



POE1648

v.1.0

PoE 48V/6A

PoE power supply for up to 16 IP cameras

EN**

Edition: 1 from 09.02.2016

Supersedes the edition: -----



PSU features:

- the 16x0,35A/48V DC power output for powering 16 cameras IP
- output voltage adjustment 41V± 56V DC
- Wide range of supply voltage: 90±264V AC
- high efficiency: 89%
- designed for 10Mbit/s and 100Mbit/s network
- LED optical indication
- protections:
 - SCP short-circuit protection
 - OVP overvoltage protection
 - Surge protection
 - Antisabotage protection
 - OLP overload protection
- warranty – 2 year from the production date

Example of power supply of up 16 IP cameras.

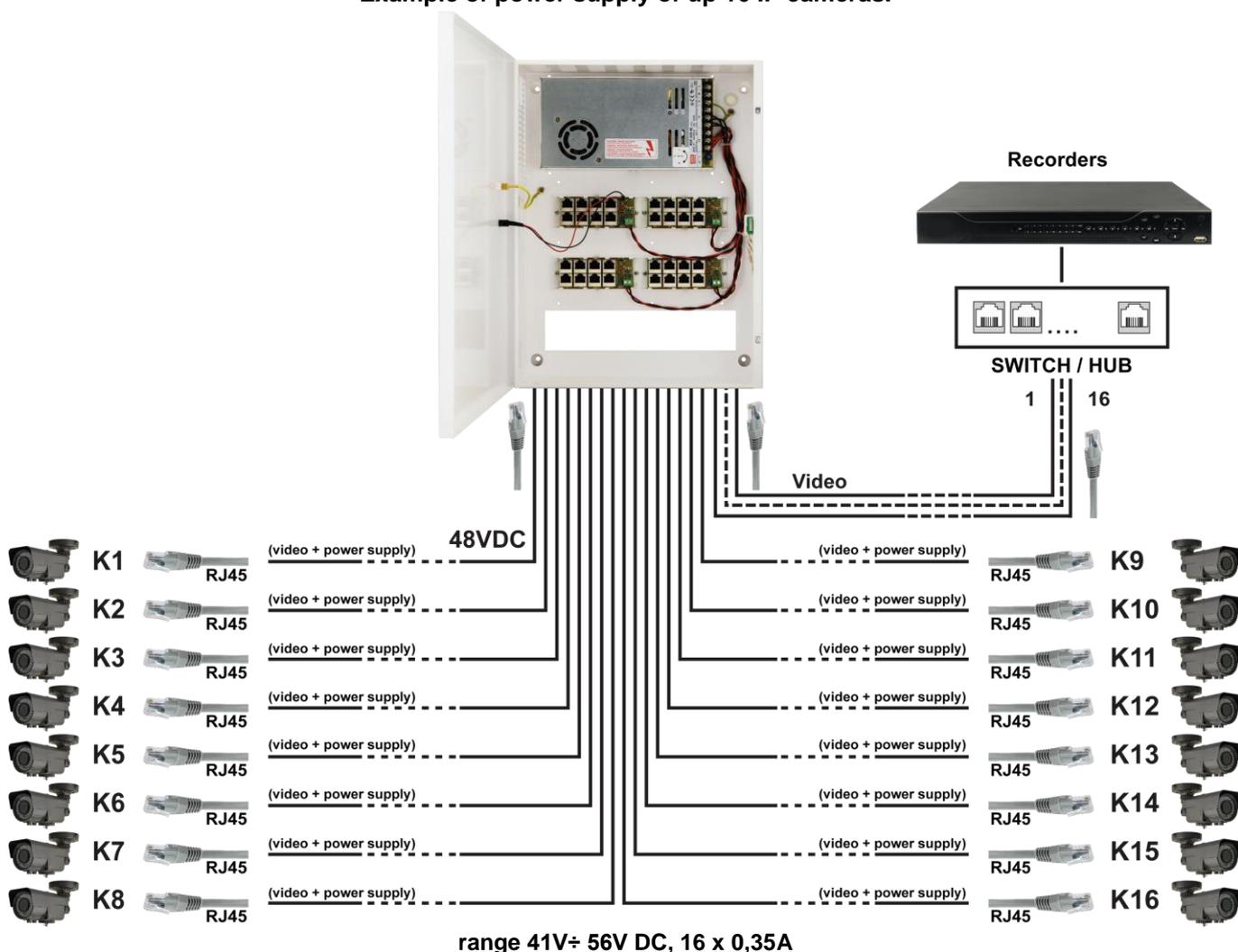


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1. Technical description.

1.1. General description.

The PSU is designed for supply of up to 16 cameras IP requiring stabilized voltage of **48V DC**. The output voltage can be adjusted with a potentiometer between **41V÷56V DC**. The power is carried over the spare pairs (4/5 & 7/8), which, according to the Ethernet network standard, are not used for data transmission (data transmission uses 1/2 and 3/6 data pairs). The PSU is housed in a metal enclosure with signaling panel equipped with a microswitch indicating door opening (front cover).

The PSU can not be used in Gigabit Ethernet networks, where all twisted pairs are involved in the transmission of data!

1.2. Block diagram.

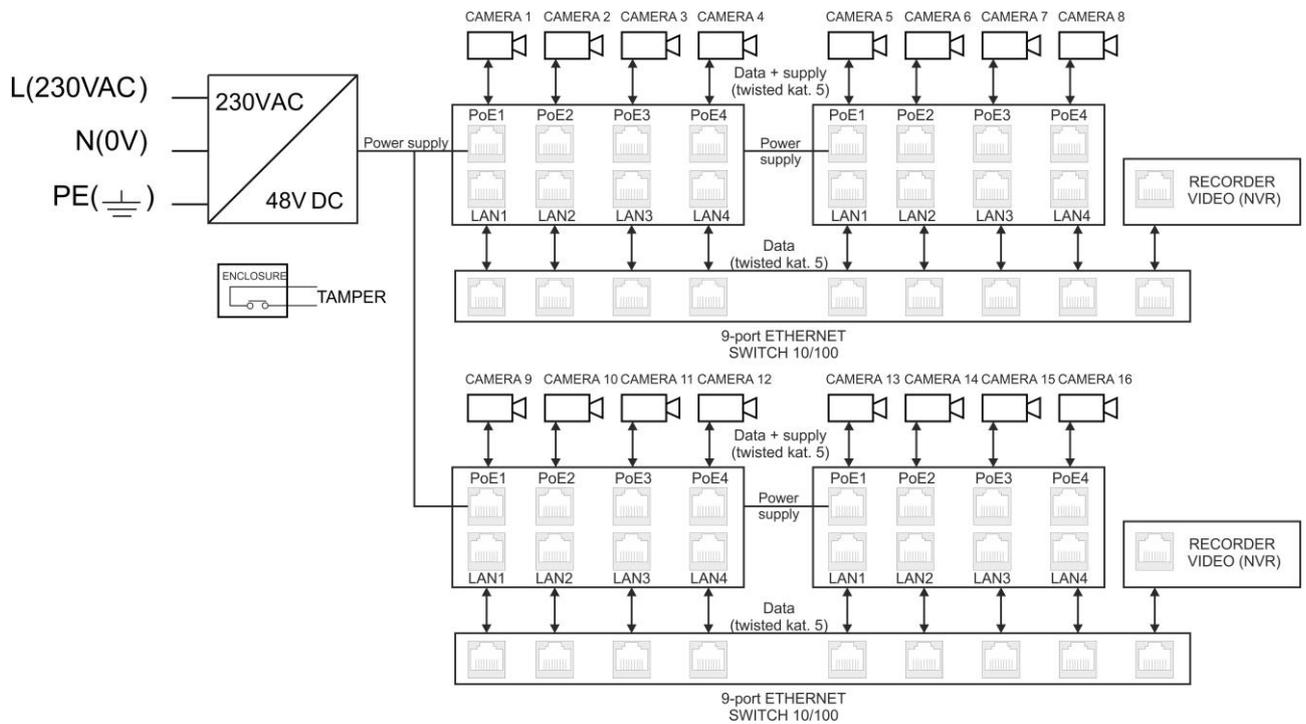


Fig. 1. Block diagram of the PSU.

1.3. The description of components and connectors of the PSU.

Table 1.

Component No. [Fig. 2]	Description
[1]	IN – screw connection, input power supply of the module (factory setting)
[2]	red LED – indicates power 48V DC at the IN output
[3]	Optional, external optical indication connector (factory setting)
[4]	PoE 1 ÷ PoE4 - Network outputs (Ethernet + power supply) – for camera connection
[5]	LAN 1 ÷ LAN4 - Network inputs (Ethernet) – for connecting the Ethernet network switch
[6]	Mounting board

Table 1. The description of components of the PoE module.

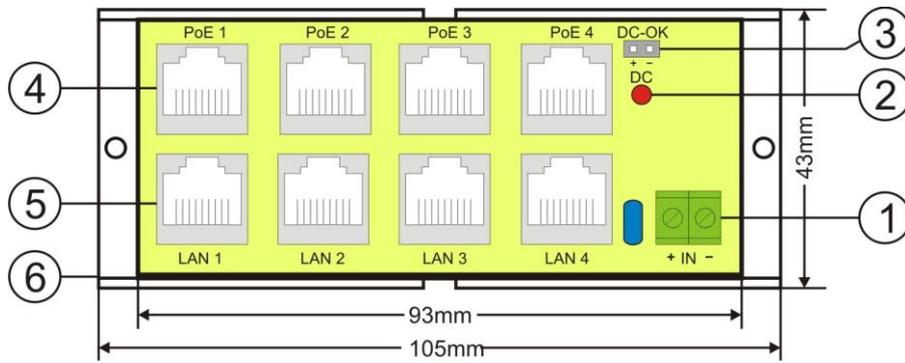


Fig. 2. Components arrangement.

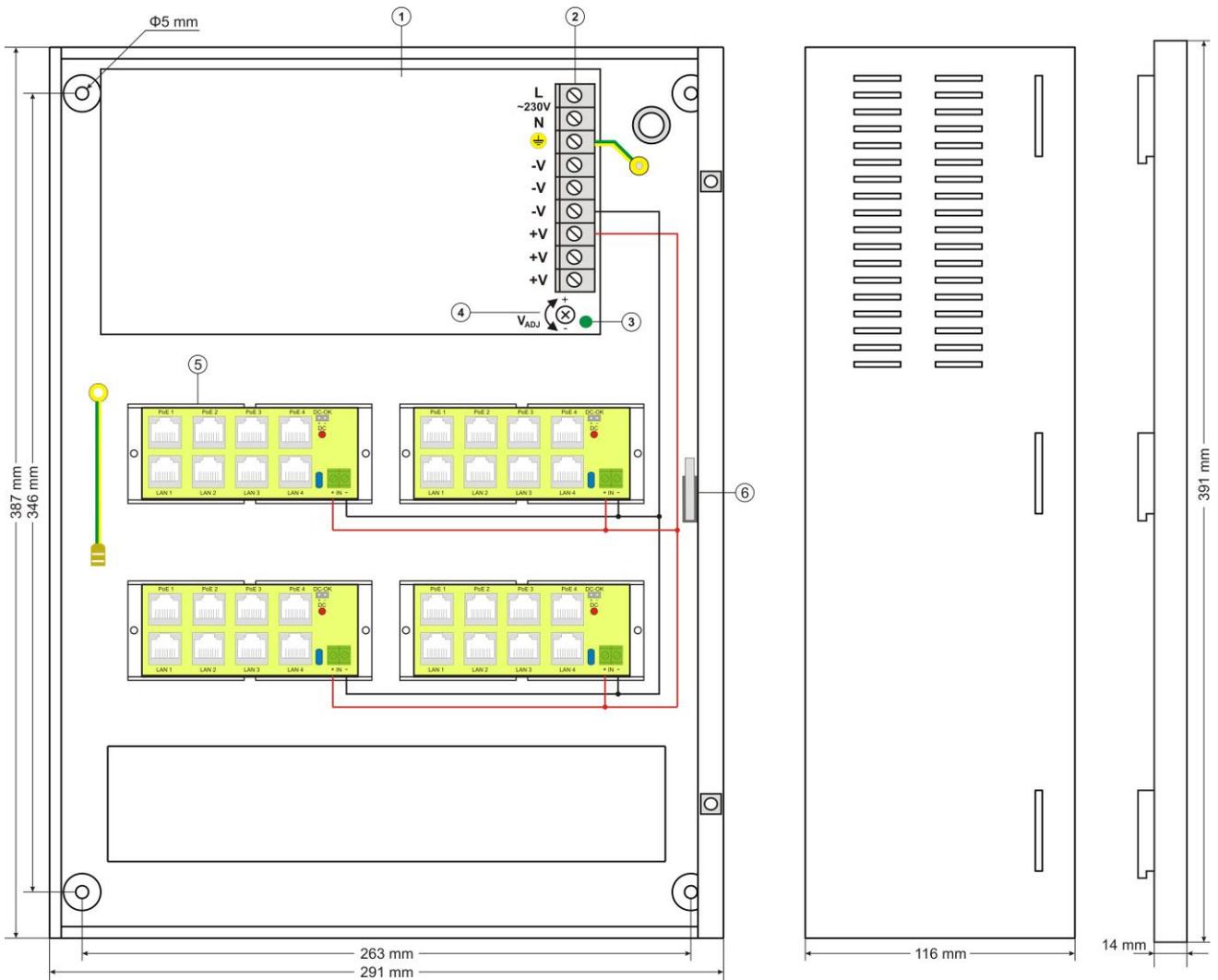


Fig. 3. The view of the PSU.

Component No. [Fig. 3]	Description
[1]	The module of the switch mode PSU
[2]	L-N power-supply connector 230V/AC, PE protection connector
[3]	LED light indicating correct operation of the switch mode PSU
[4]	V _{ADJ} potentiometer – regulation of the power supply output voltage (41÷56V DC)
[5]	PoE module
[6]	TAMPER – microswitch (contacts) of antisabotage protection (NC)

Tab. 2. Components of the PSU (see Fig. 3).

1.4 Technical parameters.

- electrical parameters (Table 3)
- mechanical parameters (Table 4)
- safety of use (Table 5)
- operation parameters (Table 6)

Electrical parameters (Table 3).

Mains supply	90±264V AC
Current consumption	2A@230V AC type
PSU's power	269W max.
Efficiency	89%
Output voltage	48V DC
The adjustment range of the output voltage	41±56V DC
Output current	16 x 0,35A (ΣI=5,6A) max. @48V
Ripple voltage	240 mV p-p max.
Short-circuit protection SCP	105% ÷ 135% of PSU power, automatic recovery
Overload protection OLP	105% ÷ 135% of PSU power, automatic recovery
Overvoltage protection OVP	58±68V DC
Surge protection	varistors
Antisabotage protection: - TAMPER output indicating enclosure opening	- microswitch, NC contacts (enclosure closed), 0,5A@50V DC (max.)
Optical indication of operation:	YES – LED lights

Mechanical parameters (Table 4).

Enclosure dimensions	291 x 387 x 101±15 (WxHxD) [mm] (+/-2)
Mounting	See Fig. 3
Net weight	4,5kg / 4,8kg
Enclosure	DC01 steel plate, 1,0mm, RAL 9003
Closing	Cylindrical screw x 2 (at the front) lock assembly possible
Terminals	Switch mode power supply: Φ0,63-2,05 (AWG 22-12) PoE module: Φ0,5-2,05 (AWG 24-12) LAN1 ÷ LAN4 inputs: RJ45 8P8C, shielded PoE1 ÷ PoE4 outputs: RJ45 8P8C, shielded TAMPER output: wires 35cm
Notes	The enclosure has a 15mm distance from the mounting surface so the cables can be led. PSU cooling: fan cooling.

Safety of use (Table 5).

Protection class PN-EN 60950-1:2007	I (first)
Protection grade PN-EN 60529: 2002 (U)	IP20
Insulation electrical strength: - between input (network) circuit and the output circuits of the PSU (I/P-O/P) - between input circuit and PE protection circuit (I/P-FG) - between output circuit and PE protection circuit (O/P-FG)	3000 V/AC min. 1500 V/AC min. 500 V/AC min.
Insulation resistance: - between input circuit and output or protection circuit	100 MΩ, 500V/DC

Operation parameters (Table 6).

Operating temperature	-10°C...+40°C
Storing temperature	-20°C...+60°C
Relative humidity	20%...90%, no condensation
Vibrations during operation	unacceptable
Surges during operation	unacceptable
Direct insolation	unacceptable
Vibrations and surges during transport	According to the PN-83/T-42106 standard

2. Installation.

2.1. Requirements.

The buffer PSU should be mounted by a qualified installer, holding relevant permits and licenses (applicable and required for a given country) for 230V/AC and low-voltage installations. The unit should be mounted in confined spaces, in accordance with the 2nd environmental class, with normal relative humidity (RH=90% maximum, no condensation) and temperature range from -10°C up to +40°C. The power supply should operate in a vertical position in order to provide free and convectional air flow through ventilating holes of the enclosure.



During normal operation, the total current drawn by the device should not exceed I=5,6A.

The power supply is designed for a continuous operation and is not equipped with a power-switch. Therefore, an appropriate overload protection in the power supply circuit should be provided. Moreover, the user should be informed how to disconnect the power supply unit from the mains supply (usually by assigning an appropriate fuse in the fuse box). The electrical system shall be made in accordance with applicable standards and regulations.

The PSU is designed for 10Mbit/s and 100Mbit/s Ethernet network (so-called Fast Ethernet). **However, it can not be used for a 1000 Mbit/s network (so-called Gigabit Ethernet).** Connections between the power supply and the camera can be done using UTP-3 cable (networks with data-rates up to 10 Mbit/s) or UTP-5 cable. Due to the lower resistance wiring, it is recommended (especially at large distances between the power supply and receivers) to use UTP-5 cable also for networks with data-rates up to 10 Mbit/s.

2.2. Installation procedure.

1. Before installation, cut off the voltage in the 230V power-supply circuit.
2. Mount the PSU in a selected location and lead the connecting cables.
3. Connect the power cables (230V AC) to L-N terminals of the PSU. Connect the ground wire to the terminal marked with grounding symbol: ⚡. Use a three-core cable (with a yellow and green PE protection wire) to make the connection. The power cables should be connected to the appropriate terminals on the connection board through the bushing.



The shock protection circuit shall be done with a particular care: the yellow and green wire coat of the power cable should be connected to the terminal marked with the ⚡ symbol in the PSU enclosure. Operation of the PSU without the properly made and fully operational shock protection circuit is UNACCEPTABLE! It can cause damage to the equipment or an electric shock.

4. Connect the network cables (Ethernet) to the PoE module: supply voltage is present only at the PoE sockets and the cameras should be connected to them. Connection diagram is shown in Figure 4:

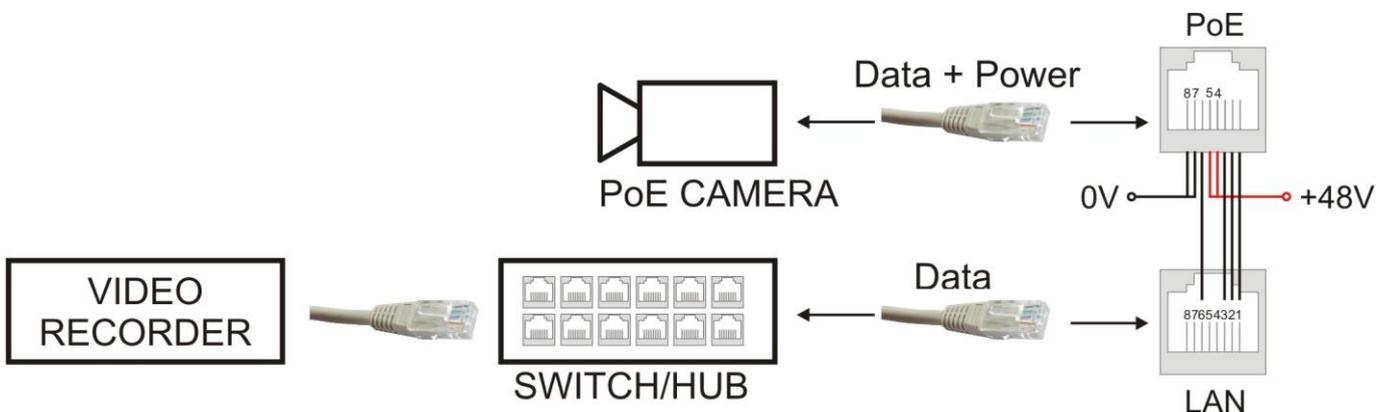


Fig. 4. Connection of cameras and network devices to the LAN and PoE terminals.

5. In case of significant voltage drops on the receivers' power cables resistance, it is possible to adjust the voltage with the V_{ADJ} potentiometer (41÷56V DC).
6. Check the optical indication of the PSU status.
7. Close the cover after installing and checking the operation of the power supply.

3. Power supply operation indication.

The presence of voltage at the input of PoE modules is indicated by LEDs on the front panel.

4. Service and operation.

4.1. Overload or short-circuit of the power supply output.

In case of power supply overload, the output voltage is automatically disconnected, which is indicated by turning off the corresponding LED. The voltage is restored automatically once the fault (overload) is cleared.

4.2. Activation of the overload protection of the power supply unit

When the OVP system is activated, the output voltage is automatically cut off. Restart is possible after disconnecting the PSU from the mains supply 230V for at least 20 seconds.

4.3. Maintenance.

All maintenance procedures can be performed after disconnecting the power supply from the power network. The PSU does not require any specific maintenance; however, its interior should be cleaned with compressed air if used in dusty conditions.

**WEEE LABEL**

Waste electrical and electronic equipment must not be disposed of with normal household waste. According to the European Union WEEE Directive, waste electrical and electronic equipment should be disposed of separately from normal household waste.

GENERAL WARRANTY CONDITIONS

1. Pulsar (manufacturer) grants a two-year quality warranty for the equipment, starting from the production date.
2. The warranty includes free-of-charge repair or replacement with an appropriate equivalent (selected by the manufacturer) if the malfunction is due to the manufacturer. It includes manufacturing or material defects, provided that such defects have been reported within the warranty period (point.1).
3. The equipment subjected to warranty should be brought to the place of purchase 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 point 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 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 (failure to follow instruction).
9. The warranty is void in case of construction changes and repairs carried out by any unauthorized service center or in case of damage or modifications to warranty stickers and serial numbers.
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 especially when resulting from failure to comply with the recommendations and requirements contained in the manual.

Pulsar

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