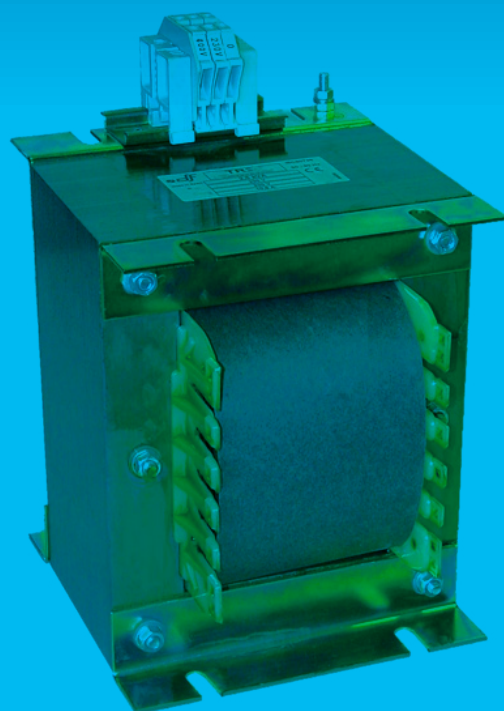


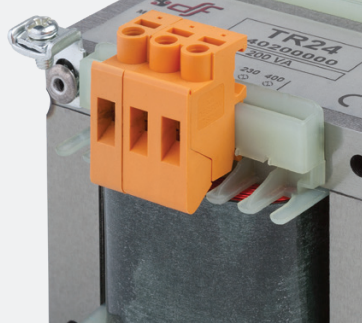
TR24 REVERSIBLE

single-phase autotransformers

TR24



PROTECTING THE WORLD

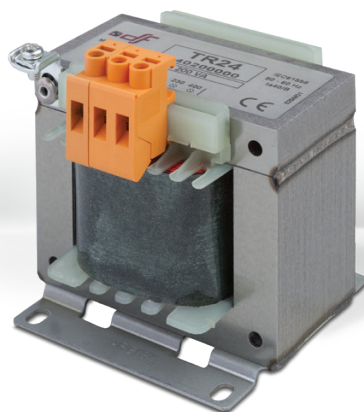


TR24

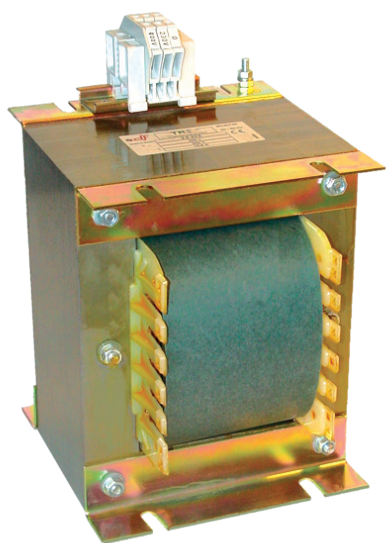
POWER
100VA...6,3kVA

RATED VOLTAGES
230-400V

STANDARDS
IEC/EN 61558-1
IEC/EN 61558-2-13
IEC60076-11



100VA
⋮
3000VA



4000VA
5000VA
6300VA

TR24 REVERSIBLE

Single-phase autotransformers

TR24 autotransformers are specially intended for use as voltage adapter when a economical solution is required.

Autotransformers have a small size (and small price) that a transformer with the same rated power. The main disadvantage is that the autotransformers do not have galvanic isolation. Neither can filter disturbances and interferences produced by harmonics or high frequency.

The main applications comprise the voltage adaptation in motors, electrical pumps, machinery, or air conditioned equipment.

These autotransformers are reversible, thus can be used as step up as well as step down autotransformers.

The standard range comprises rated power between 100 VA and 6,3kVA. On request we can manufacture up to 31,5kVA.

They are sized for continuous service at 100% of power in an ambient temperature up to 40°C. For ambient temperatures above 40°C it is necessary to apply a derating.

Rated voltages 230-400V according standard values in IEC60038. On request we can manufacture autotransformers with another voltages or with regulation taps.

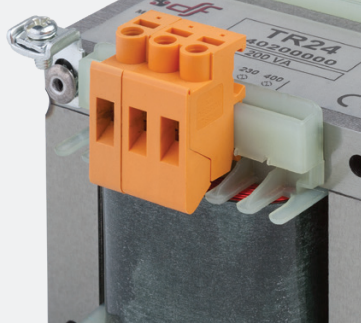
TR24 autotransformers can withstand an input overvoltage of up to 10%.

Standard range comprises autotransformers without case (IP00). On request we can manufacture them also with metallic case (IP23)..

Range

POWER (VA)	REFERENCE
100	640100000
200	640200000
320	640320000
400	640400000
500	640500000
630	640630000
800	640800000
1000	641000000
1600	641600000
2000	642000000
2500	642500000
3000	643000000
4000	644000000
5000	645000000
6300	646300000

OTHER CHARACTERISTICS ON REQUEST SUBJECT TO AVAILABILITY AND POSSIBILITY



Technical data

Use	Reversible autotransformer. Indoor use. Dry type. For stationary installation. Continuous operation (ED100%)
Rated voltages	230-400V
Rated power range	100VA to 6,3kVA up to 1kVA → IEC/EN61558 >1kVA → IEC60076-11
Protection against electric shock	Class I
Thermal class	B (130°C)
Rated ambient temperature	40°C
Protection index	IP00 IP23
Frequency	50/60Hz
Dielectric strength	≥3kV
Ambient temperature of service *	-20°C ... 70°C
Storage temperature	-40°C ... 85°C
Cooling	Natural air cooling If the transformer is placed into a cabinet, it must have adequate ventilation.

* For ambient temperatures higher than 40°C it is necessary to apply a derating.

Standards

IEC/EN 61558-1 Transformers, general specifications
IEC/EN 61558-2-13 Autotransformers for general use
IEC60076-11 Dry-type power transformers
RoHS Compliant



Constructive characteristics

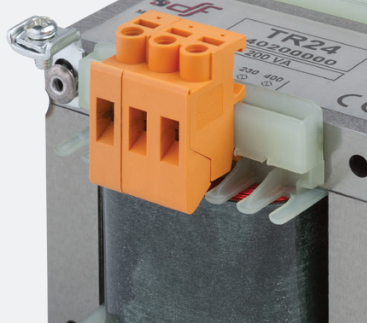
Copper windings Class F (155°C) or H (180°C)

Flexible insulating materials Class B (130°C)

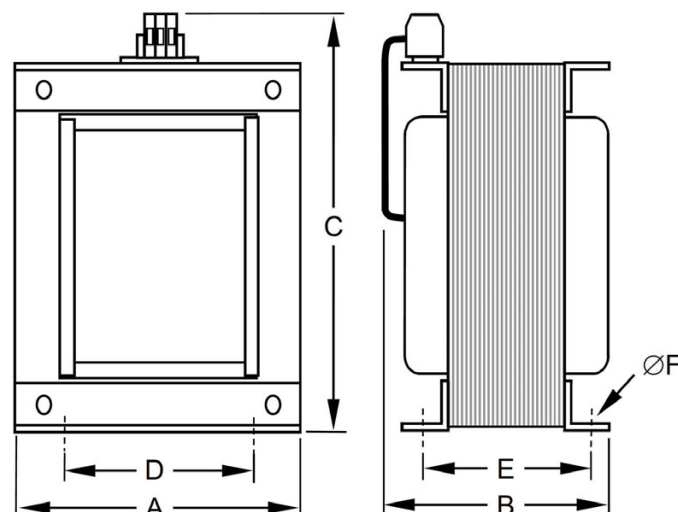
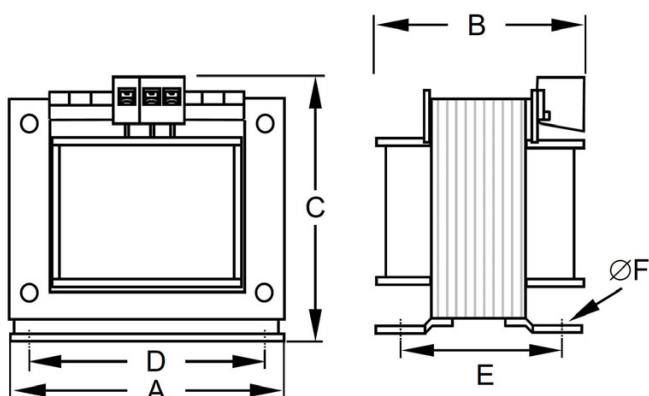
Impregnation Class F (155°C) or H (180°C)

Connection with terminal blocks protected against accidental contacts

Metallic case with index protection IP23 painted with epoxy in RAL7032 colour



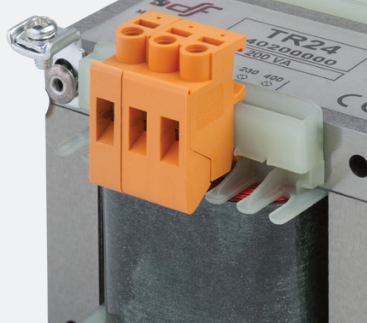
Dimensions



POWER (kVA)	DIMENSIONS (mm)						WEIGHT (kg)
	A	B	C	D	E	F	
100	75	71	81	56	47	4,8	1,00
200	84	90	95	64	67	5,8	1,90
320	96	82	100	84	67	5,8	2,23
400	96	92	100	84	77	5,7	2,68
500	96	106	113	84	91	5,8	3,38
630	108	91	113	80,5	72	5,8	3,64
800	108	106	113	80,5	85	5,8	4,44
1000	120	117	121	90	87	5,8	4,90
1600	150	113	143	122	92	78	7,48
2000	150	115	143	122	109	7	9,64
2500	150	141	143	122	135	7	13,2
3000	150	141	143	122	135	7	13,2

POWER (kVA)	DIMENSIONS (mm)						WEIGHT (kg)
	A	B	C	D	E	F	
4000	163	165	256	98	120	8	19,0
5000	163	175	256	98	130	8	21,5
6300	163	195	256	98	150	8	25,5

These dimensions belongs to autotransformers with rated voltage of 230-400V.
For another voltages the dimensions can be very different.



Autortransformer protection

The autotransformers (and their lines) must be protected against overloads and/or short-circuits that they can be submitted in use, and could causes dangerous situations for persons, animals or installations.

These protections are also a requirement of the standards and the national regulations about electrical installations.

The most adequate way to protect these autotransformers (and their lines) is to include on the output side a device protection capable to interrupt overloads as well as short circuits.

For the other hand the input line must be protected against short circuit.

As a general rule the criteria to select the ratings of protection devices are the following:

Protection on the **output side** (load)

In this part can appear overloads (if the user try to obtain a power higher than the rated power) as well as short circuits.

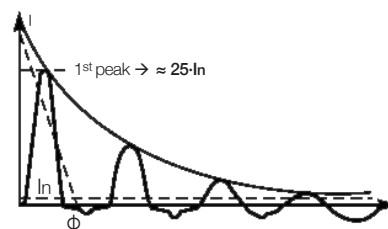
In order to achieve a good protection, the device (fuse link, circuit breaker or similar) must be capable to interrupt all range of currents (overloads and short circuits) and must has a rated current of the autotransformer (see nameplate on the autotransformer).

Protection on the **input side** (supply line)

In this part there is no risk of overload because if the output protection has been correctly selected, it will operate if appear an overload at the output side and the load will be disconnected of the autotransformer.

For this reason we only must protect the input line of autotransformer against short circuits in the line, in the transformer connections or inside the windings in a hypothetical failure of the insulations.

When the autotransformer is energized, it can demand a high momentary current (can be about 25 times the rated current) with a duration of a few milliseconds, that decrease very quickly until reach the rated value



The amplitude of this peak it depends of several factors (autotransformer design, instantaneous value of the voltage when the autotransformer is energized, ...)

These factors should be take into account to choose the protection in order to avoid the fusing of the fuses or the not desired operation of the circuit breakers.

For the protection of the line side of the TR24 autotransformers we can use the following devices:

- Miniature fuses 5x20 or 6x32 according to IEC/EN60127 standard

$$I_{\text{fuse}} \geq 3 \cdot I_{\text{autotransformer}}$$

- aM fuses according to IEC/EN60269 standard

$$I_{\text{fuse}} \geq 1,8 \cdot I_{\text{autotransformer}}$$

- gG fuses according to IEC/EN60269 standard

$$I_{\text{fuse}} \geq 3 \cdot I_{\text{autotransformer}}$$

Obviously, there are several ways to ensure the correct protection of the autotransformers because in the market we can find a wide range of protection devices.

We must take into account the main characteristics of this devices:

- Rated current.
- Rated voltage.
- Breaking range.
- Breaking capacity.



PROTECTING THE WORLD



HEAD OFFICE AND FACTORY

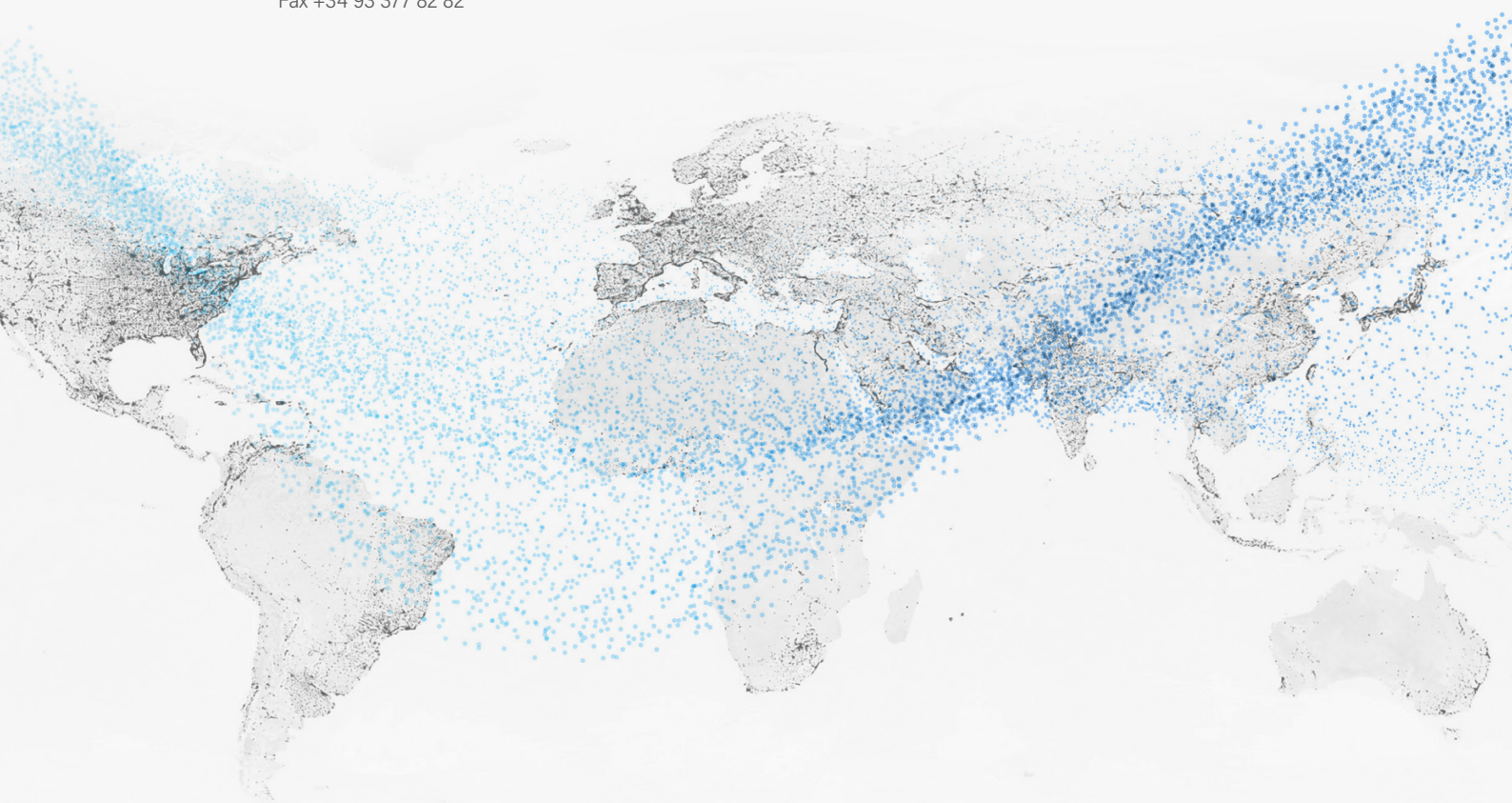
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To prevent electrical hazards, carry out the installation without voltage.



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