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

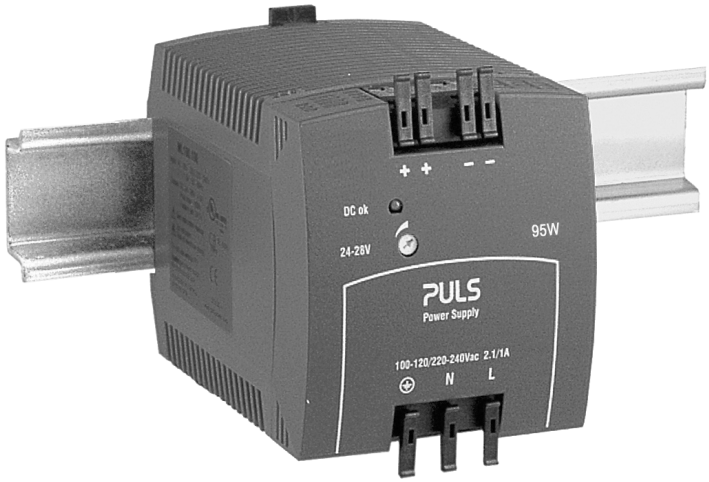
PULS

CE

c UL us LISTED

c VDE 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

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Mini is more.

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Technical Data ML95.100

Spring Clamps

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_{in}, 95 W P_{out}) <0.95 A (@ AC 220V_{in}, 95 W P_{out})
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_{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	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	, or (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	0.3-2.5mm² (28-12 AWG)
• solid cable	0.3-4mm² (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_{out} dyn. ±1.5% V_{out} over all
Ripple/Noise	<50mV_{PP} (20 MHz bandw., 50 Ω measurem.)
Overvoltage prot. (OVP)	<36V
Output noise suppression	EMI values below EN 61000-6-3, even when using long (>2m), unscreened 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_{in} and T_{amb} For details see derating diagram below
Overload behaviour	**PULS Overload Design™:** No switch-off at overload/short-circuit, instead: up to 1.4 · I_{rated}. 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

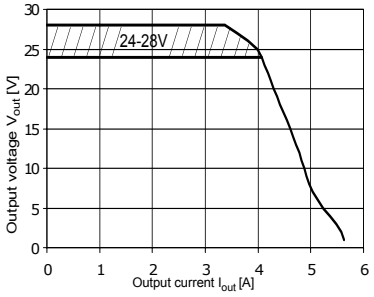
Design details – for your advantage:

- 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**

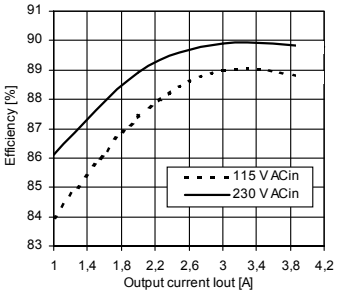
→ Easy, quick, durable and reliable installation.

Diagrams

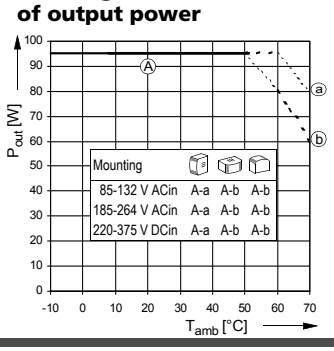
Output characteristic V_{out}/I_{out}



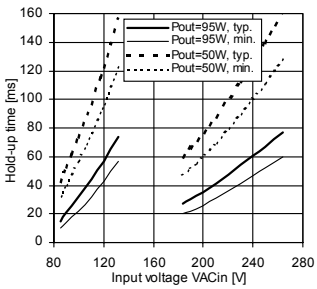
Efficiency (@ V_{out} = 24.5V, typ.)



Derating of output power



Hold-up time with ACin (at V_{out} = 24.5V, typ. + min.)



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