



MSC 1512

v.1.1

MSC 12V/1,5A-24V/1A/M PSU module for CCTV.

EN*

Edition: 3 from 16.09.2013

Supersedes the edition: 2 from 05.03.2012



Features:

- output voltage 12VDC/1,5A or 24VDC/1A jumper selectable
- supply voltage 16÷30VAC or 22÷42VDC
- high efficiency: 90% max
- LED indication
- protections:
 - SCP short-circuit protection
 - OLP overload protection
 - surge protection
- warranty – 5 year from the production date

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1. Technical description.

1.1. General description

The **MSC 1512** PSU module is intended for supplying devices that require voltage of **12V or 24V DC**. The module is designed as a supplying component in CCTV systems, KD access control, SSWiN alarm systems, etc. It is intended to be wall-mounted or fixed inside a device (e.g. camera's enclosure).



- The module delivers current of: **12V** with current efficiency of **1,5A** or **24V** with current efficiency of **1A**.

When supplied with the maximum AC power, the module enables supplying 12V DC cameras for a longer distance (approx. 2x) than in case of 13,8V DC supply (with the same cross-section and resistance of the wires). The module does not have galvanic insulation between input/output (AC-AUX). For correct operation of the module, the appropriate input voltage and current efficiency of the power source shall be provided.

Voltage drop for typical wires used in CCTV systems (2x 0,5mm²/AWG20):

Load current (P power of the device)	Voltage drop for the wire: 2 x 0,5mm ² /100m (R= ~3Ω x2@100m)
	DC, AC
0,5A (P=6W@12VDC)	3V
1A (P=12W@12VDC)	6V
1,5A (P=15W@12VDC)	9V
2A (P=21W@12VDC)	12V

1.2. Block diagram (fig.1).

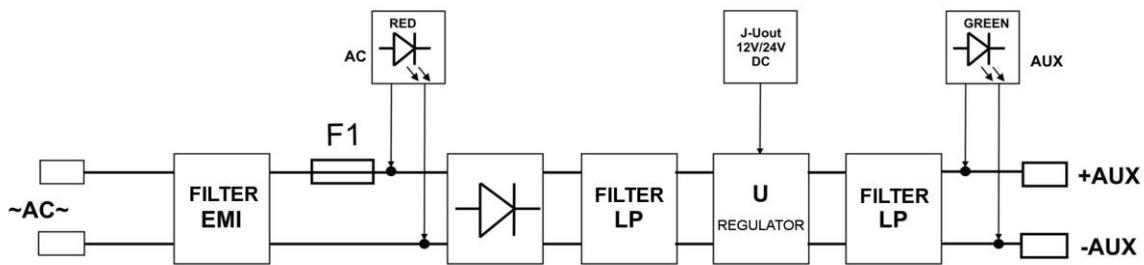


Fig.1. Block diagram of the PSU module.

1.3 Description of components and connectors

Table 1. The components of the PSU module (see fig. 2).

Element no.	Description
[1]	J-Uout, pin- AUX output voltage adjustment <ul style="list-style-type: none"> • J-Uout = voltage AUX=12VDC* • J-Uout = voltage AUX=24VDC* * - see: module's supply voltage (tab. 3) Caption: jumper on, jumper off
[2]	F1 fuse in the module's power circuit
[3]	AUX, green LED: DC power indication
[4]	DC power output (+AUX= +U, -AUX=GND), see: J-Uout jumper configuration
[5]	AC, red LED: indication of AC (DC) supply voltage
[6]	AC or DC power input (transformer or PSU: II isolation class)

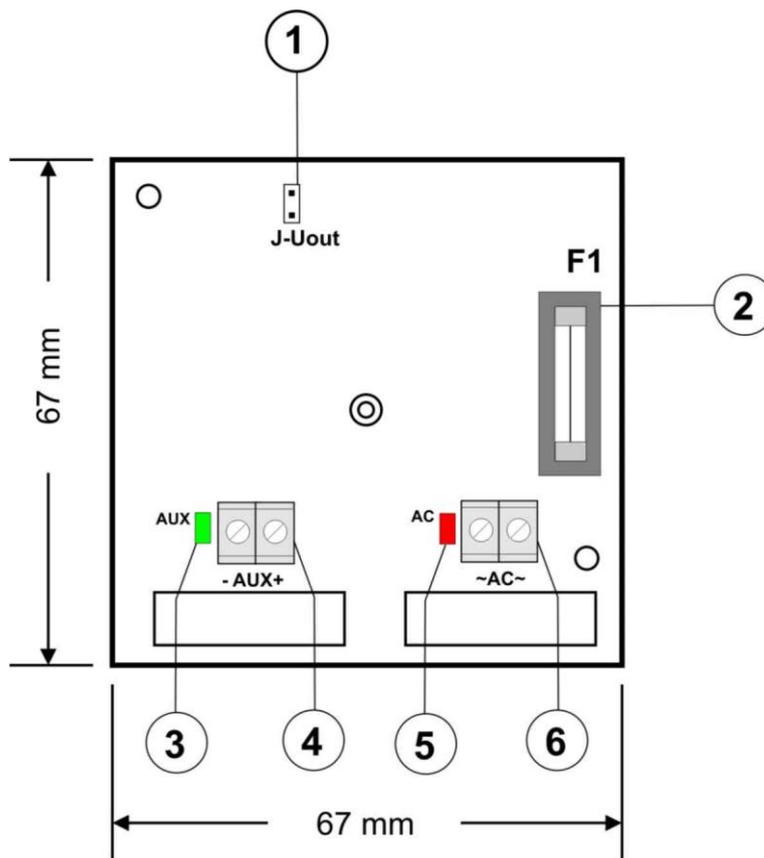


Fig. 2. The view of the MSC1512 module.

1.4. Specifications:

- electrical specifications (tab.3)
- mechanical specifications (tab.4)
- operating specifications (tab.5)

Electrical specifications (tab. 3).

Supply voltage	16V±30V/AC or 22V±42V/DC @ AUX=12VDC 24V±30V/AC or 33V±42V/DC @ AUX=24VDC (measured at the ~AC~ terminals of the module)
Current consumption	1.9A@16V/AC–1A@30V/AC max. for AUX=12V/1,5A 1.6A@24V/AC–1.3A@30V/AC max. for AUX=24V/1A
Power frequency	50Hz
PSU module's power	18W max. for AUX=12VDC 24W max. for AUX=24VDC
Efficiency	86% max(AUX=12VDC), 90% max (AUX=24VDC)
Output voltage	12V DC or 24V DC, J-Uout jumper selectable
Output current	1,5A for AUX=12VDC 1A for AUX=24VDC
Output voltage escalation, decrease, and keeping time	10ms / 34ms / 12ms
Ripple voltage	50ms/10ms/20ms (@12VDC/1,5A, AC=12V/AC) 50ms/50ms/10ms (@24VDC/1A, AC=24V/AC)
Current consumption by the module's systems	40mA max.
Short-circuit protection SCP	AUX: 200% ÷ 300% of the module's power - current limitation, automatic return
Overload protection OLP	AUX: F 2A fuse, damage requires fuse-element replacement
F1 fuse	F2A/250V

Mechanical specifications (tab. 4).

Pcb dimensions	70 x 28 x 70 (WxHxD)
Fixing	Mounting holes x 2 (fi=3 mm)
Net/gross weight	0,09kg/0,13kg
Connectors	AC: $\Phi 0,41 \div 1,63$ (AWG 26-14) AUX: connectors $\Phi 0,41 \div 1,63$ (AWG 26-14) or plug DC-5,5mm/100cm (provided)

Operating specifications (tab.5).

Operating temperature	-10°C...+40°C
Storage temperature	-20°C...+60°C
Relative humidity	20%...90%, without condensation
Vibrations during operation	unacceptable
Impulse waves during operation	unacceptable
Direct insolation	unacceptable
Vibrations and impulse waves during transport	PN-83/T-42106

2. Installation.

2.1 Requirements

The PSU module is to be mounted by a qualified installer, holding relevant permits and licenses (applicable and required for a given country) for 230V/AC interference and low-voltage installations. The unit should be mounted in accordance with the 2nd environmental class, with normal relative humidity (RH=90% maximum, without condensation) and temperature from -10°C to +40°C.

Before mounting the PSU module, perform a load balance. During normal operation, total current drawn by the receivers cannot exceed the **maximum parameters**.

As the PSU module is designed for a continuous operation and is not equipped with a power-switch, therefore an appropriate overload protection shall be guaranteed in the power supply circuit. Moreover, the user shall be informed about the method of unplugging (most frequently through separating and assigning an appropriate fuse in the fuse-box). The electrical system shall follow valid standards and regulations.

The PSU module requires AC or DC power supply with galvanic insulation (II insulation class), short-circuit and overload protections. The power of the source can be calculated with the following formula:



$$S = 1,3 \times (P_{AUX} + P_{HEATER}) \quad \text{for AC power supply}$$

$$P = 1,3 \times (P_{AUX} + P_{HEATER}) \quad \text{for DC power supply}$$

where: **S** = minimum power of supplying transformer [VA]

P = minimum power of DC power supply unit [W]

PAUX = power of the receiver (receivers) connected to the AUX output (max.)

In order to meet the LVD and EMC requirements, the rules concerning: supply, development and shielding ought to be followed- accordingly to the application.

Typical application MSC1512 (fig.2, fig.3).

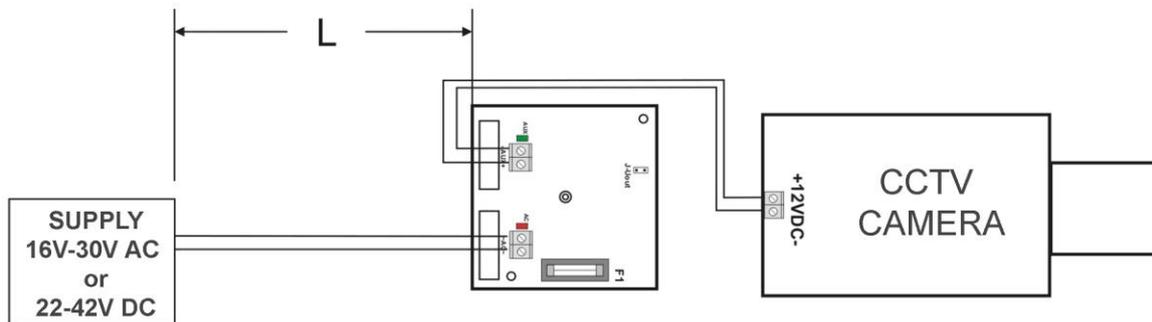


Fig.3. Connection of the PSU module and a 12VDC camera in an external enclosure.

EXAMPLE:

- 27V/AC power supply (e.g. PSAC 04244 PSU, the output switched to U2)
- total current consumption 1,9A of AC power (by the MSC1512 module, load current: 1,5A@12V)
- L= 120m wire 2x 0,5mm² (R= ~3Ω x2@100m)
- the voltage at the module's terminals equals 16V/AC
- maximum power to use S= 16V*1,9A=30,4VA
- full power use MSC1512: 18W@12V/DC

2.2. Installation in a CCTV camera enclosure

1. Mount the PSU module (on the wall or inside the intended device) and lay the wires through the cable ducts.
2. Lay on the output voltage from AC transformer or DC power supply unit to the ~AC~ terminals.
3. Configure the J-Uout jumper according to the requirements of the device and the supply voltage.
4. Connect the receivers' cables to the +AUX, -AUX terminals of the terminal strip, on the module's pcb.
5. Switch on the AC power (the AC red diode and the AUX diode should be permanently illuminated).
6. Check the output voltage (the module's voltage without load should amount to 12V or 24V).
7. Once the tests and operation control have been completed, the enclosure can be locked.

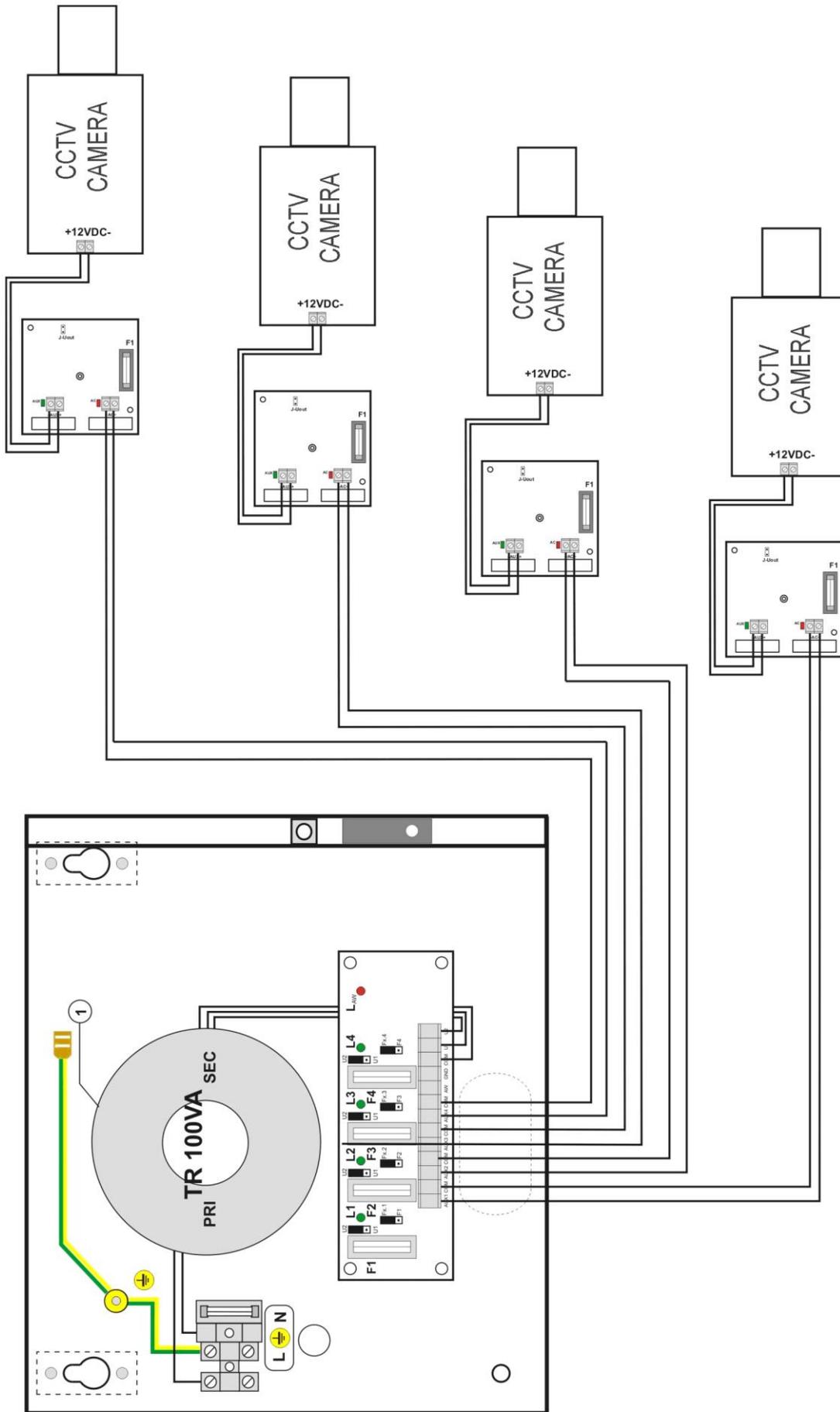


Fig.4. Typical application of the MSC1512 module and the PSAC04244 power supply unit.
(Conditions: camera's power (a group of cameras) P=13W max.).

3. Operating status indication.

The PSU is equipped with 2 LEDs that indicate operating status of: AC and AUX.

- **AC- red diode:** Under normal status (AC power) the diode is permanently illuminated. The absence of AC power is indicated by the AC diode going out.
- **AUX- green diode:** indicates DC power at the module's output. Under normal status the diode is permanently illuminated. In case of a short circuit or an overload at the output, the diode is off.

4. Operation and use.

4.1. Overload or short circuit

In case of a short circuit at the AUX output, the output voltage is automatically cut off which is indicated by the AUX diode going out. The voltage is restored automatically after limitation of current consumption or removing the short circuit.

In case of an overload at the AUX output, the output voltage is automatically cut off and/or the F1 fuse becomes damaged. Restoration of the output voltage requires limitation of current consumption or removing the short circuit. If the fuse has been damaged, a fuse-element must be replaced.

4.2 Maintenance

The PSU module does not require performing any specific maintenance measures, however, in case of dust, clean the surface with compressed air. In case of fuse replacement, use a replacement of the same parameters.

**WEEE MARK**

According to the EU WEE Directive – It is required not to dispose of electric or electronic waste as unsorted municipal waste and to collect such WEEE separately.

GENERAL WARRANTY CONDITIONS

1. Pulsar K. Bogusz Sp.j. (the manufacturer) grants a five-years warranty for the equipment, counted from the device's production date.
2. The warranty includes free-of-charge repair or replacement with an appropriate equivalent (the selection is at the manufacturer's discretion) if the malfunction is due to the manufacturer, includes manufacturing or material defects, unless such defects have been reported within the warranty period (item 1).
3. The equipment subject to warranty is to be brought to the place where it was purchased, or directly to the main office of the manufacturer.
4. The warranty applies to complete equipment, accompanied by a properly filled warranty claim with a description of the defect.
5. Should the claim be accepted, the manufacturer is obliged to provide warranty repairs, at the earliest convenience, however not later than within 14 days from the delivery to the service centre of the manufacturer.
6. The repair period mentioned in item 5 may be prolonged, if there are no technical possibilities to carry out the repairs, or if the equipment has been conditionally accepted, due to the breaking warranty terms by the claimant.
7. All the services rendered by force of the warranty are carried out at the service centre of the manufacturer, exclusively.
8. The warranty does not cover the defects of the equipment, resulting from:
 - reasons beyond the manufacturer's control,
 - mechanical damage,
 - improper storage and transport,
 - use that violates the operation manual or equipment's intended use
 - fortuitous events, including lightning discharges, power failures, fire, flood, high temperatures and chemical agents,
 - improper installation and configuration (in defiance with the manual),
9. The warranty is void in any of the following circumstances:
 - construction changes
 - repairs carried out by any unauthorized service center
 - damage or removal of warranty labels
 - modifications of the serial number
10. The liability of the manufacturer towards the buyer is limited to the value of the equipment, determined according to the wholesale prices suggested by the manufacturer on the day of purchase.
11. The manufacturer takes no responsibility for the defects that result from:
 - the damaging, malfunctioning or inability to operate the equipment
 - defects that result from using the equipment outside its stated specifications and operating parameters failing to abide by the recommendations and requirements contained in the manual, or the use of the equipment.

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