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**

CARATTERISTICHE MECCANICHE

Golfari di sollevamento	**SI**
Targa caratteristiche	**SI**
Attacco di terra	**SI**

Altri accessori e dotazioni come da ns. catalogo.

**** per installazioni ad altitudini superiori occorre considerare una adeguata riduzione di potenza ("derating")***

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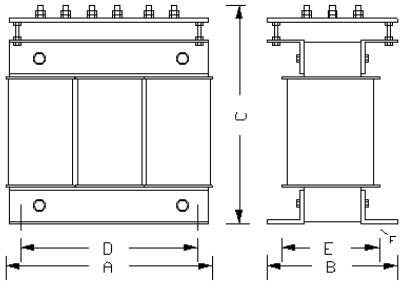
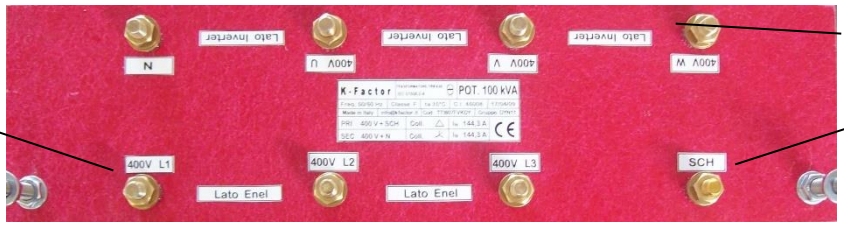


Primary-side connections,



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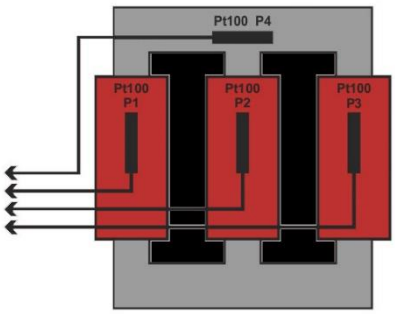
Device for protection, control, thermal monitoring of transformers engines, electric generators,industrial applications model DQ61



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 (0,5mm2)
– **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

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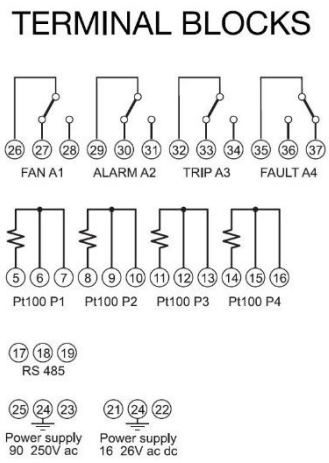
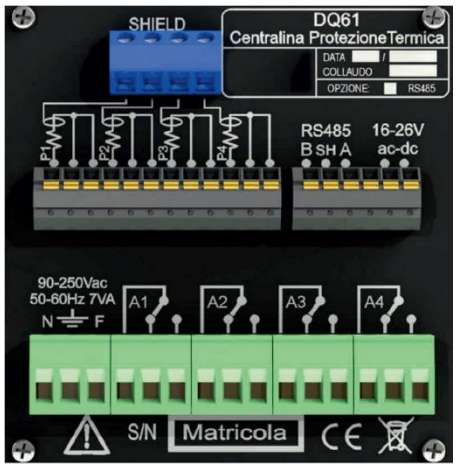
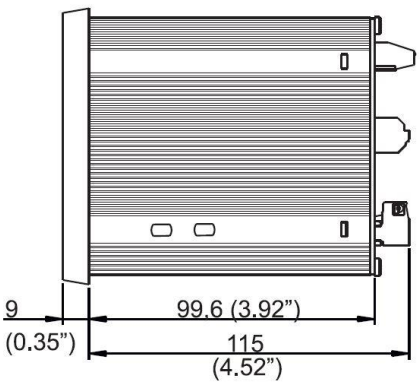
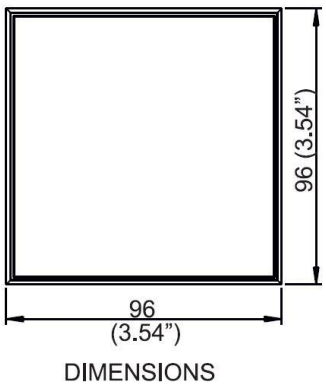
– **Dielectric strength**	2500Vca for 1 minute
– **Isolation**	Better than 100MOhm at 500Vcc ground-other terminals
– **Frontal protection**	IP40, IP65 optional
– **Ambient operating temperature**	-20 … +60°C
– **Ambient operating humidity**	Max 90% not condensing
– **MTBF**	Better than 100.000 h
– **Data storage**	More than 10 years
– **Recorded data**	Max temp on each channel; Each alarm number of activations
– **Remote control (optional)**	Optoisolated RS485, MODBUS RTU protocol
– **weight**	330 g. (unit only) 350 g. (with manual and packing)

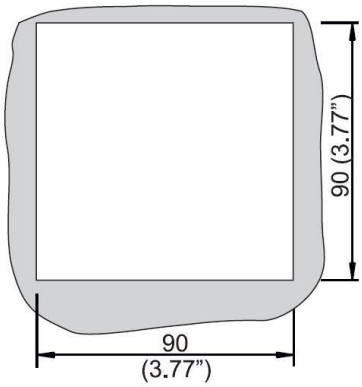
Self diagnosis with error signal on the FAULT relay
Integrated counters (partial and total) for hours of work done
Ability to schedule the regular switch-on of the fans from the service menu
FCD function: ability to set an alarm if the temperature change is too fast (°C/s) from the service menu
Ability to disable alarms for probes P1 P2 and P3 from the service menu
Ability to disable alarm activation for probe P4 from user menu











DIMENSIONS