

---

## AC/DC converters

- ✓ PK MONOVOLT
- ✓ PK BIVOLT
- ✓ PK TRIVOLT



---

## 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 240 Watt switched mode AC/DC plug-in power supplies with one output in 3U Eurocassettes for use in 19" sub racks 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)
- ✓ PK60-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
- ✓ 4 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>	with powerfail order no. <b>116.</b>
PK 30	3 / 8	>160	30	5V/6A	010016D*	-
PK 60	3 / 8	>160	60	5V/12A	010063D*	-
PK 60	3 / 8	>160	60	12V/5A	010064A*	-
PK 60	3 / 8	>160	60	24V/2,5A	010066F*	-
PK120	3 / 14	>160	120	12V/10A	010070J	-
PK120	3 / 14	>160	120	24V/5A	010072C	-
PK240	3 / 24	>160	240	24V/10A	-	032024B

\* EN 60950, UL and cUL certified

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

### Accessories

	order no.
Reduced height front panel for PK 30	148-010012D
Reduced height front panel for PK 60	148-010021E
Reduced height front panel for PK 120	148-010019G
Male connector with coding strip H15 IEC 60603-2	017-010115K
<small>Minimum order quantity 1 pack (10 pieces)</small>	
Coding strip	017-010064F

## 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)
Efficiency	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

	PK 30 V1	PK 60 V1	PK 60 V1	PK 60 V1	PK 120 V1	PK 120 V1	PK 240 V1
Single output	30W	60W	60W	60W	120W	120W	240W
Output voltage	5V	5V	12V	24V	12V	24V	24V
Adjustment range	4.85-5.5V	4.5-5.5V	11-13V	22-26V	10.8-13.2V	21.6-26.4V	22-26V
Output nominal current	6A	12A	5A	2.5A	10A	5A	10A
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>	<40mV <sub>pp</sub>
Line regulation (100% I <sub>OUT</sub> )	<0.2%	<0.3%	<0.2%	<0.2%	<0.2%	<0.2%	<0.5%
Load regulation static (10...90% I <sub>OUT</sub> )	<0.2%	<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	<0.5ms
Output current limit	>6.5A	>12.5A	>5.3A	>2.7A	>11A	>5.5A	>12A
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	26.4-30V adjustable
Powerfail signal (at full load >6ms)	—	V1<4.8V	—	V1<23V	>11.5V	>23.0V	>23.0V
Temperature coefficient	0.02%/°C	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.	0.5V max.
Derating	1W/°C above 55°C	1.6W/°C above 45°C	1.6W/°C above 45°C	1.6W/°C above 45°C	2.4W/°C above 55°C	2.4W/°C above 55°C	8W/°C above 55°C



## PK-Series BIVOLT AC/DC-converters

30 to 60Watt switched mode AC/DC plug-in power supplies with two outputs in 3U/8HP 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	010022A*

\* EN 60950 certified

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

### Accessories

	order no.
Reduced height front panel for PK 60	148-010011J
Male connector with coding strip H15 IEC 60603-2	017-010115K
<small>Minimum order quantity 1 pack (10 pieces)</small>	
Coding strip	017-010064F

## 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)
Efficiency	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	60W
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 protection (OVP) fix	±16.5-19V
Powerfail-Signal (at full load>6ms)	>4.8V
Temperature coefficient	0.02%/°C
Derating	1.6W/°C above 55°C



## TRIVOLT AC/DC-converter

60 to 120 Watt switched mode AC/DC plug-in power supplies with three outputs in 3U Eurocassettes for use in 19" sub racks 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
- ✓ 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] / [U]	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-PK120	3 / 8	160	120	5V/12A	+12-15V/2A	-12-15V/2A	<b>010046C</b> <sup>2)</sup>
TRIVOLT-PK120 PF	3 / 8	160	120	5V/12A	+12-15V/2A	-12-15V/2A	<b>010078G</b> <sup>2)</sup>

<sup>1)</sup> EN 60950 and UL certified

<sup>2)</sup> EN 60950 certified

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

### Accessories

	order no.
Reduced height front panel for PK 60	148-010000K
Reduced height front panel for PK 120	148-010020H
Male connector with coding strip H15 IEC 60603-2	017-010115K
Minimum order quantity 1 pack (10 pieces)	
Coding strip	017-010064F

## 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)
Efficiency	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 clear anodised aluminum cassette with cooling cutouts
Case material / finish	

## Technical data: output voltage

	PK 60 A			PK 60 B			PK 120		
	V1	V2	V3	V1	V2	V3	V1	V2	V3
Triple-output	60W			60W			120W		
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	-	-
Temperature coefficient	0.02%/°C			0.02%/°C			0.02%/°C		
Output regulation with sense	0.5V max.	-	-	0.5V max.	-	-	0.5V max.	-	-
Derating	1.6W/°C above 55°C			1.6W/°C above 55°C			4W/°C above 55°C		

# Power Supplies VP 80-Series 1 - 4 Outputs



## AC/DC-converter with PFC

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

- ✓ Active Powerfactor Correction PFC
- ✓ Wide input range 94-253VAC
- ✓ High efficiency up to 83%
- ✓ Power share between outputs
- ✓ N+1 redundant types
- ✓ CE marking acc. EMI and LV directive
- ✓ Safety certified to EN 60950, UI, cUL
- ✓ Optional: EMI frontpanel, no frontpanel
- ✓ VERO standard pinning, suits to PK60
- ✓ 24 months warranty

With the new VP80 series an efficiency of up to 83% is achieved whilst power density is increased over its predecessors by more than 30%. Without the need for external heatsinking, the 80W output 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>
VP80-1 24V	3 / 8	>120	80	24V/3.3A	<b>020018B</b>
VP80-3C	3 / 8	>120	80	5V/12A; +12V/4A; -12V/1A	<b>020026D</b>

## Accessories

	order no.
Male connector with coding strip H15 IEC 60603-2	017-010115K
<small>Minimum order quantity 1 pack (10 pieces)</small>	
Coding strip	017-010064F

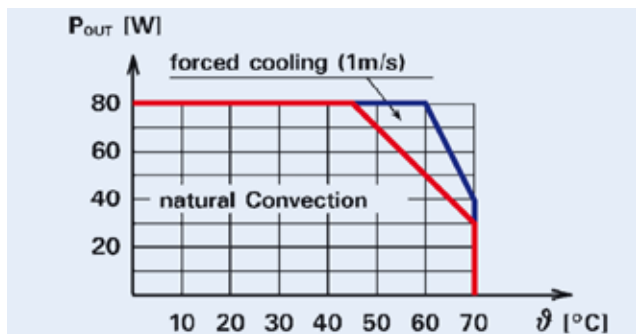
## Technical input data

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
Efficiency	bis 83%
<b>Safety: CE marking according to low voltage directive 73/23/EEG</b>	
Safety according to	EN 60950, IEC 950, UL 1950, cUL
<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	162x32, 9x100 mm
Weight:	650 g

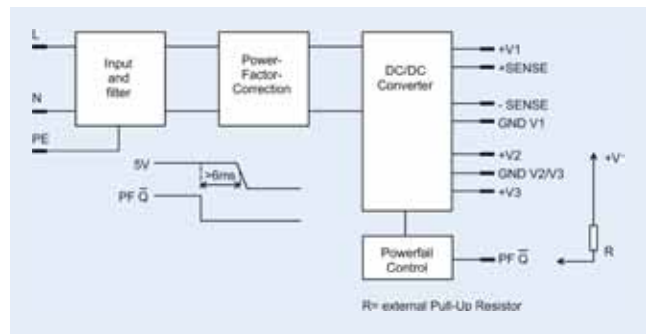
## Technical data: output voltage

	VP80-1	VP80-3 C		
	V1	V1	V2	V3
Output	80 W	80 W		
Output voltage	24V	+5V	+12V	-12V
Adjustment range	22-28V	4.8-5.5V	fix	fix
Output nominal current <sup>1)</sup>	3.3A	12A	4A	1A
Ripple at full load	<40mV <sub>pp</sub>	<40mV <sub>pp</sub>	<40mV <sub>pp</sub>	<10mV <sub>pp</sub>
Line regulation (100% I <sub>OUT</sub> )	<0.1%	<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>
Response time (10...90% I <sub>OUT</sub> )	<0.1ms	<1ms	<1ms	<1ms
Output current limit	>3.35A	>12.1A	>4.1A	>1.01A
Short circuit protection	yes, electronic, automatic restart			
Overvoltage protection (OVP)	27-32V	6.0-6.7V	-	-
Powerfail signal (at full load >6ms)	V1<23V	<V1-4.8V	-	-
Output regulation with sense	0.5V max.	0.5V max.	-	-
Derating	2W/°C over 45°C at natural convection; 4W/°C over 60°C at enhanced cooling			

<sup>1)</sup> maximum total output power: 80 Watt, see derating <sup>2)</sup> I<sub>OUT</sub> V1 min. 1A



Derating curve



Schematic Diagram

# Power Supplies VP 150-Series 1 - 3 Outputs



## AC/DC-converter with PFC

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

- ✓ Active Powerfactor Correction PFC
- ✓ Wide input range 94-253VAC
- ✓ High efficiency up to 87%
- ✓ Power share between outputs
- ✓ All outputs individually adjustable
- ✓ N+1 redundant types
- ✓ Convection cooling
- ✓ CE marking acc. to EMI and LV directive
- ✓ Safety to EN 60950, UI, cUL
- ✓ VERO standard pinning, suits to PK120
- ✓ 24 months warranty

The VP150 achieves an efficiency of up to 87% by incorporating synchronous rectification and magnetic amplifiers, whilst the power density is increased by more than 45% over the PK120 predecessor. Without the need for external heatsinking, the 150W output power can be achieved with natural convection cooling. The multi O/P units are 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 with temp-controlled charging.

### 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>
VP150-3	3 / 12	>120	150	5V/20A; +12...15V/4A; -12...15V/2A	<b>031530B</b>

### Accessories

Male connector with coding strip H15 IEC 60603-2	order no. 017-010115K
<small>Minimum order quantity 1 pack (10 pieces)</small>	
Coding strip	017-010064F

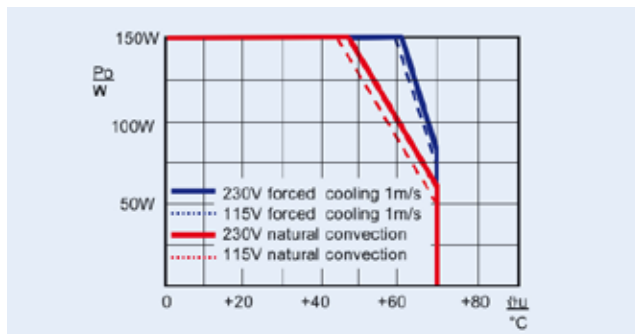
## Technical input data

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	>0.98
Efficiency	typ. >81%
<b>Safety: CE marking according to low voltage directive 73/23/EEG</b>	
Safety according to	EN 60950, IEC 950, UL 1950, cUL
<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
Oberschwingungen gemäß	EN 61000-3-2
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	162x60, 6x110 mm
Weight	1100 g

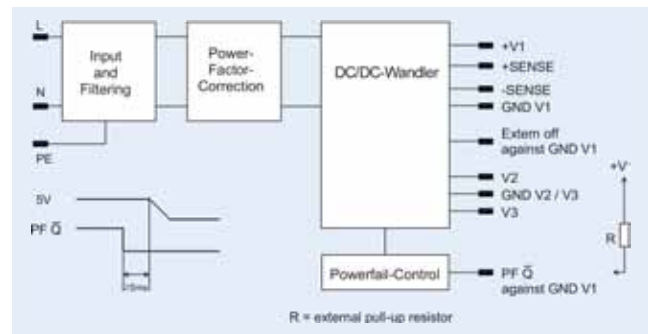
## Technical data: output voltage

	V1	VP150-3 V2	V3
Output	150W	150W	150W
Output voltage	5V	+12-15V	-12-15V
Adjustment range	4.8...5.5V	+11.8-15.2V	-11.8-15.2V
Output nominal current <sup>1)</sup>	20A <sup>1)</sup>	4A <sup>1)</sup>	2A <sup>1)</sup>
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> )	<0.5%	<0.2%	<0.2%
Response time (10...90% I <sub>OUT</sub> )	<1ms	<1ms	<1ms
Output current limit	>20.5A	>5A	>2.7A
Short circuit protection	yes, electronic, automatic restart		
Oversvoltage protection (OVP)	6.0-6.5V fix	+16-18V fix	-16-18V fix
Powerfail-Signal (at full load >5ms)	V <sub>0</sub> <4.8V	-	-
Output regulation with sense	0.5V max.	-	-
Derating	see curve		

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



Derating curve



Schematic Diagram

Power Supplies



## MONOVOLT AC/DC-converter

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

- ✓ Reduced cost power supply on 100x160 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>

\* EN 60950 certified

### Accessories

	order no.
Reduced height front panel with handle: EC50	148-010002K
Male connector with coding strip H15 IEC 60603-2	017-010115K
<small>Minimum order quantity 1 pack (10 pieces)</small>	
Coding strip	017-010064F

### 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	50W
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	continuous, automatic restart
Overvoltage protection (OVP)	27-32V
Derating	1.2W/°C over 45°C



**TRIVOLT AC/DC-converter**

50 Watt switched mode AC/DC plug-in power supplies with three output in 3U 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**

	order no.
Reduced height front panel with handle: EC50	148-010002K
Male connector with coding strip H15 IEC 60603-2	017-010115K
<small>Minimum order quantity 1 pack (10 pieces)</small>	
Coding strip	017-010064F

**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	50W		
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> <sup>1)</sup>	<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	—	—
Temperature coefficient	0,05%/°C		
Derating	1.5W/°C above 45°C		

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

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

Power Supplies



## TRIVOLT DC/DC-converter

60 to 120 Watt switched mode DC/DC plug-in converter with three outputs in 3U Eurocassettes for use in 19" sub racks 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	148-010020H
Male connector with coding strip H15 IEC 60603-2	017-010115K
Minimum order quantity 1 pack (10 pieces)	
Coding strip	017-010064F

## 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
Case material / finish	Clear anodised aluminum cassette with cooling cutouts

## Technical data: output voltage

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