



TRT33 POWER ISOLATING

three-phase transformers

TRT33



**PROTECTING
THE WORLD**



TRT33

POWER
0,1kVA...100kVA

PRI VOLTAGE
400V

SEC VOLTAGE
230V

STANDARDS

IEC/EN 61558-1
IEC/EN 61558-2-1
IEC/EN 61558-2-2
IEC/EN 61558-2-4
IEC/EN 61558-2-6
IEC60076-11



IP00



IP23

TRT33 POWER ISOLATING Three-phase transformers

TRT33 transformers are three-phase isolating transformers and are specially intended for use as voltage adapter and/or when a galvanic isolation is required.

The range comprises rated power between 0,1kVA and 100kVA (IP00) and between 0,5kVA and 100kVA (IP23).

Rated voltages on request (max. 750V).

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.

The most common vector group is Dyn5, others on request.

TRT33 autotransformers can withstand an input overvoltage of up to 10%.

There are versions without case (IP00) and with metallic case (IP23).

On request we can manufacture transformers with electrostatic screen, with thermal micro switch, taps for regulation. etc.

Range

POWER
(kVA)

REFERENCE

TRT33 IP00

TRT33 IP23

POWER (kVA)	TRT33 IP00	TRT33 IP23
0,1	73N0001014	-
0,5	73N0005000	73C0005000
1	73N0010000	73C0010000
1,6	73N0016000	73C0016000
2	73N0020000	73C0020000
3,5	73N0035000	73C0035000
4	73N0040000	73C0040000
5	73N0050000	73C0050000
6,3	73N0063000	73C0063000
8	73N0080000	73C0080000
10	73N0100000	73C0100000
12,5	73N0125000	73C0125000
16	73N0160000	73C0160000
20	73N0200000	73C0200000
25	73N0250000	73C0250000
31,5	73N0315000	73C0315000
40	73N0400000	73C0400000
50	73N0500000	73C0500000
63	73N0630000	73C0630000
80	73N0800000	73C0800000
100	73N1000000	73C1000000

OTHER CHARACTERISTICS ON REQUEST SUBJECT TO AVAILABILITY AND POSSIBILITY



Technical data

Use	Indoor use. Dry type. For stationary installation. Continuous operation (ED100%)
Rated primary voltage	400V
Rated secondary voltage	230V
Rated power range	0,1kVA ... 100kVA
Vector group	Dyn5 others on request
Protection against electric shock	Class I
Thermal class	B (130°C) ≤ 10kVA H (180°C) ≤ 12,5kVA
Rated ambient temperature	40°C
Protection index	IP00 IP23
Frequency	50/60Hz
Dielectric strength between primary and secondary	≥4kV
Dielectric strength between windings and metallic parts	≥2,5kV
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 61558-2-1 General use transformers
IEC/EN 61558-2-2 Control transformers
IEC/EN 61558-2-4 Isolating transformers
IEC/EN 61558-2-6 Safety transformers
IEC60076-11 Dry-type power transformers
RoHS Compliant



Constructive characteristics

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

Reinforced insulation

Flexible insulating materials Class F (155°C) or H (180°C)

Impregnation Class H (180°C)

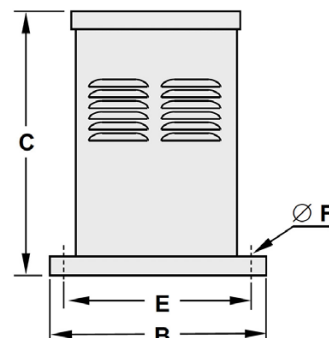
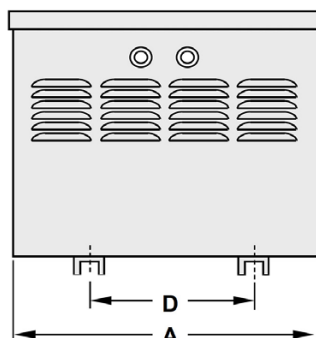
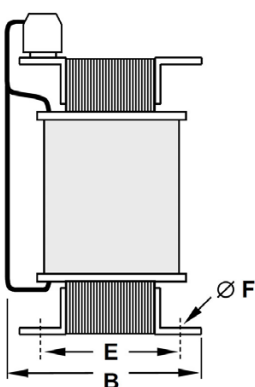
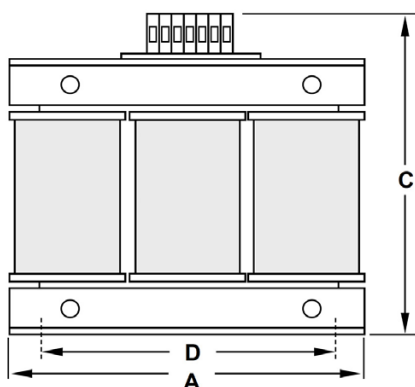
Connection with terminal blocks protected against accidental contacts or screws for flat terminals

With eyebolts for transformers with rated power greater than 6,3kVA

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



Dimensions



TRT33 IP00

TRT33 IP23

POWER (kVA)	DIMENSIONS (mm)						WEIGHT (kg)
	A	B	C	D	E	F	
0,1	120	70	125	80	51	5	2,0
0,5	180	85	200	140	55	6	6,5
1	240	110	250	200	75	6	16,0
1,65	240	120	250	200	85	6	18,5
2	240	130	250	200	95	6	23,0
3,5	300	135	340	200	105	6	33,5
4	300	145	340	200	115	6	40,0
5	300	175	340	200	135	6	50,0
6,3	360	170	361	300	115	8	56,0
8	360	180	361	300	125	8	58,0
10	360	190	361	300	135	8	66,7
12,5	420	200	425	300	140	8	86,0
16	420	210	425	300	150	8	100
20	480	225	500	400	155	10	107
25	480	240	500	400	175	10	135
31,5	480	280	510	400	195	10	160
40	480	300	510	400	215	10	180
50	600	320	600	500	180	16	240
63	600	340	600	500	200	16	270
80	600	350	530	500	220	16	325
100	720	380	690	500	200	16	420

POWER (kVA)	DIMENSIONS (mm)						WEIGHT (kg)
	A	B	C ¹	D	E	F	
0,5	235	240	285	140	215	12	9,5
1	285	290	335	200	265	12	20,0
1,6	285	290	335	200	265	12	22,5
2	285	290	335	200	265	12	27,0
3,5	375	300	435	200	270	12	40,5
4	375	300	435	200	270	12	47,0
5	375	300	435	200	270	12	57,0
6,3	450	400	480	300	370	12	66,0
8	450	400	480	300	370	12	68,0
10	450	400	480	300	370	12	76,5
12,5	510	400	540	300	370	12	97,0
16	510	400	540	300	370	12	111
20	540	500	610	400	470	12	126
25	540	500	610	400	470	12	156
31,5	540	500	610	400	470	12	180
40	540	500	610	400	470	12	197
50	880	530	830	500	500	12	268
63	880	530	830	500	500	12	300
80	880	730	830	500	700	12	363
100	880	730	830	500	700	12	470

The dimensions may slightly vary according the different rated voltages

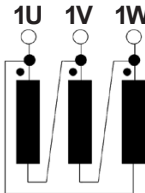
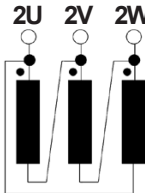
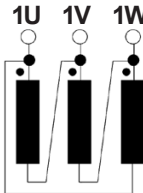
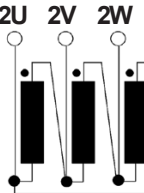
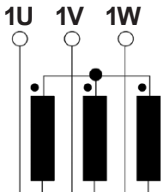
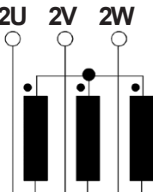
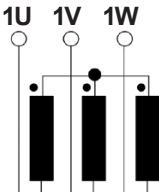
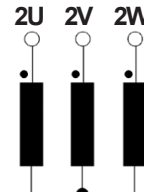
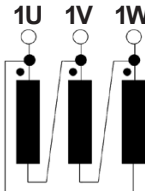
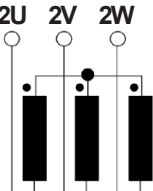
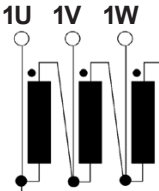
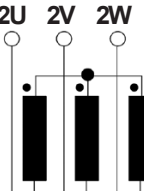
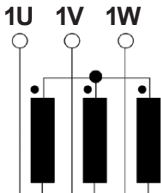
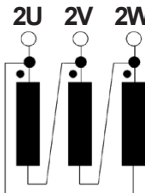
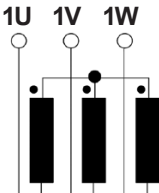
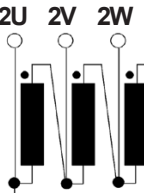
The dimensions may slightly vary according the different rated voltages

¹ Eyebolts $\geq 6,3\text{kVA} + 45\text{mm}$



Vector groups

Common connections

VECTOR GROUP	PHASE ANGLE	GREATER VOLTAGE	SMALLER VOLTAGE	VECTOR GROUP	PHASE ANGLE	GREATER VOLTAGE	SMALLER VOLTAGE
Dd0	0 (0°)			Dd6	6 (180°)		
Yy0	0 (0°)			Yy6	6 (180°)		
Dy5	5 (150°)			Dy11	11 (330°)		
Yd5	5 (150°)			Yd11	11 (330°)		

D → DELTA CONNECTION

Y → STAR (WYE) CONNECTION

- Capital letters (D, Y, N) are associated to the winding with the greater voltage and small letters (d, and, n) with the smaller voltage.
- If the neutral point of star connection winding is accessible (can be connected) is indicated by the letter N: YN or yn.



Transformer protection

The transformers (and their lines) must be protected against overloads and/or shortcircuits 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 transformers (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 equal or lower than the output rated current of the transformer (I_2).

$$I_2 = \frac{P}{U_2 \cdot 1,73}$$

$I_2 \rightarrow$ rated current of the secondary of the transformer (A)

$P \rightarrow$ rated power of the transformer (VA)

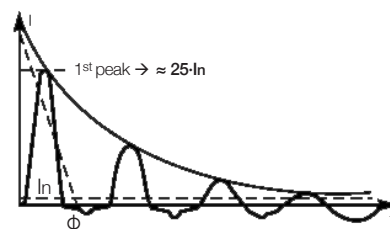
$U_2 \rightarrow$ secondary rated voltage (V)

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 transformer.

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

When the transformer 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 (transformer design, instantaneous value of the voltage when the transformer 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 TRT33 transformers we can use the following devices:

- aM fuses ($I \text{ fuse} \geq 1,1 \cdot I_1$ transformer)
- gG fuses ($I \text{ fuse} \geq 2,2 \cdot I_1$ transformer)
- Circuit breaker D type ($I \text{ MCB} \geq 1,6 \cdot I_1$ transformer)

Obviously, there are several ways to ensure the correct protection of the transformers 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.

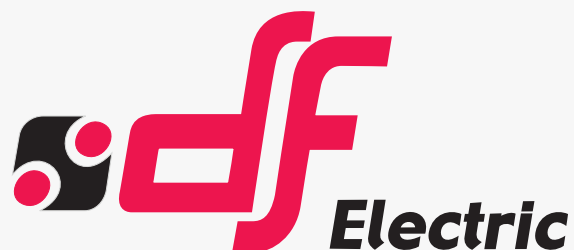
The rated current of transformer (I_1) can be calculated with the formula:

$$I_1 = \frac{P}{U_1 \cdot 1,73}$$

$I_1 \rightarrow$ rated current of the primary of the transformer (A)

$P \rightarrow$ rated power of the transformer (VA)

$U_1 \rightarrow$ primary rated voltage (V)



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HEAD OFFICE AND FACTORY

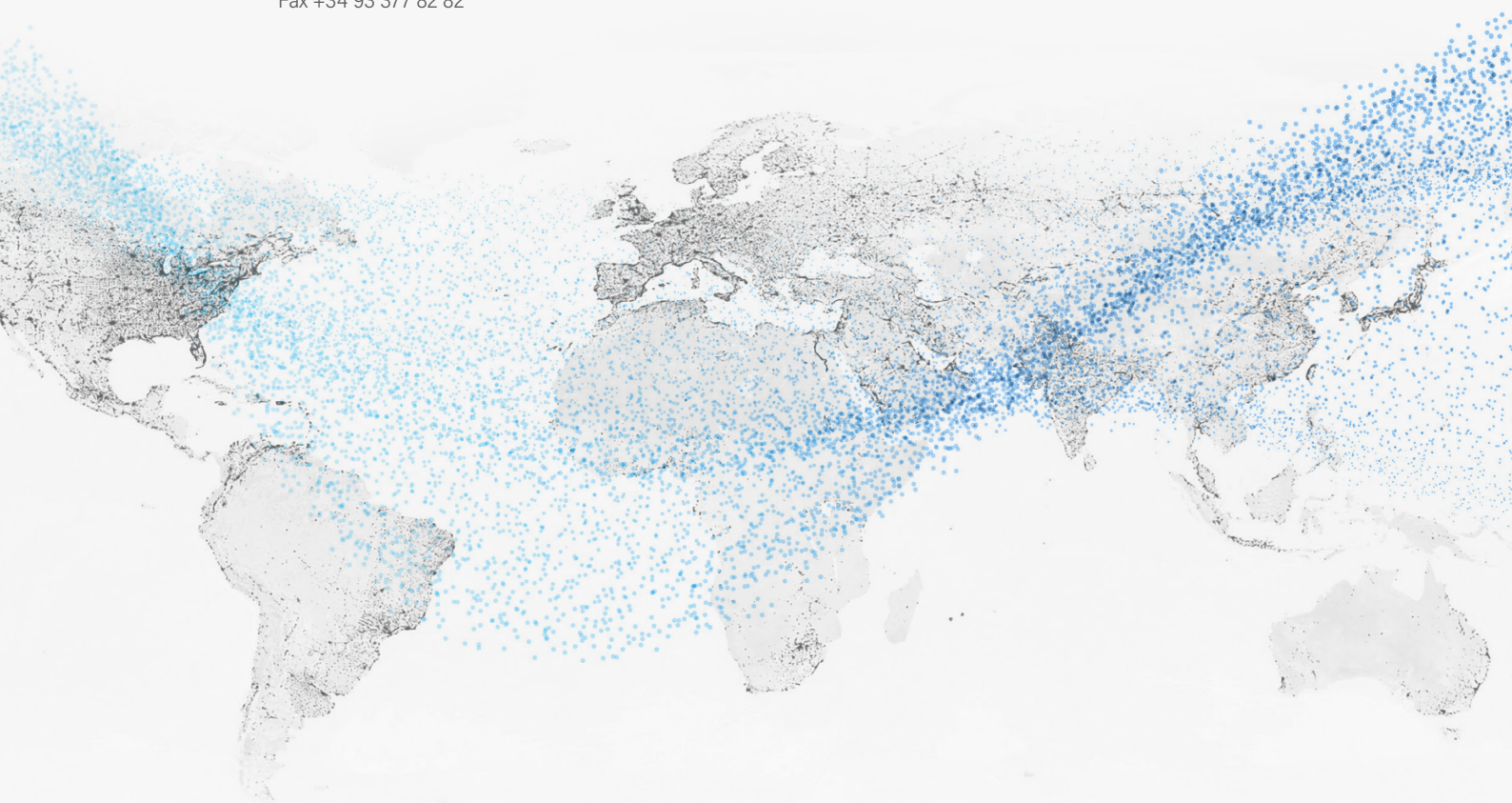
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To prevent electrical hazards, carry out the installation without voltage.



Safety notice
Please capture the following QR code and read our safety notice carefully before installing our products.



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