Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

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PULS MiniLine:
practical, versatile and reliable like
the SilverLine – yet small like no other:

PULS

Data sheet

MiniLine
with plug-in screw terminals

- 24-28 V DC/50 W output power
- 100-240 V Wide Range Input (85-264 V AC permitted)
- DCok output
- PULS Overload Design™ (does not switch off at overload but delivers up to 1.5 times nominal current)
- with load sharing for reliable parallel operation
- NEC Class 2 Power Supply

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Mini is more.

Technical Data ML50.111

PLUG Connectors

Input

Input voltage	AC100-240V (Wide Range), 47...63 Hz Admiss. limits: AC 85...264V (DC 85...375V)
Input current	<1.0A (@ AC 100V_{in}, 50W P_{out}) <0.6A (@ 196 V AC_{in}, 50W P_{out})
External Fusing	Not required, unit provides internal fuse (T3AH, not accessible)
Transient immunity	Transient resistance acc. to VDE 0160 / W2 (750V / 1.3ms), over entire load range
Hold-up time (see diagram below)	>171ms @ AC 230V, 24V / 2.1A >97ms @ AC 196V, 24V / 2.1A >17ms @ AC 100V, 24V / 2.1A

Efficiency, Reliability

Efficiency	typ. 88.5% (AC 230V, 24V / 2.1A) (see also diagram below)
Losses	typ. 6.8W (AC 230V, 24V / 2.1A)
MTBF (Reliability)	ca. 600.000 h acc. to Siemensnorm SN 29500 (24V/2.1A, 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) Depth incl. connectors: 98mm (+ DIN rail)
• Weight	240g
Mounting orientation	, or (cf. 'Output')
Ventilation/Cooling	Normal convection, no fan required
• Free space f. cooling	recom'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 plug connectors, 2 terminals/output; mating connectors enclosed
Connector size range – input:	
• flexible/solid cable	0.5 - 2.5mm² (22-12 AWG)
• Wire strip length	Ferrules admissible, 7mm recommended
Connector size range – output:	
• flexible cable	0.3 - 2.5mm² (28-12 AWG)
• solid cable	0.3 - 4mm² (28-12 AWG)
• Wire strip length	Ferrules admissible, 6mm recommended
Design details – for your advantage:	
• Standard plugs, meet various connector families (e.g CombiCon)	
• Plugs allow measurement access	

Output (incl. Logic)

Output voltage	DV 24-28V, adj. by front panel potentiometer
• preset	24V ±0.5% @ 2.1A *(25V at no load, see 'Parallel operation')*
Voltage regulation	stat. ±2.5% V_{out} *(see 'Parallel operation')* dyn. ±2% V_{out} overall
Ripple/Noise	<50mV_{PP} (20MHz bandw., 50Ω measurem.)
Overvoltage prot. (OVP)	<40V
Output noise suppression	Radiated EMI values below EN 61000-6-3, even when using long (>2m), unscreened output cables
Rated continuous loading	up to 2.1A @ 24V / up to 1.8A @ 28V depending on built-in orientation, V_{in} and T_{amb} (convection cooling); for details see derating diagram below
Overload behaviour	**PULS Overload Design™:** No switch-off at overload/short-circuit, instead: up to 1.5 · 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	see diagram below
Parallel operation	Yes; load sharing by inclined characteristic curve (ΔV = -1V between I_{out} = 0A and I_{out} = I_{rated})
Power back immunity	35V
Operation indicator	Green LED (DC OK), threshold: V_{out} = 20V
DC OK output	To feed a 24V relay (R_{coil} > 700Ω). Relay operates, if output voltage exceeds threshold value Free-wheeling diode for relay is included in the power supply unit
• Threshold	V_{out} = 20V ±4%

Environmental Data, EMC, Safety

Ambient temperature range (measured 25mm 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 (EN60950, VDE0100/T.410), PELV (EN50178)
Prot. class/degree:	Class I (EN60950) / IP20 (EN60529)

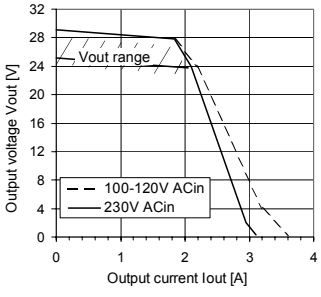
The PSU complies with all major **safety approvals** for EU (EN 60950, EN 60204-1, EN 50178), USA (UL 60950, E137006, UL508 LISTED, E198865), Canada (CAN/CSA-C22.2 No 60950 [CUR], CAN/CSA-C22.2 No. 14 [CUL]), CB Scheme (IEC 60950).

Further design details – for your advantage:

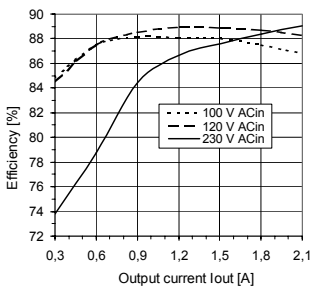
- All terminals are easy to reach as mounted on the front panel.
- Input and output are strictly apart from each other (below/above) and have different wire access (90°/270° wiring), so cannot be mixed up

Diagrams

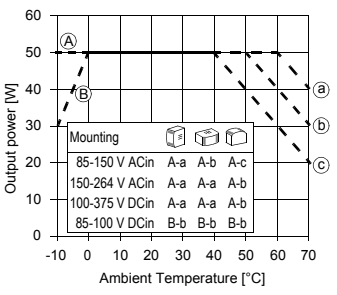
Output characteristic V_{out}/I_{out} (min.)



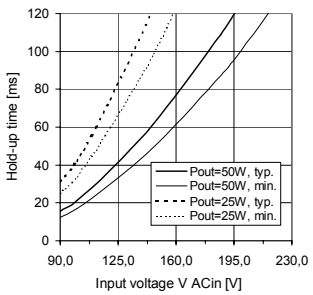
Efficiency (@ V_{out} = 24V, typ.)



Derating of output power



Hold-up time with ACin (@ V_{out} = 24V, typ. + min.)



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