Automens Systems




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# INTEGRATED POWER SUPPLIES

# AI

## RATED POWER 1 TO 7,5 KVA, 220/240 V PROTECTION DEGREE IP20

The power supply of telephone plants and FM/TV relay stations has always entailed numerous problems and specific needs which are difficult to meet, among them:

- to assure the safety of operators working on the plants, according to the law;
- to assure continuity of operation to the plants;
- to build a compact distribution system for all loads usually present in relay stations;
- to limit the costs of installation and management;
- to allow a cheap and effective technical assistance.

| *Characteristics/Models* | AI122-1E/R-3 | AI122-1,6E/R-6 | AI122-3E/R-10 | AI122-4EI/R-10 | AI122-6E/R-25 | AI122-7,5EC/ |
|---|---|---|---|---|---|---|
| *Nominal input voltage* | 220 / 240 V | | | | | |
| *Nominal output voltage* | 220 / 240 V | | | | | |
| *Rated power* | 1 kVA | 1,6 kVA | 3kVA | 4 kVA | 6kVA | 7,5 kVA |
| *Voltage drop at full load* | <3% | | | | | |
| *Full load efficiency* | 96% | | | | | |
| *Operating temperature* | -10°C +45°C | | | | | |
| *Isolation test voltage* | 1' at 50Hz | | | | | |
| *between input and ground* | 6500 Vac | | | | | |
| *between output and ground* | 6500 Vac | | | | | |
| *between input and output* | 6500 Vac | | | | | |
| *Impulse type insulating voltage (full wave 1,2/50µs)* | 20 kV | | | | | |
| *Overvoltage protection* | 1 magnetic blow-out lightning arrester | | | | | |
| *Insulators class* | B | | | | | |
| *Isolation class* | I | | | | | |
| *Fittings* | 1 input thermal magnetic circuit breaker | | | | | |
| | 3 output circuit breakers | 4 output circuit breakers | | 6 output circuit breakers | 4 output circuit breakers | 5 output cir breakers |
| | isolation test device | | | | | |
| | 3 multistandard sockets | 4 multistandard sockets | | 6 multistandard sockets | 3 multistandard sockets | 3 multistandard sockets |
| | | | | | 1 x 32A IEC309 socket | 2 outputs on term. board |
| *Net weight* | 50 kg | 60 kg | 70 kg | 75 kg | 110 kg | 120 kg |
| *Dimensions mm* | 482x554x310 | | | | 482x554x354 | |
| *Protection degree* | IP 20 | | | | | |
| *Reference Standards* | CEI EN 60742 | | | | | |



# SAFETY FOR OPERATORS

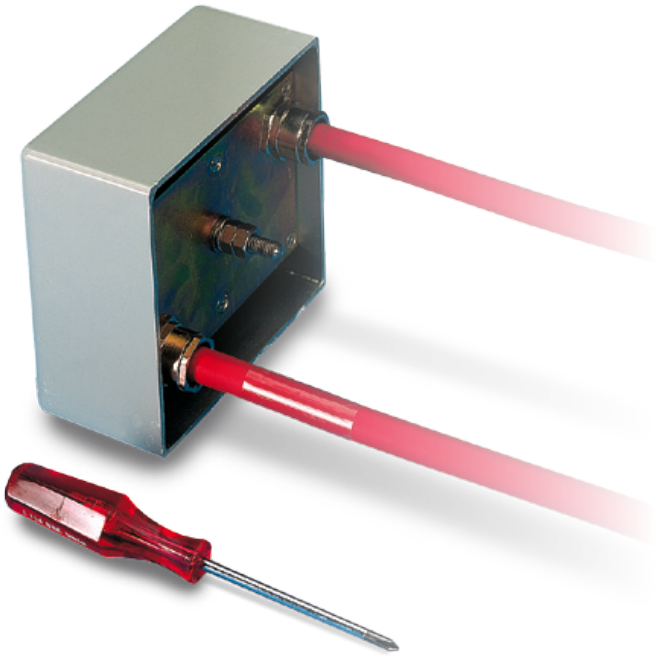
To ensure the safety of operators it is also necessary that:

- The premises hosting the telecommunications equipment are accessible only to specialized personnel.
- All equipment has live parts protected by barriers that can only be removed using tools.
- The electrical systems are built in the Rule of Art.

# CONTINUITY OF OPERATION

The continuity of operation required by an automatic repeater, often installed in practically inaccessible sites, must satisfy a variety of requirements, ranging from the prevalently technical to the economic, limiting the need for intervention on the equipment.
The first problem to arise, and probably also the most difficult to tackle, is that of protection against atmospheric discharges, practically omnipresent in repeaters on account of the sites they have to be installed in. Due to the coupling of electromagnetic fields and the conduction in cables, the effect of lightning spreads for several kilometres from the impact point.
On the other hand, other forms of protection, for example those against overloads and short circuits, are subject only to suitable dimensioning.
The use of earth leakage trips for protection against direct contacts must be ruled out as even the overcurrents of feeble intensity caused by factors such as merely even inductance can result in untimely opening of the circuit. The importance of the economic aspect lies not only in the costs of making and maintaining the equipment, but also in the question of audience return. In fact, failure to guarantee the customer full operation of the equipment constitutes an interruption of the service and, accordingly, a cost.

# CONTROLS AND FUNCTIONS



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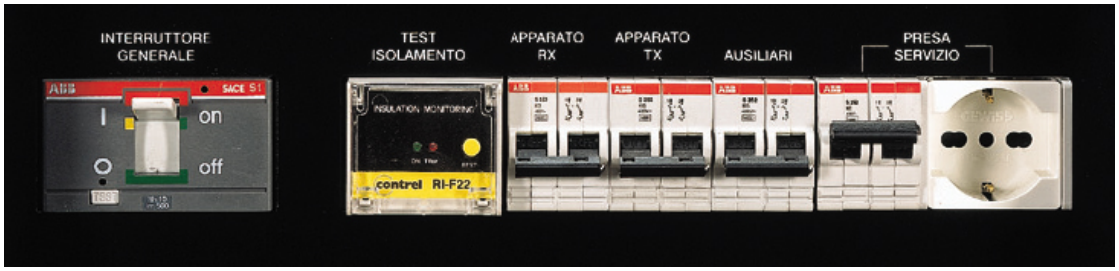

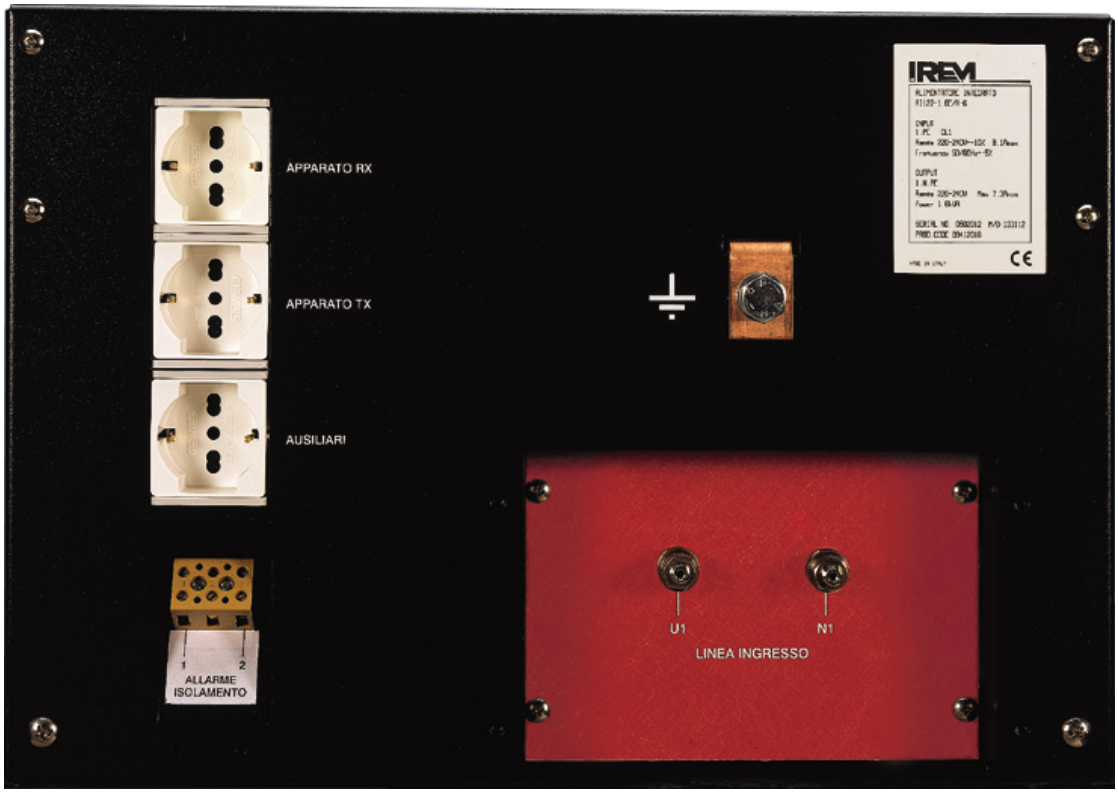


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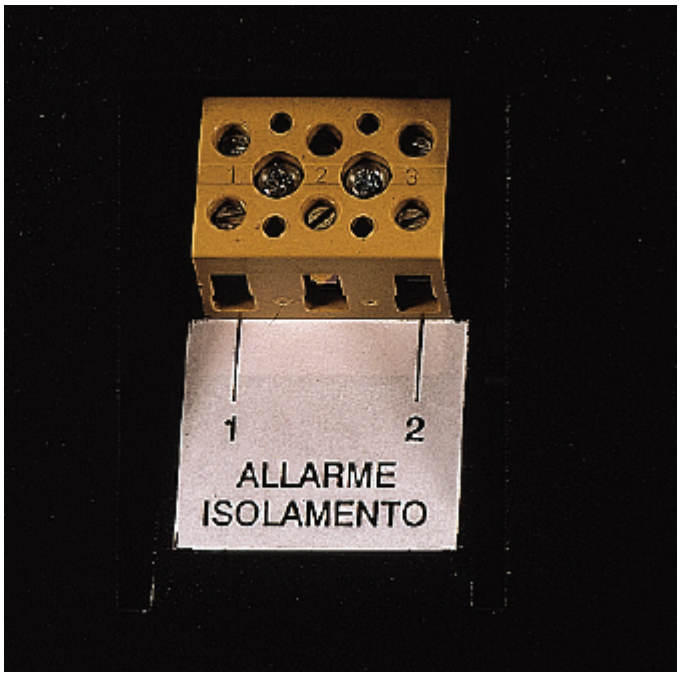


The integrated power supply AI is housed in a 19” rack cabinet. It includes the following components:

a. a spark-gap magnetic blow-out lightning arrester. This is an essential component of the integrated power supply.
b. It is characterized by:

- high precision striking voltage with any overvoltage waveform;

- restoration of the plant normal operating conditions interrupting the arc current at its first passage through 0 after the exhaustion of the overvoltage wave;
- capability of withstanding currents with peak value of 100 kA (10/350 µs), charge of 80 As and specific energy of 1,25 MJ/W;
- auto-regenerability. Thanks to this characteristic, the arrester does not need to be replaced, as it happens with other over voltage protection systems.

c. An input circuit breaker, providing protection against short circuits and acting as main circuit breaker. It has a high magnetic tripping characteristic, avoiding untimely openings followin impulse type overcurrents caused by atmospheric discharges. Four magnetothermic circuit breakers to protect the power supply lines of the receiving unit, of the transmitter, of the auxiliary devices and of the service utilities. In order to guarantee a high level of insulation with respect to the metal structure, the five switches are fixed to a high mechanical resistance gl polyester support.



d. A single-phase isolation transformer compliant with EN60742 Standard, provided with electrostatic shield between the windings. In addition to the galvanic isolation of the users from the line, it also ensures good attenuation against common and transverse mode conducted noise. The connection to the outputs is possible through multistandard sockets a CEE socket (only in the 6 kVA model);





e. A device signalling breakdown of insulation with relevant contact wired to the terminal board. This device intervenes when the insulation is lower than 100 kΩ.

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AUTOMENS SYSTEMS
P.O.Box 622, Ofankor Accra. Ghana
Tel. +233 24461 2469
Email: info@automensys.com

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