

THREE-PHASE K-FACTOR RATED ISOLATION TRANSFORMERS TYPE TTI / K

Certified efficiency and losses – SUITABLE FOR NON-LINEAR LOADS AND HIGH HARMONICS

TTI-K transformers are designed to withstand the overheating effect of high harmonics and strong currents on neutral. The K-factor index shows the transformer's ability to withstand harmonics by operating within its thermal limits, using conductors of appropriate size. The design of a K-factor transformer must consider the trend of saturation resulting from non-linear loads and continuous waveform components caused by the third harmonics. The additional currents circulating in these cases in triangle-related windings are taken into account to ensure an ideal life for the transformer. It would be a mistake to consider a de-rating factor and use common transformers: the special conditions to which these products are subjected involve a specific design.

- ✓ NATURAL air-like cooling TYPE AN, suitable for installation inside.
- ✓ Copper windings
- ✓ Low losses grain oriented magnetic core
- ✓ **Electrical insulation screen between primary and secondary connected to earth**

ELECTRICAL SPECIFICATION

Rated power:	15KVA to 300kVA
Input voltage (primary):	400V TRIANGLE
Output voltage (secondary):	6% of nominal voltage
Input adjustment sockets	2x2.5% FCAN, FCBN 2x2.5%
Secondary tension:	400Vac star - N (nominal voltage)
Maximum voltage drop at full load	Up to 3%
Frequency:	50 Hz
Connection group	DELTA/STAR-N
Vector Group	Dyn11
Efficiency:	see table
Isolation level (effective value)	4 kV
Short circuit voltage	3%
Inrush current	< 10In
Temperature class	H/H
Maximum overtemperature limits (a.t. 25°C)	120°C
Environmental temperatures	-5°C +40°C
sound level	< 45 dB (A) at 1m.
Relative humidity	50% - 95%
Operating altitude without derating:	up to 1000 m *
Protection grade	IP00
Protection class	I
Applied rules:	EN61558-2-1 - EN61558-2-4

MECHANICAL CHARACTERISTIC

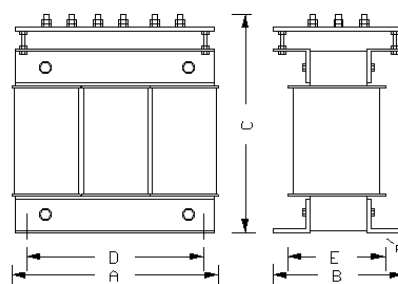
Lifting lugs	YES
Rating plate	YES
Earth bolt	YES

More accessories and fittings on request

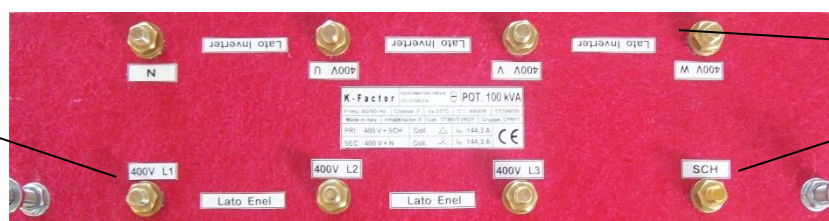
*** for installations at higher altitudes, an adequate power reduction ("derating") must be considered**

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Primary-side
 connections,



Secondary-side
 connections (3P-N)

Screen to be
 connected to earth

Typical TTI model link plate (pictured link Dyn11)

LOAD TYPE AND RELATIONSHIP WITH K-FACTOR

Lighting systems with discharge lamps	K-4
Ups with inbound filters	K-4
Welding machines	K-4
Heating systems / induction furnaces	K-4
PLC and solid state controls	K-4
Telecommunications systems	K-13
UPS without inbound filters	K-13
Electrical grid in circuits of general care areas of health facilities and school classrooms	K-13
Power circuits that provide inspection or testing equipment on an assembly or production line	K-13
Computer Mainframe	K-20
Solid-state engine drives	K-20

DESIGN STYLE AND FEATURES

Electrostatic shield between wraps

Completely isolates the distribution system from the dangers of harmonics and power disturbances

Fully closed UN ventilated IP23 design

Low temperature increase

Copper wraps

The magnetic and resistive properties of K-factor transformers are particularly improved as they are designed specifically for non-linear loads. Downgrading the rated power of a transformer does not guarantee that it will work properly if subjected to non-linear loads. Copper windings and a neutral conductor of double size, allow you to properly handle the heat generated by the harmonics.

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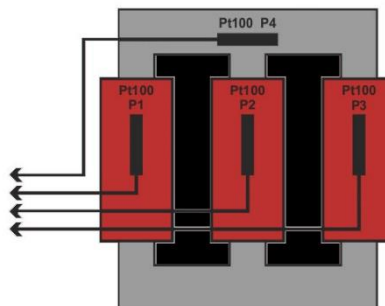
Code	POWER KVA	Eff. %	Dimensions mm			Weight kg
			W	D	H	
TTI427-K4	15	97.1	420	250	360	125
TTI467-K4	20	97.3	420	270	360	150
TTI547-K4	30	97.6	480	290	410	203
TTI667-K4	45	97.8	540	300	460	261
TTI727-K4	60	98.0	540	340	550	341
TTI757-K4	75	98.1	540	340	550	368
TTI807-K4	100	98.3	600	350	610	465
TTI817-K4	150	98.4	720	390	730	657
TTI827-K4	200	98.6	720	440	730	828
TTI835-K4	300	98.7	900	460	910	1107
TTI843-K4	400	98.9	900	520	910	1444
TTI851-K4	500	99.0	1080	570	1090	1951

Code	POWER KVA	Eff. %	Dimensions mm			Weight kg
			W	D	H	
TTI427-K13	15	97.1	420	270	360	147
TTI467-K13	20	97.2	420	290	360	172
TTI547-K13	30	97.6	480	320	410	241
TTI667-K13	45	97.7	540	340	460	320
TTI727-K13	60	97.8	600	330	610	394
TTI757-K13	75	98.1	600	380	610	505
TTI807-K13	100	98.0	720	370	730	583
TTI817-K13	150	98.3	840	430	850	876
TTI827-K13	200	98.5	900	460	910	1073
TTI835-K13	300	98.8	1080	540	1090	1696
TTI843-K13	400	98.9	1080	580	1090	2074
TTI851-K13	500	99,0	1200	600	1210	2392

Code	POWER KVA	Eff. %	Dimensions mm			Weight kg
			W	D	H	
TTI427-K20	15	97.2	420	290	360	170
TTI467-K20	20	97.2	480	300	410	210
TTI547-K20	30	97.5	540	330	460	290
TTI667-K20	45	97.6	540	330	550	350
TTI727-K20	60	97.7	600	380	610	480
TTI757-K20	75	98.2	600	390	610	520
TTI807-K20	100	97.9	720	390	730	630
TTI817-K20	150	98.2	840	450	850	970
TTI827-K20	200	98.5	900	490	910	1240
TTI835-K20	300	98.8	1080	580	1090	1950
TTI843-K20	400	98.9	1080	600	1090	2150
TTI851-K20	500	99,0	1200	700	1210	2600

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Device for protection, control, thermal monitoring of transformers engines, electric generators, industrial applications model DQ61



DQ61 device is a temperature controller specifically designed for electrical equipment such as transformers, motors, generators.

DQ61 protects the machine when overload can lead to a rise in the temperature of the windings. Moreover, it controls the fans to maintain the temperature of the machine and preserve the normal working conditions.

The DQ61 detects alarm conditions and intervenes disconnecting the transformers before they come to a dangerous situation.

A self-diagnostic system continuously monitors the status of the temperature sensors and of the internal system, reporting potential anomalies. It can handle up to four temperature sensors Pt100 and three alarm stages.

The model DQ61 is a front panel mountable with overall dimensions of 96x96mm (3.77"x3.77" 4.5" depth)

An Oled high contrast graphic display allows the simultaneous visualisation of the four temperatures monitored and of the alarms.

The scrolling menu helps and guides the parameters programming with clear messages, in the language selected by the operator

– Power supply	Universal 90...240Vdc/Vac 50/60Hz and 16...26Vdc/ac, <4VA
– Input voltage range	± 10%
– Available inputs	N°4 RTD Pt100 3 wires
– Cable length compensation	Up to 500m (0,5mm ²)
– External connections	Terminals wiring up to AWG 17 for Pt100 un up to AWG 14 for power and relays
– Temperature range	-20 ... +200°C
– Accuracy	Better than 0,4°C ±1 digit
– Output alarm relays	N°2 SPDT 5A 250V for alarm and TRIP
– Output fan relay	N°1 SPDT 5A 250V
– Output fault relay	N°1 SPDT 5A 250V
– Display	Graphic OLED 2,4" 128x64 pixel
– Keyboard	Touch Capacitive
– Alarms and signals	4 dedicated led with test message on display
– Menu Language	English, Espanol, French, Italian, more on request
– Unit of measure	°C or °F
– Dimensions	Front 96x96mm, depth 115mm
– Mounting	Front panel
– Panel cut-out	90x90mm
– Building according to CE directives	2006/95/CEE (Low voltage) and 2004/108/CEE (EMC)
– Protection against electric noise	EN61326-1
– Dielectric strength	2500Vca for 1 minute

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- **Isolation**
 - **Frontal protection**
 - **Ambient operating temperature**
 - **Ambient operating humidity**
 - **MTBF**
 - **Data storage**
 - **Recorded data**
 - **Remote control (optional)**
 - **weight**
- Better than 100MOhm at 500Vcc ground-other terminals
 IP40, IP65 optional
 -20 ... +60°C
 Max 90% not condensing
 Better than 100.000 h
 More than 10 years
 Max temp on each channel; Each alarm number of activations
 Optoisolated RS485, MODBUS RTU protocol
 330 g. (unit only) 350 g. (with manual and packing)

Self diagnosis with error signal on the FAULT relay

Integrated counters (partial and total) for hours of work done

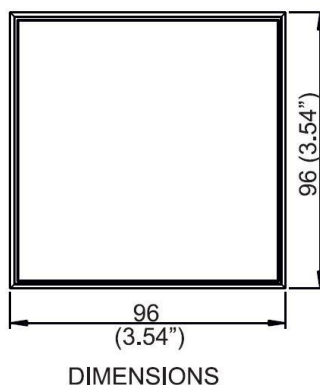
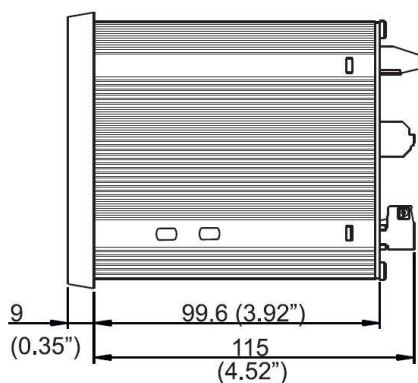
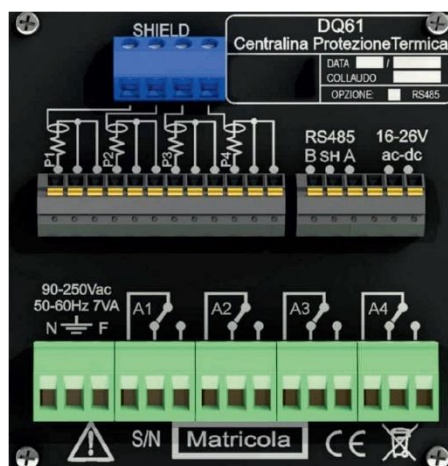
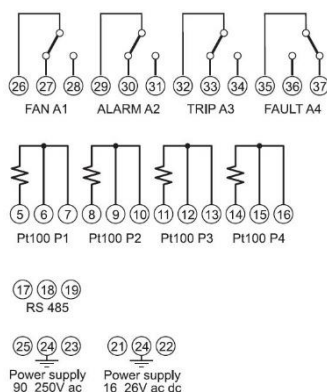
Ability to schedule the regular switch-on of the fans from the service menu

FCD function: ability to set an alarm if the temperature change is too fast (°C/s) from the service menu

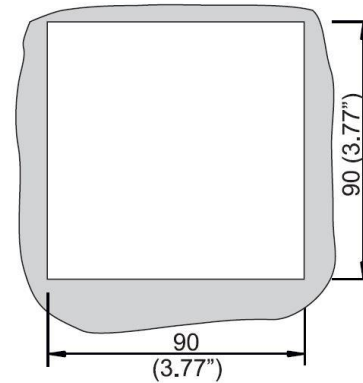
Ability to disable alarms for probes P1 P2 and P3 from the service menu

Ability to disable alarm activation for probe P4 from user menu

TERMINAL BLOCKS



DIMENSIONS



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