

## VP80-Serie: 1-4 Ausgänge AC/DC-Netzteile mit PFC

80 Watt primärgetaktete AC/DC-Einschubnetzteile in 3HE/8TE-Eurokassetten für den Einsatz in 19"-Baugruppenträgern nach DIN 41494



- Aktive Powerfaktor Korrektur PFC
- Weiter Eingangsbereich 94-253VAC
- Hoher Wirkungsgrad bis 83%
- Power Share zwischen d. Ausgängen
- N+1 redundante Typen
- CE-Zeichen gem. EMV u. NV-Richtlinie
- EN60950, ULund cUL abgenommen
- Optional: EMV-Frontplatte, ohne Frontpl.
- Vero-Standardfröpping, paßt zu PK60
- 24 Monate Garantie

Durch moderne Schaltungstechnik werden Wirkungsgradwerte bis 83% erreicht. Zusammen mit optimalem thermischen Design konnte die Leistungsdichte dieser Serie gegenüber der PK-Serie um mehr als 30% erhöht werden. Somit können 80 Watt in einer 3HE/8TE-Kassette bereitgestellt werden. Die Einzelwandler-Technik erlaubt bei Mehrfachausgängen eine Lastverschiebung zwischen den Ausgängen. Mit dem VP80-1R können N+1-redundante Systeme und Battery Back-up Systeme aufgebaut werden.

**80 Watt switched mode AC/DC plug-in power supplies in 3U/8TE-Eurocassettes for use in 19" sub racks to DIN 41494**

- 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, 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.

## Technische Daten

|                                                        |
|--------------------------------------------------------|
| <b>Eingangsdaten</b>                                   |
| Eingangsspannung                                       |
| Eingangsfrequenz                                       |
| Einschalt-Stoßstrombegrenzung                          |
| Begrenzung Eingangsspannungsspitzen                    |
| Netzausfallüberbrückung                                |
| Powerfaktor Korrektur PFC                              |
| Wirkungsgrad                                           |
| <b>Sicherheit: CE-Zeichen gemäß</b>                    |
| <b>Niederspannungsrichtlinie 73/23/EWG</b>             |
| Sicherheit gemäß                                       |
| <b>EMV: CE-Zeichen gemäß EMV-Richtlinie 89/336/EWG</b> |
| EMV-Störaussendung                                     |
| EMV-Störfestigkeit                                     |
| Betriebstemperatur / Lagertemperatur                   |
| Relative Luftfeuchtigkeit                              |
| Abmaße (L x B x H) mm                                  |
| Gewicht:                                               |

## Technical Data

|                                                                        |
|------------------------------------------------------------------------|
| <b>Input Data</b>                                                      |
| Input voltage                                                          |
| Input frequency                                                        |
| Inrush surge current limit                                             |
| Input voltage spike limit                                              |
| Hold-up time                                                           |
| Powerfactor correction PFC                                             |
| Efficiency                                                             |
| <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>              |
| EMI conducted & radiated emission                                      |
| EMI immunity                                                           |
| Operating temperature / Storage temperature                            |
| Relative humidity                                                      |
| Dimensions (L x W x H) mm                                              |
| Weight:                                                                |

## VP80 Serie

|                                             |
|---------------------------------------------|
| 94 – 253VAC                                 |
| 47-63Hz                                     |
| <27A (NTC)                                  |
| durch VDR; by VDR                           |
| >20 msec (bei Nenndaten; at nominal values) |
| >0,95                                       |
| bis / up to 83%                             |
|                                             |
|                                             |
| EN60950, IEC 950, UL1950, cUL               |
|                                             |
| EN 55022/B (0,15-30MHz; 30-1000MHz)         |
| EN 50082-2                                  |
| 0°C...+70°C / -40°C...+85°C                 |
| max.90% ohne Betauung /without condensation |
| 162x32,9x100mmm (3U/8HP) with Frontpanel    |
| 650 g                                       |

| Typ                                                          | Ausgänge                            | Bestell-Code mit Frontplatte                             | Bestell-Code ohne Frontplatte |
|--------------------------------------------------------------|-------------------------------------|----------------------------------------------------------|-------------------------------|
| Type                                                         | Outputs                             | Ordercode with frontpanel                                | Ordercode without frontpanel  |
| VP80-1 5V                                                    | 5V/16A                              | 116-020015L                                              | 116-020006A*                  |
| VP80-1 12V                                                   | 12V/6,7A                            | 116-020016H                                              | 116-020007J*                  |
| VP80-1 15V                                                   | 15V/5,3A                            | 116-020017E                                              | 116-020008F*                  |
| VP80-1 24V                                                   | 24V/3,3A                            | 116-020018B                                              | 116-020009C*                  |
| VP80-1-R 5V                                                  | 5V/16A                              | 116-020047D                                              | 116-020043E*                  |
| VP80-1-R 12V                                                 | 12V/6,7A                            | 116-020048A                                              | 116-020044B*                  |
| VP80-1-R 15V                                                 | 15V/5,3A                            | 116-020049J                                              | 116-020045K*                  |
| VP80-1-R 24V                                                 | 24V/3,3A                            | 116-020050K                                              | 116-020046G*                  |
| VP80-2A                                                      | +12V/5A; -12V/2A                    | 116-020019K                                              | 116-020010D*                  |
| VP80-2B                                                      | +15V/4A; -15V/2A                    | 116-020020L                                              | 116-020011A*                  |
| VP80-2C                                                      | +5V/12A; +12V/2,5A                  | 116-020021H                                              | 116-020012J*                  |
| VP80-2D                                                      | +5V/5A; +24V/2,5A                   | 116-020022E                                              | 116-020013F*                  |
| VP80-2E                                                      | +12V/2A; +24V/2,5A                  | 116-020023B                                              | 116-020014C*                  |
| VP80-3A                                                      | 5V/12A; ±12V/1A                     | 116-020024K                                              | 116-020000H*                  |
| VP80-3B                                                      | 5V/12A; ±15V/1A                     | 116-020025G                                              | 116-020001E*                  |
| VP80-3C                                                      | 5V/12A; +12V/4A; -12V/1A            | 116-020026D                                              | 116-020002B*                  |
| VP80-3D                                                      | 5V/12A; +15V/3A; -15V/1A            | 116-020027A                                              | 116-020003K*                  |
| VP80-4                                                       | +3,3V/3A; +5V/12A; +12V/4A; -12V/1A | 116-020028J                                              | 116-020004G*                  |
| Federleiste mit Kodierung H15 nach DIN 41612 mit Faston-Pins |                                     | Mating connector coded H15 to DIN 41612 with faston pins | 017-010115K                   |
| Kodierungsteil (10er Paket) für Federleiste mit Kodierung    |                                     | Coding keys (pack per 10)                                | 017-010064F                   |

\* auf Anfrage lieferbar / available on request

www.eplax.de · www.eplax.co.uk

## VP80-Serie mit 1 und 2 Ausgängen AC/DC-Netzteile mit PFC

| Technische Daten                                   |                           | Technical Data                                      |                          | VP80 Serie                                                                       |                     |                     |                     |
|----------------------------------------------------|---------------------------|-----------------------------------------------------|--------------------------|----------------------------------------------------------------------------------|---------------------|---------------------|---------------------|
| <b>VP80-1</b>                                      | <b>80W Einzel-Ausgang</b> | <b>VP80-1</b>                                       | <b>80W Single output</b> | <b>V1</b>                                                                        | <b>V1</b>           | <b>V1</b>           | <b>V1</b>           |
| Ausgangsspannung                                   |                           | Output voltage                                      |                          | <b>5V</b>                                                                        | <b>12V</b>          | <b>15V</b>          | <b>24V</b>          |
| Einstellbereich                                    |                           | Adjustment range                                    |                          | 4,8–5,5V                                                                         | 11–13V              | 14–16V              | 22–28V              |
| Ausgangs-Nennstrom <sup>1)</sup>                   |                           | Output nominal current <sup>1)</sup>                |                          | <b>16A</b>                                                                       | <b>6,7A</b>         | <b>5,3A</b>         | <b>3,3A</b>         |
| Ripple bei Vollast                                 |                           | Ripple at full load                                 |                          | <40mV <sub>pp</sub>                                                              | <40mV <sub>pp</sub> | <40mV <sub>pp</sub> | <40mV <sub>pp</sub> |
| Begrenzung Ausgangsstrom                           |                           | Output current limit                                |                          | >16,1A                                                                           | >6,75A              | >5,35A              | >3,35A              |
| Kurzschlußschutz                                   |                           | Short circuit protection                            |                          | ja, elektronisch, automatischer Neustart - yes, electronic, automatic restart    |                     |                     |                     |
| Überspannungsschutz (OVP)                          |                           | Overvoltage protection (OVP)                        |                          | 6,0–6,7V                                                                         | 15,5–18V            | 17–21V              | 27–32V              |
| Powerfail-Signal (bei Vollast >6ms)                |                           | Powerfail signal (at full load >6ms)                |                          | V1<4,8V                                                                          | V1<11,5V            | V1<14,4V            | V1<23V              |
| Netzregelung (100% I <sub>OUT</sub> )              |                           | Line regulation (100% I <sub>OUT</sub> )            |                          | <0,1%                                                                            | <0,1%               | <0,1%               | <0,1%               |
| Lastregelung statisch (10...90% I <sub>OUT</sub> ) |                           | Load regulation static (10...90% I <sub>OUT</sub> ) |                          | <0,1%                                                                            | <0,1%               | <0,1%               | <0,1%               |
| Regelzeit (10...90% I <sub>OUT</sub> )             |                           | Response time (10...90% I <sub>OUT</sub> )          |                          | <0,5ms                                                                           | <0,2ms              | <0,2ms              | <0,1ms              |
| Spannungsausregelung mit Sense max.                |                           | Output regulation with sense max.                   |                          | 0,5V max.                                                                        | 0,5V max.           | 0,5V max.           | 0,5V max.           |
| Derating                                           |                           | Derating                                            |                          | 2W/°C over 45°C at natural convection; 4W/°C over 60°C at enhanced cooling 1 m/s |                     |                     |                     |

### VP80-1-R for N+1 redundant systems

|                                                          |                                                       |                                                                                  |                     |                     |                     |
|----------------------------------------------------------|-------------------------------------------------------|----------------------------------------------------------------------------------|---------------------|---------------------|---------------------|
| <b>80W Einzel-Ausgang redundant</b>                      | <b>80W Single output redundant</b>                    | <b>V1</b>                                                                        | <b>V1</b>           | <b>V1</b>           | <b>V1</b>           |
| Ausgangsspannung                                         | Output voltage                                        | <b>5V</b>                                                                        | <b>12V</b>          | <b>15V</b>          | <b>24V</b>          |
| Einstellbereich                                          | Adjustment range                                      | 4,8–5,5V                                                                         | 11–13V              | 14–16V              | 22–26V              |
| Ausgangs-Nennstrom <sup>1)</sup>                         | Output nominal current <sup>1)</sup>                  | <b>16A</b>                                                                       | <b>6,7A</b>         | <b>5,3A</b>         | <b>3,3A</b>         |
| Ripple bei Vollast                                       | Ripple at full load                                   | <40mV <sub>pp</sub>                                                              | <40mV <sub>pp</sub> | <40mV <sub>pp</sub> | <40mV <sub>pp</sub> |
| Begrenzung Ausgangsstrom                                 | Output current limit                                  | >16,1A                                                                           | >6,75A              | >5,35A              | >3,35A              |
| Kurzschlußschutz                                         | Short circuit protection                              | ja, elektronisch, automatischer Neustart - yes, electronic, automatic restart    |                     |                     |                     |
| Überspannungsschutz (OVP)                                | Overvoltage protection (OVP)                          | 6,0–6,7V                                                                         | 15,5–18V            | 17–21V              | 27–32V              |
| DC-FAIL-Signal                                           | DC-FAIL signal                                        | active low bei Geräteausfall / at unit failure (open collector, 20mA, <0,4V)     |                     |                     |                     |
| Netzregelung (100% I <sub>OUT</sub> )                    | Line regulation (100% I <sub>OUT</sub> )              | <0,1%                                                                            | <0,1%               | <0,1%               | <0,1%               |
| Lastregelung statisch (10...90% I <sub>OUT</sub> )       | Load regulation static (10...90% I <sub>OUT</sub> )   | <0,2%                                                                            | <0,2%               | <0,2%               | <0,2%               |
| Regelzeit (10...90% I <sub>OUT</sub> )                   | Response time (10...90% I <sub>OUT</sub> )            | <1ms                                                                             | <0,5ms              | <0,4ms              | <0,1ms              |
| Stromaufteilung mit ASF-Signal: ±5% bei I <sub>OUT</sub> | Current share with ASF signal: ±5% @ I <sub>OUT</sub> | >3,2A                                                                            | >1,3A               | >1,0A               | >0,6A               |
| Spannungsausregelung mit Sense max.                      | Output regulation with sense max.                     | 0,5V max.                                                                        | 0,5V max.           | 0,5V max.           | 0,5V max.           |
| Derating                                                 | Derating                                              | 2W/°C over 45°C at natural convection; 4W/°C over 60°C at enhanced cooling 1 m/s |                     |                     |                     |

### VP80-2

|                                                    |                                                     |                                                                                  |                     |                     |                     |                     |                     |
|----------------------------------------------------|-----------------------------------------------------|----------------------------------------------------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| <b>80W Doppel-Ausgang</b>                          | <b>80W Dual output</b>                              | <b>Version A</b>                                                                 |                     | <b>Version B</b>    |                     | <b>Version C</b>    |                     |
| Ausgangsspannung                                   | Output voltage                                      | <b>V1</b>                                                                        | <b>V2</b>           | <b>V1</b>           | <b>V2</b>           | <b>V1</b>           | <b>V2</b>           |
| Einstellbereich                                    | Adjustment range                                    | <b>+12V</b>                                                                      | <b>-12V</b>         | <b>+15V</b>         | <b>-15V</b>         | <b>+5V</b>          | <b>+12V</b>         |
| Ausgangs-Nennstrom <sup>1)</sup>                   | Output nominal current <sup>1)</sup>                | 11,8–13V                                                                         | fix                 | 14,8–16V            | fix                 | 4,8–5,5V            | fest                |
| Ripple bei Vollast                                 | Ripple at full load                                 | <b>5A</b>                                                                        | <b>2A</b>           | <b>4A</b>           | <b>2A</b>           | <b>12A</b>          | <b>2A</b>           |
| Begrenzung Ausgangsstrom                           | Output current limit                                | <40mV <sub>pp</sub>                                                              | <40mV <sub>pp</sub> | <40mV <sub>pp</sub> | <40mV <sub>pp</sub> | <40mV <sub>pp</sub> | <40mV <sub>pp</sub> |
| Kurzschlußschutz                                   | Short circuit protection                            | >5,01A                                                                           | >2,01A              | >4,01A              | >2,01A              | >12,1A              | >2,01A              |
| Überspannungsschutz (OVP)                          | Overvoltage protection (OVP)                        | ja, elektronisch, automatischer Neustart - yes, electronic, automatic restart    |                     |                     |                     |                     |                     |
| Powerfail-Signal (bei Vollast >6ms)                | Powerfail signal (at full load >6ms)                | 15,5–18V                                                                         | —                   | 17–21V              | —                   | 6,0–6,7V            | —                   |
| Netzregelung (100% I <sub>OUT</sub> )              | Line regulation (100% I <sub>OUT</sub> )            | —                                                                                | —                   | —                   | —                   | V1<4,8V             | —                   |
| Lastregelung statisch (10...90% I <sub>OUT</sub> ) | Load regulation static (10...90% I <sub>OUT</sub> ) | <0,1%                                                                            | <0,1%               | <0,1%               | <0,1%               | <0,1%               | <0,1%               |
| Regelzeit (10...90% I <sub>OUT</sub> )             | Response time (10...90% I <sub>OUT</sub> )          | <0,5%                                                                            | <1,5% <sup>2)</sup> | <0,5%               | <1,5% <sup>2)</sup> | <0,2%               | <1,5% <sup>2)</sup> |
| Spannungsausregelung mit Sense max.                | Output regulation with sense max.                   | <1ms                                                                             | <1ms                | <1ms                | <1ms                | <1ms                | <1ms                |
| Derating                                           | Derating                                            | —                                                                                | —                   | —                   | —                   | —                   | —                   |
|                                                    |                                                     | 2W/°C over 45°C at natural convection; 4W/°C over 60°C at enhanced cooling 1 m/s |                     |                     |                     |                     |                     |

### VP80-2

|                                                    |                                                     |                                                                                  |                     |                     |                     |
|----------------------------------------------------|-----------------------------------------------------|----------------------------------------------------------------------------------|---------------------|---------------------|---------------------|
| <b>80W Doppel-Ausgang</b>                          | <b>80W Dual output</b>                              | <b>Version D</b>                                                                 |                     | <b>Version E</b>    |                     |
| Ausgangsspannung                                   | Output voltage                                      | <b>V1</b>                                                                        | <b>V2</b>           | <b>V1</b>           | <b>V2</b>           |
| Einstellbereich                                    | Adjustment range                                    | <b>+5V</b>                                                                       | <b>+24V</b>         | <b>+12V</b>         | <b>+24V</b>         |
| Ausgangs-Nennstrom <sup>1)</sup>                   | Output nominal current <sup>1)</sup>                | fest                                                                             | 22–26V              | fest                | 22–26V              |
| Ripple bei Vollast                                 | Ripple at full load                                 | <b>5A</b>                                                                        | <b>2,7A</b>         | <b>2A</b>           | <b>2,5A</b>         |
| Begrenzung Ausgangsstrom                           | Output current limit                                | <40mV <sub>pp</sub>                                                              | <40mV <sub>pp</sub> | <40mV <sub>pp</sub> | <40mV <sub>pp</sub> |
| Kurzschlußschutz                                   | Short circuit protection                            | >5,01A                                                                           | >2,71A              | >2,01A              | >2,51A              |
| Überspannungsschutz (OVP)                          | Overvoltage protection (OVP)                        | ja, elektronisch, automatischer Neustart - yes, electronic, automatic restart    |                     |                     |                     |
| Powerfail-Signal (bei Vollast >6ms)                | Powerfail signal (at full load >6ms)                | 6,0–6,7V                                                                         | —                   | —                   | —                   |
| Netzregelung (100% I <sub>OUT</sub> )              | Line regulation (100% I <sub>OUT</sub> )            | —                                                                                | —                   | —                   | —                   |
| Lastregelung statisch (10...90% I <sub>OUT</sub> ) | Load regulation static (10...90% I <sub>OUT</sub> ) | <0,1%                                                                            | <0,1%               | <0,1%               | <0,1%               |
| Regelzeit (10...90% I <sub>OUT</sub> )             | Response time (10...90% I <sub>OUT</sub> )          | <1,5%                                                                            | <0,5% <sup>2)</sup> | <1,5%               | <0,5% <sup>2)</sup> |
| Spannungsausregelung mit Sense max.                | Output regulation with sense max.                   | <1ms                                                                             | <1ms                | <1ms                | <1ms                |
| Derating                                           | Derating                                            | 0,5V max.                                                                        | —                   | 0,5V max.           | —                   |
|                                                    |                                                     | 2W/°C over 45°C at natural convection; 4W/°C over 60°C at enhanced cooling 1 m/s |                     |                     |                     |

<sup>1)</sup> maximale Gesamt-Ausgangsleistung: 80 Watt, siehe Derating

<sup>2)</sup> P<sub>OUT</sub> V1 min. 5Watt

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

<sup>2)</sup> P<sub>OUT</sub> V1 min. 5Watt

## VP80-Serie mit 3 und 4 Ausgängen AC/DC-Netzteile mit PFC

### Technische Daten

#### VP80-3

| 80W Dreifach-Ausgang                               |
|----------------------------------------------------|
| Ausgangsspannung                                   |
| Einstellbereich                                    |
| Ausgangs-Nennstrom <sup>1)</sup>                   |
| Ripple bei Vollast                                 |
| Begrenzung Ausgangsstrom                           |
| Kurzschlußschutz                                   |
| Überspannungsschutz (OVP)                          |
| Powerfail-Signal (bei Vollast >6ms)                |
| Netzregelung (100% I <sub>OUT</sub> )              |
| Lastregelung statisch (10...90% I <sub>OUT</sub> ) |
| Regelzeit (10...90% I <sub>OUT</sub> )             |
| Spannungsausregelung mit Sense max.                |
| Derating                                           |

### Technical Data

| 80W Triple output                                   |
|-----------------------------------------------------|
| Output voltage                                      |
| Adjustment range                                    |
| Output nominal current <sup>1)</sup>                |
| Ripple at full load                                 |
| Output current limit                                |
| Short circuit protection                            |
| Overvoltage protection (OVP)                        |
| Powerfail signal (at full load >6ms)                |
| Line regulation (100% I <sub>OUT</sub> )            |
| Load regulation static (10...90% I <sub>OUT</sub> ) |
| Response time (10...90% I <sub>OUT</sub> )          |
| Output regulation with sense max.                   |
| Derating                                            |

### VP80 Serie

| Version A                                                                        | with sym. ±12V      |                     | Version B           | with sym. ±15V      |                     |
|----------------------------------------------------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| V1                                                                               | V2                  | V3                  | V1                  | V2                  | V3                  |
| 5V                                                                               | +12V                | -12V                | 5V                  | +15V                | -15V                |
| 4,8–5,5V                                                                         | fix                 | fix                 | 4,8–5,5V            | fix                 | fix                 |
| 12A                                                                              | 1A                  | 1A                  | 12A                 | 1A                  | 1A                  |
| <40mV <sub>PP</sub>                                                              | <10mV <sub>PP</sub> | <10mV <sub>PP</sub> | <40mV <sub>PP</sub> | <10mV <sub>PP</sub> | <10mV <sub>PP</sub> |
| >12,1A                                                                           | >1,01A              | >1,01A              | >12,1A              | >1,01A              | >1,01A              |
| ja, elektronisch, automatischer Neustart - yes, electronic, automatic restart    |                     |                     |                     |                     |                     |
| 6,0–6,7V                                                                         | –                   | –                   | 6,0–6,7V            | –                   | –                   |
| V1<4,8V                                                                          | –                   | –                   | V1<4,8V             | –                   | –                   |
| <0,2%                                                                            | <0,2%               | <0,2%               | <0,2%               | <0,2%               | <0,2%               |
| <0,5%                                                                            | <1,5% <sup>2)</sup> | <1,5% <sup>2)</sup> | <0,5%               | <1,5% <sup>2)</sup> | <1,5% <sup>2)</sup> |
| <1ms                                                                             | <1ms                | <1ms                | <1ms                | <1ms                | <1ms                |
| 0,5V                                                                             | –                   | –                   | 0,5V                | –                   | –                   |
| 2W/°C over 45°C at natural convection; 4W/°C over 60°C at enhanced cooling 1 m/s |                     |                     |                     |                     |                     |

#### VP80-3

| 80W Dreifach-Ausgang                               |
|----------------------------------------------------|
| Ausgangsspannung                                   |
| Einstellbereich                                    |
| Ausgangs-Nennstrom <sup>1)</sup>                   |
| Ripple bei Vollast                                 |
| Begrenzung Ausgangsstrom                           |
| Kurzschlußschutz                                   |
| Überspannungsschutz (OVP)                          |
| Powerfail-Signal (bei Vollast >6ms)                |
| Netzregelung (100% I <sub>OUT</sub> )              |
| Lastregelung statisch (10...90% I <sub>OUT</sub> ) |
| Regelzeit (10...90% I <sub>OUT</sub> )             |
| Spannungsausregelung mit Sense max.                |
| Derating                                           |

| 80W Triple output                                   |
|-----------------------------------------------------|
| Output voltage                                      |
| Adjustment range                                    |
| Output nominal current <sup>1)</sup>                |
| Ripple at full load                                 |
| Output current limit                                |
| Short circuit protection                            |
| Overvoltage protection (OVP)                        |
| Powerfail signal (at full load >6ms)                |
| Line regulation (100% I <sub>OUT</sub> )            |
| Load regulation static (10...90% I <sub>OUT</sub> ) |
| Response time (10...90% I <sub>OUT</sub> )          |
| Output regulation with sense max.                   |
| Derating                                            |

#### Version C with strong +12V/4A Version D with strong +15V/3A

| V1                                                                               | V2                  | V3                  | V1                  | V2                  | V3                  |
|----------------------------------------------------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| +5V                                                                              | +12V                | -12V                | +5V                 | +15V                | -15V                |
| 4,8–5,5V                                                                         | fix                 | fix                 | 4,8–5,5V            | fix                 | fix                 |
| 12A                                                                              | 4A                  | 1A                  | 12A                 | 3A                  | 1A                  |
| <40mV <sub>PP</sub>                                                              | <40mV <sub>PP</sub> | <10mV <sub>PP</sub> | <40mV <sub>PP</sub> | <40mV <sub>PP</sub> | <10mV <sub>PP</sub> |
| >12,1A                                                                           | >4,1A               | >1,01A              | >12,1A              | >3,1A               | >1,01A              |
| ja, elektronisch, automatischer Neustart - yes, electronic, automatic restart    |                     |                     |                     |                     |                     |
| 6,0–6,7V                                                                         | –                   | –                   | 6,0–6,7V            | –                   | –                   |
| V1<4,8V                                                                          | –                   | –                   | V1<4,8V             | –                   | –                   |
| <0,2%                                                                            | <0,2%               | <0,2%               | <0,2%               | <0,2%               | <0,2%               |
| <0,5%                                                                            | <±4 <sup>2)</sup>   | <1,5% <sup>2)</sup> | <0,5%               | <±4 <sup>2)</sup>   | <1,5% <sup>2)</sup> |
| <1ms                                                                             | <1ms                | <1ms                | <1ms                | <1ms                | <1ms                |
| 0,5V                                                                             | –                   | –                   | 0,5V                | –                   | –                   |
| 2W/°C over 45°C at natural convection; 4W/°C over 60°C at enhanced cooling 1 m/s |                     |                     |                     |                     |                     |

#### VP80-4

| 80W Vierfach-Ausgang                               |
|----------------------------------------------------|
| Ausgangsspannung                                   |
| Einstellbereich                                    |
| Ausgangs-Nennstrom <sup>1)</sup>                   |
| Ripple bei Vollast                                 |
| Begrenzung Ausgangsstrom                           |
| Kurzschlußschutz                                   |
| Überspannungsschutz (OVP)                          |
| Powerfail-Signal (bei Vollast >6ms)                |
| Netzregelung (100% I <sub>OUT</sub> )              |
| Lastregelung statisch (10...90% I <sub>OUT</sub> ) |
| Regelzeit (10...90% I <sub>OUT</sub> )             |
| Spannungsausregelung mit Sense max.                |
| Derating                                           |

| 80W quadruple output                                |
|-----------------------------------------------------|
| Output voltage                                      |
| Adjustment range                                    |
| Output nominal current <sup>1)</sup>                |
| Ripple at full load                                 |
| Output current limit                                |
| Short circuit protection                            |
| Overvoltage protection (OVP)                        |
| Powerfail signal (at full load >6ms)                |
| Line regulation (100% I <sub>OUT</sub> )            |
| Load regulation static (10...90% I <sub>OUT</sub> ) |
| Response time (10...90% I <sub>OUT</sub> )          |
| Output regulation with sense max.                   |
| Derating                                            |

#### mit 3,3V und 5V für cPCI-Anwendungen / for cPCI applications

| V1                                                                               | V2                  | V3                  | V4                  |
|----------------------------------------------------------------------------------|---------------------|---------------------|---------------------|
| +3,3V                                                                            | +5V                 | +12V                | 12V                 |
| fix                                                                              | 4,8–5,5V            | fix                 | fix                 |
| 3,0A                                                                             | 12A                 | 4A                  | 1A                  |
| <20mV <sub>PP</sub>                                                              | <40mV <sub>PP</sub> | <40mV <sub>PP</sub> | <10mV <sub>PP</sub> |
| >3,01A                                                                           | >12,1A              | >4,1A               | >1,01A              |
| ja, elektronisch, automatischer Neustart - yes, electronic, automatic restart    |                     |                     |                     |
| –                                                                                | 6,0–6,7V            | –                   | –                   |
| –                                                                                | V2<4,8V             | –                   | –                   |
| <0,2%                                                                            | <0,2%               | <0,2%               | <0,2%               |
| <±4%                                                                             | <1%                 | <1,5% <sup>3)</sup> | <1,5% <sup>3)</sup> |
| <1ms                                                                             | <1ms                | <1ms                | <1ms                |
| –                                                                                | –                   | –                   | –                   |
| 2W/°C over 45°C at natural convection; 4W/°C over 60°C at enhanced cooling 1 m/s |                     |                     |                     |

<sup>1)</sup> maximale Gesamt-Ausgangsleistung: 80 Watt, siehe Derating

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

<sup>3)</sup> I<sub>OUT</sub> V2 min. 1A

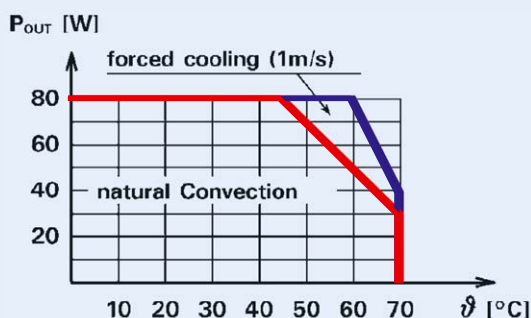
<sup>1)</sup> maximum total output power: 80 Watt, see derating

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

<sup>3)</sup> I<sub>OUT</sub> V2 min. 1A

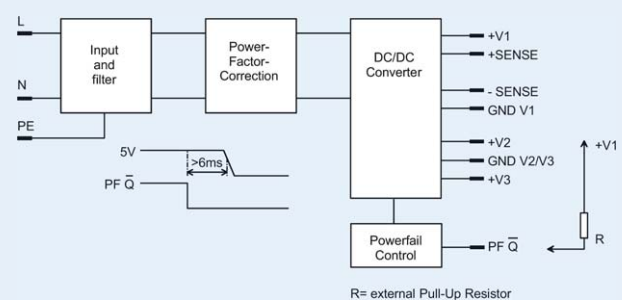
### Deratingkurve

### Derating curve



### Blockschaltbild

### Schematic Diagram



## VP150-Serie: 1-3 Ausgänge AC/DC-Netzteile mit PFC

150 Watt primärgetaktete AC/DC-Einschubnetzteile in 3HE/12TE-Eurokassetten für den Einsatz in 19"-Baugruppenträgern nach DIN 41494



- Aktive Powerfaktor Korrektur PFC
- Weiter Eingangsbereich 94-253VAC
- Hoher Wirkungsgrad bis 87%
- Power Share zwischen d. Ausgänge
- Alle Ausgänge separat einstellbar
- N+1 redundante Typen
- Konvektionskühlung
- CE-Zeichen gem. EMV u. NV-Richtlinie
- Sicherheit gemäß EN60950, UL, cUL
- VERO-Standardpinning, paßt zu PK120
- 24 Monate Garantie

Durch Synchrongleichrichtung und Transduktorregelung werden Wirkungsgradwerte bis 87% erreicht. Zusammen mit optimalem thermischen Design konnte die Leistungsdichte dieser Serie gegenüber der PK-Serie um mehr als 45% erhöht werden. Somit können 150Watt in einer 3HE/12TE-Kassette bereitgestellt werden. Die Einzelwandler-Technik erlaubt bei Mehrfachausgängen eine Lastverschiebung zwischen den Ausgängen. Mit dem VP150-1R können N+1 redundante Systeme und Battery Back-up Systeme aufgebaut werden.

### 150 Watt switched mode AC/DC plug-in power supplies in 3U/12HP-Eurocassettes for use in 19" subracks to DIN 41494

- 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, UL, 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.

| Technische Daten                                                 |
|------------------------------------------------------------------|
| Eingangsdaten                                                    |
| Eingangsspannung                                                 |
| Eingangsfrequenz                                                 |
| Einschalt-Stoßstrombegrenzung                                    |
| Begrenzung Eingangsspannungsspitzen                              |
| Netzausfallüberbrückung                                          |
| Powerfaktor Korrektur PFC                                        |
| Wirkungsgrad                                                     |
| Sicherheit: CE-Zeichen gemäß Niederspannungsrichtlinie 73/23/EWG |
| Sicherheit gemäß EMV: CE-Zeichen gemäß EMV-Richtlinie 89/336/EWG |
| EMV-Störaussendung                                               |
| EMV-Störfestigkeit                                               |
| Oberschwingungen gemäß                                           |
| Betriebstemperatur / Lagertemperatur                             |
| Relative Luftfeuchtigkeit                                        |
| Abmaße (L x B x H) mm                                            |
| Gewicht:                                                         |

| Technical Data                                                         |
|------------------------------------------------------------------------|
| Input Data                                                             |
| Input voltage                                                          |
| Input frequency                                                        |
| Inrush surge current limit                                             |
| Input voltage spike limit                                              |
| Hold-up time                                                           |
| Powerfactor correction PFC                                             |
| Efficiency                                                             |
| Safety: CE marking according to low voltage directive 73/23/EEG        |
| Safety according to EMC: CE marking according EMC directive 89/336/EEG |
| EMI conducted & radiated emission                                      |
| EMI immunity                                                           |
| harmonics according                                                    |
| Operating temperature / Storage temperature                            |
| Relative humidity                                                      |
| Dimensions (L x W x H) mm                                              |
| Weight:                                                                |

| VP150 Serie                                 |
|---------------------------------------------|
| 94-253VAC                                   |
| 47-63Hz                                     |
| <27A (NTC)                                  |
| durch VDR; by VDR                           |
| >20 msec (bei Nenndaten; at nominal values) |
| >0,98                                       |
| bis / up to 87%                             |
| EN60950, IEC 950, UL1950, cUL               |
| EN 55022/B (0,15-30MHz; 30-1000MHz)         |
| EN 50082-2                                  |
| EN 61000-3-2                                |
| 0°C...+70°C / -40°C...+85°C                 |
| max.90% ohne Btauung /without condensation  |
| 162x60,6x110mm (3U/12HP) with Frontpanel    |
| 1100 g                                      |

### Bestell-Informationen / Order information

| Typ                                          | Ausgänge                           | Netzspannung                            | Wirkungsgrad | Bestell-Code |
|----------------------------------------------|------------------------------------|-----------------------------------------|--------------|--------------|
| Type                                         | Outputs                            | Mains voltage                           | Efficiency   | Ordercode    |
| VP150-1 5V                                   | 5V/24A                             | 94...253VAC                             | typ. 82,5%   | 116-031510K  |
| VP150-1 12V                                  | 12...15V/10A                       | 94...253VAC                             | typ. 85%     | 116-031511G  |
| VP150-1 24V                                  | 24...28V/6,25A                     | 94...253VAC                             | typ. 87%     | 116-031512D  |
| VP150-1-R 5V                                 | 5V/24A                             | 94...253VAC                             | typ. 81,5%   | 116-031513A  |
| VP150-1-R 12V                                | 12...15V/10A                       | 94...253VAC                             | typ. 82,5%   | 116-031514J  |
| VP150-1-R 24V                                | 24...28V/6,25A                     | 94...253VAC                             | typ. 85%     | 116-031515F  |
| VP150-1-R 48V                                | 48...54V/3,2A                      | 94...253VAC                             | typ. 85%     | 116-031516C  |
| VP150-3                                      | 5V/20A; +12...15V/4A; -12...15V/2A | 94...253VAC                             | typ. 81%     | 116-031530B  |
| Federleiste mit Kodierung H15 nach DIN 41612 |                                    | Mating connector coded H15 to DIN 41612 |              | 017-010115K  |
| Kodierungsteil (10er Paket)                  |                                    | Coding keys (pack per 10)               |              | 017-010064F  |

## VP150-Serie mit 1 und 3 Ausgängen AC/DC-Netzteile mit PFC

| Technische Daten                                   | Technical Data                                      | VP150 Serie                                                                   |
|----------------------------------------------------|-----------------------------------------------------|-------------------------------------------------------------------------------|
| <b>VP150-1 150W Einzel-Ausgang</b>                 | <b>VP150-1 150W Single output</b>                   |                                                                               |
| Ausgangsspannung                                   | Output voltage                                      | V1                                                                            |
| Einstellbereich                                    | Adjustment range                                    | 5V                                                                            |
| Ausgangs-Nennstrom <sup>1)</sup>                   | Output nominal current <sup>1)</sup>                | 4,5–5,5V                                                                      |
| Ripple bei Vollast                                 | Ripple at full load                                 | 12–15V                                                                        |
| Begrenzung Ausgangsstrom                           | Output current limit                                | 24V                                                                           |
| Kurzschlußschutz                                   | Short circuit protection                            | 24,0A                                                                         |
| Überspannungsschutz (OVP)                          | Overvoltage protection (OVP)                        | <40mV <sub>pp</sub>                                                           |
| Powerfail-Signal (bei Vollast >6ms)                | Powerfail signal (at full load >6ms)                | >24,5A                                                                        |
| Netzregelung (100% I <sub>OUT</sub> )              | Line regulation (100% I <sub>OUT</sub> )            | ja, elektronisch, automatischer Neustart - yes, electronic, automatic restart |
| Lastregelung statisch (10...90% I <sub>OUT</sub> ) | Load regulation static (10...90% I <sub>OUT</sub> ) | 5,8–6,25V                                                                     |
| Regezeit (10...90% I <sub>OUT</sub> )              | Response time (10...90% I <sub>OUT</sub> )          | 16,5–18V                                                                      |
| Spannungsausregelung mit Sense                     | Output regulation with SENSE                        | 29–30,6V                                                                      |
| Derating                                           | Derating                                            | Vo<4,8V                                                                       |
|                                                    |                                                     | <0,2%                                                                         |
|                                                    |                                                     | <0,5%                                                                         |
|                                                    |                                                     | <1ms                                                                          |
|                                                    |                                                     | 0,5V max.                                                                     |
|                                                    |                                                     | 0,5V max.                                                                     |
|                                                    |                                                     | 0,5V max.                                                                     |

siehe Diagramm - see curve

### VP150-1-R for N+1 redundant systems and battery back-up systems

| 150W Einzel-Ausgang redundant                      | 150W Single output redundant                        | V1                                                                            | V1                        | V1                        | V1                        |
|----------------------------------------------------|-----------------------------------------------------|-------------------------------------------------------------------------------|---------------------------|---------------------------|---------------------------|
| Ausgangsspannung                                   | Output voltage                                      | 5V                                                                            | 12–15V                    | 24V                       | 48V                       |
| Einstellbereich mit Poti                           | Adjustment range with Poti                          | 4,5–5,5V                                                                      | 11,8–15,2V                | 23,5–28,5V                | 47,5–54,5V                |
| Einstellbereich über Vadj Eingang                  | Adjustment range by Vadj input                      | –                                                                             | –                         | 22–28,5V                  | 40–58,2V                  |
| Ausgangs-Nennstrom <sup>1)</sup>                   | Output nominal current <sup>1)</sup>                | 24,0A                                                                         | 10,7A                     | 6,3A                      | 3,2A                      |
| Ripple bei Vollast                                 | Ripple at full load                                 | <40mV <sub>pp</sub>                                                           | <40mV <sub>pp</sub>       | <40mV <sub>pp</sub>       | <40mV <sub>pp</sub>       |
| Begrenzung Ausgangsstrom                           | Output current limit                                | >24,5A                                                                        | >11,7A                    | >6,6A                     | >3,4A                     |
| Kurzschlußschutz                                   | Short circuit protection                            | ja, elektronisch, automatischer Neustart - yes, electronic, automatic restart |                           |                           |                           |
| Überspannungsschutz (OVP)                          | Overvoltage protection (OVP)                        | 5,8–6,25V                                                                     | 16,5–18V                  | 29–30,6V                  | 62–68V                    |
| DC-FAIL-Signal                                     | DC-FAIL signal                                      | aktiv low bei Geräteausfall / at unit failure (open collector, 20mA, <0,4V)   |                           |                           |                           |
| Netzregelung (100% I <sub>OUT</sub> )              | Line regulation (100% I <sub>OUT</sub> )            | <0,2%                                                                         | <0,2%                     | <0,2%                     | <0,2%                     |
| Lastregelung statisch (10...90% I <sub>OUT</sub> ) | Load regulation static (10...90% I <sub>OUT</sub> ) | <0,5%                                                                         | <0,5%                     | <0,5%                     | <0,5%                     |
| Regezeit (10...90% I <sub>OUT</sub> )              | Response time (10...90% I <sub>OUT</sub> )          | <1ms                                                                          | <1ms                      | <1ms                      | <1ms                      |
| Stromaufteilung mit ASF-Signal                     | Current share with ASF signal                       | typ. ±5% I <sub>OUT</sub>                                                     | typ. ±5% I <sub>OUT</sub> | typ. ±5% I <sub>OUT</sub> | typ. ±5% I <sub>OUT</sub> |
| Spannungsausregelung mit Sense                     | Output regulation with SENSE                        | 0,5V max.                                                                     | 0,5V max.                 | 0,5V max.                 | 0,5V max.                 |
| Derating                                           | Derating                                            |                                                                               |                           |                           |                           |

siehe Diagramm - see curve

### VP150-3 V2 and V3 ±12...15V individually adjustable, with strong +12...15V

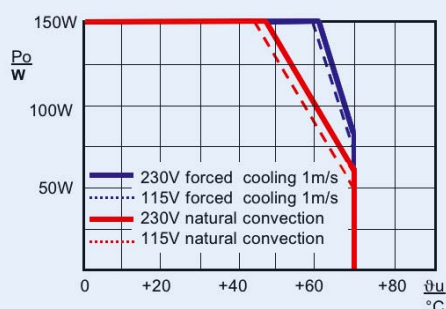
| 150W Dreifach Ausgang                              | 150W Triple output                                  | V1                                                                            | V2                  | V3                  |
|----------------------------------------------------|-----------------------------------------------------|-------------------------------------------------------------------------------|---------------------|---------------------|
| Ausgangsspannung                                   | Output voltage                                      | 5V                                                                            | +12–15V             | -12–15V             |
| Einstellbereich                                    | Adjustment range                                    | 4,8...5,5V                                                                    | +11,8–15,2V         | -11,8–15,2V         |
| Ausgangs-Nennstrom <sup>1)</sup>                   | Output nominal current <sup>1)</sup>                | 20A <sup>1)</sup>                                                             | 4A <sup>1)</sup>    | 2A <sup>1)</sup>    |
| Ripple bei Vollast                                 | Ripple at full load                                 | <40mV <sub>pp</sub>                                                           | <20mV <sub>pp</sub> | <20mV <sub>pp</sub> |
| Begrenzung Ausgangsstrom                           | Output current limit                                | >20,5A                                                                        | >5A                 | >2,7A               |
| Kurzschlußschutz                                   | Short circuit protection                            | ja, elektronisch, automatischer Neustart - yes, electronic, automatic restart |                     |                     |
| Überspannungsschutz (OVP)                          | Overvoltage protection (OVP)                        | 6,0–6,5V fix                                                                  | +16–18V fix         | -16–18V fix         |
| Powerfail-Signal (bei Vollast >5ms)                | Powerfail signal (at full load >5ms)                | Vo<4,8V                                                                       | –                   | –                   |
| Netzregelung (100% I <sub>OUT</sub> )              | Line regulation (100% I <sub>OUT</sub> )            | <0,2%                                                                         | <0,2%               | <0,2%               |
| Lastregelung statisch (10...90% I <sub>OUT</sub> ) | Load regulation static (10...90% I <sub>OUT</sub> ) | <0,5%                                                                         | <0,2%               | <0,2%               |
| Regezeit (10...90% I <sub>OUT</sub> )              | Response time (10...90% I <sub>OUT</sub> )          | <1ms                                                                          | <1ms                | <1ms                |
| Spannungsausregelung mit Sense                     | Output regulation with SENSE                        | 0,5V max.                                                                     | –                   | –                   |
| Derating                                           | Derating                                            |                                                                               |                     |                     |

siehe Diagramm - see curve

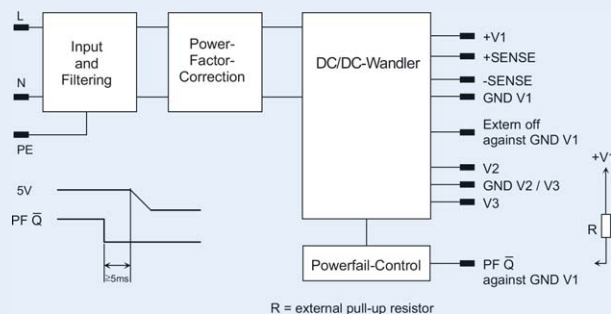
<sup>1)</sup> maximale Gesamt-Ausgangsleistung: 150 Watt, siehe Derating

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

#### Deratingkurve Derating curve



#### Blockschaltbild Schematic Diagram

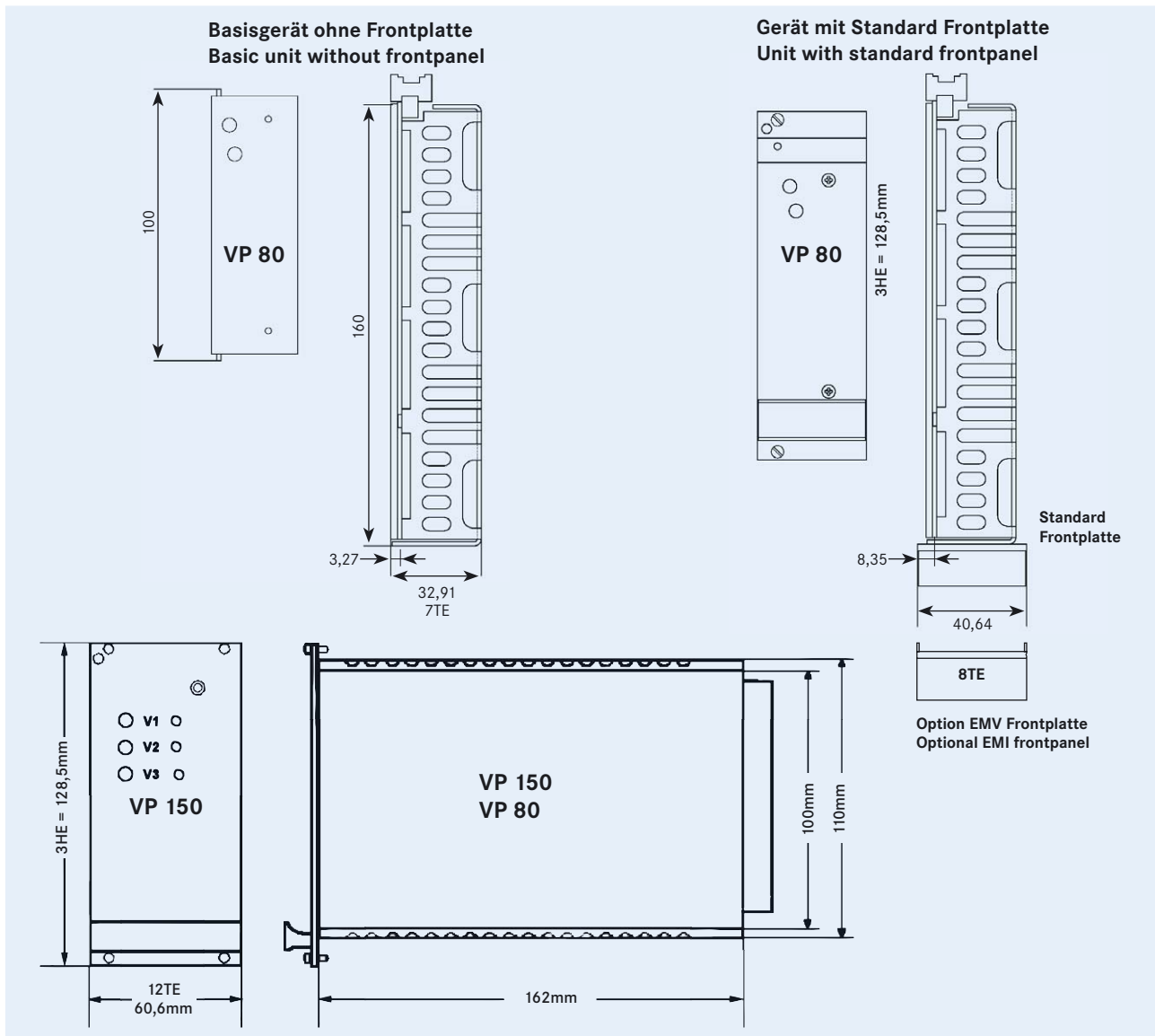


## VP80 und VP150 Serien

## Mechanische Details, Steckerbelegung

## VP80 and VP150 Series

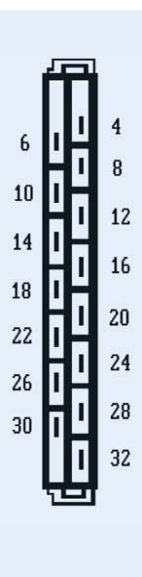
## Mechanical Details, Connector Pinning



### H15-Stecker Connector

### Anschlußbelegung

### Connector pinning



| PIN | Funktion |          |           |        |        |           |        |        |             |             |             |  |
|-----|----------|----------|-----------|--------|--------|-----------|--------|--------|-------------|-------------|-------------|--|
|     | VP80-1   | VP80-1R  | VP80-2    |        |        | VP80-3    |        | VP80-4 | VP150-1     | VP150-1R    | VP150-3     |  |
|     |          |          | A+B       | C+E    | D      | A+B       | C+D    |        |             |             |             |  |
| 4   | +V1      | +V1      | —         | +V1    | +V1    | +V1       | +V1    | +V2    | +V1         | +V1         | +5V         |  |
| 6   | +V1      | +V1      | —         | +V1    | +V1    | +V1       | +V1    | +V2    | +V1         | +V1         | +5V         |  |
| 8   | Gnd V1   | Gnd V1   | —         | Gnd V1 | Gnd V1 | Gnd V1    | Gnd    | Gnd    | Gnd V1      | Gnd V1      | Gnd V1      |  |
| 10  | Gnd V1   | Gnd V1   | —         | Gnd V1 | Gnd V1 | Gnd V1    | Gnd    | Gnd    | Gnd V1      | Gnd V1      | Gnd V1      |  |
| 12  | +Sense   | +Sense   | —         | +Sense | —      | +Sense    | +Sense | +V1    | +Sense      | +Sense      | +Sense      |  |
| 14  | -SENSE   | -Sense   | —         | -Sense | —      | -Sense    | -Sense | —      | -Sense      | -Sense      | -Sense      |  |
| 16  | PF/      | DC-Fail/ | —         | PF/    | —      | PF/       | PF/    | PF/    | Ext.on/off+ | Ext.on/off+ | PF/         |  |
| 18  | —        | —        | +V1       | —      | —      | +V2       | +V2    | +V3    | —           | DC-Fail     | +12V        |  |
| 20  | —        | ASF      | Gnd V1/V2 | +V2    | +V2    | Gnd V2/V3 | Gnd    | Gnd    | —           | ASF         | GND2        |  |
| 22  | —        | —        | -V2       | Gnd V2 | Gnd V2 | -V3       | -V3    | -V4    | PF/         | Vadj.       | -12V        |  |
| 24  | —        | —        | —         | —      | —      | —         | —      | —      | Ext.on/off- | Ext.on/off- | Ext.on/off+ |  |
| 26  | —        | —        | —         | —      | —      | —         | —      | —      | —           | —           | —           |  |
| 28  | N        | N        | N         | N      | N      | N         | N      | N      | N           | N           | N           |  |
| 30  | L        | L        | L         | L      | L      | L         | L      | L      | L           | L           | L           |  |
| 32  | PE       | PE       | PE        | PE     | PE     | PE        | PE     | PE     | PE          | PE          | PE          |  |

Anmerkung: Die Sense-Leitungen müssen angeschlossen werden. Wegen der maximalen Kompensation des Spannungsabfalls im Zuleitungskabel sollten sie so nahe wie möglich an der Last angeschlossen sein.

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.