	
Power Factor Correction complying with		EN 61000-3-2	
Efficiency dependent on output voltage		64 – 80 %	70 – 82 %
Current at switch-on $I_P$ (at 230 $V_{AC}$ )		< 20 A	
Output variables		190/90 $V_{AC}$	
Output voltage [V]	factory setting	12	24
	Adjustment range $\Delta V$	4.5 – 17	16 – 30
Output current [A]	0 ... 50°C	5.9 / 4.2	3.4 / 2.5
	70°C	4.2/3.4	2.5/2
Output power max. (50 °C) [W]		100 / 72	102 / 77
Current limitation deactivates the output after approx. 10 ms, automatically returning after approx. 2 s, after long overload power supply switches off		Permanently secured against short circuit	
Residual ripple/ Interference voltage (BW: 30 MHz) [mV <sub>PP</sub> ]		< 100	< 150
Mains and load control, static (load change 0 – 100 %) [mV <sub>PP</sub> ]		< 120	< 250
Temperature coefficient		-0.015 %/K	
CSB and output controlled via diode		built-in	
Dynamic control deviations (Load change: 10 ... 100 % with 100 Hz; $di/dt = 0.25 A/\mu s$ )			
Total control time, tolerance 1 % $\times V_1$ nominal [ms]		<0.2	<0.2
Overshoot and undershoot amplitude [mV]		< 180	

Protection and monitoring devices			
Switch-on time		< 0.8 s	
Mains fuse, high breaking, slow		4 A/250 $V_{AC}$ , 5 $\times$ 20 mm, EN 60127-2/V	
Power failure bridging for mains/line voltage-operating range and 100 % load		4.5 – 12 V > 20 ms 12 – 17 V > 10 ms	16 – 24 V > 20 ms 24 – 28 V > 10 ms 28 – 30 V > 5 ms
Over-voltage protection OVP limits the $U_A$ to		< 22 V	< 38 V
Remote sensing, compensated		max. 0.5 V	
Signal "output voltage ok"		Signal "Output OK", active high	
High level [V]		3–20 V	13–20 V
Time delay		100 – 250 ms	
Testing and environmental conditions			
Climatic test based on		IEC 68-2-38	
Shock and vibration test based on acceleration 2 g		EN 60068-2-6	
Height 3 U/ Depth 160 mm/Width [HP]		6	
Weight (mass)		0.55 kg	
CE	Interference emission	EN 50081-1: EN 55011 Class B	
	Interference immunity, degree of severity 3	EN 50082-2: EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-11	
	Safety, protection class 1	complies with EN 60950	
High voltage test complying with EN 60950	Input-Output	4.3 kV <sub>DC</sub>	
	Input PE	2.2 kV <sub>DC</sub>	
	Output PE	0.7 kV <sub>DC</sub>	
Power supply, maintenance-free		Yes	
Cooling type		Convection	
Ambient temperature operation/storage		0 ... 70°C / -20 ... +85°C	
MTBF at full load, $T_{ambient} = 40^\circ C$		270,000 h (5 V – 220.000 h)	

## Circuit diagram



DJIM0032

New

# 19" compatible DC/DC converter

**Case**  
ratiopacPRO/-air ..... 4

**Power Supply**  
19" compatible..... 38

**Backplanes**  
CompactPCI..... 46



11301001

## Single, 100 W

- 19" compatible DC/DC switch controller (3 U)
- 1 output voltage
- Galvanic isolation between primary and secondary circuit
- Large input voltage range of 20 to 72 V<sub>DC</sub>
- Very high efficiency
- High performance
- Passive current share operation, active decoupling for redundancy
- High reliability and long service life



DUM0084

PSA46292

Pin	Connection
4	Output + V <sub>1</sub>
6	
8	Sensor line + V <sub>1</sub>
10	Sensor line 0 V V <sub>1</sub>
12	
14	Output 0 V V <sub>1</sub>
16	
18	-
20	
22	used
24	Output OK
26	Ext. ON/OFF*
28	+ Input
30	0 V Input
32	PE ⊕

\*reference point 0 V input

### Note

Delivery does not include a front panel.

Voltage in V	Output data at T <sub>ambient</sub> = 0 ... 50 °C			Height in U	Width A in HP	Power supply Type	Order No. <sup>1)</sup>	
	Current in A	Power in W						Front panel <sup>2)</sup> EMC version
5	20	100	3	6	CPDC 105	<b>13103-002</b>	<b>21006-955</b>	
12	8.5	102			CPDC 112	<b>13103-003</b>		
15	7	105			CPDC 115	<b>13103-004</b>		
24	4.2	108			CPDC 124	<b>13103-005</b>		

<sup>1)</sup> Please order front panel separately

<sup>2)</sup> Front anodised, rear chromated, slotted on both side for mounting EMC contact strips in the case of increased EMC requirements

(3 U EMC contact strips, Qty. 10, Order No. 21101-705)

**Mating-connector H15F with FASTON connection, Order No. 69001-733**

# 19" compatible DC/DC converter



**Power supply  
19" compatible**

**AC/DC switched mode  
power supply**

Single adjustable,  
100 W ..... 38

**DC/DC converter**

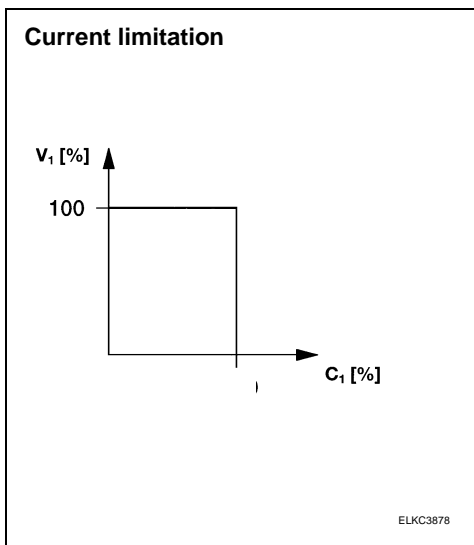
Single, 100 W ..... 40

Dual, 100 W ..... 42

Triple, 100 W ..... 44

**Technical data**

Input variables			
Input voltage range	20–72 V		
Fuse, internal	15 A		
Efficiency	84 – 90 %		
Output variables			
Output power	100 W	102 – 105 W	108 W
Output voltages	5 V	12 V – 15 V	24 V
Output current (50 °C)	20 A	8.5 A – 7 A	4.5 A
Residual ripple	< 20 mV <sub>SS</sub>	< 50 mV <sub>SS</sub>	< 80 mV <sub>SS</sub>
Interference voltage (BW: 30 MHz)	< 100 mV <sub>SS</sub>		
Input voltage control (20 – 72 V)	<0.1 %		
Load control (I <sub>Out</sub> = 0 ... 100 %)	<0.2 %		
Load control	< 1 ms at load change 10 ... 100 %		
Temperature coefficient	±0.025 %/K		
Derating	from + 50 °C: 3 %/K		
Current limitation	110 % I <sub>nominal</sub>		
External switching on/off	TTL compatible		
Remote sensing compensated	max 0.25 V / cable		
Parallel switching possible	Redundancy diode mounted		
Other data			
Overvoltage protection	Input	present	
	Output	U <sub>nominal</sub> + 20 %	
Weight (mass)	0.3 kg		
Electromagnetic compatibility, CE	Interference emission	EN 50081-1: EN 55011 Class B, EN 55022 Class B	
	Interference immunity (Degree of severity)	EN 61000-6-2 EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-11	
	Safety	Complying with EN 60950	
Operating display	green LED for V <sub>1</sub>		
Cooling type	Convection		
Ambient temperature T <sub>U</sub> Operation	0 ... 70 °C		



New

# 19" compatible DC/DC converter

**Case**  
ratiopacPRO/-air ..... 4

**Power Supply**  
19" compatible..... 38

**Backplanes**  
CompactPCI..... 46



11301001

## Dual, 100 W

- 19" compatible DC/DC switch controller (3 U)
- 2 output voltages
- Galvanic isolation between primary and secondary circuit
- Large input voltage range of 20 to 72 V<sub>DC</sub>
- Very high efficiency
- High performance
- High reliability and long service life



100 x 160 mm

DUM0084

PSA46292

Pin	Connection
4	
6	
8	
10	-
12	
14	
16	Output + V <sub>1</sub>
18	Output 0 V V <sub>1,2</sub>
20	Output 0 V V <sub>2</sub>
22	
24	-
26	Ext. ON/OFF*
28	+ Input
30	0 V Input
32	PE ⊕

\*reference point 0 V input

### Note

Delivery does not include a front panel.

Output data at T <sub>ambient</sub> = 0 ... 50 °C							Order No. <sup>1)</sup>		
Voltage <sup>3)</sup> in V		Current in A		Capacity	Height	Width:	Power supply		Front panel <sup>2)</sup>
V <sub>1</sub>	V <sub>2</sub>	I <sub>1</sub>	I <sub>2</sub>	in W	in HE	in HP	Type		EMC version
+12	-12	4.5	4.5	108	3	6	CPDC 212	<b>13103-007</b>	<b>21006-956</b>

<sup>1)</sup> Please order front panel separately

<sup>2)</sup> Front anodised, rear chromated, slotted on both side for mounting EMC contact strips in the case of increased EMC requirements  
(3 U EMC contact strips, 10 units, Order No. 21101-705)

<sup>3)</sup> Adjustment range up to 15 V

**Mating-connector H15F with FASTON connection, Order No. 69001-733**

# 19" compatible DC/DC converter



**Power supply  
19" compatible**

**AC/DC switched mode  
power supply**

Single adjustable,  
100 W ..... 38

**DC/DC converter**

Single, 100 W ..... 40

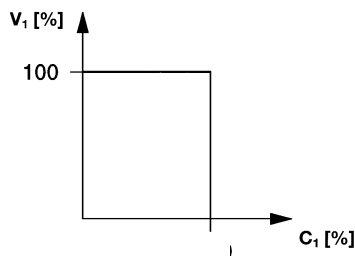
Dual, 100 W ..... 42

Triple, 100 W ..... 44

**Technical data**

<b>Input variables</b>		
Input voltage range	20–72 V	
Fuse, internal	15 A	
Efficiency	87 – 90 %	
<b>Output variables</b>		
Output power	108 W	105 W
Output voltage	± 12 V	± 15 V
Output current (50 °C)	4.5 A	3.5 A
Residual ripple	< 50 mV <sub>SS</sub>	
Interference voltage	< 100 mV <sub>SS</sub>	
Input voltage control (20 – 72 V)	<0.1 %	
Load control (I <sub>Out</sub> = 0 ... 100 %)	V <sub>1</sub> < 0.2 %, V <sub>2</sub> < 3 % with 10 % base load at V <sub>1</sub>	
Load control	< 1 ms at load change 10 ... 100 %	
Temperature coefficient	±0.025 %/K	
Derating	from + 50 °C: 3 %/K	
Current limitation	110 % I <sub>nominal</sub>	
External switching on/off	TTL compatible	
<b>Other data</b>		
Overvoltage protection	Input	present
Weight (mass)	0.3 kg	
Electromagnetic compatibility, CE	Interference emission	EN 50081-1: EN 55011 Class B, EN 55022 Class B
	Interference immunity (Degree of severity)	EN 61000-6-2 EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-11
	Safety	Complying with EN 60950
Operating display	green LED for V <sub>1</sub> and V <sub>2</sub>	
Cooling type	Convection	
Ambient temperature T <sub>U</sub> Operation	0 ... 70 °C	

**Current limitation**



ELKC3878

New

# 19" compatible DC/DC converter

**Case**  
ratiopacPRO/-air ..... 4

**Power Supply**  
19" compatible..... 38

**Backplanes**  
CompactPCI..... 46



11301001

## Triple, 100 W

- 19" compatible DC/DC switch controller (3 U)
- 3 output voltages
- Galvanic isolation between primary and secondary circuit
- Large input voltage range of 20 to 72 V<sub>DC</sub>
- External switching on/off
- Very high efficiency
- High performance
- High reliability and long service life



100 x 160 mm

DUJM0084

PSA46292

Pin	Connection
4	Output + V <sub>1</sub>
6	
8	Sensor line + V <sub>1</sub>
10	Sensor line 0 V V <sub>1</sub>
12	Output 0 V V <sub>1</sub> (V <sub>2</sub> )
14	
16	Output + V <sub>2</sub>
18	Output 0 V V <sub>2</sub> (V <sub>1</sub> )
20	Output 0 V V <sub>3</sub>
22	Output -V <sub>3</sub>
24	Output OK
26	-
28	+ Input
30	0 V Input
32	PE ⊕

**Note**

Delivery does not include a front panel.

Output data at T <sub>ambient</sub> = 0 ... 50 °C								Order No. <sup>1)</sup>			
Voltage in V			Current in A			Capacity	Height	Width:	Power supply		Front panel <sup>2)</sup>
V <sub>1</sub>	V <sub>2</sub> <sup>3)</sup>	V <sub>3</sub> <sup>3)</sup>	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	in W	in U	in HP	Type		EMC version
+5	+12	-12	10	2	2	98	3	6	CPDC 312	<b>13103-016</b>	<b>21006-957</b>

<sup>1)</sup> Please order front panel and other accessories separately, EMV front panel available on request

<sup>2)</sup> Front anodised, rear chromated, slotted on both side for mounting EMC contact strips in the case of increased EMC requirements

(3 U EMC contact strips, Qty. 10, Order No. 21101-705)

<sup>3)</sup> Adjustment range up to 15 V

**Mating-connector H15F with FASTON connection, Order No. 69001-733**

# 19" compatible DC/DC converter



**Power supply  
19" compatible**

**AC/DC switched mode  
power supply**

Single adjustable,  
100 W ..... 38

**DC/DC converter**

Single, 100 W ..... 40

Dual, 100 W ..... 42

Triple, 100 W ..... 44

**Technical data**

Input variables			
Input voltage range	20–72 V		
Fuse, internal	15 A		
Efficiency	typ. 85%		
Output variables			
Output power	50 W	48 W	51 W
Output voltages	5 V	± 12 V	± 15 V
Output current (50 °C)	10 A	2 A	1.7 A
Residual ripple	< 20 mV <sub>SS</sub>	< 50 mV <sub>SS</sub>	
Interference voltage (BW: 30 MHz)	< 100 mV <sub>SS</sub>		
Input voltage control (20 – 72 V)	< 0.1 %		
Load control (I <sub>Out</sub> = 0 ... 100 %)	V <sub>1, 2, 3</sub> < 0.2 %		
Load control	< 1 ms at load change 10 ... 100 %		
Temperature coefficient	± 0.05 %/K		
Derating	from + 50 °C: 3 %/K		
Current limitation	110 % I <sub>nominal</sub>		
External switching on/off	TTL compatible		
Remote sensing compensated	V <sub>1</sub> max. 0.25 V / cable		
Parallel switching	at V <sub>2</sub> and V <sub>3</sub> possible		
Series switching	at V <sub>2</sub> and V <sub>3</sub> possible		
Other data			
Over-voltage protection, input	present		
Weight (mass)	0.4 kg		
Electromagnetic compatibility, CE	Interference emission	EN 50081-1: EN 55011 Class B, EN 55022 Class B	
	Interference immunity (Degree of severity)	EN 61000-6-2 EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-11	
	Safety	Complying with EN 60950	
Operating display	green LED for V <sub>1</sub> , V <sub>2</sub> and V <sub>3</sub>		
Cooling type	Convection		
Ambient temperature T <sub>A</sub> Operation	0 ... 70 °C		

