A FORTEC GROUP MEMBER

# FILTER RIA12 100-W/Ks, .../Ksl.../Ksp

**RAILWAY FILTER.**

## FOR PCB AND CHASSIS MOUNTING


## HIGHLIGHTS

- Output Power up to 100 Watts*
- Efficiency up to 99%
- Ultra Wide Input Range
- Wide Temperature Range
- Hold-up-time > 10ms
- RoHS compliance
- According to EN50155 and RIA12
- Reverse Polarity Protection
- Integrated EMC Filter

## INPUT

| | |
|---|---|
| **Input Voltage Nominal** | 72, 96 and 110 V |
| **Input Voltage Operating** | 50,4-137,5 VDC |
| **Input Voltage Range** | 43,2-154 VDC ( t ≤ 1,0 sec.) |
| **No Load Input Current** | See table page 2 |

## OUTPUT

| | |
|---|---|
| **Output Voltage** | See page 4 |
| **Output Load** | See page 4 |
| **Minimum Load** | No minimum load |
| **Load Regulation** | < 1,5 % (0% - 100% load) |
| **Start Time** | < 50 ms |
| **Max. Output Capacitance** | 500 uF x $I_{out\ nom}$ |

## FEATURES

| | |
|---|---|
| **Active Inrush Current Limitation** | Max. 6 A (for ≥ 0,5 ms) |
| **Reverse Polarity Protection** | Max.160 V |
| **Hold-up-time** | > 10 ms at full load |

## TRANSIENTS RIA 12

| | |
|---|---|
| **Wave Form A – 385VDC** | 20ms, 0,2 Ohm |
| **Wave Form B – 165VDC** | 1s, 0,2 Ohm |
| **Wave Form C – 960V** | 10us/100us, 5 Ohm |
| **Wave Form D – 1800V** | 5us/50us, 5 Ohm |
| **Wave Form E – 3600V** | 0,5us/5us, 100 Ohm |
| **Wave Form F – 4800V** | 0,1us/1us, 100 Ohm |
| **Wave Form G – 8400V** | 0,05/0,1us, 100 Ohm |

## PROTECTION

| | |
|---|---|
| **Over Temperature Protection (OTP)** | Shutdown at +95°-100°C PCB-temp. with about 5°C hysteresis and auto recovery. |

## GENERAL

| | |
|---|---|
| **Product Standard** | EN 50155:2007 |
| **Isolation** | 2200 VDC Input/Output to Earth (PE) |
| **Dimensions [mm]** | 113,5 x 35 x 46 |
| **Weight** | approx. 300 g |
| **MTBF** | TBD |

## ENVIRONMENTAL

| | |
|---|---|
| **Operating Ambient Temp.** | -40°C to +85°C* |
| **Storage Temperature** | -40°C to +100°C |
| **Vibration / Shock / Bump** | EN 61373:1999, Cat. 1 |

## EMC

| | |
|---|---|
| **EMC Standard** | EN 50121-3-2:2006 |
| **Emissions** | EN 55011:2009+A1:2010, Class B** |
| **ESD Immunity** | EN 61000-4-2:2009, level 3 (6kV/8kV), Criteria A |
| **Burst** | EN 61000-4-4:2004, level 3 (2kV), Criteria A |
| **Surge** | EN 50121-3-2:2006, line to line ±1kV, 42R, and line to case ±2kV, 42R, Criteria A<br>EN 61000-4-5:2006, line to line ±1kV, and line to case ±2kV, Criteria A |
| **Conducted Immunity** | EN 61000-4-6:2009, level 3 (10V), Criteria A |
| **Radiated Immunity** | EN 61000-4-3:2006+A1:2008+A2:2010, 20V/m, Criteria A |

* +85°C continuously.
** In built-in condition the devices may show different EMC properties.

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# TECHNICAL DATA

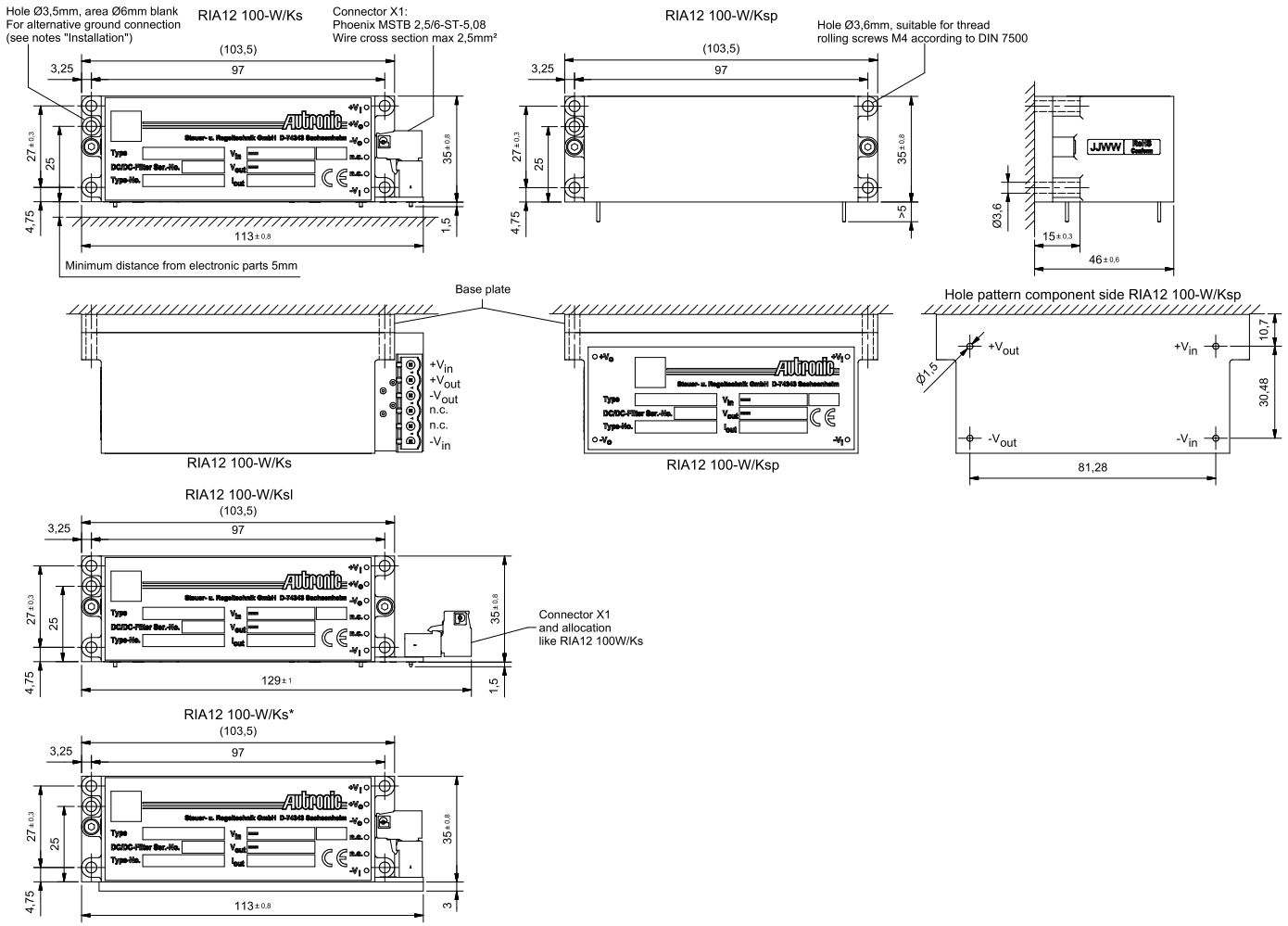
For $T_{amb}$=25°C,$V_{in\ nom}$,$I_{out\ nom}$, unless otherwise specified

## SPECIFICATION Input 14,4 - 154 VDC

| | TYPE | | RIA12 100-W | | |
|---|---|---|---|---|---|
| | ORDER NUMBER | | 87 72 01 0222 5 | | |
| | CHARACTERISTIC | Unit | | | |
| INPUT | Input Voltage Nominal | V | 72 | 96 | 110 |
| | Input Voltage Range | V | 43,2...101 | 57,6...134,4 | 66...154 |
| | Under Voltage Turn-on | V | <43,2 | | |
| | Under Voltage Turn-off | V | <35...40 | | |
| | Input Current @ Full Load | A | 1,40 | 1,04 | 0,91 |
| | Input Current @ No Load | A | 0,006 | 0,006 | 0,006 |
| | Recommended External Fuse | A | 3,0 | | |
| OUTPUT | Output Power | W | 100 | | |
| | Efficiency @ Full Load (typical) | % | 99 | 99 | 99 |

## MECHANICAL DETAILS

1. Dimensions are in mm
2. Unless otherwise specified, general tolerances +/-0,5 are for values in brackets (XX)
   Values not in brackets are according to ISO-2768-1m




Resin compound: Polyurethane black, UL94-V0, EN45545-2:2016-02 HL-HL2-HL3 (R24)

* For models with pin cover

# TECHNICAL DATA

For $T_{amb}$=25°C,$V_{in\ nom}$,$I_{out\ nom}$, unless otherwise specified

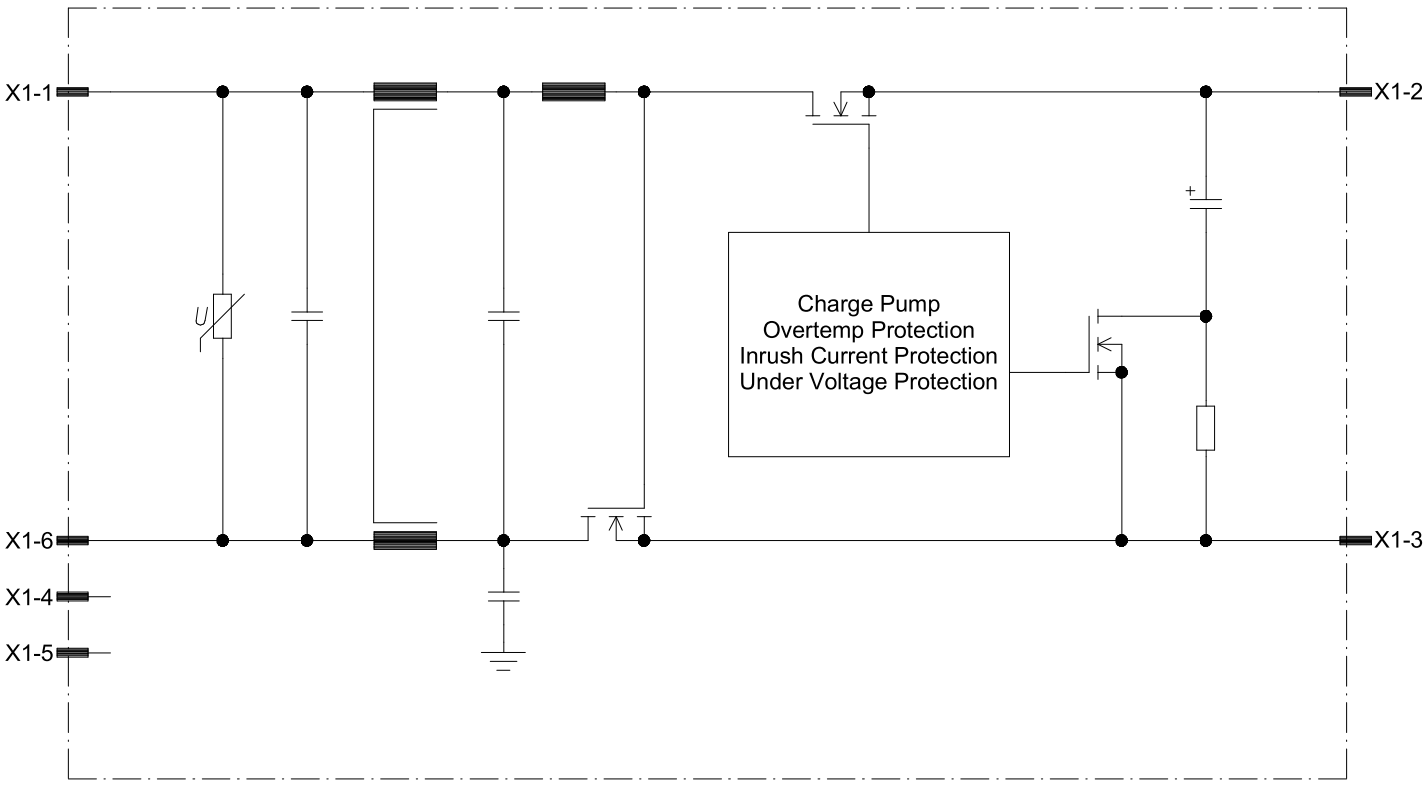
## PINNING

| Pin | Function |
|---|---|
| X1-1 | $+V_{in}$ |
| X1-2 | $+V_{out}$ |
| X1-3 | $-V_{out}$ |
| X1-4 | ic |
| X1-5 | ic |
| X1-6 | $-V_{in}$ |

## NOTES

Installation instructions:
The converters have to be installed according to the guidelines currently in force, like other open electronic component assemblies. Attention must be paid to sufficient ventilation, carry off heat, fastening and protection against accidential contact. Plug in not under voltage. The base plate has to be grounded by using thread rolling screws M 4 according to DIN 7500. An alternative connection to ground can be realized by a special mounting hole, which is free of anodizing surface.
Fault protection: For input protection a time-lag fuse corresponding to IEC 60127-2 must be installed. For recommended rating of the fuse refer to specification table above. Pay attention on sufficent current source in case of short circuit. In some applications 2 fuses would be necessary, one in each input line.

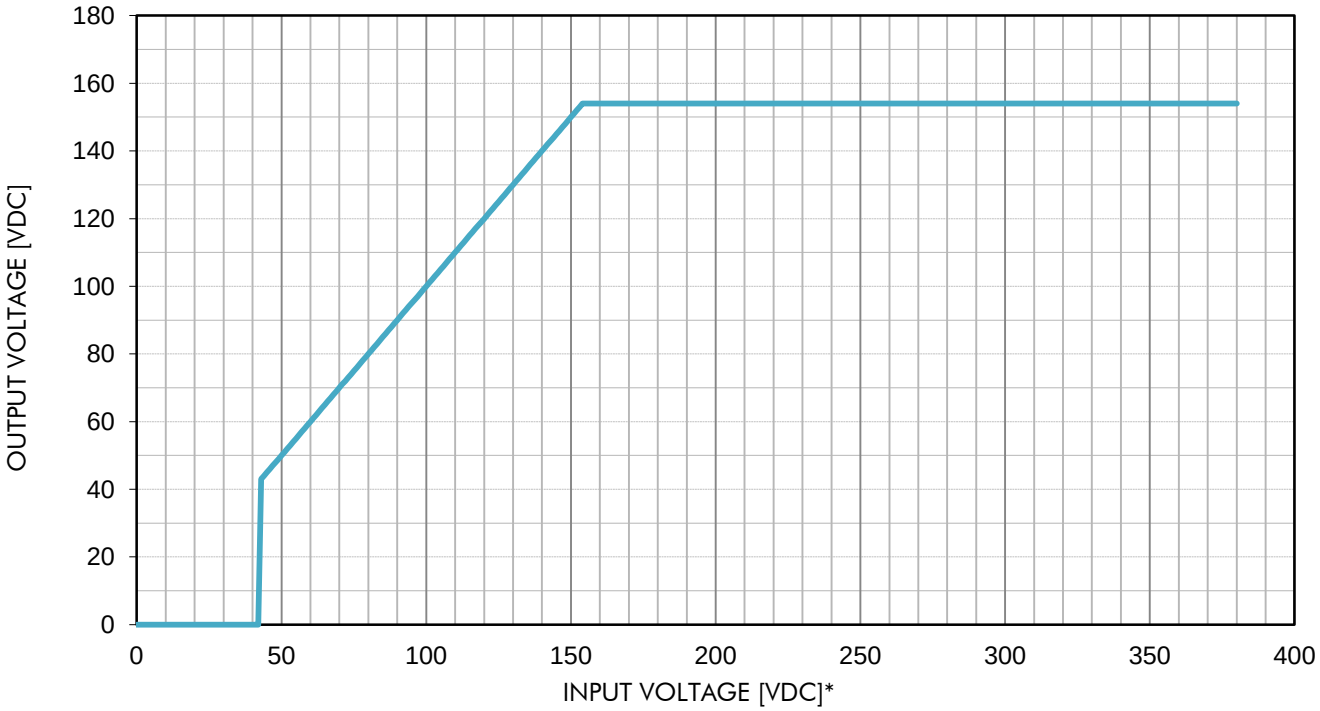
## BLOCK DIAGRAM



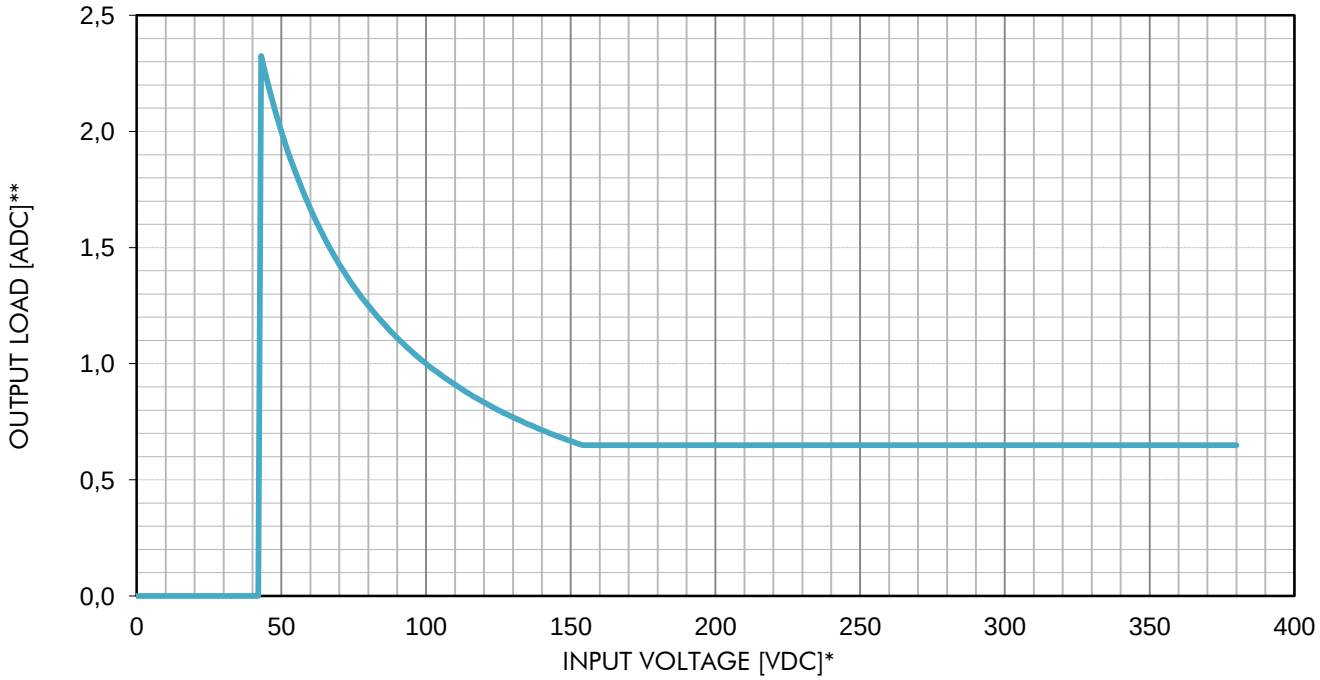
# DESCRIPTION OF FEATURES

For $T_{amb}$=25°C,$V_{in\ nom}$,$I_{out\ nom}$, unless otherwise specified

## OUTPUT VOLTAGE




## MAXIMUM OUTPUT LOAD




* For Vin >154V only allowed according to RIA12 requirements.

** For Vin: 50,4V...137,5V double value allowed for t < 1s at start time.