K-rate
(K-Factor Rated)
Transformer

This is the transformer which adapted to UL-1561 21.1.4 (Temperature rise)

■The server (load facilities of the secondary side) generates harmonics for non-linear loads.
Harmonic distortion will cause transformer to overheat or affect power system equipment.

■Effects of harmonics on transformers
- Increase in load loss of the winding caused by skin effect.
- Increase in eddy current loss
- Increase in N phase electric current

The transformers which are designed considering all of the above while being lightweight and compact are the K-rate transformers of the Toyo electric corporation!

Main applications!

●It is greatly adopted in domestic iDC (Internet Data Center)
for UPS (Uninterruptible Power Supply)
for PDU (Power Distribution Unit)

●Power supply for data management and for building-related use

■Specification

Type	Dry-type self-cooling system
Normal usage condition	For indoor use, ambient temperature -5 to 40°C (daily average below 35°C, yearly average below 20°C) above altitude l000m or less
Applicable standard	JEC-2200(2014) transformer & JEM-1310(2001)Dry-type transformer, rise limit and winding standard temperature (Insulation Class H) UL-1561 21.1.4 (Temperature rise)
Insulation class	Insulation class [H] & temperature rise limit : 140K (Winding temperature rise)
Installation location	Indoor installation without case, cubicle storage
Harmonic tolerance	K = 13
Neutral current	200% correspondence
Magnetizing inrush current	Double or less
Impedance percentage	6% or less (at time of K=13)

Number of phases	Three-phase	Three-phase / Two-phase (Scott)
Frequency [Hz]	50 or 60	
Primary voltage [V]	F440-R420-F400 (50Hz) F460-R440-F420 (60Hz)	420 (50Hz) 440 (60Hz)
Secondary voltage [V]	R210/121-F182/105	210-105×2 circuit
Connection	7 wire system (△−Y₀)	⊥ ⊥
Capacity [kVA]	100 150 200 250 300	100 150 200 250 300

■Standard parts

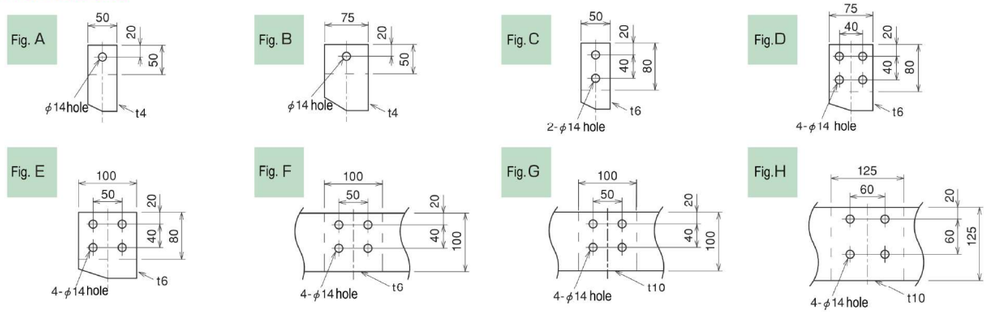
- ●Name plate
- ●Earth terminal
- ●Hazard labels
- ●Double shield *1

■Options

- ● Anti-vibration rubber
- ● Dial thermometer *2
  (With maximum temperature indicator needle)
- ● Wheels *3
- ● Temperature protector
  (Thermostat: normal close)

*1 Double shield with designed termina
*2 The length of a bowstring is 2.5m.
Please attach a display side to the board side.
*3 Please inform the movement direction.

●Terminal size

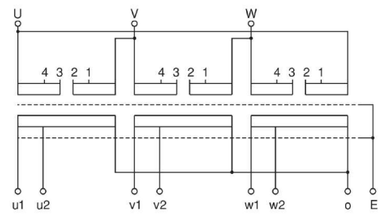


Select List / Outline drawing / Connection diagram

■Three-phase (△−Y₀ connection) 100～300kVA

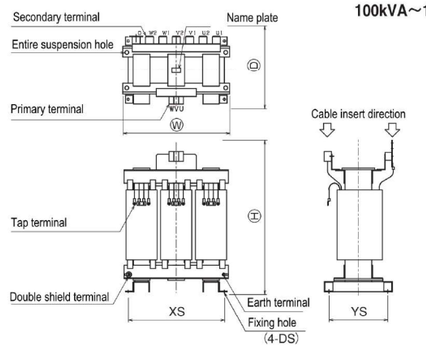
Capacity (kVA)	Freq. (Hz)	External dimension (mm) Ⓦ	Ⓓ	Ⓗ	Panel dimension (mm) XS	YS	DS	Terminal size Primary	Secondary	Total mass (kg)
100	50	670	535	940	630	440	ϕ20	M8	Fig. A Fig. B	620
	60	670	495	940	630	400	ϕ20	M8	Fig. A Fig. B	540
150	50	780	565	1130	720	440	ϕ20	M10	Fig. C Fig. E	870
	60	780	525	1130	720	400	ϕ20	M10	Fig. C Fig. E	760
200	50	780	670	1145	720	460	ϕ20	M10	Fig. C Fig. F	1100
	60	780	630	1145	720	420	ϕ20	M10	Fig. C Fig. F	960
250	50	840	720	1150	760	480	ϕ20	M12	Fig. D Fig. G	1300
	60	840	680	1150	760	440	ϕ20	M12	Fig. D Fig. G	1150
300	50	990	755	1220	890	550	ϕ20	M12	Fig. D Fig. H	1500
	60	990	715	1220	890	510	ϕ20	M12	Fig. D Fig. H	1300

Connection diagram

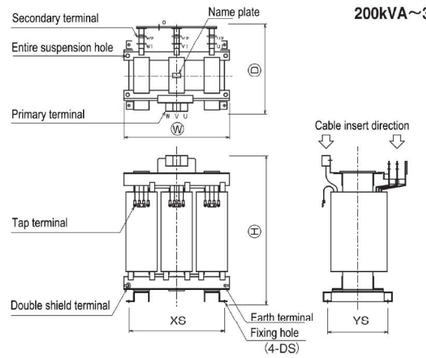


■Three-phase (△−Y₀ connection) 100～300kVA

100kVA～150kVA



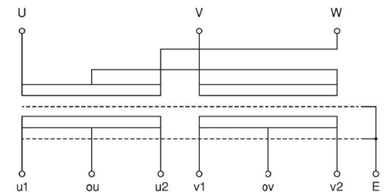
200kVA～300kVA



■Three-phase / Two-phase (Scott connection) 100～300kVA

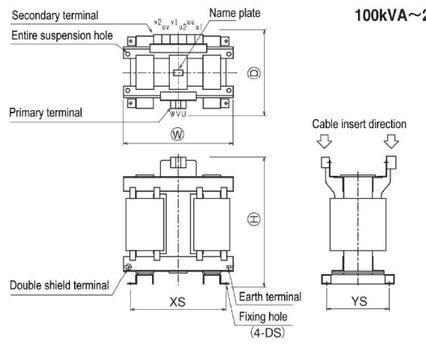
Capacity (kVA)	Freq. (Hz)	External dimension (mm) Ⓦ	Ⓓ	Ⓗ	Panel dimension (mm) XS	YS	DS	Terminal size Primary	Secondary	Total mass (kg)
100	50	770	545	895	670	440	ϕ20	M10	M12	760
	60	770	515	895	670	410	ϕ20	M10	M12	680
150	50	810	685	1045	690	480	ϕ20	M10	Fig. A	1050
	60	810	645	1045	690	440	ϕ20	M10	Fig. A	920
200	50	810	700	1195	690	480	ϕ20	M10	Fig. A	1300
	60	810	660	1195	690	440	ϕ20	M10	Fig. A	1140
250	50	920	715	1320	790	540	ϕ20	M12	Fig. C	1560
	60	920	675	1320	790	500	ϕ20	M12	Fig. C	1370
300	50	920	775	1320	790	590	ϕ20	M12	Fig. C	1800
	60	920	730	1320	790	540	ϕ20	M12	Fig. C	1580

Connection diagram



■Three-phase / Two-phase (Scott connection) 100～300kVA

100kVA～200kVA



250kVA～300kVA