

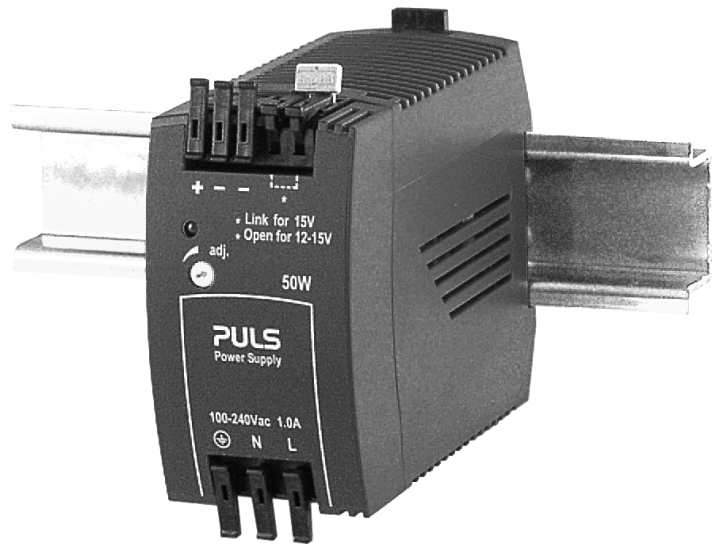
PULS does it again:
practical, versatile and reliable like
the SilverLine – yet small like
no other.

PULS

CE

CB
scheme

UL US LISTED



Data Sheet

MiniLine ML50.102 with DC 12-15V / 50W

- Mounted and connected in record time, no tools required
- World-wide approvals (UL, EN, CSA, CB Scheme) for industry and office/home
- Tiny: WxHxD = 45 x 75 x 91mm
- Adjustable output voltage: DC 12-15V(without jumper) resp. DC 15V (with jumper)
- 100-240V Wide Range Input
- NEC Class 2 Power Supply and Hazardous Location Class I Div. 2 (UL 1604)

PULS GmbH, Arabellastrasse 15, 81925 Munich
Tel. +49.(0)89.9278-244, Fax: +49.(0)89.9278-299
sales@puls-power.com, <http://www.puls-power.com>

Mini is more.

◆ Technical Data ML50.102

◆ Input

Input voltage	AC 100-240V (Wide Range), 47...63Hz Admiss. limits: AC 85...264V (DC 85...375V)
Input current	<1.0A (@ AC 100V, 50W P _{out}) <0.6A (@ AC 196V, 50W P _{out})
External fusing	not required, unit provides internal fuse (T3A15H, not accessible)
Transient immunity	Transient resistance acc. to VDE 0160 / W2 (750V / 1.3ms), over entire load range
Hold-up time (see diagram below)	>170ms @ AC 230V, 12V / 4.2A >97ms @ AC 196V, 12V / 4.2A >17ms @ AC 100V, 12V / 4.2A

◆ Efficiency, Reliability

Efficiency	typ. 90% (AC 230V, 12V / 4.2A) (see also diagram below)
Losses	typ. 6W (AC 230V, 12V / 4.2A)
MTBF (Reliability)	appr. 600.000h acc. to Siemensnorm SN29500 (12V / 4.2A, AC 230V, T _{amb} = +40°C)

Prior to shipment, every unit undergoes the following tests in order to isolate any defective units which might suffer an early failure:

- Run-in/burn-in (Full load, T_{amb} = +60°C, on/off cycle)
- Functional test (100%)

◆ Construction, Mechanics, Installation

Robust plastic housing (US Patent No. D442, 923S), fine ventilation grid on three housing sides to keep out small parts (e.g. screws), IP20

Dimensions and weight

- W x H x D 45mm x 75mm x 91mm (+ DIN Rail)
- Weight 260g

Mounting orientation  (cf. 'Output')

Ventilation/Cooling Normal convection, no fan required

- Free space f. cooling normal d.: 25mm on sides with ventilation grid

Easy snap-on mounting onto the DIN-rail (TS35/7,5 or TS35/15).

Unit sits safely and firmly on the rail; no tools required even to remove

Connection by Spring Clamp terminals; uniformly firm hold, vibration-resistant and maintenance-free.

Connector size range

- flexible cable 0.3-2.5mm² (28-12 AWG)
- solid cable 0.3-4mm² (28-12 AWG)
Ferrules admissible
- Wire strip length 6mm (0.24in) recommended

Design details – for your advantage:

- All terminals are easy to reach as mounted on the front panel.
- Input and output are strictly apart from each other (input below, output above) and so cannot be mixed up.
- **Mounting and connection do not require any screwdriver**
- A jumper (output terminal) serves to adjust the output voltage (12V resp. 15V).

◆ Output

Output voltage	without jumper: DC 12-15V (adj. by front panel potentiometer, adj. range guaranteed); • preset with jumper: 15V ± 3.5%, without jumper: 12V ± 0.5%
Voltage regulation	stat. <1% @ V _{out} = 12V stat. <1.5% @ V _{out} = 15V, dyn. ±3% V _{out} over all
Ripple/Noise	<100mV _{pp} (20MHz bandw., 50 Ω measur.)
Overvoltage prot. (OVP)	<20V
Rated continuous loading	at convection cooling: max. I _{out} = 4.2A @ V _{out} = 12V, max. I _{out} = 3.4A @ V _{out} = 15V, details see derating diagram below
• power reserve	max. 10%(depending on V _{in}); details see diag. 'output characteristic' below
Overload behaviour	Straight V/I characteristic (depending on V _{in}); details see diag. 'output characteristic' below
Protection	Unit is protected against (also permanent) short-circuit, overload and open-circuit.
Derating	depending on built-in orientation; see diagram below
Power back immunity	22V
Operating indicator	Green LED (DC ON)

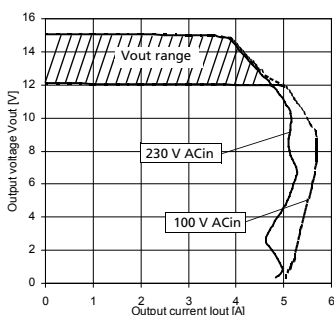
◆ Environmental Data, EMC, Safety

Ambient temperature range (measured 25 mm below unit)	
• storage/transport	-25°C ... +85°C
• operation	-10°C ... +70°C (for derating see diagram below)
Humidity	max. 95% (without condensation)
Electromagnetic emissions (EME)	EN 61000-6-3 (includes EN 61000-6-4) Class B (EN 55011, EN 55022)
Electromagnetic immunity (EMI)	EN 61000-6-2 (includes EN 61000-6-1)
Safe low voltage:	SELV (EN 60950, VDE0100/T.410), PELV (EN 50178)
Prot. class/degree:	Class I (EN 60950) / IP20 (EN 60529)

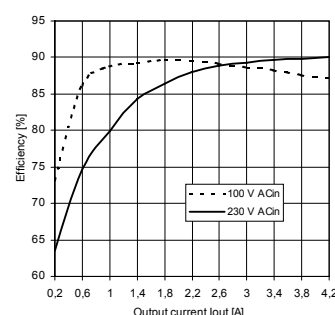
The PSU complies with all major **safety approvals** for EU (EN 60 950, EN 60204-1, EN 50178), USA (UL 60950, E137006, UL508 LISTED, E198865), Canada (CAN/CSA-C22.2 No 60950 [CUR], CAN/CSA-C22.2 No. 14 [CUL]), CB Scheme (IEC 60950). NEC Class 2 Power Supply and Hazardous Location Class I Div. 2 (UL 1604)

◆ Diagrams

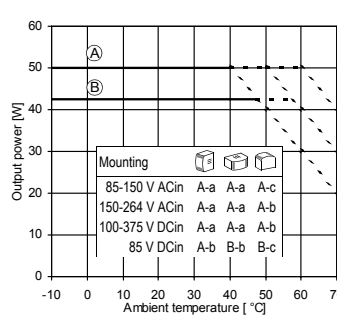
Output characteristic V_{out}/I_{out} (typ.)



Efficiency (@ V_{out} = 12V, typ.)



Derating of output power



Hold-up time with ACin (at V_{out} = 12V, typ. and min.)

