PULS

EN	**ML50.100, ML50.109 Installation Manual**	**Power Supply 1-Phase, 24V, 2.1A, 50W**
DE	**ML50.100, ML50.109 Installationsanleitung**	**Stromversorgung 1-Phase, 24V, 2.1A, 50W**
FR	**ML50.100, ML50.109 Manuel d'installation**	**Alimentation d'Énergie 1-Phase, 24V, 2.1A, 50W**
ES	**ML50.100, ML50.109 Manual de instalación**	**Fuente De Alimentación 1-Phase, 24V, 2.1A, 50W**

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Read this first! — English

Before operating this device, please read this manual thoroughly and retain this manual for future reference! This device may only be installed and put into operation by qualified personnel. If damage or malfunction should occur during operation, immediately turn power off and send device to the factory for inspection. The device does not contain serviceable parts. The information presented in this document is believed to be accurate and reliable and may change without notice. For any clarifications, the English translation will be used.

⚠ WARNING **Risk of electrical shock, fire, personal injury, or death:**

Turn power off before working on the device and protect against inadvertent re-powering.

Do not open, modify or repair the device.

Use caution to prevent any foreign objects from entering the housing.

Do not use in wet locations or in areas where moisture or condensation can be expected.

Do not touch during power-on and immediately after power-off. Hot surfaces may cause burns.

Vor Inbetriebnahme lesen! — Deutsch

Bitte lesen Sie diese Warnungen und Hinweise sorgfältig durch, bevor Sie das Gerät in Betrieb nehmen. Bewahren Sie die Anleitung zum Nachlesen auf. Das Gerät darf nur durch fachkundiges und qualifiziertes Personal installiert werden. Bei Funktionsstörungen oder Beschädigungen schalten Sie sofort die Versorgungsspannung ab und senden das Gerät zur Überprüfung ins Werk. Das Gerät beinhaltet keine Servicebauteile. Die angegebenen Daten dienen allein der Produktbeschreibung und sind nicht als zugesicherte Eigenschaften im Rechtssinne aufzufassen. Im Zweifelsfall gilt der englische Text.

⚠ WARNUNG **Missachtung nachfolgender Punkte kann einen elektrischen Schlag, Brände, schwere Unfälle oder Tod zur Folge haben:**

Schalten Sie die Eingangsspannung vor Installations-, Wartungs- oder Änderungsarbeiten ab und sichern Sie diese gegen unbeabsichtigtes Wiedereinschalten.

Führen Sie keine Änderungen oder Reparaturen durch. Gerät nicht öffnen!

Verhindern Sie das Eindringen von Fremdkörpern.

Betreiben Sie das Gerät nicht in feuchter Umgebung oder in einer Umgebung, bei der mit Betauung oder Kondensation zu rechnen ist.

Gehäuse nicht während des Betriebes oder kurz nach dem Abschalten berühren. Heiße Oberflächen können Verletzungen verursachen.

A lire avant mise sous tension! — Français

Veuillez lire ces instructions de montage et d'entretien avant de mettre l'alimentation sous tension. Conservez ce manuel qui vous sera toujours utile. Cette alimentation ne doit être installée que par du personnel qualifié et compétent. En cas de dommage ou dysfonctionnement, coupez immédiatement la tension d'alimentation et retournez l'appareil à l'usine pour vérification. ! L'alimentation ne contient pas de pièces échangeables Les données indiquées dans ce document servent uniquement à donner une description du produit et n'ont aucune valeur juridique. En cas de divergences, le texte anglais fait foi.

⚠ AVERTISSEMENT **Prendre en compte les points suivants, afin d'éviter toute détérioration électrique, incendie, dommage aux personnes ou mort:**

Mettre l'alimentation hors tension avant toute intervention sur celle-ci et s'assurer qu'il n'y a pas risque de redémarrage.

Ne pas ouvrir, modifier ou réparer l'alimentation.

Veiller à ce qu'aucun objet ne rentre en contact avec l'intérieur de l'alimentation (trombones, pièces métalliques).

Ne pas faire fonctionner l'appareil dans un environnement humide ou dans un environnement où il peut y avoir de la condensation.

Ne pas toucher le carter pendant le fonctionnement ou directement après la mise hors tension. Surface chaude risquant d'entraîner des blessures.

Lea primero! — Español

Conserve este manual como referencia para futuras consultas. La fuente de alimentación solo puede ser instalada y puesta en funcionamiento por personal cualificado. Por favor lea detenidamente este manual antes de conectar la fuente de alimentación. Si se produce un fallo o mal funcionamiento durante la operación, desconecte inmediatamente la tensión de alimentación. En ambos casos, el equipo debe ser inspeccionado en fábrica. La información presentada en este documento es exacta y fiable en cuanto a la descripción del producto y puede cambiar sin aviso. En casa de duda, prevalece el texto inglés.

⚠ ADVERTENCIA **Riesgo de descarga eléctrica, incendio, accidente grave o muerte:**

Desconectar la tensión de red antes de trabajar en la fuente de alimentación. Evite una posible reconexión involuntaria.

No realizar ninguna modificación o reparación de la unidad. No abrir la unidad.

Evitar la introducción en la carcasa de objetos extraños.

No usar el equipo en ambientes húmedos. No operar el equipo en ambientes donde se espere la formación de rocío o condensación.

No tocar durante el funcionamiento ni inmediatamente después del apagado. El calor de la superficie puede causar quemaduras graves.

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Product Description

The ML50.100 is a DIN-rail mountable single-phase-input power supply, which provides a floating, stabilized and galvanically separated SELV/PELV output voltage.

The output of the device fulfils the requirements for a limited power source acc. to NEC Class 2.

The ML50.109 device is the same as the ML50.100 but with conformal coated pc-boards.

Intended Use

This device is designed for installation in an enclosure and is intended for commercial use, such as in industrial control, process control, monitoring, measurement equipment or the like. Do not use this device in equipment, where malfunctioning may cause severe personal injury or threaten human life without additional appropriate safety devices, that are suited for the end-application.

If this device is used in a manner outside of its specification, the protection provided by the device may be impaired.

Installation Instructions

Install device in an enclosure providing protection against electrical, mechanical and fire hazards.

Install the device onto a DIN-rail according to EN 60715 with the input terminals on the bottom of the device. Other mounting orientations require a reduction in output current.

Make sure that the wiring is correct by following all local and national codes. Use appropriate copper cables that are designed for a minimum operating temperature of 60°C for ambient temperatures up to +45°C, 75°C for ambient temperatures up to +60°C and 90°C for ambient temperatures up to +70°C. Ensure that all strands of a stranded wire enter the terminal connection.

The device is designed for pollution degree 2 areas in controlled environments. No condensation or frost is allowed.

The housing of the device provides a degree of protection of IP20. The housing does not provide protection against spilled liquids.

The device is designed for overvoltage category II zones.

The device is designed as “Class of Protection” I equipment according to IEC 61140. Do not use without a proper PE (Protective Earth) connection.

The device is suitable to be supplied from TN, TT and IT mains networks. The continuous voltage between the input terminals and the PE potential must not exceed 264Vac.

The input can also be powered from batteries or similar DC sources. The continuous voltage between the supply voltage and the PE/ground potential must not exceed 375Vdc.

A disconnecting means shall be provided for the input of the device.

The device is designed for convection cooling and does not require an external fan. Do not obstruct airflow and do not cover ventilation grid!

The device is designed for altitudes up to 2000m (6560ft).

Keep the following minimum installation clearances: 40mm on top, 20mm on the bottom, 0mm left and right side. Increase the 0mm to 15mm in case the adjacent device is a heat source.

The device is designed, tested and approved for branch circuits up to 16A (IEC) or 15A (UL) without additional protection device. If an external fuse is utilized, do not use circuit breakers smaller than 10A B- or 6A C-Characteristic to avoid a nuisance tripping of the circuit breaker.

The maximum surrounding air temperature is +70°C (+158°F). The operational temperature is the same as the ambient or surrounding air temperature and is defined 2cm below the device.

The device is designed to operate in areas between 5% and 95% relative humidity.

Installation Instructions for Hazardous Location Areas

The device is suitable for use in Class I Division 2 Groups A, B, C, D locations.

Substitution of components may impair suitability for this environment.

Do not disconnect the device or operate the voltage adjustment unless power has been switched off or the area is known to be non-hazardous.

Functional Description

The output is electronically protected against no-load, overload and short circuit and can supply any kind of loads, including inductive and capacitive loads.

Do not apply return voltages from the load to the output terminals higher than 35V.

The output voltage can be adjusted with a small flat-blade screwdriver on the front of the unit.

The green DC-OK LED reports a voltage on the output terminals above 19V.

Devices can be paralleled to increase the output power. The ambient temperature is not allowed to exceed +45°C. The output voltage shall be adjusted to the same value (±100mV) with the same load conditions on all devices, or the devices can be left with the factory settings. If more than three devices are connected in parallel, a diode, fuse or circuit breaker with a rating of 3A or 4A is required on each output.

Same devices can be connected in series for higher output voltages. It is allowed to connect as many outputs in series as needed, providing the sum of the output voltage does not exceed 150Vdc.

In case of an internal defect, a redundant circuit limits the maximum output voltage to 39V. The output shuts down and automatically attempts to restart.

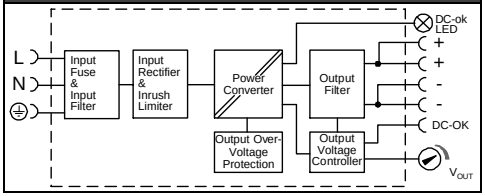
The DC-OK signal reports an output voltage above 19V on the output terminals. The signal is an open collector source output to feed loads up to 30mA. Connect the load (relay, LED, PLC) between the DC-OK pin and the negative output voltage. An external free-wheeling diode is not required.

Technical Data

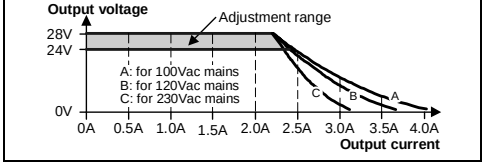
All values are typical figures specified at 230Vac, 50Hz input voltage, 24V 2.1A output load, 25°C ambient temperature and after a 5 minutes run-in time unless otherwise noted.

Output voltage	DC 24V	Nominal
Adjustment range	24 – 28Vdc	Factory setting 24.5V
Output current	2.1 – 1.8A	Below +60°C ambient
	1.6 – 1.3A	At +70°C ambient
	Derate linearly between +60°C and +70°C	
Input voltage AC	AC 100 – 240V	-15% / +10%
Mains frequency	50 – 60Hz	±6%
Input current AC	0.83 / 0.52A	At 120 / 230Vac
Power factor	0.56 / 0.48	At 120 / 230Vac
Input voltage DC	DC 110-300V	-20% / +25%
Input current DC	0.51 / 0.19A	At 110 / 300Vdc
Input inrush current	17 / 35A pk	At 120 / 230Vac, 40°C, cold start
Efficiency	88.4 / 89.0%	At 120 / 230Vac
Power losses	6.6 / 6.2W	At 120 / 230Vac
Hold-up time	40 / 180ms	At 120 / 230Vac
Temperature range	-10 to +70°C	
Max. wire size (litz wire)	2.5mm²	
Max. wire size with ferrules	1.5mm²	
Wire size AWG	AWG 26-12	
Max. wire diameter	2.3mm	
Wire stripping length	6mm / 0.25inch	
Size (wxhxd)	45x75x91mm	Without DIN-rail
Weight	240g / 0.53lb	

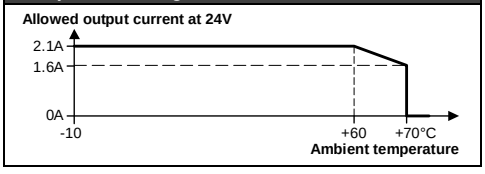
Functional Diagram



Output Characteristic



Temperature Range



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