



ISOLATING TRANSFORMERS FOR TLC PLANTS

Isolating transformers for TLC plants

The power supply of telecommunication plants and FM/TV relay stations has always entailed numerous problems and specific needs which are difficult to meet. We refer in particular to the difficulty of reaching the installation sites for carrying out the technical service, to the exposure to atmospheric discharges and to the length of electric lines with consequent voltage drops. The operators of TLC plants are well aware of the direct and indirect costs deriving from a bad power supply. As a matter of fact, the costs deriving from service interruption and from “low audience efficiency” must be added to the failures which may occur to the plants.

In order to obtain the maximum economic yield from the service, it is fundamental to build an electric plant assuring a **good protection of the transmission plants** and the **safety of operators** employed in plant maintenance. Since the isolating transformer is one of the most important components of the electric plant, the use of a specific product is essential.

The models included in this catalogue share the ability to satisfy different specific needs in the telecommunication field. Each series shows peculiar technical features designed for different kinds of TLC systems.

The following models are only a small part of what has been designed and manufactured up to now for satisfying the specific needs of some of the most prestigious manufacturers of TLC plants in Italy and abroad.

Isolating transformers with different mechanical and electrical features can be manufactured on customer's request.

All models are characterized by a **recessed concentric winding configuration**, a low output impedance and the insensitiveness to load power factor, in order to assure high attenuation and good galvanic separation of the loads from the line.



Class II isolating transformer Series ARM2

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High attenuation isolating transformers series RS with overvoltage protection

The models of RS series share the following peculiar features:

- high attenuation of common mode disturbances, obtained thanks to a ground-connected electrostatic shield inserted between the windings;
- attenuation of overvoltages caused by lightnings and line commutations. This is obtained by connecting 3 varistors between phases and ground. Each surge arrester is fitted with a device signalling when the varistor is out of order.

TECHNICAL FEATURES

Nominal voltage	UN	200 V~	500 V~
Max. operating voltage	U ~ max	275 V	550 V
Varistor	U ~ max	350 V	745 V
Varistor capacity	C	4000 pF	2000 pF
Nominal leakage current	$i_s N$ (8/20)	15 kA	15 kA
Max. impulse test current	i_{smax} (8/20)	40 kA	40 kA
Residual UR voltage	$i_s = 1$ kA	0.8 kV	1.7 kV
	$i_s = 5$ kA	1.0 kV	2.0 kV
	$i_s = 10$ kA	1.2 kV	2.3 kV
	$i_s N = 15$ kA	1.3 kV	2.5 kV
	$i_{smax} = 40$ kA	1.9 kV	3.3 kV
Long duration discharge current	$i_s N$ (2000 ms)	200 A	200 A
Response time	t_a	< 25 ns	< 25 ns



TECHNICAL FEATURES Input	IT3-10RS	IT3-16RS	IT3-20RS	IT3-25RS	IT3-40RS	IT3-50RS
Nominal voltage	400 V 3ph					
Nominal current	15.6 A	24 A	30 A	37.5 A	60 A	74 A
Frequency	50/60 Hz $\pm 5\%$					
Phase connection	delta					
Connection group	DYN5					

TECHNICAL FEATURES Output	IT3-10RS	IT3-16RS	IT3-20RS	IT3-25RS	IT3-40RS	IT3-50RS
Nominal voltage	400 V 3ph					
Phase connection	star + neutral					
Rated power	10 kVA	16 kVA	20 kVA	25 kVA	42 kVA	50 kVA
Nominal rated current	15 A	23 A	29 A	36 A	58 A	72 A
Electrostatic shield between primary and secondary winding	ground connected					
Short circuit voltage	10 V	12 V	8 V	11 V	7.5 V	7 V
Full-load efficiency	96%	96%	96%	96%	97%	97%
Dielectric strength:						
• between input and ground	1875 Vac					
• between output and ground	1875 Vac					
• between input and ground	3750 Vac					
Input overvoltage protection	No. 3 surge arresters between phase and ground					
Isolation class	class I transformer (EN60742)					
Protection degree	IP 20					
Thermal class	F					
Operating temperature	0°C to +40°C					
Cooling	free convection					
Storage temperature	-20°C to +75°C					
Relative humidity	<95% without condensate					
Dimensions (mm)	600x310x510h	600x305x560h	600x305x560h	600x305x560h	610x400x700h	610x400x700h
Weight (kg)	150	200	205	210	345	410

High isolation and high attenuation isolating transformers series ARM.

Thanks to their peculiar technical features and to the shielding between primary and secondary windings, these isolating transformers can stand high isolation voltages, both impulse type and at 50 Hz. Also this series is characterized by high attenuation of common mode disturbances.

TECHNICAL FEATURES Input	IT333-06ARM	IT333-12ARM	IT333-20ARM	IT333-30ARM	IT333-40ARM
Nominal voltage	400 V 3ph				
Nominal rated current	9 A	18 A	30 A	45 A	60 A
Frequency	50/60 Hz $\pm 5\%$				
Phase connection	delta				
Connection group	DYN5				

TECHNICAL FEATURES Output	IT333-06ARM	IT333-12ARM	IT333-20ARM	IT333-30ARM	IT333-40ARM
Nominal voltage	400 V 3ph				
Phase connection	star + neutral				
Rated power	6 kVA	12 kVA	20 kVA	30 kVA	40 kVA
Nominal rated current	8.7 A	17 A	29 A	43 A	58 A
Electrostatic shielding between primary and secondary winding	ground connected				
Short-circuit voltage	11 V	12 V	7.5 V	11 V	7.8 V
Full load efficiency	96%	96%	96%	97%	97%
Dielectric strength:					
• between input and ground	6500 Vac				
• between output and ground	6500 Vac				
• between input and ground	6500 Vac				
Impulse isolating voltage 1.2/50 microsec.	20 kV				
Classification	class I transformer (EN61558-1)				
Protection degree	IP20				
Thermal class	F				
Ambient temperature	0°C to +40°C				
Cooling	free convection				
Storage temperature	-20°C to +75°C				
Relative humidity	<95% without condensate				
Dimensions (mm)	600x305x510h		600x310x550h		670x370x714h
Weight (kg)	75	127	170	250	280

Class II isolating transformers series ARM2.

The peculiar characteristic of this series of transformers is their **compliance to Standard EN 61558-1, certified by CESVIT-CETACE**. Therefore these models, being classified as “**class II transformers**”, allow the building of plants assuring both the safety of operators and the continuity of operation of the connected transmission systems. In other words, it is possible to:

1. install only a thermomagnetic circuit breaker without residual-current protection on the line fitted with double-insulation cables, connecting the “delivery point” to the isolating transformer;
 2. install specific surge arresters for protection against atmospheric discharges on the primary winding of the transformer.
- The non-use of residual-current circuit breakers avoids the untimely circuit opening due to very small leakages caused by inductive phenomena.

TECHNICAL FEATURES Input	IT122-06ARM2	IT122-12ARM2	IT333-06ARM2	IT333-12ARM2	IT333-20ARM2	IT333-30ARM2	IT333-40ARM2
Nominal voltage	230V 1ph + N			400V 3ph			
Nominal current	27 A	54 A	9 A	18 A	30 A	45 A	60 A
Frequency	50/60 Hz ±5%						
Phase connection	delta						
Connection group	DYN5						

TECHNICAL FEATURES Output	IT122-06ARM2	IT122-12ARM2	IT333-06ARM2	IT333-12ARM2	IT333-20ARM2	IT333-30ARM2	IT333-40ARM2
Nominal voltage	230v 1ph + N			400V 3ph + N			
Phase connection	star + neutral						
Rated power	6 kVA	12 kVA	6 kVA	12 kVA	20 kVA	30 kVA	40 kVA
Nominal rated current	26 A	52 A	8.7 A	17 A	29 A	43 A	58 A
Electrostatic shield between primary and secondary	connected to the transformer						
Short circuit voltage	4.6 V	9.5 V	11 V	12 V	7.5 V	11 V	7.8 V
Full-load efficiency	96%	97%	96%	96%	96%	97%	97%
Dielectric strength:	6500 Vac						
Impulse isolating voltage 1.2/50 microsec.	20 kV						
Isolation class	class II transformer (EN61558-1)						
Protection degree	IP20						
Thermal class	F						
Operating temperature	0°C to +40°C						
Cooling	free convection						
Storage temperature	-20°C to +75°C						
Relative humidity	<95% without condensate						
Dimensions (mm)	450x590x600h				520x690x700h		
Weight (kg)	130	145	110	170	210	305	345

IREM. Experience and Quality

IREM is a leading company in the manufacture of electromechanical and electronic equipment for the control of the mains power in the following sectors:

- **powering of discharge lamps for professional applications;**
- **protection of electric users against line disturbances;**
- **luminous flux regulation in lighting plants;**
- **power generation by micro hydroelectric plants.**

Since its foundation in 1947, IREM has gained wide recognition due to the reliability and innovative content of its high-tech products. A reliable company deserving the Oscar-Award. In 1992, in Los Angeles, **Mario Celso** - founder of IREM - was granted the "**Scientific-Technical Award**" by the Academy of Motion Picture Arts and Sciences.

Two production plants, a philosophy based on "quality upgrading" as the company's primary concern and direct export exceeding 50% of the global turnover are a warranty of continuity and development.

Experience, quality and professional skill: these are the factors that permitted IREM to achieve in 1993 the certification of its quality system in compliance with **UNI EN ISO 9001** standard, a further confirmation of IREM commitment to constant improvement to ensure the maximum satisfaction of the customer and its capacity to guarantee:

- **a constant quality standard**
- **precision and repeatability of all working processes**
- **dropping of acceptance control at the customer's plant**
- **identification and traceability of a product through the years.**

In year 2000, IREM obtained the certification of its environment management system according to **UNI EN ISO 14001** standard. This certification is a firm demonstration of the company's will to protect the environment not just through its products, but also via precise patterns of behaviour.

