DESIGNED FOR
TLC PLANTS

AI - AO
INTEGRATED POWER SUPPLIES

The supplying of radio and TV radio repeaters has always entailed problems and requirements that are difficult to solve: the most important among them are safety and continuity of operation.
IREM integrated power supplies series AI can meet the particular needs of the power supply of the telecommunications stations.

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/R-25**
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 circuit 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					

DEDICATED TO PROFESSIONAL USE

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 create 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

IREM PROPOSAL

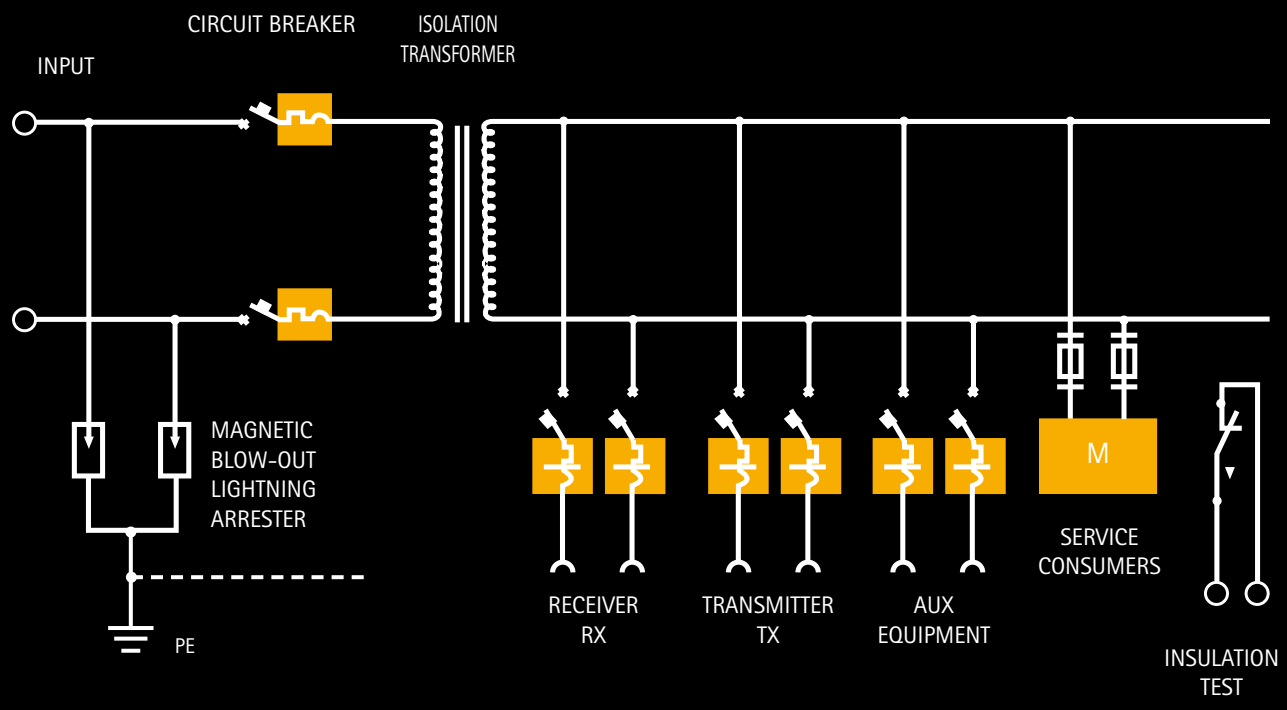
IREM integrated power supplies solve the power quality problems of broadcasting stations in the telecommunications sector. They include safety, protection, distribution, connection and signal devices.

All the integrated power supplies of AI range can also be manufactured with class II protection (double insulation).

SAFETY OF OPERATORS

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

- ✔ The premises hosting the telecommunications equipment are accessible only to specialized personnel.
- ✔ Any equipment has live parts protected by barriers that can only be removed using tools.
- ✔ The electrical systems are done to perfection.



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

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

b. a spark-gap magnetic blow-out self-healing lightning arrester. This is an essential component of the integrated power supply.

c. 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/Ω;
- ✔ auto-regenerability. Thanks to this characteristic, the arrester does not need to be replaced, as it happens with other over voltage protection systems.

d. 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 following impulse type overcurrents caused by atmospheric discharges. Four thermal magnetic 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 glass-polyester support.

e. 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 and a IEC socket (only in the 6 kVA model);

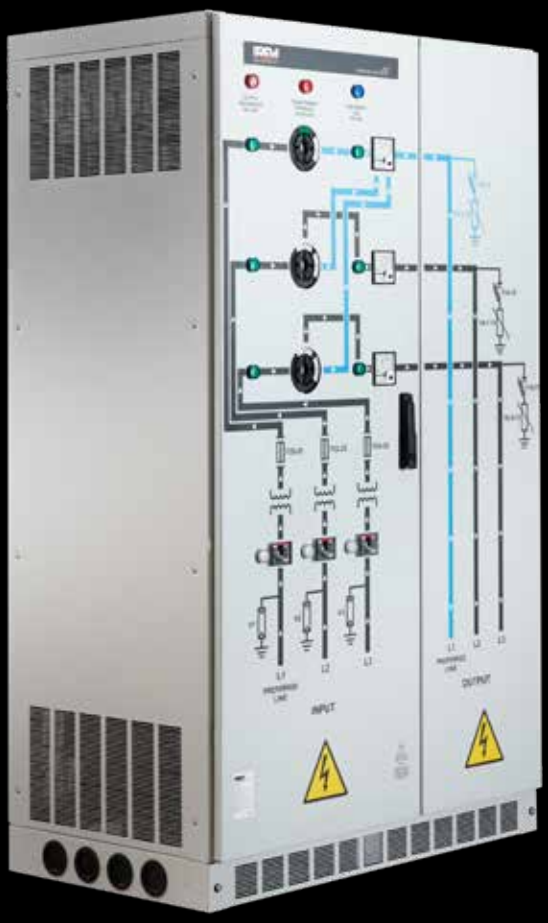
f. A device warning against breakdown of insulation with relevant contact wired to the terminal board. This device intervenes when the insulation is lower than 100 kΩ.

HIGH PROTECTION INTEGRATED POWER SUPPLIES (AO)

It is known that the phenomenon of overvoltages can be caused by the switching of large inductive or capacitive loads or in most cases by direct or indirect lightning that occurs during thunderstorms.

In particular, lightning strikes are phenomena of violent discharge that produce very high intensity currents which can reach and exceed 200 kA. Due to the enormous energy developed in short time, these events can be felt with all their destructive potential on components or systems.

In order to express the highest level of performance against the effects of overvoltages with high energy content and ensure the best protection to the most sensitive and strategic users, IREM has developed a High Protection Integrated Power Supply meeting the technical requirements that describe the technical specifications of the "Absorbeur d'Ondes" (AO).





The High Protection Integrated Power Supply combines in a single equipment various overvoltage protection strategies to provide a protected power supply with a very low residual voltage to the load. The coordinated action of a set of devices that operate selectively for switching, limiting and dissipating the energy transmitted by the overvoltage allows to offer a solution of maximum efficiency and reliability.

The functions of the protection and filter devices are integrated and energetically coordinated and ensure the highest levels of protection.

The performance of IREM High Protection Integrated Power Supplies is validated in an accredited laboratory capable of simulating the direct discharge of a lightning and measuring the residual overvoltage.

The High Protection Integrated Power Supplies are installed in series to the power supply line and upstream of the loads which, in relation to the intrinsic value or the mandatory nature of the function performed, must receive the maximum level of protection.

Among the loads with these characteristics we can consider the radio transmission systems, the control centers of rail, sea and air transport, process equipment, data processing centers, research centers, sensitive infrastructures in general and for defense.

The High Protection Integrated Power Supplies (AO) are typically composed of:

- ✔ Input protection and disconnecting device;
- ✔ Lightning arresters for lightning current with discharge capacity of 200kA per pole in 10/350 µs waveform;
- ✔ Isolation transformer with high dielectric strength and electrostatic shield;
- ✔ Protection fuses of the internal power circuit derived from the transformer;
- ✔ Combined surge arresters with discharge capacity of 50kA per pole in 8/20 µs waveform;
- ✔ Air wound series reactor shunted by snabber resistors;
- ✔ Varistor surge arresters in derivation for the fine protection of common and transverse mode in waveform 1.2 / 50 µs;
- ✔ LCR series filter for protection against high frequency noise;
- ✔ Capacitors for absorption of residual overvoltage;
- ✔ Output protection and disconnecting device.

A GLOBAL LEADING PLAYER

SINCE 1947 MORE THAN 1,000,000 EQUIPMENT ALL OVER THE WORLD

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