

#### Features

- World's most compact High Voltage Power Supplies
- Full SMD-Design with Ceramic Capacitors for highest Reliability
- Positive or negative Polarity Models
- PCB- and flying Lead Versions
- Excellent Output stability
- Low Temperature Coefficient
- Ultra low Ripple
- Remote Voltage Programming 0 to 100%
- Short Circuit Protection
- Shielded Metal Case
- 2 Year Product Warranty



The MHV / SHV series are regulated miniature high voltage power modules using SMD and hybrid technology. They are designed for PCB mounting (MHV series) or chassis mounting (SHV series) The use of high stability components guarantees a minimal temperature drift and a very stable output voltage.

Typical applications for these HV power supplies are photomultiplier tubes, gas chromatography, analytical instruments and wherever where small size and high output voltage stability is requested.

#### Models

| Ordercode                                                                                                                                                                | Input voltage             | Output voltage                                                                                                                       | Output current max.                                              | Case                                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|--------------------------------------|
| MHV 12-180 S 15 P<br>MHV 12-180 S 15 N<br>MHV 12-300 S 10 P<br>MHV 12-300 S 10 N<br>MHV 12-350 S 07 P<br>MHV 12-350 S 07 N<br>MHV 12-0.5 K 6000 P<br>MHV 12-0.5 K 6000 N | 12 VDC<br>10.8 - 13.2 VDC | 0... +180 VDC<br>0... -180 VDC<br>0... +300 VDC<br>0... -300 VDC<br>0... +350 VDC<br>0... -350 VDC<br>0... +500 VDC<br>0... -500 VDC | 15 mA<br>15 mA<br>10 mA<br>10 mA<br>7 mA<br>7 mA<br>6 mA<br>6 mA | A<br>A<br>A<br>A<br>A<br>A<br>B<br>B |
| MHV 12-1.0 K 2000 P<br>MHV 12-1.0 K 2000 N<br>MHV 12-1.5 K 1300 P<br>MHV 12-1.5 K 1300 N<br>MHV 12-2.0 K 1000 P<br>MHV 12-2.0 K 1000 N                                   | 12 VDC<br>10.8 - 16.5 VDC | 0...+1000 VDC<br>0...-1000 VDC<br>0...+1500 VDC<br>0...-1500 VDC<br>0... +2000 VDC<br>0...-2000 VDC                                  | 2 mA<br>2 mA<br>1.3 mA<br>1.3 mA<br>1 mA<br>1 mA                 | B<br>B<br>B<br>B<br>B<br>B           |
| SHV 12-0.5 K 6000 P<br>SHV 12-0.5 K 6000 N                                                                                                                               | 12 VDC<br>10.8 - 13.2 VDC | 0... +500 VDC<br>0... -500 VDC                                                                                                       | 6 mA<br>6 mA                                                     | C<br>C                               |
| SHV 12-1.0 K 2000 P<br>SHV 12-1.0 K 2000 N<br>SHV 12-1.5 K 1300 P<br>SHV 12-1.5 K 1300 N<br>SHV 12-2.0 K 1000 P<br>SHV 12-2.0 K 1000 N                                   | 12 VDC<br>10.8 - 16.5 VDC | 0...+1000 VDC<br>0...-1000 VDC<br>0...+1500 VDC<br>0...-1500 VDC<br>0... +2000 VDC<br>0...-2000 VDC                                  | 2 mA<br>2 mA<br>1.3 mA<br>1.3 mA<br>1 mA<br>1 mA                 | C<br>C<br>C<br>C<br>C<br>C           |

Order code P for positive output polarity  
Order code N for negative output polarity

### Input Specifications

|               |                                                      |                                                |
|---------------|------------------------------------------------------|------------------------------------------------|
| Input voltage | 180, 300, 350 & 500 Vout models<br>other Vout models | +10.8VDC to +13.2 VDC<br>+10.8VDC to +16.5 VDC |
|---------------|------------------------------------------------------|------------------------------------------------|

|                            |      |
|----------------------------|------|
| Reverse voltage protection | none |
|----------------------------|------|

|                         |                 |
|-------------------------|-----------------|
| Conducted noise (input) | internal filter |
|-------------------------|-----------------|

### Output Specifications

|                  |       |
|------------------|-------|
| Voltage accuracy | ± 5 % |
|------------------|-------|

|                                                                                                             |          |
|-------------------------------------------------------------------------------------------------------------|----------|
| Voltage adjustment range<br>(adjustable with external voltage 0 to +4 VDC or with 5 kOhm variable resistor) | 0 – 100% |
|-------------------------------------------------------------------------------------------------------------|----------|

|                                                             |                                                        |
|-------------------------------------------------------------|--------------------------------------------------------|
| Remote ON / OFF control (not for 180, 300, 350 Vout models) | ON = pin 2 to pin 5 open<br>OFF = pin 2 to pin 5 short |
|-------------------------------------------------------------|--------------------------------------------------------|

|            |                                                                      |                                |
|------------|----------------------------------------------------------------------|--------------------------------|
| Regulation | – Input variation Vin min. to Vin max.<br>– Load variation 0 – 100 % | ± 0.03 % max.<br>± 0.08 % max. |
|------------|----------------------------------------------------------------------|--------------------------------|

|                                                        |                                                           |                                                      |
|--------------------------------------------------------|-----------------------------------------------------------|------------------------------------------------------|
| Ripple and noise<br>(20 MHz Bandwidth) 500 Vout models | 180, 300 & 350 Vout models<br>1.0, 1.5 & 2.0 kVout models | 30 mVpk-pk typ.<br>10 mVpk-pk typ.<br>8 mVpk-pk typ. |
|--------------------------------------------------------|-----------------------------------------------------------|------------------------------------------------------|

|                         |               |
|-------------------------|---------------|
| Temperature coefficient | ± 0.01 % / °C |
|-------------------------|---------------|

|           |                             |
|-----------|-----------------------------|
| Stability | 0.05% 8h after warm-up time |
|-----------|-----------------------------|

|                    |                              |
|--------------------|------------------------------|
| Current limitation | 105% of Iout max., fold back |
|--------------------|------------------------------|

|                          |            |
|--------------------------|------------|
| Short circuit protection | indefinite |
|--------------------------|------------|

### General Specifications

|                    |                                                |                                                            |
|--------------------|------------------------------------------------|------------------------------------------------------------|
| Temperature ranges | – Operating<br>– Case temperature<br>– Storage | – 10 °C ... + 60 °C<br>+ 95 °C max.<br>– 25 °C ... + 85 °C |
|--------------------|------------------------------------------------|------------------------------------------------------------|

|                     |         |
|---------------------|---------|
| Derating above 50°C | 4% / °C |
|---------------------|---------|

|                           |                 |
|---------------------------|-----------------|
| Humidity (non condensing) | 95 % rel H max. |
|---------------------------|-----------------|

|            |          |
|------------|----------|
| Efficiency | 60 – 65% |
|------------|----------|

|                                               |                      |
|-----------------------------------------------|----------------------|
| Reliability, calculated MTBF (MIL-HDBK-217 D) | >300'000 h @ + 25 °C |
|-----------------------------------------------|----------------------|

|                   |                |      |
|-------------------|----------------|------|
| Isolation voltage | Input / Output | none |
|-------------------|----------------|------|

|           |                                                                |
|-----------|----------------------------------------------------------------|
| Vibration | 5 –100 Hz amplitude 10 mm pk-pk<br>10 – 55 Hz acceleration 2 G |
|-----------|----------------------------------------------------------------|

|       |                                   |
|-------|-----------------------------------|
| Shock | acceleration 20 G max. time 11 ms |
|-------|-----------------------------------|

### Physical Specifications

|               |                           |
|---------------|---------------------------|
| Case material | steel chrom-nickel plated |
|---------------|---------------------------|

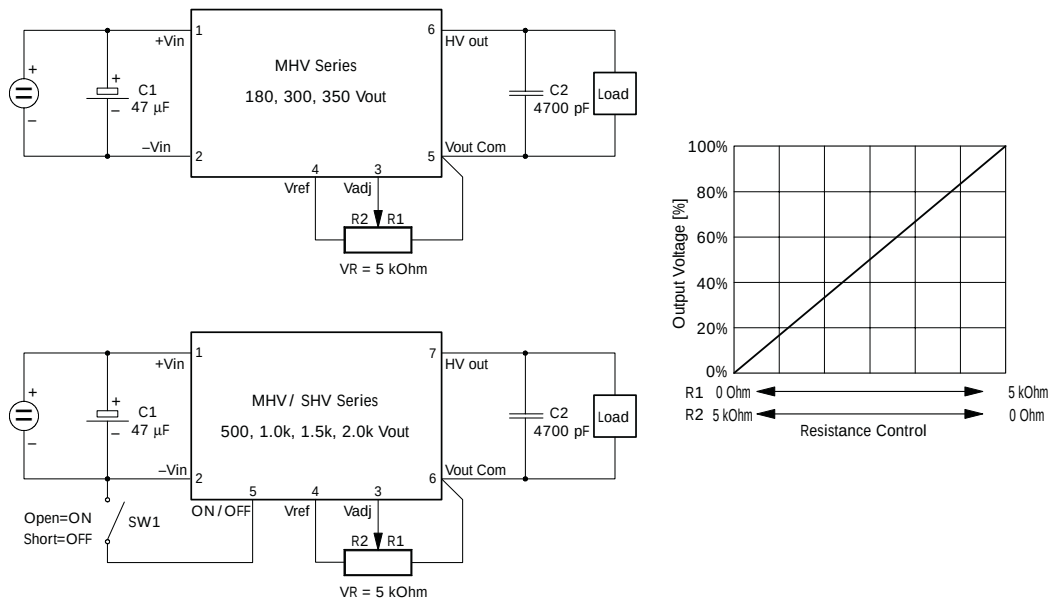
|        |                                                      |                                                    |
|--------|------------------------------------------------------|----------------------------------------------------|
| Weight | MHV models case A<br>MHV models case B<br>SHV models | 47 g (1.66 oz)<br>65 g (2.29 oz)<br>98 g (3.46 oz) |
|--------|------------------------------------------------------|----------------------------------------------------|

|                       |                       |
|-----------------------|-----------------------|
| Soldering temperature | max. 260 °C / 10 sec. |
|-----------------------|-----------------------|

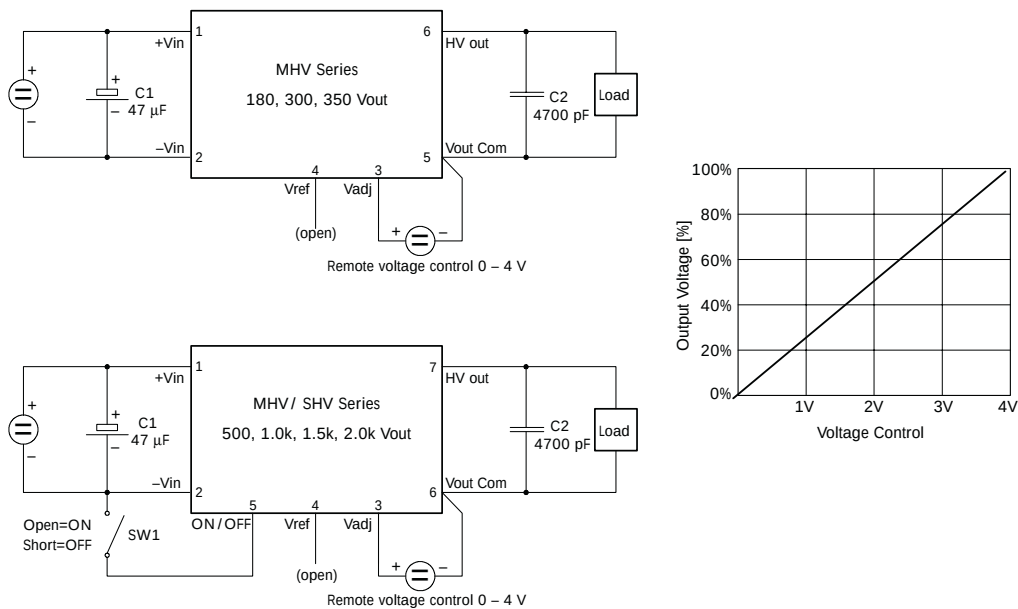
All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

## Connection Diagram

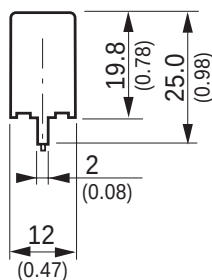
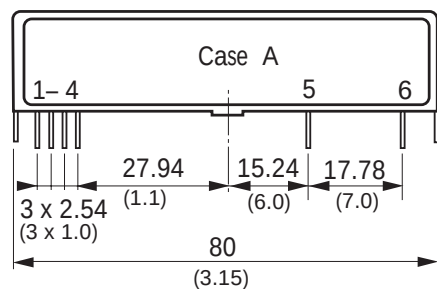
Connection for remote control by variable resistor



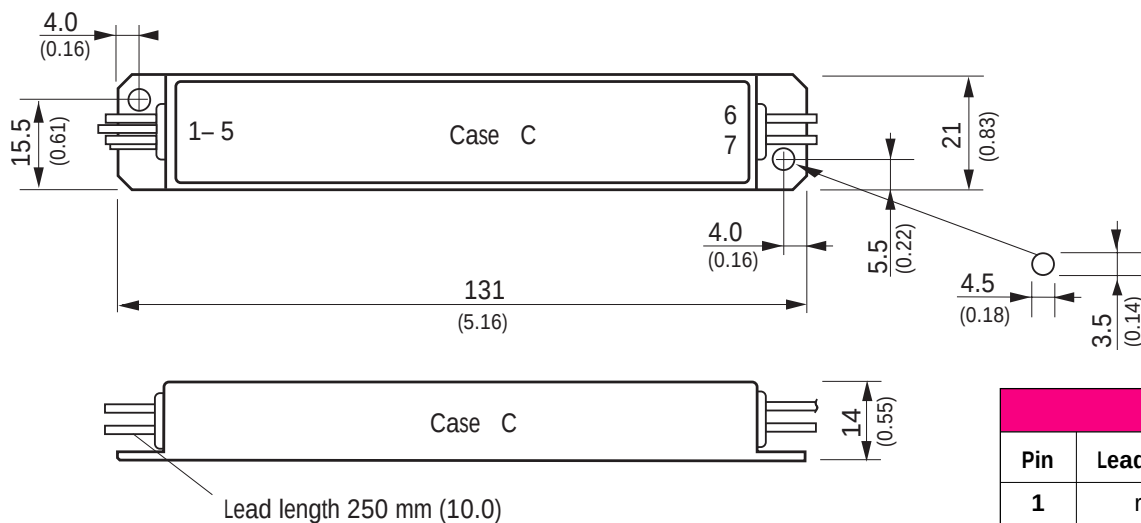
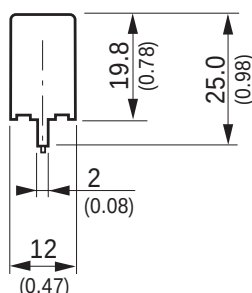
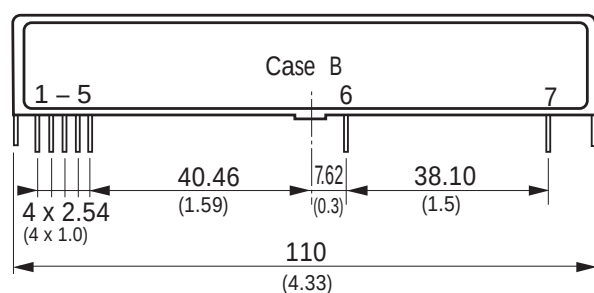
Connection for remote voltage control



## Connection Diagram



| Pin-Out |            |            |
|---------|------------|------------|
| Pin     | Case A     | Case B     |
| 1       | +Vin (Vcc) | +Vin (Vcc) |
| 2       | -Vin (GND) | -Vin (GND) |
| 3       | V adj.     | V adj.     |
| 4       | V ref.     | V ref.     |
| 5       | Common     | ON / OFF   |
| 6       | Vout       | Common     |
| 7       | no pin     | Vout       |



| Pin-Out |            |            |
|---------|------------|------------|
| Pin     | Lead color | Case C     |
| 1       | red        | +Vin (Vcc) |
| 2       | black      | -Vin (GND) |
| 3       | yellow     | V adj.     |
| 4       | orange     | V ref.     |
| 5       | blue       | ON / OFF   |
| 6       | black      | Common     |
| 7       | red        | Vout       |

Pin diameter  $\varnothing 0.65 \pm 0.05$  ( $0.03 \pm 0.002$ )

Tolerances  $\pm 0.5$  (0.02)

Specifications can be changed without notice