

---

**AC/DC converters**

- ✓ PK MONOVOLT
- ✓ PK BIVOLT
- ✓ PK TRIVOLT
- ✓ VP 40
- ✓ VP 50



---

**AC/DC converters with active PFC**

- ✓ VP 80
- ✓ VP 150



---

**AC/DC converters economy**

- ✓ EC MONOVOLT
- ✓ EC TRIVOLT



---

**DC/DC converters**

- ✓ GK TRIVOLT





## MONOVOLT AC/DC-converters

30 to 120 Watt switched mode AC/DC plug-in power supplies with one output in 3 U Eurocassettes for use in 19" subracks to IEC 60297-3.

- ✓ Compact rugged design in stable aluminum cassette
- ✓ High regulation accuracy
- ✓ Remote On/Off and Powerfail signal
- ✓ SENSE-operation and Overvoltage protection (OVP)
- ✓ PK 60-R for redundant operation
- ✓ Convection cooling
- ✓ CE marked for compliance to EMC and Low Voltage Directives
- ✓ Safety according to EN 60950, UL, cUL
- ✓ VERO standardised pinning
- ✓ 24 months warranty

### Ordering details Power Supplies Monovolt AC/DC-converter

	nom. height/ nom. width [U] / [HP]	for nom. depth [mm]	single output [W]	output [V] / [A]	without powerfail order no. <b>116.</b>
PK 30	3 / 8	>160	30	5V/6A	<b>010016D*</b>
PK 60	3 / 8	>160	60	5V/12A	<b>010063D*</b>
PK 60	3 / 8	>160	60	12V/5A	<b>010064A*</b>
PK 60	3 / 8	>160	60	24V/2,5A	<b>010066F*</b>
PK 120	3 / 14	>160	120	12V/10A	<b>010070J</b>
PK 120	3 / 14	>160	120	24V/5A	<b>010072C</b>

For applications according EN 61000-3-2, we recommend the VP-Series.

### Accessories

	order no.
Reduced height front panel for PK 30	<b>148-011002D</b>
Reduced height front panel for PK 60	<b>148-010021E</b>
Reduced height front panel for PK 120	<b>148-010019G</b>
Male connector with coding strip H15 DIN 41612	<b>017-010115K</b>
<small>Minimum order quantity 1 pack (10 pieces)</small>	
Coding strip	<b>017-010064F</b>

## Technical input data

Input voltage (switchable)	115 / 230VAC
Input frequency	47-63Hz
Inrush surge current limit	by NTC
Input voltage spike limit	by VDR
Hold-up time	>20 msec (at nominal values) typ. > 80%
<b>Safety: CE marking according to low voltage directive 73/23/EEG</b>	
Safety according to	EN 60950, UL 1950
<b>EMC: CE marking according EMC directive 89/336/EEG</b>	
EMI conducted & radiated emission	EN 55022/B (0.15-30MHz; 30-1000MHz)
EMI immunity	EN 55082-2
Operating temperature / Storage temperature	0 °C...+70 °C / -25 °C...+85 °C
Relative humidity	max. 95% without condensation
Case material / finish	clear anodised aluminum cassette with cooling cutouts

## Technical data: output voltage

	PK 30 V1	PK 60 V1	PK 60 V1	PK 60 V1	PK 120 V1	PK 120 V1
Single output	30 W	60 W	60 W	60 W	120 W	120 W
Output voltage	5V	5V	12V	24V	12V	24V
Adjustment range	4.85-5.5V	4.5-5.5V	11-13V	22-26V	10.8-13.2V	21.6-26.4V
Output nominal current	6A	12A	5A	2,5A	10A	5A
Ripple at full load	<40mV <sub>pp</sub>	<40mV <sub>pp</sub>	<40mV <sub>pp</sub>	<40mV <sub>pp</sub>	<40mV <sub>pp</sub>	<40mV <sub>pp</sub>
Line regulation (100% I <sub>OUT</sub> )	<0.2%	<0.3%	<0.2%	<0.2%	<0.2%	<0.2%
Load regulation static (10...90% I <sub>OUT</sub> )	<0.2%	<0.2%	<0.2%	<0.2%	<0.2%	<0.2%
Response time (10...90% I <sub>OUT</sub> )	<1ms	<0.8ms	<0.5ms	<0.5ms	<0.5ms	<0.5ms
Output current limit	>6.5A	>12.5A	>5.3A	>2.7A	>11A	>5.5A
Short circuit protection			continuously, automatic restart			
Overvoltage protection (OVP)	6-6.7V	5.5-6.0V adjustable	13.2-15V adjustable	26.4-30V adjustable	12-16.5V adjustable	27-29V adjustable
Powerfail signal (at full load >6ms)	—	V1<4.8V	—	V1<23V	>11.5V	>23.0V
Temperatur	0.02%/°C	0.02%/°C	0.02%/°C	0.02%/°C	0.02%/°C	0.02%/°C
Output regulation with sense	0.5V max.	0.5V max.	0.5V max.	0.5V max.	0.5V max.	0.5V max.
Derating	1 W/°C above 55°C	1.6 W/°C above 45°C	1.6 W/°C above 45°C	1.6 W/°C above 45°C	2.4 W/°C above 55°C	2.4 W/°C above 55°C



## PK-Series BIVOLT AC/DC-converters

30 to 60 Watt switched mode AC/DC plug-in power supplies with two outputs in 3 U/8 HP Eurocassettes for use in 19" subracks to IEC 60297-3.

- ✓ High regulation accuracy
- ✓ All voltages individually adjustable
- ✓ Compact rugged design in stable aluminum cassette
- ✓ EN 60950, UL, and cUL approvals
- ✓ CE marked for compliance to EMC and Low Voltage Directives
- ✓ Overvoltage protection (OVP)
- ✓ No-load and short circuit proof
- ✓ Coded H15 connector
- ✓ VERO standardised pinning
- ✓ 24 months warranty

### Ordering details Power Supplies AC/DC-converter

	nom. height/ nom. width [U] / [HP]	for nom. depth [mm]	single output [W]	output [V]/ [A]	order no. <b>116.</b>
BIVOLT PK 60 A	3 / 8	>160	60	±12-15V/2A	<b>010022A*</b>

For applications according EN 61000-3-2, we recommend the VP-Series.

### Accessories

	order no.
Reduced height front panel for PK 60	<b>148-010011J</b>
Male connector with coding strip H15 DIN 41612	<b>017-010115K</b>
<small>Minimum order quantity 1 pack (10 pieces)</small>	
Coding strip	<b>017-010064F</b>

## Technical input data

Input voltage (switchable)	94-253VAC
Input frequency	47-63Hz
Inrush surge current limit	by NTC
Input voltage spike limit	by VDR
Hold-up time	>20 msec (at nominal values) typ. > 80%
<b>Safety: CE marking according to low voltage directive 73/23/EEG</b>	
Safety according to	EN 60950, UL 1950
<b>EMC: CE marking according EMC directive 89/336/EEG</b>	
EMI conducted & radiated emission	EN 55022/B (0.15-30MHz; 30-1000MHz)
EMI immunity	EN 50082-2
Operating temperature / Storage temperature	0 °C...+70 °C / -25 °C...+85 °C
Relative humidity	max. 95% without condensation
Case material / finish	clear anodised aluminum cassette with cooling cutouts

## Technical data: output voltage

	<b>PK 60 A</b> V1, V2
Dual output	60 W
Output voltage	±12-15V
Adjustment range	±12-15V
Output nominal current	2A, 2A
Ripple at full load	<20mV <sub>pp</sub>
Line regulation (100% I <sub>OUT</sub> )	<0.2%
Load regulation static (10...90%I <sub>OUT</sub> )	<0.5%
Response time (10...90%I <sub>OUT</sub> )	<1ms
Output current limit	>2.2A
Short circuit protection	continuously, automatic restart
Overvoltage pr	±16.5-19V
Powerfail-Signal (at full load>6ms)	>4.8V
Temperatur	0.02%/°C
Derating	1.6 W/°C above 55°C



## TRIVOLT AC/DC-converter

60 to 120 Watt switched mode AC/DC plug-in power supplies with three outputs in 3 U Eurocassettes for use in 19" subracks to IEC 60297-3.

- ✓ 3 high stability outputs, all adjustable
- ✓ Safety approvals to UL, cUL and EN 60950
- ✓ CE marked for compliance to EMC and Low Voltage Directives
- ✓ SENSE-operation (5V output)
- ✓ Overvoltage protection (OVP)
- ✓ Powerfail signal optional
- ✓ No-load and short circuit proof
- ✓ Coded H15 connector
- ✓ VERO standardised pinning
- ✓ 24 months warranty

### Ordering details Power Supplies TRIVOLT AC/DC-converter

	nom. height/ nom. width [U] / [HP]	for nom. depth [mm]	single output [W]	outputs			order no. <b>116.</b>
				V1	V2	V3	
TRIVOLT PK 60 A	3 / 8	160	60	5V/6A	+12-15V/1A	-12-15V/1A	<b>010018J</b> <sup>1)</sup>
TRIVOLT PK 60 B	3 / 8	160	60	5V/6A	+12-15V/2A	-12-15V/0.5A	<b>010101G</b> <sup>1)</sup>
TRIVOLT PK 120	3 / 14	160	120	5V/12A	+12-15V/2A	-12-15V/2A	<b>010046C</b> <sup>2)</sup>
TRIVOLT PK1 20 PF	3 / 14	160	120	5V/12A	+12-15V/2A	-12-15V/2A	<b>010078G</b> <sup>2)3)</sup>

<sup>1)</sup>

<sup>2)</sup>

<sup>3)</sup> incl. Powerfail signal

For applications according EN 61000-3-2, we recommend the VP-Series.

### Accessories

	order no.
Reduced height front panel for PK 60	<b>148-010000K</b>
Reduced height front panel for PK 120	<b>148-010020H</b>
Male connector with coding strip H15 DIN 41612	<b>017-010115K</b>
Minimum order quantity 1 pack (10 pieces)	
Coding strip	<b>017-010064F</b>

## Technical input data

Input voltage (switchable)	94-253VAC
Input frequency	47-63Hz
Inrush surge current limit	by NTC
Input voltage spike limit	by VDR
Hold-up time	>20 msec (at nominal values) typ. >75%
<b>Safety: CE marking according to low voltage directive 73/23/EEG</b>	
Safety according to	EN 60950, UL 1950
<b>EMC: CE marking according EMC directive 89/336/EEG</b>	
EMI conducted & radiated emission	EN 55022/B (0.15-30MHz; 30-1000MHz)
EMI immunity	EN 50082-2
Operating temperature / Storage temperature	0 °C...+70 °C / -25 °C...+85 °C
Relative humidity	max. 95% without condensation
Case material / finish	clear anodised aluminum cassette with cooling cutouts

## Technical data: output voltage

	PK 60 A			PK 60 B			PK 120 / PK 120 PF		
	V1	V2	V3	V1	V2	V3	V1	V2	V3
Triple-output	60 W			60 W			120 W		
Output voltage	5V	+12V	-12V	5V	+12V	-12V	5V	+12V	-12V
Adjustment range	4.5-5.5V	+12-15V	-12-15V	4.5-5.5V	+12-15V	-12-15V	4.5-5.5V	+12-15V	-12-15V
Output nominal current	6A	1A	1A	6A	2A	0.5A	12A	2A	2A
Ripple at full load	<40mV <sub>pp</sub>	<3mV <sub>pp</sub>	<3mV <sub>pp</sub>	<40mV <sub>pp</sub>	<3mV <sub>pp</sub>	<3mV <sub>pp</sub>	<40mV <sub>pp</sub>	<20mV <sub>pp</sub>	<20mV <sub>pp</sub>
Line regulation (100% I <sub>OUT</sub> )	<0.2%	<0.02%	<0.02%	<0.2%	<0.02%	<0.02%	<0.2%	<0.02%	<0.02%
Load regulation static (10...90% I <sub>OUT</sub> )	<0.2%	<0.2%	<0.2%	<0.5%	<0.5%	<0.5%	<0.2%	<0.2%	<0.2%
Response time (10...90% I <sub>OUT</sub> )	<1ms	<10µs	<10µs	<1ms	<10µs	<10µs	<0.2ms	<0.5ms	<0.5ms
Output current limit	>6.5A	>1.1A	>1.1A	>6.5A	>2.1A	>0.6A	>12.5A	>2.2A	>2.2A
Short circuit protection	continuously, automatic restart								
Overvoltage protection (OVP)	6.0-6.7V	-	-	6.0-6.7V	-	-	+5.5-6.0V adjustable	+16.5-19V fix	-16.5-19V fix
Powerfail signal (at full load >6ms)	<4.8V	-	-	<4.8V	-	-	>4.8V	-	-
Temperatur	0.02%/°C			0.02%/°C			0.02%/°C		
Output regulation with sense	0.5V max.	-	-	0.5V max.	-	-	0.5V max.	-	-
Derating	1.6 W/°C above 55°C			1.6 W/°C above 55°C			4 W/°C above 55°C		

# Power Supplies VP-Series, 40 and 50 1 - 3 Outputs



## AC/DC-converter

40 or 50 Watt switched mode AC/DC plug-in power supplies in 3 U/4 HP Eurocassettes for use in 19" sub racks to IEC 60297-3.

- ✓ Wide input range 94-253VAC
- ✓ High efficiency from 75% to 84%
- ✓ CE marking according EMI and LV directive
- ✓ Safety according to EN 60950, UL, cUL
- ✓ Optional: EMI front panel, no front panel
- ✓ VERO standard pinning, suits to PK 60
- ✓ SENSE-operation
- ✓ Convection cooling
- ✓ 24 months warranty

With modern switch mode technology VP 40 achieves

## Ordering details Power Supplies AC/DC-converter

	nom.height/ nom. width [U] / [HP]	for nom. depth [mm]	output [W]	outputs	with front plate order no. <b>116.</b>
VP 40-3 A	3 / 4	>160	40	5V/4A; +12...15V/0.6A; -12...-15V/0.6A	<b>040311E*</b>
VP 40-3 B	3 / 4	>160	40	+12...15V/1.4A; +12...15V/0.6A; -12...-15V/0.6A	<b>040312B*</b>
VP 40-3 C	3 / 4	>160	40	24V/0.8A; +12...15V/0.6A; -12...-15V/0.6A	<b>040313K*</b>
VP 50-1	3 / 4	>160	50	5V/10A	<b>040151K*</b>
VP 50-1	3 / 4	>160	50	12V/4.2A...15V/3.3A	<b>040152G*</b>
VP 50-1	3 / 4	>160	50	24V/2.1A	<b>040153D*</b>

## Accessories

Male connector with coding strip H15 DIN 41612	order no. <b>017-010115K</b>
Minimum order quantity 1 pack (10 pieces)	
Coding strip	<b>017-010064F</b>



## Technical input data

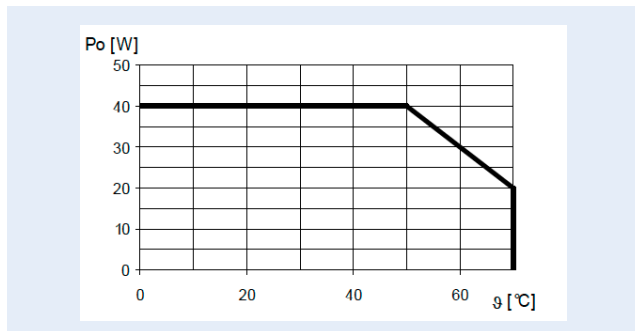
Input voltage	115 / 230VAC
Input frequency	47-63Hz
Inrush surge current limit	by NTC resistor
Input voltage spike limit	by VDR resistor
Hold-up time	≥60 ms at 230V / ≥10 ms at 115V ≥30 ms at 230V / ≥30 ms at 115V
Powerfactor correction PFC	>0,6
Efficiency	up to 75% / up to 85%
<b>Safety: CE marking according to low voltage directive 2006/95/EG</b>	
Safety according to	EN 60950-1
<b>EMC: CE marking according EMC directive 2004/108/EG</b>	EN 61000-6-3 (2007) EN 61000-6-2 (2006)
EMI conducted & radiated emission	EN 55022/B (0,15-30MHz; 30-1000MHz)
EMI immunity	EN 50082-2
Operating temperature / Storage temperature	0 °C...+70 °C / -25 °C...+85 °C
Relative humidity	max. 95%, not condensing
Dimensions (L x W x H) mm	162 x 20 x 100 mm, with front plate 128 mm

## Technical data: output voltage

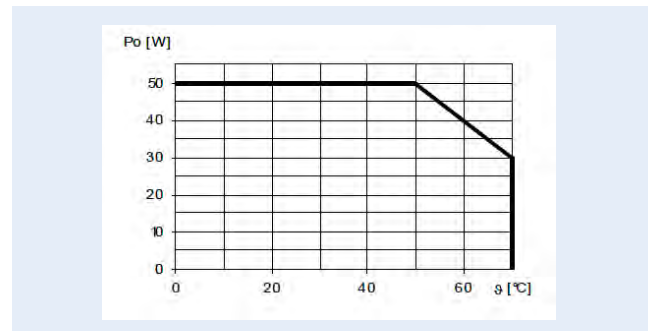
	VP 40-3 A			VP 40-3 B / C			VP 50-1		
	V1	V2	V3	V1B / C	V2B / C	V3B / C	V1	V1	V1
Output	40 W			40 W			50 W		
Output voltage	+5V	+12V	-12V	+12V	+12V	-12V	5V	12V	24V
Adjustment range	+5V	+12V...+15V	-12V...-15V	+12V...+15V / 24V	+12V...+15V	-12V...-15V	5V	12V...15V	24V
Output nominal current <sup>1)</sup>	4A	0.6A	0.6A	1.4A / 0.8A	0.6A	0.6A	10A	4.2A...3.3A	2.1A
Ripple at full load	≤20mVss	≤5mVss	≤5mVss	≤20mVss	≤5mVss	≤5mVss	≤20mVss	≤40mVss	≤20mVss
Line regulation (100% I <sub>OUT</sub> )	≤0.1%	≤0.02%	≤0.02%	≤0.1%	≤0.02%	≤0.02%	≤0.1%	≤0.1%	≤0.1%
Load regulation static (10...90% I <sub>OUT</sub> )	≤0.1%	≤0.4 <sup>2)</sup>	≤0.4 <sup>2)</sup>	≤0.1%	≤0.4 <sup>2)</sup>	≤0.4 <sup>2)</sup>	≤0.1%	≤0.1 <sup>2)</sup>	≤0.1 <sup>2)</sup>
Response time (10...90% I <sub>OUT</sub> )	≤0.4ms	≤20μs	≤20μs	≤0.4ms	≤20μs	≤20μs	≤0.4ms	≤0.4ms	≤0.4ms
Output current limit	>4.2A	>0.8A	>0.8A	>1.5A / 0.85A	>0.8A	>0.8A	>10A	3.6A...5.5A	>2.1A
Short circuit protection	yes			yes			yes		
Oversvoltage protection (OVP)	5.85V...6.25V			16.5V...18V / 26.4V...31V	—	—	5.85V...6.25V	16.5V...18V	16.5...31V
Powerfail signal (at full load >6ms)	≥5ms bevor V1 < 4.8V			optional	optional	optional	optional	optional	optional
Output regulation with sense	0.5V max.			0.5V max.	—	—	0.5V max.	0.5V max.	0.5V max.
Derating				2.5% / °C, from 50 °C			see derating curv		

<sup>1)</sup> maximum total output power: 40 / 50 Watt, see derating

<sup>2)</sup> I<sub>OUT</sub> V1 min. 1A



Derating curve VP 40



Derating curve VP 50

# Power Supplies VP-Series, 80 and 150 1 - 3 Outputs



## AC/DC-converter with PFC

80 or 150 Watt switched mode AC/DC plug-in power supplies in 3 U/8 HP respectively 12 HP Eurocassettes for use in 19" sub racks to IEC 60297-3.

- ✓ Active Powerfactor Correction PFC
- ✓ Wide input range 94-253VAC
- ✓ High efficiency from 83% up to 87%
- ✓ Power share between outputs
- ✓ N+1 redundant types on request
- ✓ CE marking acc. EMI and LV directive
- ✓ Safety according to EN 60950, UL, cUL
- ✓ VERO standard pinning, VP 80 suits to PK 60 and VP 150 suits to PK 120
- ✓ 24 months warranty

With the new VP 80 / 150 series and efficiency from 83% up to 87% is achieved while power density is increased over its predecessors by more than 30%. Without the need for external heatsinking, the 80 W or 150 W out-put power can be achieved with natural convection cooling. A wide range of multi O/P units is

further extended through power share technology, allowing maximum flexibility in the way power is delivered across the voltage rails, for smaller and more economical solutions. The range is enhanced with „Type R“ versions, designed for N+1 redundant applications or battery back-up systems.

## Ordering details Power Supplies AC/DC-converter

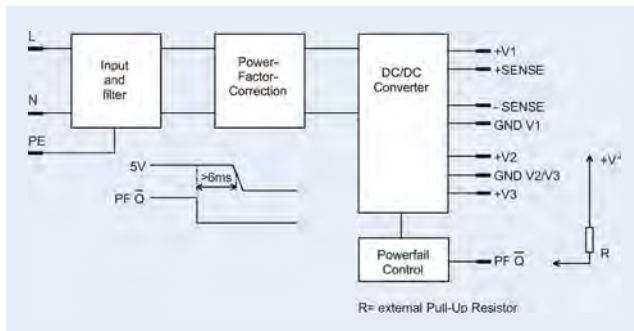
	nom.height/ nom. width [U] / [HP]	for nom. depth [mm]	output [W]	outputs	order no. <b>116.</b>
VP 80-1	3 / 8	>120	80	24V/3.3A	<b>020018B</b> <sup>1)</sup>
VP 80-3 C	3 / 8	>120	80	5V/12A; +12V/4A; -12V/1A	<b>020026D</b> <sup>1)</sup>
VP 150-3	3 / 12	>120	150	5V/20A; +12V...15V/4A; -12...15V/2A	<b>031530B</b> <sup>2)</sup>

<sup>1)</sup>

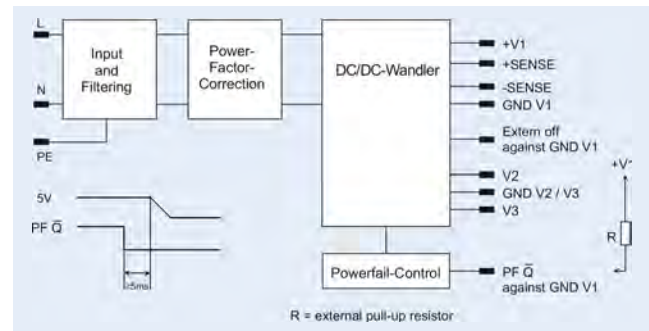
<sup>2)</sup> safety to EN 60950, UL, cUL

## Accessories

Male connector with coding strip H15 DIN 41612	order no.
Minimum order quantity 1 pack (10 pieces)	<b>017-010115K</b>
Coding strip	<b>017-010064F</b>



Schematic diagram VP 80



Schematic diagram VP 150

## Technical input data

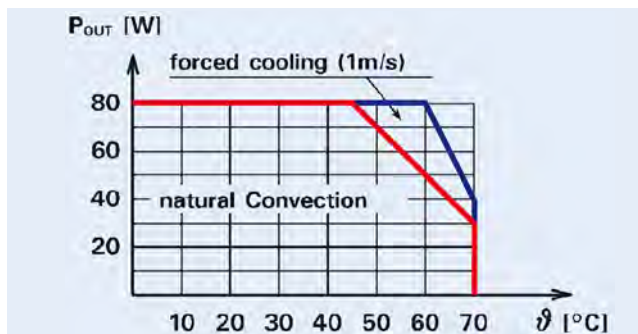
Input voltage	94-253VAC
Input frequency	47-63Hz
Inrush surge current limit	<27A (NTC)
Input voltage spike limit	by VDR
Hold-up time	>20 msec (at nominal values)
Powerfactor correction PFC	>0,95 / >0,98
Efficiency	up to 83% / typ. >81%
<b>Safety: CE marking according to low voltage directive 73/23/EEG</b>	
Safety according to	EN 60950
<b>EMC: CE marking according EMC directive 89/336/EEG</b>	
EMI conducted & radiated emission	EN 55022/B (0.15-30MHz; 30-1000MHz)
EMI immunity	EN 50082-2
Operating temperature / Storage temperature	0 °C...+70 °C / -40 °C...+85 °C
Relative humidity	max. 90% without condensation
Dimensions (L x W x H) mm	VP 80 162 x 32, 9 x 100 mm / VP 150 162x60, 6x110 mm
Weight:	650 g / 1100 g

## Technical data: output voltage

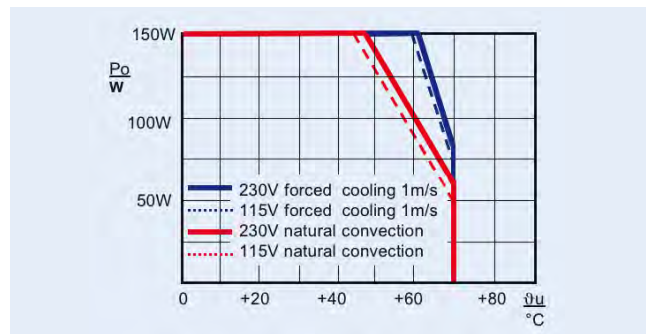
	VP 80-1	VP 80-3 C			VP 150-3		
	V1	V1	V2	V3	V1	V2	V3
Output	80 W	80 W			150 W		
Output voltage	24V	+5V	+12V	-12V	+5V	+12-15V	-12-15V
Adjustment range	22-26V	4.8-5.5V	fix	fix	4.8...5.5V	+11.8-15.2V	-11.8-15.2V
Output nominal current <sup>1)</sup>	3,3A	12A	4A	1A	20A <sup>1)</sup>	4A <sup>1)</sup>	2A <sup>1)</sup>
Ripple at full load	<40mV <sub>pp</sub>	<40mV <sub>pp</sub>	<40mV <sub>pp</sub>	<10mV <sub>pp</sub>	<40mV <sub>pp</sub>	<20mV <sub>pp</sub>	<20mV <sub>pp</sub>
Line regulation (100% I <sub>OUT</sub> )	<0.1%	<0.2%	<0.2%	<0.2%	<0.2%	<0.2%	<0.2%
Load regulation static (10...90% I <sub>OUT</sub> )	<0.1%	<0.5%	<±4 <sup>2)</sup>	<1.5% <sup>2)</sup>	<0.5%	<0.2%	<0.2%
Response time (10...90% I <sub>OUT</sub> )	<0.1ms	<1ms	<1ms	<1ms	<1ms	<1ms	<1ms
Output current limit	>3.35A	>12.1A	>4.1A	>1.01A	>20.5A	>5A	>2.7A
Short circuit protection	yes, electronic, automatic restart						
Oversvoltage protection (OVP)	27-32V	6.0-6.7V	—	—	6.0-6.5V fix	+16-18V fix	-16-18V fix
Powerfail signal (at full load >6ms)	V1<23V	<V1-4.8V	—	—	<V1-4.8V	—	—
Output regulation with sense	0.5V max.	0.5V max.	—	—	0.5V max.	—	—
Derating	2 W/°C over 45°C at natural convection; 4 W/°C over 60°C at enhanced cooling				see derating curve		

<sup>1)</sup> maximum total output power: 80 Watt or 150 Watt, see derating curve

<sup>2)</sup> I<sub>OUT</sub> V1 min. 1A



Derating curve VP 80



Derating curve VP 150



## MONOVOLT AC/DC-converter

50 Watt switched mode AC/DC plug-in power supplies with one output in 3 U/8 HP steelcassettes for use in 19" subracks to IEC 60297-3.

- ✓ Reduced cost power supply on 100 x 160 mm Eurocard
- ✓ Steel cover
- ✓ Wide input range
- ✓ Overvoltage protection (OVP)
- ✓ No load and short circuit proof
- ✓ Powerfail signal
- ✓ Coded H15 connector
- ✓ VERO standardised pinning
- ✓ Separate frontpanel kit with handle
- ✓ 24 months warranty

### Ordering details Power Supplies Monovolt AC/DC-converter

	nom. height/ nom. width [U] / [HP]	for nom. depth [mm]	single output [W]	output [V]/ [A]	order no. <b>116.</b>
EC 50	3 / 8	>160	50	24V/2.2A	<b>010194F*</b>

### Accessories

	order no.
Front panel with handle: EC50	<b>148-011001G</b>
Male connector with coding strip H15 DIN 41612	<b>017-010115K</b>
<small>Minimum order quantity 1 pack (10 pieces)</small>	
Coding strip	<b>017-010064F</b>

### Technical input data

Input voltage AC/DC	93-253VAC wide input
Input frequency	47-63Hz
Inrush surge current limit	by NTC
Input voltage spike limit	by VDR
Hold-up time	>20 msec (at nominal values)
Efficiency	typ. 68-75%
<b>Safety: CE marking according to low voltage directive 73/23/EEG</b>	
Safety according to	EN 60950, UL 1950, EN41003
<b>EMC: CE marking according EMC directive 89/336/EEG</b>	
EMI conducted & radiated emission	EN 55022/B (0.15-30MHz; 30-1000MHz)
EMI immunity	EN 50082-2
Operating temperature / Storage temperature	0 °C...+70 °C / -25 °C...+85 °C
Relative humidity	max. 95% without condensation
Case material / finish	ventilated steel cassette with cooling cutouts

### Technical data: output voltage

	<b>EC 50</b> V1
Single-output	50 W
Output voltage	24V
Adjustment range	21.6-26.8V
Output nominal current	2.2A
Ripple at full load	<40mV <sub>pp</sub>
Line regulation (100% I <sub>OUT</sub> )	<0.2%
Load regulation static (10...90%I <sub>OUT</sub> )	<1%
Response time (10...90%I <sub>OUT</sub> )	<1ms
Output current limit	>2.4A
Short circuit protection	continous, automatic restart
Overvoltage protection (OVP)	27-32V
Derating	1.2 W/°C over 45°C



**TRIVOLT AC/DC-converter**

50 Watt switched mode AC/DC plug-in power supplies with three output in 3 U steelcassettes for use in 19" subracks to IEC 60297-3.

- ✓ Economy priced alternative of PK series
- ✓ Steel cover
- ✓ Safety according to EN 60950
- ✓ Overvoltage protection (OVP)
- ✓ No load and short circuit proof
- ✓ Powerfail signal
- ✓ Coded H15 connector
- ✓ VERO standardized pinning
- ✓ Separate frontpanel kit with handle
- ✓ 24 months warranty

**Ordering details Power Supplies Monovolt AC/DC-converter**

	nom.height/ nom. width [U] / [HP]	for nom. depth [mm]	output [W]	outputs V1      V2      V3			order no. <b>116.</b>
EC 50 C	3 / 8	>160	50	5V/5A	+15V/0.8A	-15V/0.8A	<b>010186D*</b>

\*EN 60950 certified

**Accessories**

Front panel with handle: EC50	order no. <b>148-011001G</b>
Male connector with coding strip H15 DIN 41612	<b>017-010115K</b>
Minimum order quantity 1 pack (10 pieces)	
Coding strip	<b>017-010064F</b>

**Technical input data**

Input voltage AC/DC	93-253VAC wide input
Input frequency	47-63Hz
Inrush surge current limit	by NTC
Input voltage spike limit	by VDR
Hold-up time	>20 msec (at nominal values)
Efficiency	typ. 70%
<b>Safety: CE marking according to low voltage directive 73/23/EEG</b>	
Safety according to	EN 60950, UL 1950,
<b>EMC: CE marking according EMC directive 89/336/EEG</b>	
EMI conducted & radiated emission	EN 55022/B (0.15-30MHz; 30-1000MHz)
EMI immunity	EN 50082-2
Operating temperature / Storage temperature	0 °C...+70 °C / -25 °C...+85 °C
Relative humidity	max. 95% without condensation
Case material / finish	ventilated steel cassette with cooling cutouts

**Technical data: output voltage**

	EC 50		
	V1	V2	V3
Triple output	50 W		
Output voltage	5V	+15V	-15V
Adjustment range	4.5-5.5V	fix	fix
Output nominal current	5A	0.8A	0.8A
Ripple at full load	<40mV <sub>pp</sub>	<10mV <sub>pp</sub> <sup>1)</sup>	<10mV <sub>pp</sub> <sup>1)</sup>
Line regulation (100% I <sub>OUT</sub> )	<0.2%	<0.2%	<0.2%
Load regulation static (10...90% I <sub>OUT</sub> )	<1%	<0.5%	<0.5%
Response time (10...90% I <sub>OUT</sub> )	<1ms	<1ms	<1ms
Output current limit	>6A(>9A <sup>2)</sup> )	>1.1A	>1.1A
Short circuit protection	yes, electronic, automatic restart		
Overvoltage protection (OVP)	6.0-6.7V	—	—
Powerfail-Signal (at full load>6ms)	V1<4.8V	—	—
Temperatur	0,05%/°C		
Derating	1.5 W/°C above 45°C		

<sup>1)</sup> V2/V3 linear post regulated

<sup>2)</sup> at single load



## TRIVOLT DC/DC-converter

60 to 120 Watt switched mode DC/DC plug-in converter with three outputs in 3 U Eurocassettes for use in 19" subracks IEC 60297-3.

- ✓ Compact rugged design in stable aluminum cassette
- ✓ DC input range 2:1 ratio
- ✓ High regulation accuracy
- ✓ Separate adjust of all outputs
- ✓ SENSE-operation and Overvoltage protection (OVP)
- ✓ Convection cooling
- ✓ CE marked for compliance to EMC and Low Voltage Directives
- ✓ VERO standardised pinning
- ✓ 24 months warranty

## Ordering details Power Supplies TRIVOLT AC/DC-converter

	nom. height/ nom. width [U] / [HP]	for nom. depth [mm]	output [W]	outputs V1      V2      V3			order no. <b>116.</b>
GK 120-2	3 / 14	>160	120	5V/12A	+12-15V/2A	-12-15V/2A	<b>010175L</b>

## Accessories

	order no.
Reduced height front panel GK 120	<b>148-010020H</b>
Male connector with coding strip H15 DIN 41612	<b>017-010115K</b>
Minimum order quantity 1 pack (10 pieces)	
Coding strip	<b>017-010064F</b>

## Technical input data

Input voltage	24VDC (18-36)
Inrush surge current limit	line impedance dependant
Input voltage spike limit	by Thyristor-Crowbar
Hold-up time	>3 msec (at nominal values)
Efficiency	typ. >70-75%
<b>Safety: CE marking according to low voltage directive 73/23/EEG</b>	
Safety according to <b>EMC: CE marking according EMC directive 89/336/EEG</b>	EN 60950, UL 1950,
EMI conducted & radiated emission	EN 55022/B (0.15-30MHz; 30-1000MHz)
EMI immunity	EN 50082-2
Operating temperature / Storage temperature	0 °C...+70 °C / -25 °C...+85 °C
Relative humidity	max. 95% without condensation
Cae material / finish	Clear anodised aluminum cassette with cooling cutouts

## Technical data: output voltage

	GK 120-2		
	V1	V2	V3
Triple output	120 W		
Output voltage	5V	+12-15V	-12-15V
Adjustment range	4.5-5.5V	+12-15V	-12-15V
Output nominal current	12A	2A	2A
Ripple at full load	<40mV <sub>pp</sub>	<20mV <sub>pp</sub>	<20mV <sub>pp</sub>
Line regulation (100% I <sub>OUT</sub> )	<0.2%	<0.2%	<0.2%
Load regulation static (10...90% I <sub>OUT</sub> )	<0.2%	<0.2%	<0.2%
Response time (10...90% I <sub>OUT</sub> )	<0.2ms	<0.5ms	<0.5ms
Output current limit	>12.5A	>2.2A	>2.2A
Short circuit protection	continuously, automatic restart		
Overvoltage protection (OVP)	5.5-6.0V	—	—
Output regulation with sense	0.5V max.	—	—
Temperatur	0,05%/°C		
Derating	4 W/°C above 55°C		