

VEROTEC

Electronics Packaging



Power Supplies

CUSTOM POWER SUPPLIES

TecServ+ is the vehicle by which Verotec delivers its value added services. These fall within 5 main categories and are described below. When it comes to power supplies, we've worked with many customers in the past to design, manufacture and help bring to market modified and custom versions of our standard products – a small selection of these are pictured below. If you have any special power supply requirements, please contact our sales office.



Customised GK300 PSU with 80dB screening, high airflow & fully DSP regulated converter – MRI Scanner application.



Customised VP rack PSU with modular construction and remote signalling / monitoring – air traffic control application



Bespoke, 1U/19" PSU with RS485 & Ethernet interface for monitoring and control functions – telecoms application.



Customised VP60 PSU – low cost design with wide AC & DC input and hot-swap functionality - traffic signalling application.

ENGINEERING SERVICES:

- + Complete review of commercial, electro-mechanical, environmental and regulatory product requirements with customer.
- + Import of STEP, IGES, DWG & DXF file formats
- + Mechanical and electrical design using latest CAD software
- + 3D Modelling to allow conceptual testing before production
- + Component selection from a vast library of parts

MANUFACTURING SERVICES:

- + Prototype / pre-production samples using small batch shop
- + Modification of standard catalogue products (including machining, CNC punching, laser cutting, painting & silk-screening)
- + Manufacture of custom / bespoke products (including fabrication, machining, CNC punching, plating, painting & silk-screening)
- + Assembly & kitting of components
- + Integration & mechanical / electrical testing of complex systems

COMPLIANCE SERVICES:

- + Validation of product design and/or specification
- + Advice on environment legislation (RoHS, Reach, Weee etc.)
- + In-house pre-compliance testing for CE marking (Safety, EMC)
- + Supply of product technical construction file
- + Testing & certification of a product at an approved test house (for EMC, shock & vibration, altitude, temperature, humidity etc.)

LOGISTICAL SERVICES:

- + Express manufacturing service for quick turnaround of urgent orders
- + Special / bespoke packaging for safe transport of goods
- + Scheduled orders (including JIT and KAN BAN systems)
- + Stock holding & distribution
- + Exporting (including export packaging, land/sea/air transportation, freight forwarding, customs documentation & shipping manifests)

PROJECT MANAGEMENT SERVICES:

- + Initial project consultation
- + Capability and feasibility study
- + Estimation of project cost and leadtime
- + Management of design process (specification to validation)
- + Management of manufacturing process (prototype to production)
- + Cost reduction programmes throughout product life cycle

COMPACT PCI 3U SERIES

200W AC/DC & DC/DC 11.04 - 11.09

300W AC/DC & DC/DC 11.10 - 11.15

COMPACT PCI 6U SERIES

350W AC/DC & DC/DC 11.16 - 11.17

400W AC/DC & DC/DC 11.18 - 11.21

500W AC/DC & DC/DC 11.22 - 11.25



AC/DC CONVERTERS · PK-SERIES

PK MONOVOLT 11.26 - 11.28

PK BIVOLT 11.29 - 11.30

PK TRIVOLT 11.31 - 11.33



AC/DC CONVERTERS WITH PFC · VP-SERIES

VP 20 11.34

VP40 11.35

VP50 11.36

VP80 11.37- 11.40

VP150 11.41 - 11.43



AC/DC CONVERTERS ECONOMY · EC-SERIES

EC MONOVOLT 11.44

EC TRIVOLT 11.45 -11.47



DC/DC CONVERTERS · GK-SERIES

GK MONOVOLT 11.48 - 11.50

GK BIVOLT 11.51 - 11.52

GK TRIVOLT 11.53 - 11.54



30 TO 120 WATT SWITCHED MODE AC/DC PLUG-IN POWER SUPPLIES WITH ONE OUTPUT IN 3U EUROCASSETTES FOR USE IN 19" SUBRACKS TO DIN 41494

FEATURES

- Compact rugged design in stable aluminium 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 EN60950, UL, cUL
- VERO standardised pinning
- 24 months warranty

SPECIFICATION

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%
Efficiency	
Safety: CE marking according to	
low voltage directive 73/23/EEG	
Safety according to	EN60950, UL1950
EMC: CE marking according EMC directive 89/336/EEG	
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 aluminium cassette with cooling cutouts



PK Monovolt Series

ORDER INFORMATION

MONOVOLT PK30: 30Watt			
Type	output	without Powerfail	with Powerfail
PK30	5V/6A	116-10016*	—
PK30	12-15V/2A	116-10215	—
PK30	24V/1,5A	116-10216	—

MONOVOLT PK60 und PK60-R = N+1 redundant: 60Watt			
PK60	3,3V/15A	116-10196	—
PK60	5V/12A	116-10063*	116-10074*
PK60	12V/5A	116-10064*	—
PK60	15V/4A	116-10065*	—
PK60	24V/2,5A	116-10066*	116-10077*
PK60-R	5V/12A	116-10128*	—
PK60-R	12V/5A	116-10219*	—
PK60-R	15V/4A	116-10220*	—
PK60-R	24V/2,5A	116-10129*	—

* EN60950, UL und cUL zertifiziert - certified

MONOVOLT PK 120: 120Watt			
Type	output	without Powerfail	with Powerfail
PK120	5V/20A	116-10069	116-10081
PK120	12V/10A	116-10070	116-10082
PK120	15V/8A	116-10071	—
PK120	24V/5A	116-10072	116-10084

Accessoires	
reduced height front panel: PK30	148-11002
reduced height front panel: PK60	148-10021
reduced height front panel: PK120	148-10019
DIN 41612 - mating connector	17-10115
coding keys :pack10	17-10064

TECHNICAL DATA

MONO PK30	30W Single output	V1	V1	V1
Output voltage	5V	12V	24V	
Adjustment range	4,85–5,5V	12–15V	22–26V	
Output nominal current	6A	2,5A	1,5A	
Ripple at full load	<40m _{VPP}	<20m _{VPP}	<20m _{VPP}	
Line regulation (100% IOUT)	<0,2%	<0,02%	<0,02%	
Load regulation static (10...90%IOUT)	<0,2%	<0,5%	<0,5%	
Response time (10...90%IOUT)	<1ms	<1ms	<1ms	
Output current limit	>6,5A	>2,6A	>1,5A	
Short circuit protection	continuously, automatic restart			
Overvoltage protection (OVP)	6-6,7V	—	—	
Powerfail signal (at full load >6ms)	—	—	—	
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	1W/°C ab 55°C	—	1W/°C above 55°C	

TECHNICAL DATA

MONO PK60	60W Single output	V1	V1	V1	V1	V1
Output voltage	3,3V	5V	12V	15V	24V	
Adjustment range	1,8-3,5V	4,5-5,5V	11-13V	13,5-16,5V	22-26V	
Output nominal current	15A	12A	5A	4A	2,5A	
Ripple at full load	<40m _{VPP}	<40m _{VPP}	<40m _{VPP}	<40m _{VPP}	<40m _{VPP}	
Line regulation (100% IOUT)	<0,3%	<0,3%	<0,2%	<0,2%	<0,2%	
Load regulation static (10...90%IOUT)	<0,2%	<0,2%	<0,2%	<0,2%	<0,2%	
Response time (10...90%IOUT)	<0,8ms	<0,5ms	<0,5ms	<0,5ms	<1ms	
vOutput current limit	>15,5A	>12,5A	>5,3A	>4,3A	>2,7A	
Short circuit protection	continuously, automatic restart					
Overvoltage protection (OVP) adjustable	2,8-5,0V	5,5-6,0V	13,2-15V	16,5-18V	26,4-30V	
Powerfail signal (at full load >6ms)	—	V1<4,8V	—	—	V1<23V	
Temperature coefficient	0,02%/°C	0,02%/°C	0,02%/°C	0,02%/°C	0,02%/°C	
Output regulation with sense max.	0,5V max.	0,5V max.	0,5V max.	0,5V max.	0,5V max.	
Derating	1,6W/°C ab 45°C - 1,6W/°C above 45°C					

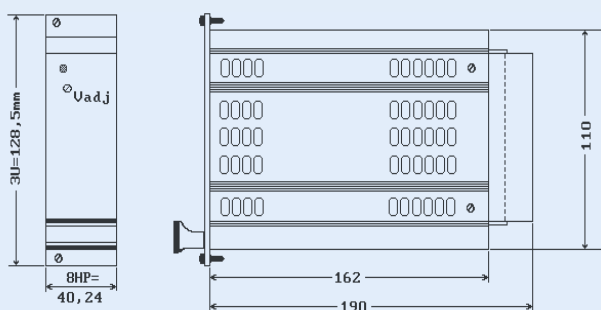
MONO PK60-R FOR N+1 REDUNDANT SYSTEMS

60W Single	output redundant	V1	V1	V1	V1
Output voltage (fix)	5V±1%	12V±1%	15V±1%	24V±1%	
Output nominal current	12A	5A	4A	2,5A	
Ripple at full load	<40m _{VPP}	<40m _{VPP}	<40m _{VPP}	<40m _{VPP}	
Output current limit	>12,5A	>5,3A	>4,3A	>2,7A	
Short circuit protection	continuously, automatic restart				
Overvoltage protection (OVP)	6,0-6,7V	13,2-15V	16,5-18V	27-29V	
DC-FAIL signal	at unit failure (open collector, 20mA, <0,4V)				
Line regulation (100% IOUT)	<0,2%	<0,2%	<0,2%	<0,2%	
Load regulation static (10...90%IOUT)	<0,2%	<0,2%	<0,2%	<0,2%	
Response time (10...90%IOUT)	<1ms	<1ms	<1ms	<1ms	
Temperature coefficient	0,02%/°C	0,02%/°C	0,02%/°C	0,02%/°C	
Current share with ASF signal: ±5% @ IOUT	>2,4A	>1,0A	>0,8A	>0,5A	
Output regulation with sense max.	0,5V max.	0,5V max.	0,5V max.	0,5V max.	
Derating	2W/°C ab 55°C - 2W/°C above 55°C				

TECHNICAL DATA

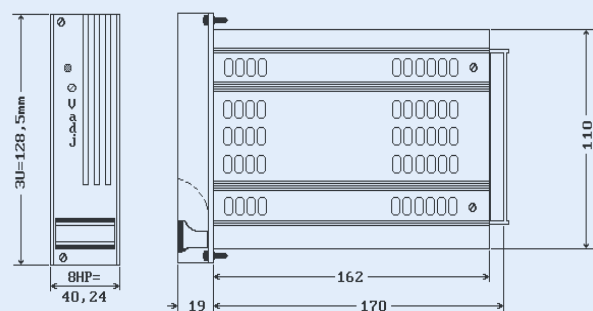
MONO PK120	120W Single output	V1	V1	V1	V1
Output voltage		5V	12V	15V	24V
Adjustment range		4,5-5,5V	10,8-13,2V	13,5-16,5V	21,6-26,4V
Output nominal current		20A	10A	8A	5A
Ripple at full load		<40m _{VPP}	<40m _{VPP}	<40m _{VPP}	<40m _{VPP}
Line regulation (100% IOUT)		<0,2%	<0,2%	<0,2%	<0,2%
Load regulation static (10...90% IOUT)		<0,2%	<0,2%	<0,2%	<0,2%
Response time (10...90% IOUT)		<0,5ms	<0,5ms	<0,5ms	<0,5ms
Output current limit		>22A	>11A	>8,8A	>5,5A
Short circuit protection		continously, automatic restart			
Overvoltage protection (OVP) adjustable		5,0-7,0V	12-16,5V	15-21V	27-29V
Powerfail signal (at full load >6ms)		>4,8V	>11,5V	>14,4V	>23,0V
Temperature coefficient		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.
Derating		2,4W/°C ab 55°C - 2,4W/°C above 55°C			

PK30, PK60

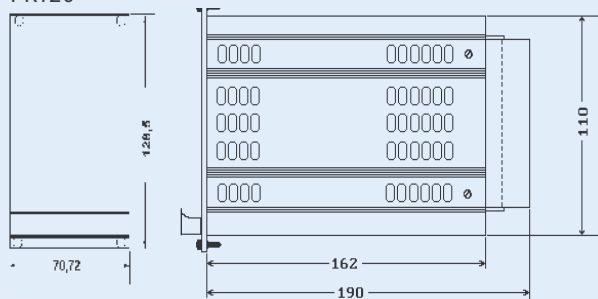


PK30, PK60, PK60R 850g

PK 60-R

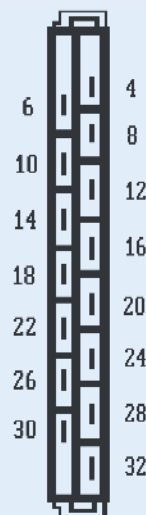


PK120



PK120 1350g

H15 connector



PIN	Function			
	PK30	PK60	PK60-R	PK120
4	+Vout	+Vout	+Vout	+Vout
6	+Vout	+Vout	+Vout	+Vout
8	-Vout	-Vout	-Vout	-Vout
10	-Vout	-Vout	-Vout	-Vout
12*	+SENSE	+SENSE	+SENSE	+SENSE
14*	-SENSE	-SENSE	-SENSE	-SENSE
16*	—	Ext I/O+	—	Ext I/O+
18	—	PF Q	DC FAIL/	PF Q
20	—	—	ASF	—
22	—	PF Q/	—	PF Q/
24	—	Ext I/O-	—	Ext I/O-
26	—	—	—	—
28	N	N	N	N
30	L	L	L	L
32	PE	PE	PE	PE

* Sense lines must be connected. For maximum compensation for supply lead voltage drop they should be connected as close to the load as possible

30 TO 60 WATT SWITCHED MODE AC/DC PLUG-IN POWER SUPPLIES WITH TWO OUTPUTS IN 3U/8HP EUROCASSETTES FOR USE IN 19" SUBRACKS TO DIN 41494

FEATURES:

- High regulation accuracy
- All voltages individually adjustable
- Compact rugged design in stable aluminium cassette
- EN60950, 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

SPECIFICATION

INPUT SPECIFICATION

Input Data	
Input voltage (switchable)	94—253 VAC
Input frequency	47-63Hz
Inrush surge current limit	NTC ; by NTC
Input voltage spike limit	VDR; by VDR
Hold-up time	>20 msec (at nominal values)
Efficiency	typ. > 80%
Safety: CE marking according to low voltage directive 73/23/EEG	
Safety according to	EN60950, UL1950
EMC: CE marking according EMC directive 89/336/EEG	
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 aluminium cassette with cooling cutouts



PK Bivolt Series

ORDER INFORMATION

BIVOLT PK30: 30 Watt

Type	Size	Output	Order-Code
PK30	3U x 8HP	±12 - 15V/1A	116-10015 *

BIVOLT PK60: 60 Watt

PK60	3U x 8HP	±12-15V/2A	116-10022 **
PK60	3U x 8HP	5V/6A;12-15V/2A	116-10024 **
PK60	3U x 8HP	5V/6A ; 24V/1,5A	116-10025 **
PK60	3U x 8HP	12-15V/2A ; 24V/1,5A	116-10080 **

Accessoires

reduced height frontpanel (PK30)	148-11002
reduced height frontpanel (PK60)	148-10011
DIN 41612 - mating connector	17-10115
coding keys pack 10	17-10064

* EN60950 and UL certified

** EN60950 certified

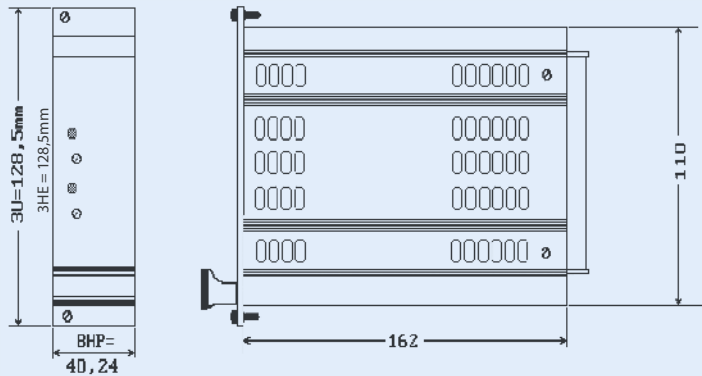
TECHNICAL DATA BIVOLT PK SERIES

BIVOLT PK30 30W Dual output	V1, V2
Output voltage	±12 – 15V
Output nominal current	1A
Ripple at full load	<3mVPP
Line regulation (100% IOUT)	<0,02%
Load regulation static (10...90%IOUT)	<0,5%
Response time (10...90%IOUT)	<10 µs
Output current limit	>1,1A
Short circuit protection	continuously, automatic restart
Temperature coefficient	0,02%/°C
Derating	1W/°C ab 55°C - 1W/°C above 55°C

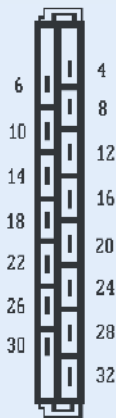
	116-10022	116-10024		116-10025		116-10080	
BIVOLT PK60 60W Dual output	V1, V2	V1	V2	V1	V2	V1	V2
Output voltage	±12-15V	5V	12-15V	5V	24V	12-15V	24V
Adjustment range	±12-15V	4,5-5,5V	12-15V	4,5-5,5V	22-26V	12-15V	22-26V
Output nominal current	2A, 2A	6A	2A	6A	1,5A	2A	1,5A
Ripple at full load	<20m _{VPP}	<40m _{VPP}		<40m _{VPP}		<40m _{VPP}	
Line regulation (100% IOUT)	<0,2%	<0,2%		<0,2%		<0,2%	
Load regulation static (10...90%IOUT)	<0,5%	<0,2%	<0,5%	<0,2%	<0,5%	<0,5%	
Response time (10...90%IOUT)	<1ms	<1ms		<1ms		<1ms	
Output current limit	>2,2A	>6,5A	>2,2A	>6,5A	>1,5A	>2,2A	>1,5A
Short circuit protection	continuously, automatic restart						
Overvoltage protection (OVP) fix	±16,5-19V	6-6,4V	16,5-19V	6-6,4V	26,4-31V	16,5-19V	26,4-31V
Powerfail signal (at full load >6ms)	>4,8V	>11,5V		>14,4V		>23,0V	
Temperature coefficient	0,02%/°C	0,02%/°C		0,02%/°C		0,02%/°C	
Output regulation with sense max.	—	0,5V max	—	0,5V max.	—	—	
Derating	1,6W/°C ab 55°C - 1,6W/°C above 55°C						

MECHANICAL DETAILS & CONNECTOR PINNING

PK30, PK60
PK30, PK60: 850 g



H15 connector



CONNECTOR PINNING

PIN	Function	PK60 A	PK60 B	PK60 C	PK60 D
	PK30				
4	—	—	+5V	+5V	+12-15V
6	—	—	+5V	+5V	+12-15V
8	—	—	GND 1	GND 1	GND 1
10	—	—	GND 1	GND 1	GND 1
12 *	—	—	+SENSE	+SENSE	—
14 *	—	—	-SENSE	-SENSE	—
16	—	—	—	—	—
18	+12-15V	+12-15V	—	—	—
20	GND	GND	+12-15V	+24V	+24V
22	-12-15V	-12-15V	GND 2	GND 2	GND2
24	—	—	—	—	—
26	—	—	—	—	—
28	N	N	N	N	N
30	L	L	L	L	L
32	PE	PE	PE	PE	PE

* Sense lines must be connected. For maximum compensation for supply lead voltage drop they should be connected as close to the load as possible.

60 TO 120 WATT SWITCHED MODE AC/DC PLUG-IN POWER SUPPLIES WITH THREE OUTPUTS IN 3U EUROCASSETTES FOR USE IN 19" SUBRACKS TO DIN 41494

FEATURES:

- 3 high stability outputs, all adjustable
- Safety approvals to UL, cUL and EN60950
- 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

SPECIFICATION

Input Data	
Input voltage (switchable)	110/230 VAC
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%
Safety: CE marking according to low voltage directive 73/23/EEG	
Safety according to	EN60950, UL1950
EMC: CE marking according EMC directive 89/336/EEG	
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 aluminium cassette with cooling cutouts

ORDER INFORMATION

Trivolt PK60: 3U x 8HP, 60 Watt				
Type	Outputs			Code
	V1	V2	V3	
PK60	5V/6A	+12-15V/1A	-12-15V/1A	116-10018 *
PK60-PF	5V/6A	+12-15V/1A	-12-15V/1A	116-10103 **
PK60	5V/6A	+12-15V/2A	-12-15V/0,5A	116-10101 *
PK60-PF	5V/6A	+12-15V/2A	-12-15V/0,5A	116-10102 **

Trivolt PK120: 3U x 14HP, 120Watt				
PK120	5V/12A	+12-15V/2A	-12-15V/2A	116-10046 **
PK120-PF	5V/12A	+12-15V/2A	-12-15V/2A	116-10078 **

PF = Powerfail-Signal

* EN60950 and UL certified

** EN60950 - certified

Accessoires	Code
reduced height front panel: PK60	148-11000
reduced height front panel: PK120	148-10020
DIN 41612 - mating connector	17-10115
coding keys pack 10	17-10064



PK Trivolt Series

TECHNICAL DATA

	116-10018 / 116-10103			116-10101 / 116-10102		
TRI PK60 60W Triple output	V1	V2	V3	V1	V2	V3
Output voltage	5V	+12V	-12V	5V	+12V	-12V
Adjustment range	4,5-5,5V	+12-15V	-12-15V	4,5-5,5V	+12-15V	-12-15V
Output nominal current 1)	6A	1A	1A	6A	2A	0,5A
Ripple at full load	<40m _{VPP}	<3m _{VPP}	<3m _{VPP}	<40m _{VPP}	<3m _{VPP}	<3m _{VPP}
Output current limit	>6,5A	>1,1A	>1,1A	>6,5A	2,1A	>0,6A
Short circuit protection	continuously, automatic restart					
Overvoltage protection (OVP) fix	6,0-6,7V	—	—	6,0-6,7V	—	—
Powerfail signal (at full load >6ms)	<4,8V	—	—	<4,8V	—	—
Line regulation (100% IOUT)	<0,2%	<0,02%	<0,02%	<0,2%	<0,02%	<0,02%
Load regulation static (10...90%IOUT)	<0,2%	<0,2%	<0,2%	<0,5%	<0,5%	<0,5%
Response time (10...90%IOUT)	<1ms	<10µs	<10µs	<1ms	<10µs	<10µs
Temperature coefficient	0,02%/°C			0,02%/°C		
Output regulation with sense max.	0,5V	—	—	0,5V	—	—
Derating	1,6W/°C ab 55°C - 1,6W/°C above 55°C					

TRI PK120 120W Triple output	V1	V2	V3
Output voltage	5V	+12V	-12V
Adjustment range	4,5-5,5V	+12-15V	-12-15V
Output nominal current	12A	2A	2A
Ripple at full load	<40m _{VPP}	<20m _{VPP}	<20m _{VPP}
Line regulation (100% IOUT)	<0,2%	<0,02%	<0,02%
Load regulation static (10...90%IOUT)	<0,2%	<0,2%	<0,2%
Response time (10...90%IOUT)	<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 adjustable	+16,5-19V fix	-16,5-19V fix
Powerfail signal (at full load >6ms)	>4,8V	—	—
Temperature coefficient	0,02%/°C	0,02%/°C	0,02%/°C
Output regulation with sense	0,5V max.	—	—
Derating	4W/°C ab 55°C - 4W/°C above 55°C		

MECHANICAL DETAILS & CONNECTOR PINNING

PK60

weight: PK60: 850g

PK120

weight: PK120: 1350g

H15 Connector

PIN	Function	PK60	PK120
4	+5V	+5V	+5V
6	+5V	+5V	+5V
8	GND1	GND1	GND1
10	GND1	GND1	GND1
12*	+SENSE	+SENSE	+SENSE
14*	-SENSE	-SENSE	-SENSE
16	PF Q/	PF Q/	PF Q/
18	+12-15V	+12-15V	+12-15V
20	GND 2/3	GND 2/3	GND 2/3
22	-12-15V	-12-15V	-12-15V
24	—	—	—
26	—	—	—
28	N	N	N
30	L	L	L
32	PE	PE	PE

* Sense lines must be connected. For maximum compensation for supply lead voltage drop they should be connected as close to the load as possible.

75 WATT SWITCHED MODE AC/DC PLUG-IN POWER SUPPLY WITH 3 OUTPUTS IN 3U EUROCASSETTES FOR USE IN 19" SUBRACKS TO DIN 41494

FEATURES:

- 3 high stable outputs, all individually adjustable
- Universal 115/230VAC input
- Two 12—15V linear outputs for currents up to 2A
- Overvoltage protection (OVP), sense operation
- Powerfail signal
- Compatible to Trivolt PK60, VP80-3 and EC50
- Coded H15 connector, VERO standardised pinning
- Stable aluminium extrusion cassette
- No projecting heatsink
- 24 months warranty

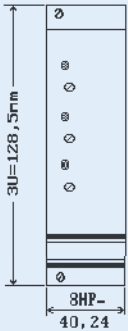
A 75W power supply as expansion of our PK Series, now with 115/230V universal input, with 3 outputs 5V/8A and ±12—15V in linear quality up to 2A load, all with LED and individually adjustable. 79% efficiency eliminates the need of projecting heatsinks. This unit replaces many different variants.

SPECIFICATION

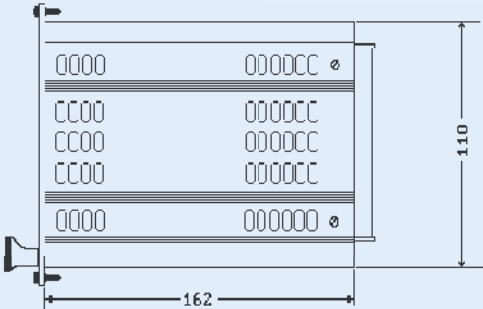
Input Data	
Input voltage	94—253VAC
Hold-up time	>30 msec bei/at 230V, >10ms bei/at 115V
Efficiency at full load	typ. 79%
Power factor PFC	> 0,6
Safety: CE marking according to low voltage directive 73/23/EEG	
Safety according to	EN60950-1, UL60950-1
EMC: CE marking according EMC directive 89/336/EEG	
EMI conducted & radiated noise	EN 55022/B (0,15—30MHz; 30—1000MHz)
EMI immunity	EN 61000-6-2
Operating temperature	0°C...+70°C
Storage temperature	-25°C...+85°C
Relative humidity	5...95% without condensation
Case material / finish	Clear anodised aluminium cassette 3U/8HP

MECHANICAL DETAILS & CONNECTOR PINNING

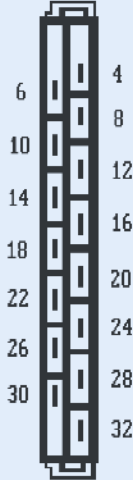
PK75



weight: PK75: 850g



H15 connector



PIN	Function
	PK75
4	+5V
6	+5V
8	GND1
10	GND1
12*	+SENSE
14*	-SENSE
16	PF Q/
18	+12-15V
20	GND 2/3
22	-12-15V
24	—
26	—
28	N
30	L
32	PE

* Sense lines must be connected. For maximum compensation for supply lead voltage drop they should be connected as close to the load as possible.



PK Trivolt Series

Type	Outputs	Ordercode
TRIVOLT PK75	5V/8A; +12V—15V/2A; -12V—15V/1A	116-410018
PK75	Reduced height frontpanel PK75	148-11000
DIN 41612	Mating connector coded to H15 to DIN 41612	17-10115
Coding keys	(pack per 10)	17-10064

VP-Series: 20W AC/DC Power Supply

20 WATT SWITCHED MODE AC/DC PLUG-IN POWER SUPPLIES IN 3U/4HP MODULE FOR 19" SUBRACKS TO DIN 41494

FEATURES:

- Wide input range 94-253VAC
- Single DC output
- 5V, 12-15V & 24V output versions
- Compact 3Ux4HPx160mm form factor
- Short circuit protection
- CE marking (to EMC & LVD Directive)
- Power Fail Signal
- Safety certified to EN60950
- 24 month warranty

SPECIFICATION:

INPUT

AC Input Voltage		93-253VAC, 47-63Hz
Efficiency	VP20-1A	Typ.75%
at full load	VP20-1B	Typ.77%
	VP20-1C	Typ.79%
Power factor		>0.6%
Output (see ordering information for power ratings)		
Ripple (full load)		20mVpp

REGULATION

Line Regulation	0.1%	
Load Regulation	0.1%	
Transient Response	0.4mS	
Voltage Stabilisation	0.5V max.	

PROTECTION AND CONTROL

O/P Current Limit	116-40111	>4.2A
	116-40112	>1.5A
	116-40113	>0.85A
O/P Voltage	116-40111	5.85-6.25V
Protection (OVP)	116-40112	16.5-18V
	116-40113	16.5-18V
Short Circuit Protection	Yes	
Input current limitation	By NTC resistor	
Input voltage limitation	By VDR resistor	
Hold-up time	60ms@230V, 10mS@115V	
Powerfail signal	5v only, >5mS	

SAFETY (CE-MARK ACCORDING LVD)

Dielectric strength	EN60950-1	
Protection Class I to VDE0100	Mating connector with leading earth pin	

EMI (CE-MARK ACCORDING EMC-DIRECTIVE)

Emission	EN55022/B (0.15-30MHz; 30-1000MHz)	
Immunity	EN 61000-6-2	
ESD	EN 61000-4-2	
Burst	EN 61000-4-4	
Surge	EN 61000-4-5	
HF-Injection	EN 61000-4-6	
Line voltage drops	EN 61000-4-11	

ENVIRONMENTAL

Operating Temperature	0-70 Deg.C	
Derating	2.5%/Deg.C at 50 Deg.C	
Storage Temperature	-25 Deg.C - +85 Deg.C	
Relative Humidity	5-95%, non-condensing	



VP20 AC/DC Power Supply

The VP20 is a primary switched mode plug-in power supply for 19" subrack systems according to DIN 41494 in a 3U/4HP cassette. The power supply is guided on left hand side. The electrical connection is via an H15 connector according to DIN 41612 in position 1.

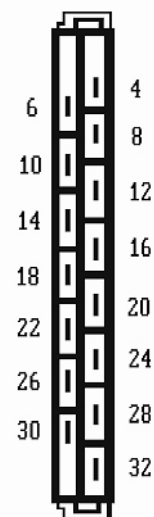
ORDERING INFORMATION:

Type	Output (adjustable)	Ordercode
VP20	5V/4A	116-40111
VP20	12-15V/1.4A	116-40112
VP20	24V/0.8A	116-40113

ELECTRICAL CONNECTIONS (DIN 41612 H15 MALE CONNECTOR)

PIN FUNCTION

4	+V1
6	+V1
8	GND V1
10	GND V1
12	+SENSE
14	-SENSE
16	PF/*
18	NC
20	NC
22	NC
24	NC
26	NC
28	N
30	L
32	PE



Note: Sense lines must be connected

VP-Series: 40W AC/DC Power Supply

**40 WATT SWITCHED MODE AC/DC PLUG-IN POWER SUPPLIES
IN 3U/4HP/160MM MODULE FOR 19" SUBRACKS TO DIN 41494**

FEATURES:

- Wide input range 94-253VAC
- Triple DC output
- 3 versions available
- CE marking (to EMC & LVD Directive)
- With or without front panel
- Power Fail Signal
- Compact 3Ux4HPx160mm size
- Short circuit protection
- Safety certified to EN60950
- 24 month warranty



VP40 AC/DC Power Supply

ORDERING INFORMATION:

Type	Outputs (adjustable)	Ordercode (With front panel)	Ordercode (No front panel)
VP40	5V/4A, +12-15V/0.6A, -12-15V/0.6A	116-40311	116-40301
VP40	+12-15V/1.4A, +12-15V/0.6A, -12-15V/0.6A	116-40312	116-40302
VP40	24V/0.8A, +12-15V/0.6A, -12-15V/0.6A	116-40313	116-40303
Mating H15 Connector (Faston Blades)		17-10115	

SPECIFICATION:

INPUT	116-40311	116-40312	116-40313
AC Input Voltage	93-253VAC, 47-63Hz		
Efficiency at full load	Typ.75%	Typ.77%	Typ.79%
Power factor	>0.6%		

OUTPUT (SEE ORDERING INFORMATION FOR POWER RATINGS)

Ripple (full load)	V1 = 20mVpp, V2 = 5mVpp, V3 = 5mVpp		
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REGULATION

Line Regulation	V1 = 0.1%, V2 = 0.02%, V3 = 0.02%		
Load Regulation	V1 = 0.1%, V2 = 0.4%, V3 = 0.4%		
Transient Response	V1 = 0.4mS, V2 = 20uS, V3 = 20uS		
Voltage Stabilisation	V1 = 0.5V maximum, V2 = N/A, V3 = N/A		

PROTECTION AND CONTROL

O/P Current Limit	V1 >4.2A	V1 >1.5A	V1 >0.85A
	V2 >0.8A	V2 >0.8A	V2 >0.8A
	V3 >0.8A	V3 >0.8A	V3 >0.8A
O/P Voltage Protection (OVP)	V1 = 5.85-6.25V	V1 = 16.5-18V	V1 = 26.4-31V
Short Circuit Protection	Yes		
Input current limitation	By NTC resistor		
Input voltage limitation	By VDR resistor		
Hold-up time	60ms@230V, 10mS@115V		
Powerfail signal	5mS before V1<4.8V	Optional	Optional

SAFETY (CE-MARK ACCORDING LVD)

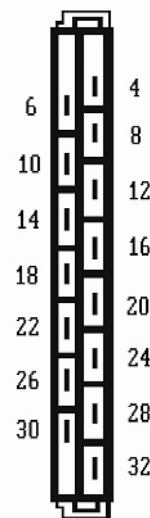
Dielectric strength	EN60950-1
Protection Class I to VDE0100	Mating connector with leading earth pin

EMI (CE-MARK ACCORDING EMC-DIRECTIVE)

Emission	EN55022/B (0.15-30MHz; 30-1000MHz)
Immunity	EN 61000-6-2
ESD	EN 61000-4-2
Burst	EN 61000-4-4
Surge	EN 61000-4-5
HF-Injection	EN 61000-4-6
Line voltage drops	EN 61000-4-11
Environmental	
Operating Temperature	0-70 Deg.C
Derating	2.5%/Deg.C at 50 Deg.C
Storage Temperature	-25 Deg.C - +85 Deg.C
Relative Humidity	5-95%, non-condensing

ELECTRICAL CONNECTIONS (DIN 41612 H15 MALE CONNECTOR)

Pin	Function
4	+V1
6	+V1
8	GND V1
10	GND V1
12	+SENSE
14	-SENSE
16	PF/*
18	+V2
20	GND V2/V3
22	-V3
24	nc
26	nc
28	N
30	L
32	PE



Note: Sense lines must be connected

VP-Series: 50W AC/DC Power Supply

50 WATT SWITCHED MODE AC/DC PLUG-IN POWER SUPPLIES IN 3U/4HP MODULE FOR 19" SUBRACKS TO DIN 41494

FEATURES:

- 115/230v Switchable AC Input
- Single DC output
- 5V, 12-15V & 24V output versions
- Compact 3Ux4HPx160mm form factor
- Short circuit protection
- CE marking (to EMC & LVD Directive)
- Safety certified to EN60950
- 24 month warranty

SPECIFICATION:

INPUT

AC Input Voltage	115V/230V Switchable
Input Frequency	47-63Hz
Efficiency	VP50-1A Typ.82%
at full load	VP50-1B Typ.84%
	VP50-1C Typ.85%
Power factor	>0.6%

OUTPUT (SEE ORDERING INFORMATION FOR POWER RATINGS)

Ripple (full load)	20mVpp
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REGULATION

Line Regulation	0.1%
Load Regulation	0.1%
Transient Response	0.4mS
Voltage Stabilisation	0.5V max.

PROTECTION AND CONTROL

O/P Current Limit	116-40151	>10A
	116-40152	3.6-5.5A
	116-40153	>2.1A
O/P Voltage	116-40151	5.85-6.25V
Protection (OVP)	116-40152	16.5-18V
	116-40153	26.4-31V

Short Circuit Protection	Yes
Input current limitation	By NTC resistor
Input voltage limitation	By VDR resistor
Hold-up time	30ms
Powerfail signal	Optional

SAFETY (CE-MARK ACCORDING LVD)

Dielectric strength	EN60950-1
Protection Class I to VDE0100	Mating connector with leading earth pin

EMI (CE-MARK ACCORDING EMC-DIRECTIVE)

Emission	EN55022/B (0.15-30MHz; 30-1000MHz)
Immunity	EN 61000-6-2
ESD	EN 61000-4-2
Burst	EN 61000-4-4
Surge	EN 61000-4-5
HF-Injection	EN 61000-4-6
Line voltage drops	EN 61000-4-11

ENVIRONMENTAL

Operating Temperature	0-70 Deg.C
Derating	2.5%/Deg.C at 50 Deg.C
Storage Temperature	-25 Deg.C - +85 Deg.C
Relative Humidity	5-95%, non-condensing



VP50 AC/DC Power Supply

The VP50 is a primary switched mode plug-in power supply for 19" subrack systems according to DIN 41494 in a 3U/4HP cassette. The power supply is guided on left hand side. The electrical connection is via an H15 connector according to DIN 41612 in position 1.

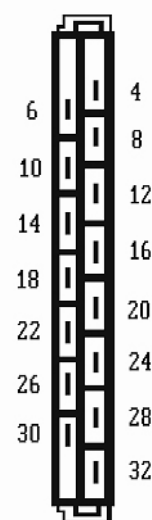
ORDERING INFORMATION:

Type	Output (adjustable)	Ordercode
VP50	5V/10A	116-40151
VP50	12V/4.2A-15V/3.3A	116-40152
VP50	24V/2.1A	116-40153
Mating H15 Connector (Faston Blades)		17-10115

ELECTRICAL CONNECTIONS (DIN 41612 H15 MALE CONNECTOR)

Pin	Function
4	+V1
6	+V1
8	GND V1
10	GND V1
12	+SENSE
14	-SENSE
16	PF/*
18	nc
20	nc
22	nc
24	Ext. ON/OFF*
26	nc
28	N
30	L
32	PE

Note: Sense lines must be connected



80 WATT SWITCHED MODE AC/DC PLUG-IN POWER SUPPLIES IN 3U/8HPEUROCASSETTES FOR USE IN 19" SUBRACKS TO DIN 41494

FEATURES:

- 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 EN60950, UL, 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.

SPECIFICATION

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	up to 83%
Safety: CE marking according to low voltage directive 73/23/EEG	
Safety according to	EN60950, IEC 950, UL1950, cUL
EMC: CE marking according EMC directive 89/336/EEG	
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	162x32,9x100mm (3U/8HP) with Frontpanel
Weight:	650 g



VP80-Series: Power Supply

Type	Outputs	Ordercode with frontpanel
VP80	5V 5V/16A	116-20015
VP80	12V 12V/6,7A	116-20016
VP80	15V 15V/5,3A	116-20017
VP80	24V 24V/3,3A	116-20018
VP80-R	5V 5V/16A	116-20047
VP80-R	12V 12V/6,7A	116-20048
VP80-R	15V 15V/5,3A	116-20049
VP80-R	24V 24V/3,3A	116-20050
VP80	+12V/5A; -12V/2A	116-20019
VP80	+15V/4A; -15V/2A	116-20020
VP80	+5V/12A; +12V/2,5A	116-20021
VP80	+5V/5A; +24V/2,5A	116-20022
VP80	+12V/2A; +24V/2,5A	116-20023
VP80	5V/12A; ±12V/1A	116-20024
VP80	5V/12A; ±15V/1A	116-20025
VP80	5V/12A; +12V/4A; -12V/1A	116-20026
VP80	5V/12A; +15V/3A; -15V/1A	116-20027
VP80	+3,3V/3A; +5V/12A; +12V/4A; -12V/1A	116-20028
Mating connector coded H15 to DIN 41612 with faston pins		17-10115
Coding keys (pack per 10)		17-10064

VP80 Single output	V1	V1	V1	V1
Output voltage	5V	12V	15V	24V
Adjustment range	4,8—5,5V	11—13V	14—16V	22—28V
Output nominal current 1)	16A	6,7A	5,3A	3,3A
Ripple at full load	<40m _{VPP}	<40m _{VPP}	<40m _{VPP}	<40m _{VPP}
Output current limit	>16,1A	>6,75A	>5,35A	>3,35A
Short circuit protection	electronic, automatic restart			
Overvoltage protection (OVP)	6,0—6,7V	15,5—18V	17—21V	27—32V
Powerfail signal (at full load >6ms)	V1<4,8V	V1<11,5V	V1<14,4V	V1<23V
Line regulation (100% IOUT)	<0,1%	<0,1%	<0,1%	<0,1%
Load regulation static (10...90%IOUT)	<0,1%	<0,1%	<0,1%	<0,1%
Response time (10...90%IOUT)	<0,5ms	<0,2ms	<0,2ms	<0,1ms
Output regulation with sense max.	0,5V max.	0,5V max.	0,5V max.	0,5V max.
Derating	2W/°C over 45°C at natural convection; 4W/°C over 60°C at enhanced cooling 1 m/s			

VP80-R for N+1 redundant systems

80W Single output redundant	V1	V1	V1	V1
Output voltage	5V	12V	15V	24V
Adjustment range	4,8—5,5V	11—13V	14—16V	22—26V
Output nominal current 1)	16A	6,7A	5,3A	3,3A
Ripple at full load	<40m _{VPP}	<40m _{VPP}	<40m _{VPP}	<40m _{VPP}
Output current limit	>16,1A	>6,75A	>5,35A	>3,35A
Short circuit protection	electronic, automatic restart			
Overvoltage protection (OVP)	6,0—6,7V	15,5—18V	17—21V	27—32V
DC-FAIL signal	at unit failure (open collector, 20mA, <0,4V)			
Line regulation (100% IOUT)	<0,1%	<0,1%	<0,1%	<0,1%
Load regulation static (10...90%IOUT)	<0,2%	<0,2%	<0,2%	<0,2%
Response time (10...90%IOUT)	<1ms	<0,5ms	<0,4ms	<0,1ms
Current share with ASF signal: ±5% @ IOUT	>3,2A	>1,3A	>1,0A	>0,6A
Output regulation with sense max.	0,5V max.	0,5V max.	0,5V max.	0,5V max.
Derating	2W/°C over 45°C at natural convection; 4W/°C over 60°C at enhanced cooling 1 m/s			

VP80 Dual output	116-20019		116-20020		116-20021	
80W Dual output	V1	V2	V1	V2	V1	V2
Output voltage	+12V	-12V	+15V	-15V	+5V	+12V
Adjustment range	11,8—13V	fix	14,8—16V	fix	4,8—5,5V	fest
Output nominal current 1)	5A	2A	4A	2A	12A	2A
Ripple at full load	<40m _{VPP}	<40m _{VPP}	<40m _{VPP}	<40m _{VPP}	<40m _{VPP}	<40m _{VPP}
Output current limit	>5,01A	>2,01A	>4,01A	>2,01A	>12,1A	>2,01A
Short circuit protection	electronic, automatic restart					
Overvoltage protection (OVP)	15,5—18V	—	17—21V	—	6,0—6,7V	—
Powerfail signal (at full load >6ms)	—	—	—	—	V1<4,8V	—
Line regulation (100% IOUT)	<0,1%	<0,1%	<0,1%	<0,1%	<0,1%	<0,1%
Load regulation static (10...90%IOUT)	<0,5%	<1,5% 2)	<0,5%	<1,5% 2)	<0,2%	<1,5% 2)
Response time (10...90%IOUT)	<1ms	<1ms	<1ms	<1ms	<1ms	<1ms
Output regulation with sense max.	—	—	—	—	—	—
Derating	2W/°C over 45°C at natural convection; 4W/°C over 60°C at enhanced cooling 1 m/s					

VP80-2	116-20022		116-20023	
80W Dual output	V1	V2	V1	V2
Output voltage	+5V	+24V	+12V	+24V
Adjustment range	fest	22-26V	fest	22-26V
Output nominal current 1)	5A	2,7A	2A	2,5A
Ripple at full load	<40m _{VPP}	<40m _{VPP}	<40m _{VPP}	<40m _{VPP}
Output current limit	>5,01A	>2,71A	>2,01A	>2,51A
Short circuit protection	electronic, automatic restart			
Overvoltage protection (OVP)	6,0—6,7V	—	—	—
Powerfail signal (at full load >6ms)	V1<4,8V	—	—	—
Line regulation (100% IOUT)	<0,1%	<0,1%	<0,1%	<0,1%
Load regulation static (10...90%IOUT)	<1,5%	<0,5% 2)	<1,5%	<0,5% 2)
Response time (10...90%IOUT)	<1ms	<1ms	<1ms	<1ms
Output regulation with sense max.	0,5V max.	—	0,5V max.	—
Derating	2W/°C over 45°C at natural convection; 4W/°C over 60°C at enhanced cooling 1 m/s			

1) maximum total output power: 80 Watt, see derating

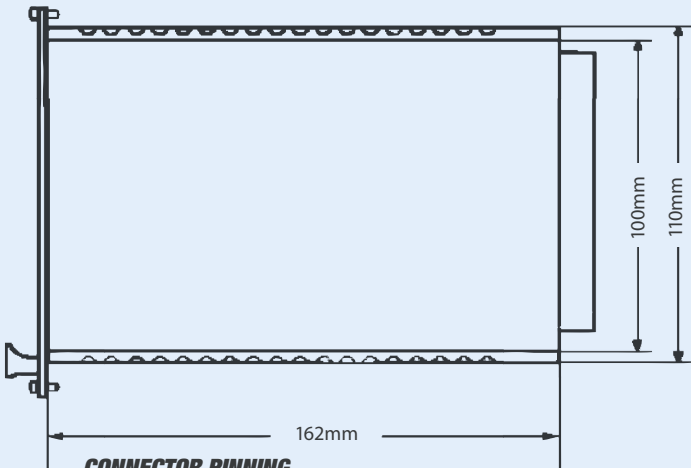
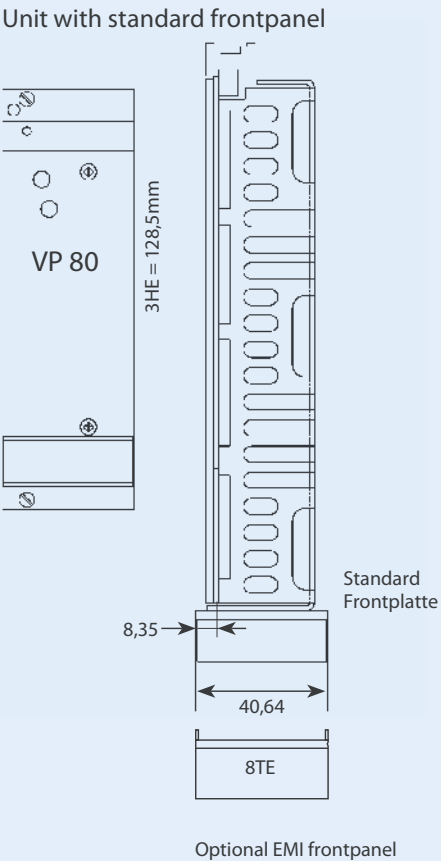
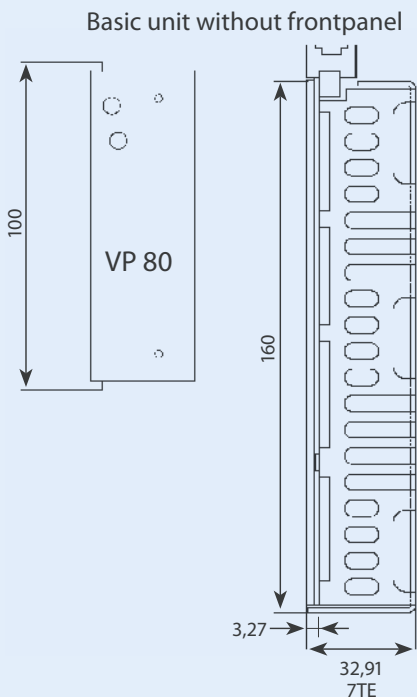
2) POUT V1 min. 5Watt

VP80 Triple output	116-20024	with sym. $\pm 12V$		116-20025	with sym. $\pm 15V$	
80W Triple output	V1	V2	V3	V1	V2	V3
Output voltage	5V	+12V	-12V	5V	+15V	-15V
Adjustment range	4,8—5,5V	fix	fix	4,8—5,5V	fix	fix
Output nominal current 1)	12A	1A	1A	12A	1A	1A
Ripple at full load	$<40m_{VPP}$	$<10m_{VPP}$	$<10m_{VPP}$	$<40m_{VPP}$	$<10m_{VPP}$	$<10m_{VPP}$
Output current limit	$>12,1A$	$>1,01A$	$>1,01A$	$>12,1A$	$>1,01A$	$>1,01A$
Short circuit protection	electronic, automatic restart					
Overvoltage protection (OVP)	6,0—6,7V	—	—	6,0—6,7V	—	—
Powerfail signal (at full load $>6ms$)	$V1 < 4,8V$	—	—	$V1 < 4,8V$	—	—
Line regulation (100% IOUT)	$<0,2\%$	$<0,2\%$	$<0,2\%$	$<0,2\%$	$<0,2\%$	$<0,2\%$
Load regulation static (10...90% IOUT)	$<0,5\%$	$<1,5\% 2)$	$<1,5\% 2)$	$<0,5\%$	$<1,5\% 2)$	$<1,5\% 2)$
Response time (10...90% IOUT)	$<1ms$	$<1ms$	$<1ms$	$<1ms$	$<1ms$	$<1ms$
Output regulation with sense max.	0,5V	—	—	0,5V	—	—
Derating	45°C at natural convection; 4W/°C over 60°C at enhanced cooling 1 m/s					

VP80 Triple output	116-20026	with strong +12V/4A		116-20027	with strong +15V/3A	
80W Triple output	V1	V2	V3	V1	V2	V3
Output voltage	+5V	+12V	-12V	+5V	+15V	-15V
Adjustment range	4,8—5,5V	fix	fix 4,8—5,5V	fix	fix	
Output nominal current 1)	12A	4A 1A	12A	3A	1A	
Ripple at full load	$<40m_{VPP}$	$<40m_{VPP}$	$<10m_{VPP}$	$<40m_{VPP}$	$<40m_{VPP}$	$<10m_{VPP}$
Output current limit	$>12,1A$	$>4,1A$	$>1,01A$	$>12,1A$	$>3,1A$	$>1,01A$
Short circuit protection	yes, electronic, automatic restart					
Overvoltage protection (OVP)	6,0—6,7V	—	—	6,0—6,7V	—	—
Powerfail signal (at full load $>6ms$)	$V1 < 4,8V$	—	—	$V1 < 4,8V$	—	—
Line regulation (100% IOUT)	$<0,2\%$	$<0,2\%$	$<0,2\%$	$<0,2\%$	$<0,2\%$	$<0,2\%$
Load regulation static (10...90% IOUT)	$<0,5\%$	$<\pm 4 2)$	$<1,5\% 2)$	$<0,5\%$	$<\pm 4\% 2)$	$<1,5\% 2)$
Response time (10...90% IOUT)	$<1ms$	$<1ms$	$<1ms$	$<1ms$	$<1ms$	$<1ms$
Output regulation with sense max.	0,5V	—	—	0,5V	—	—
Derating	2W/°C over 45°C at natural convection; 4W/°C over 60°C at enhanced cooling 1 m/s					

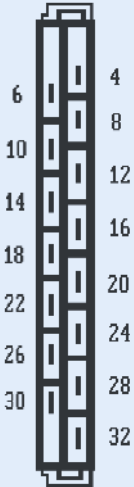
VP80 Quad output	116-20028 (for cPCI applications)			
80W quadruple output	V1	V2	V3	V4
Output voltage	+3,3V	+5V	+12V	12V
Adjustment range	fix	4,8—5,5V	fix	fix
Output nominal current 1)	3,0A	12A	4A	1A
Ripple at full load	$<20m_{VPP}$	$<40m_{VPP}$	$<40m_{VPP}$	$<10m_{VPP}$
Output current limit	$>3,01A$	$>12,1A$	$>4,1A$	$>1,01A$
Short circuit protection	electronic, automatic restart			
Overvoltage protection (OVP)	—	6,0—6,7V	—	—
Powerfail signal (at full load $>6ms$)	—	$V2 < 4,8V$	—	—
Line regulation (100% IOUT)	$<0,2\%$	$<0,2\%$	$<0,2\%$	$<0,2\%$
Load regulation static (10...90% IOUT)	$<\pm 4\%$	$<1\%$	$<1,5\% 3)$	$<1,5\% 3)$
Response time (10...90% IOUT)	$<1ms$	$<1ms$	$<1ms$	$<1ms$
Output regulation with sense max.	—	—	—	—
Derating	2W/°C over 45°C at natural convection; 4W/°C over 60°C at enhanced cooling 1 m/s			

MECHANICAL DETAILS, CONNECTOR PINNING



CONNECTOR PINNING

H15 CONNECTOR



PIN	Function							
	VP80 Single o/p	VP80-1R Single o/p	VP80 Dual o/p			VP80 Triple o/p		VP80 Quad o/p
			A+B	C+E	D	A+B	C+D	
4	+V1	+V1	—	+V1	+V1	+V1	+V1	+V2
6	+V1	+V1	—	+V1	+V1	+V1	+V1	+V2
8	Gnd V1	Gnd V1	—	Gnd V1	Gnd V1	Gnd V1	Gnd	Gnd
10	Gnd V1	Gnd V1	—	Gnd V1	Gnd V1	Gnd V1	Gnd	Gnd
12	+Sense	+Sense	—	+Sense	—	+Sense	+Sense	+V1
14	-SENSE	-Sense	—	-Sense	—	-Sense	-Sense	—
16	PF/	DC-Fail/	—	PF/	—	PF/	PF/	PF/
18	—	—	+V1	—	—	+V2	+V2	+V3
20	—	ASF	Gnd V1/V2	+V2	+V2	Gnd V2/V3	Gnd	Gnd
22	—	—	-V2	Gnd V2	Gnd V2	-V3	-V3	-V4
24	—	—	—	—	—	—	—	—
26	—	—	—	—	—	—	—	—
28	N	N	N	N	N	N	N	N
30	L	L	L	L	L	L	L	L
32	PE	PE	PE	PE	PE	PE	PE	PE

Attention: The sense lines must be connected. For maximum compensation of the voltage drops on the power cables they should be connected as close as possible to the load.

150 WATT SWITCHED MODE AC/DC PLUG-IN POWER SUPPLIES IN 3U/12HP-EUROCASSETTES FOR USE IN 19" SUBRACKS TO DIN 41494

FEATURES:

- 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 EN60950, 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.

SPECIFICATION

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	up to 87%
Safety: CE marking according to low voltage directive 73/23/EEG	
Safety according to	EN60950, IEC 950, UL1950, cUL
EMC: CE marking according EMC directive 89/336/EEG	
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	162x32,9x100mm (3U/12HP) with Frontpanel
Weight:	1100 g

ORDER INFORMATION

Type	Outputs	Mains voltage	Efficiency	Ordercode
VP150	5V/24A	94...253VAC	typ. 82,5%	116-31510
VP150	12...15V/10A	94...253VAC	typ. 85%	116-31511
VP150	24...28V/6,25A	94...253VAC	typ. 87%	116-31512
VP150-R	5V/24A	94...253VAC	typ. 81,5%	116-31513
VP150-R	12...15V/10A	94...253VAC	typ. 82,5%	116-31514
VP150-R	24...28V/6,25A	94...253VAC	typ. 85%	116-31515
VP150-R	48...54V/3,2A	94...253VAC	typ. 85%	116-31516
VP150	5V/20A; +12...15V/4A; -12...15V/2A	94...253VAC	typ. 81%	116-31530
Mating connector coded H15 to DIN 41612				17-10115
Coding keys (pack per 10)				17-10064



VP150-Series: Power Supply

TECHNICAL DATA VP150 SERIES

VP150 Single output	116-31510	116-31511	116-31512
Output voltage	5V	12—15V	24V
Adjustment range	4,5—5,5V	11,8—15,2V	23,5—28,5V
Output nominal current	24,0A	10,7A	6,3A
Ripple at full load	<40mVPP	<40m ^{VPP}	<40m ^{VPP}
Output current limit	>24,5A	>11,7A	>6,6A
Short circuit protection	electronic, automatic restart		
Overvoltage protection (OVP)	5,8—6,25V	16,5—18V	29—30,6V
Powerfail signal (at full load >6ms)	Vo<4,8V	Vo<11,5V	Vo<23V
Line regulation (100% IOUT)	<0,2%	<0,2%	<0,2%
Load regulation static (10...90%IOUT)	<0,5%	<0,5%	<0,5%
Response time (10...90%IOUT)	<1ms	<1ms	<1ms
Output regulation with SENSE	0,5V max.	0,5V max.	0,5V max.
Derating	see curve		

VP150-R FOR N+1 REDUNDANT SYSTEMS AND BATTERY BACK-UP SYSTEMS

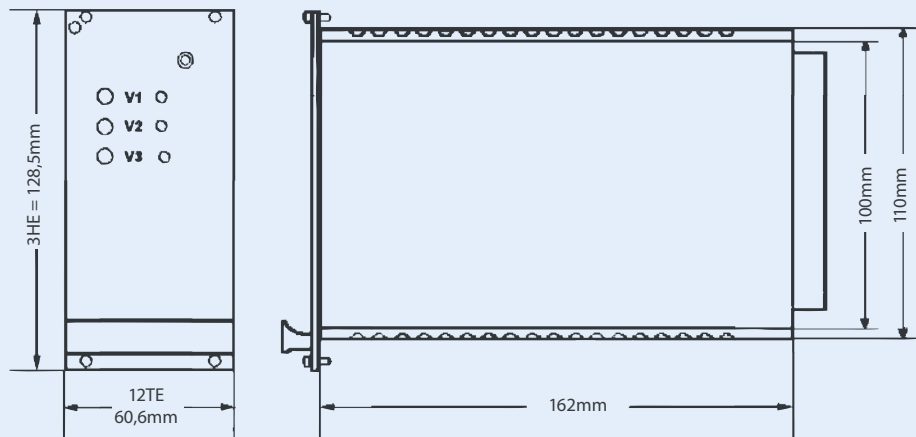
150W Single output redundant	116-31513	116-31514	116-31515	116-31516
Output voltage	5V	12—15V	24V	48V
Adjustment range	4,5—5,5V	11,8—15,2V	23,5—28,5V	47,5—54,5V
Adjustment range by input	—	—	22—28,5V	40—58,2V
Output nominal current 1)	24,0A	10,7A	6,3A	3,2A
Ripple at full load	<40mVPP	<40m ^{VPP}	<40m ^{VPP}	<40m ^{VPP}
Output current limit	>24,5A	>11,7A	>6,6A	>3,4A
Short circuit protection	electronic, automatic restart			
Overvoltage protection (OVP)	5,8—6,25V	16,5—18V	29—30,6V	62—68V
DC-FAIL signal	at unit failure (open collector, 20mA, <0,4V)			
Line regulation (100% IOUT)	<0,2%	<0,2%	<0,2%	<0,2%
Load regulation static (10...90%IOUT)	<0,5%	<0,5%	<0,5%	<0,5%
Response time (10...90%IOUT)	<1ms	<1ms	<1ms	<1ms
Current share with ASF signal	typ. ±5% IOUT	typ. ±5% I ^{OUT}	typ. ±5% I ^{OUT}	typ. ±5% I ^{OUT}
Output regulation with SENSE	0,5V max.	0,5V max.	0,5V max.	0,5V max.
Derating	see curve			

VP150 TRIPLE OUTPUT

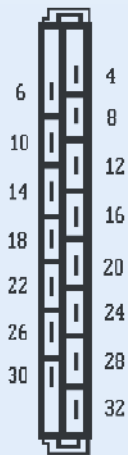
150W Triple output (116-31530)	V1	V2	V3
Output voltage	5V	+12—15V	-12—15V
Adjustment range	4,8...5,5V	+11,8—15,2V	-11,8—15,2V
Output nominal current 1)	20A 1)	4A 1)	2A 1)
Ripple at full load	<40mVPP	<20mVPP	<20mVPP
Output current limit	>20,5A	>5A	>2,7A
Short circuit protection	yes, electronic, automatic restart		
Overvoltage protection (OVP)	6,0—6,5V fix	+16—18V fix	-16—18V fix
Powerfail signal (at full load >5ms)	Vo<4,8V	—	—
Line regulation (100% IOUT)	<0,2%	<0,2%	<0,2%
Load regulation static (10...90%IOUT)	<0,5%	<0,2%	<0,2%
Response time (10...90%IOUT)	<1ms	<1ms	<1ms
Output regulation with SENSE	0,5V max.	—	—
Derating	see curve		

1) maximum total output power: 150 Watt, see derating

MECHANICAL DETAILS, CONNECTOR PINNING



H15 CONNECTOR



CONNECTOR PINNING

PIN	Function		
	VP150 Single o/p	VP150-R Single o/p	VP150 Triple o/p
4	+V1	+V1	+5V
6	+V1	+V1	+5V
8	Gnd V1	Gnd V1	Gnd V1
10	Gnd V1	Gnd V1	Gnd V1
12	+Sense	+Sense	+Sense
14	-Sense	-Sense	-Sense
16	Ext.on/off+	Ext.on/off+	PF/
18	—	DC-Fail	+12V
20	—	ASF	GND2
22	PF/	Vadj.	-12V
24	Ext.on/off-	Ext.on/off -	Ext.on/off+
26	—	—	—
28	N	N	N
30	L	L	L
32	PE	PE	PE

Attention: The sense lines must be connected. For maximum compensation of the voltage drops on the power cables they should be connected as close as possible to the load.

50 WATT SWITCHED MODE AC/DC PLUG-IN POWER SUPPLIES WITH ONE OUTPUT IN 3U/8HP STEELCASSETTES FOR USE IN 19" SUBRACKS TO DIN 41494

FEATURES:

- 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

SPECIFICATION

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%
Safety: CE marking according to low voltage directive 73/23/EEG	
Safety according to	EN60950, UL1950, EN41003
EMC: CE marking according EMC directive 89/336/EEG	
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



EC Monovolt Series

ORDER INFORMATION

Economy 3Ux8HP, 50 Watt

Type	Output	Code
EC 50	5V/8A	116-10188*
EC 50 mit Powerfail	5V/8A	116-10189*
EC 50	12V/4A	116-10190*
EC 50	15V/3,5A	116-10192*
EC 50	24V/2,2A	116-10194*

Accessoires

Type	Code
reduced height front panel with handle: EC50	148-10002
DIN 41612 - mating connector	17-10115
coding keys pack 10	17-10064

* EN60950 certified

Output data	V1	V1	V1	V1
Output voltage	5V	12V	15V	24V
Adjustment range	4,5-5,5V	10,8-13,2V	13,5-16,5V	21,6-26,8V
Output nominal current	8A	4A	3,5A	2,2A
Ripple at full load	<40m _{VPP}	<40m _{VPP}	<40m _{VPP}	<40m _{VPP}
Output current limit	>8,8A	>4,4A	>3,8A	>2,4A
Short circuit protection	continuous, automatic restart			
Overvoltage protection (OVP)	6,0-6,7V	15,5-18V	17-19,5V	27-32V
Powerfail signal (at full load >6ms)	V1<4,8V	—	—	—
Line regulation (100% IOU)	<0,2%	<0,2%	<0,2%	<0,2%
Load regulation static (10...90%IOU)	<1%	<1%	<1%	<1%
Response time (10...90%IOU)	<1ms	<1ms	<1ms	<1ms
Derating	1,2W/°C ab 45°C — 1,2W/°C over 45°C			

* See Page 11.47 for mechanical

50 WATT SWITCHED MODE AC/DC PLUG-IN POWER SUPPLIES WITH THREE OUTPUT IN 3U STEELCASSETTES FOR USE IN 19" SUBRACKS TO DIN 41494

FEATURES:

- Economy priced alternative of PK Series
- Steel cover
- Safety according to EN60950
- 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

SPECIFICATION

INPUT SPECIFICATION

Input Data	
Input voltage	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%
Safety: CE marking according to low voltage directive 73/23/EEG	
Safety according to	EN60950, UL1950
EMC: CE marking according EMC directive 89/336/EEG	
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



EC Trivolt Series

TRIVOLT EC50: 3U x 8HP, 50 Watt				Code	Code
Type	Outputs			without Powerfail	with Powerfail
EC50	+5V/5A,	+12V/1,8A,	-12V/0,4A	116-10130*	116-10131*
EC50	+5V/5A,	+15V/1,4A,	-15V/0,3A	116-10183*	116-10184*
EC50	5V/5A,	±15V/0,8A		116-10186*	116-10187*
EC50	5V/5A,	±12V/1A		116-10217*	116-10218*

Accessoires EC Series		Code
reduced height front panel with handle: EC50		148-10002
DIN 41612 - mating connector		17-10115
coding keys		17-10064

* EN60950 certified

TECHNICAL DATA

TRIVOLT EC50	116-10130 / 116-10131			116-10183 / 116-10184		
50W Triple output	V1	V2	V3	V1	V2	V3
Output voltage	+5V	+12V	-12V	+5V	+15V	-15V
Adjustment range	4,5-5,5V	fix	fix	4,5-5,5V	fix	fix
Output nominal current	5A	1,8A	0,8A	5A 1,4	A 0,6A	
Ripple at full load	<40m _{VPP}	<40m _{VPP}	<10m _{VPP}	<40m _{VPP}	<40m _{VPP}	<10m _{VPP}
Output current limit	>6A(>9A2))	>2,2A	>0,8A	>6A(>9A2))	>1,7A	>0,6A
Short circuit protection	electronic, automatic restart					
Overvoltage protection (OVP)	6,0-6,7V	—	—	6,0-6,7V	—	—
Powerfail signal (at full load >6ms)	V1<4,8V	—	—	V1<4,8V	—	—
Line regulation (100% IOUT)	<0,2%	<0,2%	<0,2%	<0,2%	<0,2%	<0,2%
Load regulation static (10...90%IOUT)	<1%	<5% 1)	<0,5%	<1% <3% 1)	<0,5%	
Response time (10...90%IOUT)	<1ms	<1ms	<1ms	<1ms	<1ms	<1ms
Temperature coefficient/oC	0,05%V			0,05%		
Derating	1,5W/°C ab 45°C, 1,5W/°C over 45°C					

TRIVOLT EC50	116-10186 / 116-10187			116-10217 / 116-10218		
50W Triple output	V1	V2	V3	V1	V2	V3
Output voltage	5V	+15V	-15V	5V	+12V	-12V
Adjustment range	4,5-5,5V	fix	fix	4,5-5,5V	fix	fix
Output nominal current	5A	0,8A	0,8A	5A	1A	1A
Ripple at full load	<40m _{VPP}	<10m _{VPP} ³⁾	<10m _{VPP} ³⁾	<40m _{VPP} ³⁾	<10m _{VPP} ³⁾	<10m _{VPP} ³⁾
Output current limit	>6A(>9A2))	>1,1A	>1,1A	>6A(>9A2))	>1,1A	>1,1A
Short circuit protection	electronic, automatic restart					
Overvoltage protection (OVP)	6,0-6,7V	—	—	6,0-6,7V	—	—
Powerfail signal (at full load >6ms)	V1<4,8V	—	—	V1<4,8V	—	—
Line regulation (100% IOUT)	<0,2%	<0,2%	<0,2%	<0,2%	<0,2%	<0,2%
Load regulation static (10...90%IOUT)	<1%	<0,5%	<0,5%	<1%	<0,5%	<0,5%
Response time (10...90%IOUT)	<1ms	<1ms	<1ms	<1ms	<1ms	<1ms
Temperature coefficient/oC	0,05%V			0,05%		
Derating	1,5W/°C ab 45°C, 1,5W/°C over 45°C					

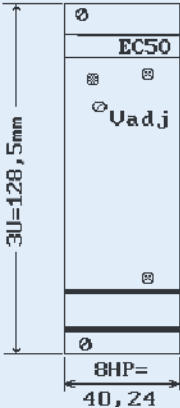
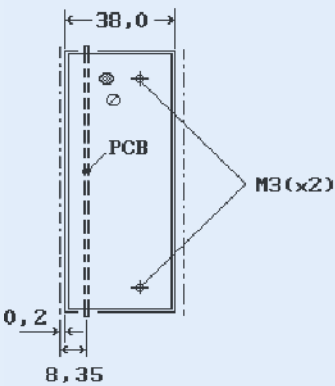
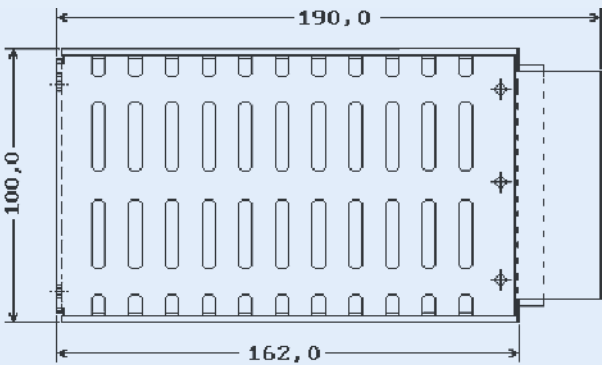
1) I2 = 0,1...4 x I1

2) at single load

3) V2/V3 at EC50 C+D linear post regulated

MECHANICAL DETAILS, CONNECTOR PINNING

EC50
weight: EC50 650g



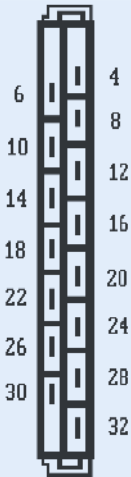
EC50 frontpanel kit

CONNECTOR PINNING

PIN	Function		
	Mono EC50	Tri EC50 (116-10130 / 116-10183)	Tri EC50 (116-10186 / 116-10217)
4	+V1	+V1	+V1
6	+V1	+V1	+V1
8	GND	GND	GND V1
10	GND	GND	GND V1
12	—	—	—
14	—	—	—
16	PF/	PF/	PF/
18	—	+V2	+V2
20	—	GND	GND V2, V3
22	—	-V3	-V3
24	—	—	—
26	—	—	—
28	N	N	N
30	L	L	L
32	PE	PE	PE

* only at 12V versions

H15 CONNECTOR



30 TO 120 WATT SWITCHED MODE DC/DC PLUG-IN CONVERTER WITH ONE OUTPUT IN 3U EUROCASSETTES FOR USE IN 19" SUBRACKS TO DIN 41494

FEATURES:

- Compact rugged design in stable aluminium cassette
- DC input range 2:1 ratio
- High regulation accuracy
- Remote On/Off (GK60 + GK120)
- SENSE-operation and Overvoltage protection (OVP)
- Convection cooling
- CE marked for compliance to EMC and Low Voltage Directives
- VERO standardised pinning
- 24 months warranty

SPECIFICATION

Input Data	
Input voltage	12VDC (9–18); 24VDC (18–36); 48VDC (36–72)
Inrush surge current limit	line impedance dependant
Input voltage spike limit	
Hold-up time	>3 msec (at nominal values)
Efficiency	typ. > 70%
Safety: CE marking according to low voltage directive 73/23/EEG	
Safety according to	EN60950, UL1950
EMC: CE marking according EMC directive 89/336/EEG	
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 aluminium cassette with cooling cutouts

ORDER INFORMATION

MONOVOLT GK30: 30W	Input	Size	Output	Code
GK 30	12VDC	3U x 8HP	5V/6A	116-10166
GK 30	24VDC	3U x 8HP	5V/6A	116-10167
GK 30	48VDC	3U x 8HP	5V/6A	116-10168

MONOVOLT GK60: 60W				
GK 60	24VDC	3U x 8HP	5V/12A	116-10034
GK 60	24VDC	3U x 8HP	12V/5A	116-10035
GK 60	24VDC	3U x 8HP	15V/4A	116-10036
GK 60	24VDC	3U x 8HP	24V/2,5A	116-10037
GK 60	48VDC	3U x 8HP	5V/12A	116-10038
GK 60	48VDC	3U x 8HP	12V/5A	116-10039
GK 60	48VDC	3U x 8HP	15V/4A 1	16-10040
GK 60	48VDC	3U x 8HP	24V/2,5A	116-10041

MONOVOLT GK120: 120W				
GK 120	24VDC	3U x 14HP	5V/20A	116-10132
GK 120	24VDC	3U x 14HP	12V/10A	116-10133
GK 120	24VDC	3U x 14HP	24V/5A	116-10135
GK 120	48VDC	3U x 14HP	5V/20A	116-10136
GK 120	48VDC	3U x 14HP	12V/10A	116-10137
GK 120	48VDC	3U x 14HP	24V/5A	116-10139

Accessoires:	
reduced height front panel: GK30	148-10012
reduced height front panel: GK60	148-10021
reduced height front panel: GK120	148-10019
DIN 41612 - mating connector	17-10115
coding keys pack 10	17-10064



GK Monovolt Series

TECHNICAL DATA

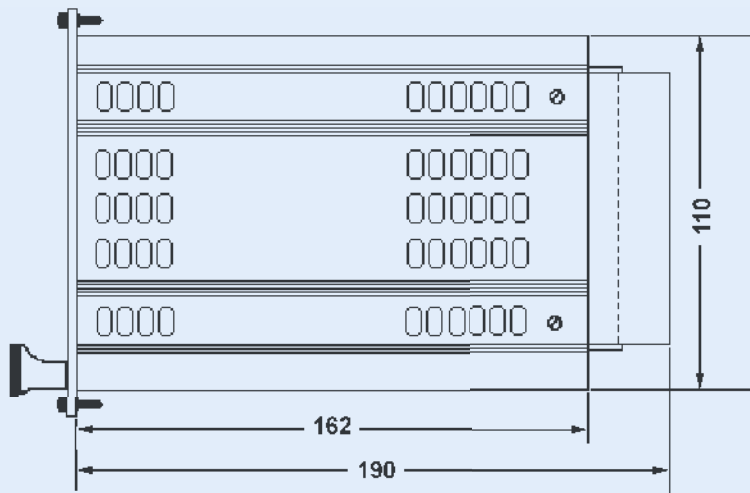
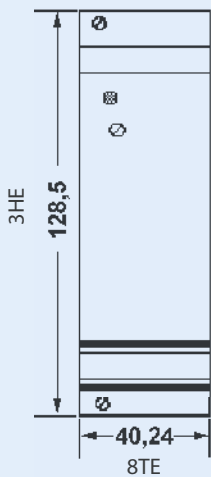
MONO GK30 Single output	V1
Output voltage	5V
Adjustment range	4,8–5,5V
Output nominal current	6A
Ripple at full load	<40m _{VPP}
Line regulation (100% IOUT)	<0,2%
Load regulation static (10...90%IOUT)	<0,2%
Response time (10...90%IOUT)	<1ms
Output current limit	>6,5A
Short circuit protection	continously, automatic restart
Overvoltage protection (OVP)	6,0-6,7V
Temperature coefficient	0,02%/°C
Output regulation with sense	0,5V max.
Derating	1W/°C ab 55°C - 1W/°C above 55°C

MONO GK60 Single output	V1	V1	V1	V1
Output voltage	5V	12V	15V	24V
Adjustment range	4,5-5,5V	11-13V	13,5-16,5V	22-26V
Output nominal current	12A	5A	4A	2,5A
Ripple at full load	<40m _{VPP}	<40m _{VPP}	<40m _{VPP}	<40m _{VPP}
Line regulation (100% IOUT)	<0,3%	<0,2%	<0,2%	<0,2%
Load regulation static (10...90%IOUT)	<0,2%	<0,2%	<0,2%	<0,2%
Response time (10...90%IOUT)	<0,8ms	<0,5ms	<0,5ms	<0,5ms
Output current limit	>12,5A	>5,3A	>4,3A	>2,7A
Short circuit protection	continously, automatic restart			
Overvoltage protection (OVP)	5,5-6,0V	13,2-15,0V	16,5-18,0V	26,4-30,0V
Temperature coefficient	0,02%/°C	0,02%/°C	0,02%/°C	0,02%/°C
Output regulation with sense max.	0,5V max.	0,5V max.	0,5V max.	0,5V max.
Derating	2W/°C ab 55°C - 2W/°C above 55°C			

MONO GK120 Single output	V1	V1	V1	V1
Output voltage	5V	12V	15V	24V
Adjustment range	4,5-5,5V	10,8-13,2V	13,5-16,5V	21,6-26,4V
Output nominal current	20A	10A	8A	5A
Ripple at full load	<40m _{VPP}	<40m _{VPP}	<40m _{VPP}	<40m _{VPP}
Line regulation (100% IOUT)	<0,2%	<0,2%	<0,2%	<0,2%
Load regulation static (10...90%IOUT)	<0,2%	<0,2%	<0,2%	<0,2%
Response time (10...90%IOUT)	<0,5ms	<0,5ms	<0,5ms	<0,5ms
Output current limit	>22A	>11A	>8,8A	>5,5A
Short circuit protection	continously, automatic restart			
Overvoltage protection (OVP)	5,0-7,0V	12-16,5V	15-21V	27-29V
Temperature coefficient	0,02%/°C	0,02%/°C	0,02%/°C	0,02%/°C
Output regulation with sense max.	0,5V max.	0,5V max.	0,5V max.	0,5V max.
Derating	4W/°C ab 55°C - 4W/°C above 55°C			

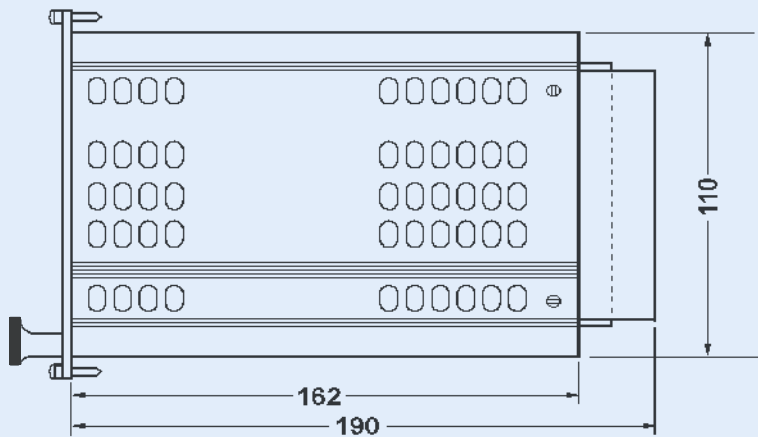
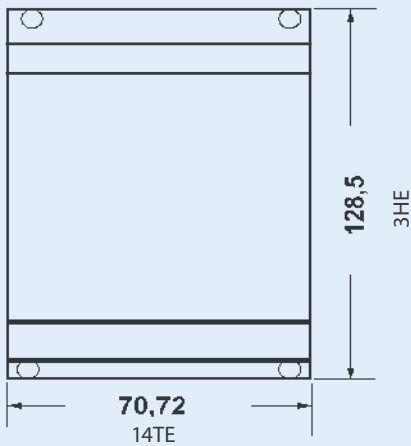
MECHANICAL DETAILS, CONNECTOR PINNING

GK30, GK60



weight GK30, GK60: 850g

GK120

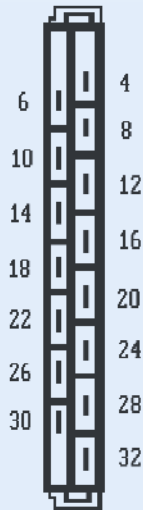


weight GK120: 1350g

CONNECTOR PINNING

PIN	Function		
	GK30	GK60	GK120
4	+Vout	+Vout	+Vout
6	+Vout	+Vout	+Vout
8	-Vout	-Vout	-Vout
10	-Vout	-Vout	-Vout
12	+SENSE	+SENSE	+SENSE
14	-SENSE	-SENSE	-SENSE
16	—	—	—
18	—	—	—
20	—	—	—
22	—	Ext on/off	Ext on/off
24	-Vin *	-Vin	-Vin
26	-Vin	-Vin	-Vin
28	+Vin	+Vin	+Vin
30	+Vin	+Vin	+Vin

H15 connector



Note: Sense lines must be connected. For maximum compensation for supply lead voltage drop they should be connected as close to the load as possible

30 TO 60 WATT SWITCHED MODE DC/DC PLUG-IN CONVERTER WITH TWO OUTPUTS IN 3U EUROCASSETTES FOR USE IN 19" SUBRACKS TO DIN 41494

FEATURES:

- Compact rugged design
- Compact rugged design in stable aluminium cassette
- DC input range 2:1 ratio
- High regulation accuracy
- Separate adjust of both outputs
- No-load and short circuit proof
- Convection cooling
- CE marked for compliance to EMC and Low Voltage Directives
- VERO standardised pinning
- 24 months warranty

SPECIFICATION

Input Data	
Input voltage	12VDC (9–18); 24VDC (18–36); 48VDC (36–72)
Inrush surge current limit	line impedance dependant
Input voltage spike limit	
Hold-up time	>3 msec (at nominal values)
Efficiency	typ. > 60-80%
Safety: CE marking according to low voltage directive 73/23/EEG	
Safety according to	EN60950, UL1950
EMC: CE marking according EMC directive 89/336/EEG	
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 aluminium cassette with cooling cutouts

ORDER INFORMATION

BIVOLT GK 30: 30Watt		Input	Size	Outputs	Code
GK30		12VDC	3U x 8HP	±12-15V/1A	116-10170
GK30		24VDC	3U x 8HP	±12-15V/1A	116-10171
GK30		48VDC	3U x 8HP	±12-15V/1A	116-10172
BIVOLT GK60: 60 Watt		Input	Size	Outputs	Code
GK60		12VDC	3U x 8HP	±12-15V/2A	116-10152
GK60		24VDC	3U x 8HP	±12-15V/2A	116-10153
GK60		48VDC	3U x 8HP	±12-15V/2A	116-10154
Accessoires:					
reduced height front panel: GK30					148-10013
reduced height front panel: GK60					148-10011
DIN 41612 - mating connector					17-10115
coding keys pack 10					17-10064



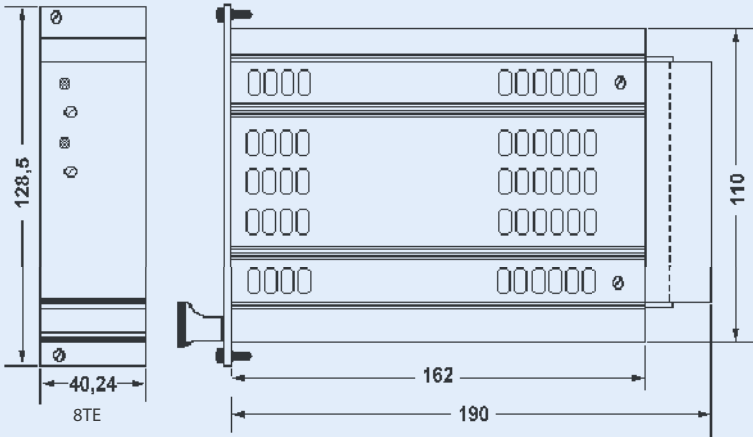
TECHNICAL DATA BIVOLT GK SERIES

BIVOLT GK30 Dual output	V1, V2
Output voltage	±12 – 15V
Output nominal current	1A
Ripple at full load	<3m _{VPP}
Line regulation (100% IOUT)	<0,02%
Load regulation static (10...90%IOUT)	<0,2%
Response time (10...90%IOUT)	<10 µs
Output current limit	>1,1A
Short circuit protection	continuously, automatic restart
Temperature coefficient	0,05%/°C
Derating	1W/°C ab 55°C - 1W/°C above 55°C

BIVOLT GK60 Dual output	V1, V2
Output voltage	±12 – 15V
Output nominal current	2A
Ripple at full load	<20m _{VPP}
Line regulation (100% IOUT)	<0,2%
Load regulation static (10...90%IOUT)	<0,5%
Response time (10...90%IOUT)	<1ms
Output current limit	>2,2A
Short circuit protection	continuously, automatic restart
Overvoltage protection (OVP)	±16,5-18V fix
Temperature coefficient	0,05%/°C
Derating	2W/°C ab 55°C - 2W/°C above 55°C

MECHANICAL DETAILS, CONNECTOR PINNING

GK30, GK60



CONNECTOR PINNING

PIN	Function	GK30	GK60
4	—	—	—
6	—	—	—
8	—	—	—
10	—	—	—
12	—	—	—
14	—	—	—
16	—	—	—
18	+12-15V	+12-15V	
20	0V	0V	
22	-12-15V	-12-15V	
24	-Vin *	-Vin *	
26	-Vin	-Vin	
28	+Vin	+Vin	
30	+Vin	+Vin	
32	PE	PE	

* only at 12V versions

H15 Connector



60 TO 120 WATT SWITCHED MODE DC/DC PLUG-IN CONVERTER
WITH THREE OUTPUTS IN 3U EUROCASSETTES FOR USE IN 19" SUBRACKS TO DIN 41494

FEATURES:

- Compact rugged design in stable aluminium 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

SPECIFICATION

Input Data	
Input voltage	12VDC (9–18); 24VDC (18–36); 48VDC (36–72)
Inrush surge current limit	line impedance dependant
Input voltage spike limit	
Hold-up time	>3 msec at nominal values)
Efficiency	typ. >70-75%
Safety: CE marking according to low voltage directive 73/23/EEG	
Safety according to	EN60950, UL1950
EMC: CE marking according EMC directive 89/336/EEG	
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 aluminium cassette with cooling cutouts



TRIVOLT GK60: 60 Watt				
Type	Input	Size	Outputs	Code
GK60	12VDC	3U x 8HP	5V/6A, ±12-15V/1A	116-10097
GK60	24VDC	3U x 8HP	5V/6A, ±12-15V/1A	116-10098
GK60	48VDC	3U x 8HP	5V/6A, ±12-15V/1A	116-10099
TRIVOLT GK120: 120 Watt				
GK120	24VDC	3U x 14HP	5V/12A, ±12-15V/2A	116-10175
GK120	48VDC	3U x 14HP	5V/12A, ±12-15V/2A	116-10176
Accessoires:				
reduced height front panel: GK60				148-10010
reduced height front panel: GK120				148-10020
DIN 41612 - mating connector				17-10115
coding keys pack 10				17-10064

TRIVOLT GK Series

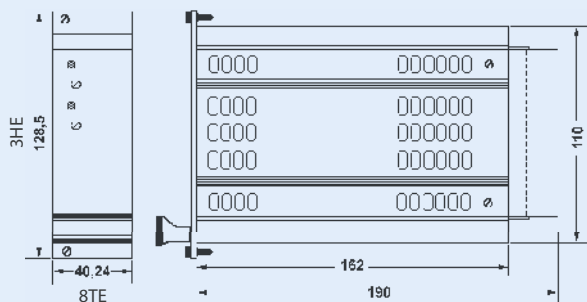
TRI GK60 Triple output	V1	V2	V3
Output voltage	5V	+12-15V	-12-15V
Adjustment range	4,5-5,5V	+12-15V	-12-15V
Output nominal current	6A	1A	1A
Ripple at full load	<40m _{VPP}	<3m _{VPP}	<3m _{VPP}
Line regulation (100% IOUT)	<0,2%	<0,02%	<0,02%
Load regulation static (10...90% IOUT)	<0,2%	<0,2%	<0,2%
Response time (10...90% IOUT)	<0,2ms	<10µs	<10µs
Output current limit	>6,5A	<1,1A	>1,1A
Short circuit protection	continuously, automatic restart		
Overvoltage protection (OVP)	6,0-6,7V	—	—
Temperature coefficient	0,05%/°C	0,05%/°C	0,05%/°C
Output regulation with sense	0,5V max.	—	—
Derating	2W/°C ab 55°C - 2W/°C above 55°C		

TRI GK120 Triple output	V1	V2	V3
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	<40m _{VPP}	<20m _{VPP}	<20m _{VPP}
Line regulation (100% IOUT)	<0,2%	<0,2%	<0,2%
Load regulation static (10...90% IOUT)	<0,2%	<0,2%	<0,2%
Response time (10...90% IOUT)	<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	—	—
Temperature coefficient	0,05%/°C	0,05%/°C	0,05%/°C
Output regulation with sense	0,5V max.	—	—
Derating	4W/°C ab 55°C - 4W/°C above 55°C		

MECHANICAL DETAILS, CONNECTOR PINNING

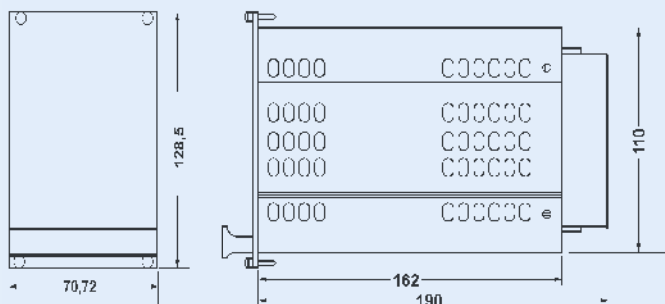
GK60

weight GK60: 700g



GK120

weight GK120: 1350g



CONNECTOR PINNING

PIN	Function	
	GK60	GK120
4	+5V	+5V
6	+5V	+5V
8	GND 1	GND 1
10	GND 1	GND 1
12	+SENSE	+SENSE
14	-SENSE	-SENSE
16	—	—
18	+12-15V	+12-15V
20	GND 2/3	GND 2/3
22	-12-15V	-12-15V
24	-Vin *	—
26	-Vin	-Vin
28	+Vin	+Vin
30	+Vin	+Vin
32	PE	PE

* only at 12V versions

Note: Sense lines must be connected. For maximum compensation for supply lead voltage drop they should be connected as close to the load as possible

H15 Connector

