

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

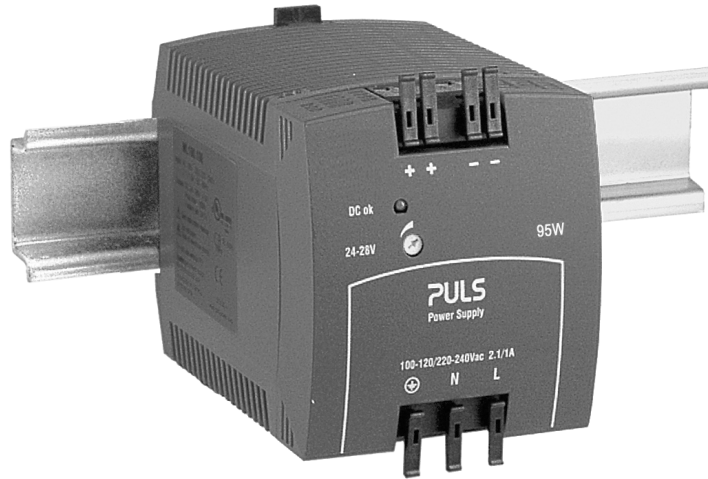
**PULS**

CE

UL US LISTED

UL US

CB Report  
Available



Data Sheet

# MiniLine ML95.100 with DC 24-28V / 95W

- Adjustable output voltage up to DC 24-28V
- PULS Overload Design™ (high output overload capability)
- 115/230V Auto Select Input
- Limited Power Source, NEC class 2 and Hazardous Location Class I Div. 2
- Mounted and connected in record time, no tools required
- World-wide approvals (UL, EN, CSA) for industry and office/home
- Tiny: WxHxD = 73 x 75 x 103mm

PULS GmbH, Elektrastr.6, 81925 Munich  
Tel. +49(0)899278-0, Fax: +49(0)899278-299  
sales@pulspower.com, <http://www.pulspower.com>

**Mini is more.**

## ◆ Technical Data ML95.100

### ◆ Input

Input voltage	AC 100-120/220-240V (Auto Select), 47...63 Hz (AC 85...132V / AC 184...264V, DC 220...375V N=⊕ and L=⊖)
Input current	<2.0 A (@ AC 100V <sub>in</sub> , 95 W P <sub>out</sub> ) <0.95 A (@ AC 220V <sub>in</sub> , 95 W P <sub>out</sub> )
External fusing	not required, unit provides internal fuse (T3A15H, not accessible)
Transient immunity	Transient resistance acc. to VDE 0160 / W2 (750V/ 1.3 ms), over entire load range
Hold-up time (see diagram below)	>40 ms @ AC 230V, 24.5V / 3.9 A >20 ms @ AC 196V, 24.5V / 3.9 A >20 ms @ AC 100V, 24.5V / 3.9 A

### ◆ Efficiency, Reliability

Efficiency	typ. 90% (AC 230 V, 24.5 V / 3.9 A) (see also diagram below)
Losses	typ. 10.5 W (AC 230V, 24.5 V / 3.9 A)
MTBF (Reliability)	appr. 500.000 h acc. to Siemensnorm SN 29500 (24.5 V / 4.2 A, AC 230 V, T <sub>amb</sub> = +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<sub>amb</sub> = +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 73 mm x 75 mm x 103 mm + DIN rail  
(2.87in x 2.95in x 4.06in + DIN rail)
- Depth incl. terminals: 98 mm (3,85in) + DIN rail
- Weight 360 g
- Mounting orientation  (cf. 'Output')
- Ventilation/Cooling Normal convection, no fan required
- Free space f. cooling recom'd.: 25 mm (1in) 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: 2 terminals per output

Connector size range

- flexible cable 0.3-2.5mm<sup>2</sup> (28-12 AWG)
- solid cable 0.3-4mm<sup>2</sup> (28-12 AWG)  
Ferrules admissible
- Wire strip length 6mm (0.24in) recommended

### ◆ Output

Output voltage	DC 24-28V (adj. by front panel potentiometer) • preset 24.5V ± 0.5% @ 3.9 A
Voltage regulation	stat. <1% V <sub>out</sub> dyn. ±1.5% V <sub>out</sub> over all
Ripple/Noise	<50mV <sub>PP</sub> (20 MHz bandw., 50 Ω measur.)
Overvoltage prot. (OVP)	<36V
Output noise suppression	EMI values below EN 61000-6-3, even when using long (>2m), unshielded output cables
Rated continuous loading	up to 3.9 A @ 24.5 V / 3.2 A @ 28 V (convection cooling), depending on built-in orientation, V <sub>in</sub> and T <sub>amb</sub> For details see derating diagram below
Overload behaviour	<b>PULS Overload Design™</b> : No switch-off at overload/short-circuit, instead: up to 1.4 · I <sub>rated</sub> . So you need no oversizing to start awkward loads.
Protection	Unit is protected against (also permanent) short-circuit, overload and open-circuit.
Derating	depending on built-in orientation; see diagram below
Parallel operation	possible, no active load sharing
Power back immunity	35V
Operating indicator	Green LED

### ◆ 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 55032) incl. output noise suppression  
EN 61000-3-2 (PFC)

Electromagnetic immunity (EMI) EN 61000-6-2 (includes EN 61000-6-1)

Safety: SELV (IEC/UL 60950-1), PELV (EN 50178)  
Prot. class/degree: Class I (EC/UL 60950-1) / IP20 (EN 60529)

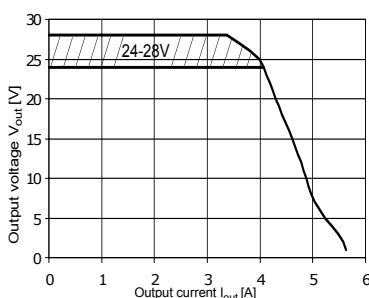
The PSU complies with all major **safety approvals** for EU (EN IEC 61010-2-201), USA (UL 60950-1: E137006, UL508 LISTED: E198865), Canada (CAN/CSA-C22.2 No 60950-1 [CUR], CAN/CSA-C22.2 No. 14 [CUL]), CB Scheme (IEC 60950-1, IEC 61010-2-201), Hazardous Location Class I Div 2, NEC Class

Design details – for your advantage:

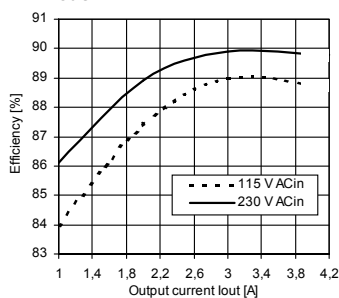
- All terminals are easy to reach as mounted on the front panel.
- Input and output are strictly apart from each other (input below, output above) and so cannot be mixed up.
- **Mounting and connection do not require any screwdriver**  
→ Easy, quick, durable and reliable installation.

### ◆ Diagrams

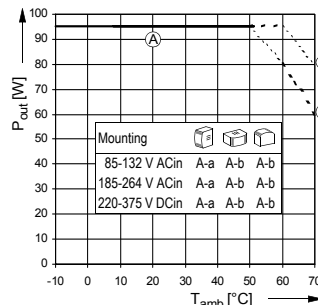
Output characteristic V<sub>out</sub>/I<sub>out</sub>



Efficiency (@ V<sub>out</sub> = 24.5V, typ.)



Derating of output power



Hold-up time with ACin (at V<sub>out</sub> = 24.5V, typ. + min.)

