Selection chart for control transformers

Single-phase control transformers

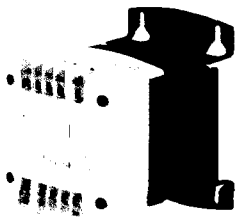
Primary 230 - 400 V ±15 V

U	24 V	115 V	115 V with electrostatic screen	230 V	230 V with electrostatic screen
40 VA	**Transformer 6421 01** Fuse *T 2 A L	**Transformer 6421 61** Fuse *T 400m A L	**Transformer 6421 81** Fuse *T 400m A L	**Transformer 6422 01** Fuse *T 200m A L	**Transformer 6422 21** Fuse *T 200m A L
63 VA	**Transformer 6421 02** Fuse *T 3·15 A H	**Transformer 6421 62** Fuse *T 630m A L	**Transformer 6421 82** Fuse *T 630m A L	**Transformer 6422 02** Fuse *T 315m A L	**Transformer 6422 22** Fuse *T 315m A L
100 VA	**Transformer 6421 03** Fuse 133 04 MCB 068 55	**Transformer 6421 63** Fuse 133 01 MCB 068 52	**Transformer 6421 83** Fuse 133 01 MCB 068 52	**Transformer 6422 03** Fuse 133 94 MCB 0·5 A	**Transformer 6422 23** Fuse 133 94 MCB 0·5 A
160 VA	**Transformer 6421 04** Fuse 133 08 MCB 068 58	**Transformer 6421 64** Fuse 133 02 MCB 068 53	**Transformer 6421 84** Fuse 133 02 MCB 068 53	**Transformer 6422 04** Fuse 133 01 MCB 068 52	**Transformer 6422 24** Fuse 133 01 MCB 068 52
250 VA	**Transformer 6421 05** Fuse 133 10 MCB 068 58	**Transformer 6421 65** Fuse 133 02 MCB 068 53	**Transformer 6421 85** Fuse 133 02 MCB 068 53	**Transformer 6422 05** Fuse 133 01 MCB 068 52	**Transformer 6422 25** Fuse 133 01 MCB 068 52
400 VA	**Transformer 6421 06** Fuse 133 16 MCB 068 60	**Transformer 6421 66** Fuse 133 04 MCB 068 55	**Transformer 6421 86** Fuse 133 04 MCB 068 55	**Transformer 6422 06** Fuse 133 02 MCB 068 53	**Transformer 6422 26** Fuse 133 02 MCB 068 53
630 VA	**Transformer 6421 08** Fuse 133 25 MCB 25 A	**Transformer 6421 68** MCB 068 56	**Transformer 6421 88** MCB 068 56	**Transformer 6422 08** MCB 068 54	**Transformer 6422 28** MCB 068 54
1000 VA	**Transformer 6421 10** Fuse 143 40 MCB 068 64	**Transformer 6421 70** Fuse 133 08 MCB 068 58	**Transformer 6421 90** Fuse 133 08 MCB 068 58	**Transformer 6422 10** MCB 068 55	**Transformer 6422 30** MCB 068 55
1600 VA	**Transformer 6421 11** Fuse 153 63 MCB 068 66	**Transformer 6421 71** Fuse 133 16 MCB 068 60	**Transformer 6421 91** Fuse 133 16 MCB 068 60	**Transformer 6422 11** Fuse 133 08 MCB 068 58	**Transformer 6422 31** Fuse 133 08 MCB 068 58
2500 VA	**Transformer 6421 12** Fuse 153 96 MCB 100 A	**Transformer 6421 72** Fuse 133 20 MCB 068 61	**Transformer 6421 92** Fuse 133 20 MCB 068 61	**Transformer 6422 12** Fuse 133 10 MCB 068 58	**Transformer 6422 32** Fuse 133 10 MCB 068 58
4000 VA		**Transformer 6421 73** Fuse 143 32 MCB 068 63	**Transformer 6421 93** Fuse 143 32 MCB 068 63	**Transformer 6422 13** Fuse 133 16 MCB 068 60	**Transformer 6422 33** Fuse 133 16 MCB 068 60

* Supplied with transformer
(1) 5 x 20 time delay fuse (replacement fuse must be time delay type)
- (II) low breaking capacity : 35 A
- (H) high breaking capacity : 1500 A
Type gG fuse : 10 x 38 up to 25 A, 14 x 51 up to 50 A, 22 x 58 over 50 A
Type C MCB : single pole up to 63 A, double pole 80 - 100 A

control transformers
single-phase open type

6421 02



6421 05

Pack Cat. Nos.

Conform to IEC 60989, UL 506[1] and CSA 22.2.6[1]

Transformer protection
40 and 63 VA transformers are supplied complete with a fuse holder with a 5 x 20 time delay fuse
100 to 2 500 VA transformers can be protected by type gG fuse or by type C miniature circuit breaker (see table p. 32-37)
Supplied complete with 0 V/Earth[2] connection link

Primary : 230-400 V ±15 V
Secondary : 24 V

Pack	Cat. Nos.	Power in VA according to IEC and CSA	Power in VA according to UL	Admissible instantaneous power at cos φ 0·5
1	6421 01	40 VA	40	87
1	6421 02	63 VA	63	180
1	6421 03	100 VA	100	260
1	6421 04	160 VA	160	470
1	6421 05	250 VA	230	670
1	6421 06	400 VA	330	1 200
1	6421 08	630 VA	500	1 400
1	6421 10	1 000 VA	500	3 300
1	6421 11	1 600 VA	700	4 800
1	6421 12	2 500 VA	1 400	4 300

***Primary* : 230-400 V ±15 V**
Secondary : 115 V

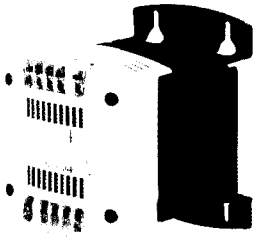
Pack	Cat. Nos.	Power in VA according to IEC and CSA	Power in VA according to UL	Admissible instantaneous power at cos φ 0·5
1	6421 61	40 VA	40	90
1	6421 62	63 VA	63	180
1	6421 63	100 VA	100	240
1	6421 64	160 VA	160	690
1	6421 65	250 VA	220	740
1	6421 66	400 VA	350	1 500
1	6421 68	630 VA	500	1 600
1	6421 70	1 000 VA	500	3 500
1	6421 71	1 600 VA	700	4 700
1	6421 72	2 500 VA	1 300	6 200
1	6421 73	4 000 VA	2 400	11 000

Primary : 230-400 V ±15 V
Secondary : 115 V
Electrostatic screen between primary and secondary

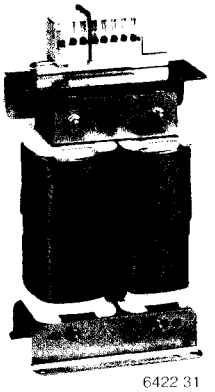
Pack	Cat. Nos.	Power in VA according to IEC and CSA	Power in VA according to UL	Admissible instantaneous power at cos φ 0·5
1	6421 81	40 VA	40	90
1	6421 82	63 VA	63	180
1	6421 83	100 VA	100	240
1	6421 84	160 VA	160	690
1	6421 85	250 VA	220	740
1	6421 86	400 VA	350	1 500
1	6421 88	630 VA	500	1 600
1	6421 90	1 000 VA	500	3 500
1	6421 91	1 600 VA	700	4 700
1	6421 92	2 500 VA	1 300	6 200
1	6421 93	4 000 VA	2 400	11 000

(1) Approval pending
(2) Except for 1 600, 2 500, 4 000 VA

control transformers
single-phase open type *(continued)*



6422 06



6422 31

Pack Cat. Nos.

Conform to IEC 60989, UL 506[1] and CSA 22.2.6[1]

Transformer protection
40 and 63 VA transformers are supplied complete with a fuse holder with a 5 x 20 time delay fuse
100 to 4 000 VA transformers can be protected by type gG fuse or by type C miniature circuit breaker (see table p. 32-37)
Supplied complete with 0 V/Earth[2] connection link

Primary : 230-400 V ±15 V
Secondary : 230 V

Pack	Cat. Nos.	Power in VA according to IEC and CSA	Power in VA according to UL	Admissible instantaneous power at cos φ 0·5
1	6422 01	40 VA	40	88
1	6422 02	63 VA	63	170
1	6422 03	100 VA	100	240
1	6422 04	160 VA	160	640
1	6422 05	250 VA	230	740
1	6422 06	400 VA	350	1 400
1	6422 08	630 VA	500	1 500
1	6422 10	1 000 VA	500	3 200
1	6422 11	1 600 VA	700	5 300
1	6422 12	2 500 VA	1 300	5 600
1	6422 13	4 000 VA	2 400	9 700

Primary : 230-400 V ±15 V
Secondary : 230 V
Electrostatic screen between primary and secondary

Pack	Cat. Nos.	Power in VA according to IEC and CSA	Power in VA according to UL	Admissible nstantaneous power at cos φ 0·5
1	6422 21	40 VA	40	88
1	6422 22	63 VA	63	170
1	6422 23	100 VA	100	240
1	6422 24	160 VA	160	640
1	6422 25	250 VA	230	740
1	6422 26	400 VA	350	1 400
1	6422 28	630 VA	500	1 500
1	6422 30	1 000 VA	500	3 200
1	6422 31	1 600 VA	700	5 300
1	6422 32	2 500 VA	1 300	5 600
1	6422 33	4 000 VA	2 400	9 700

(1) Approval pending
(2) Except for 1 600, 2 500, 4 000 VA

control transformers
single-phase open type

Conform to IEC 60989, UL 506(1) and CSA 22.2.6(1)
Single-phase 50-60 Hz - class I
Insulation voltage between windings : 4 000 V
Max. ambient operating temperature : 60°C
Protected against accidental contact with live parts up to 1 000 VA

Electrical characteristics

Rated power in VA IEC and CSA	Admissible instantaneous power in VA IEC 60989 with power factor cos φ of									Voltage drop (ΔU) as % with cos φ of			No-load loss(*) (W)	Total loss at nominal load(*) (W Iron + W Copper)	Efficiency with cos φ of			Ucc (%)
	0·2	0·3	0·4	0·5	0·6	0·7	0·8	0·9	1	0·3	0·6	1			0·3	0·6	1	
40	140	120	100	88	79	71	64	59	55	3·4	5·8	8·6	4·7	7·6	0·61	0·76	0·84	7·1
63	270	230	200	170	150	140	130	120	110	2·8	4·7	7·0	6·9	11·1	0·63	0·77	0·85	5·7
100	380	320	280	240	220	200	180	160	150	3·0	5·0	7·4	8·5	14·9	0·67	0·80	0·87	6·1
160	900	770	670	590	520	470	440	400	390	1·9	3·2	4·8	17·3	21·8	0·69	0·81	0·88	3·9
250	1 150	1 000	860	760	680	610	560	520	500	2·2	3·7	5·3	19·8	30·9	0·71	0·83	0·89	4·4
400	2 000	1 700	1 500	1 300	1 200	1 100	1 000	940	940	2·4	3·5	4·5	27·4	39·6	0·75	0·86	0·91	3·8
630	2 100	1 800	1 600	1 400	1 300	1 200	1 100	1 000	1 000	2·5	3·6	4·5	28·2	54·8	0·78	0·87	0·92	3·8
1 000	4 600	4 100	3 600	3 300	3 000	2 800	2 600	2 500	2 600	1·7	2·5	2·9	45·5	63·8	0·82	0·90	0·94	2·5
1 600	6 600	5 900	5 400	4 900	4 600	4 300	4 100	4 000	4 300	1·6	2·1	2·3	60·5	84·2	0·85	0·92	0·95	2·1
2 500	6 000	5 600	5 300	4 900	4 900	4 800	4 800	4 900	6 100	2·8	3·2	2·5	76·1	131·6	0·85	0·92	0·95	2·9
4 000	16 000	14 000	12 000	10 000	9 000	8 200	7 500	6 900	6 700	2·1	3·3	4·6	58·5	255·3	0·82	0·90	0·94	3·8

(*) Maximum values when different to the secondary voltages

Mechanical characteristics

Figure 1 : 40 to 1 000 VA

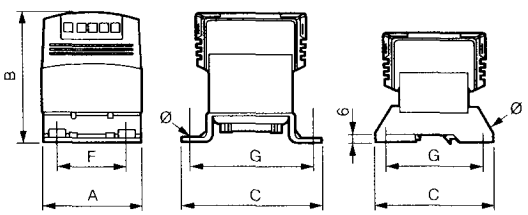


Figure 2 : 1 600 to 2 500 VA

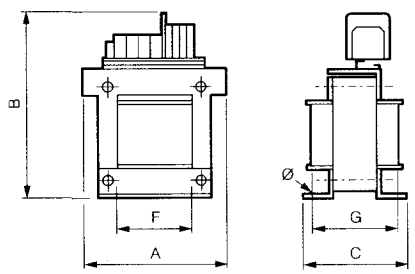
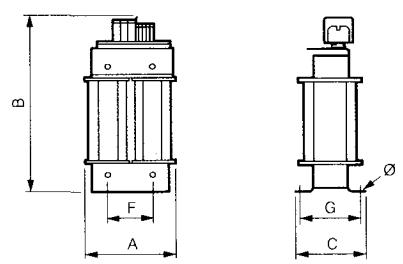
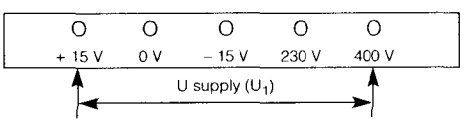


Figure 3 : 4 000 VA

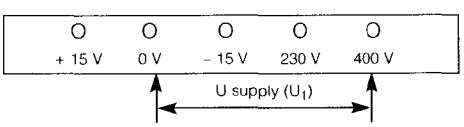


Power VA	Secondary	Dimensions (mm) A	B max	C	Fixing(1) (mm) F	G	Ø	Max Weight (kg)	Primary Connection Cable mm² flexible	rigid	Secondary Connection Cable mm² flexible	rigid	Fig.
40	24 V - 115 V - 230 V	84	97	115	50	100	4·5	1·5	1 to 4	1 to 4	1 to 4	1 to 4	1
63	"	84	110	115	50	100	4·5	2	1 to 4	1 to 4	1 to 4	1 to 4	1
100	"	84	124	115	50	100	4·5	2·7	1 to 4	1 to 4	1 to 4	1 to 4	1
160	"	108	139	150	75	125	5·5	4·9	1 to 4	1 to 4	1 to 4	1 to 4	1
250	"	108	147	150	75	125	5·5	5·4	1 to 4	1 to 4	1 to 4	1 to 4	1
400	"	126	153	175	75	150	5·5	7·7	1 to 4	1 to 4	1 to 4	1 to 4	1
630	"	150	158	206	100	175	7	11·2	1 to16	1 to16	1 to16	1 to16	1
1 000	"	150	199	206	100	175	7	16·6	1 to16	1 to16	1 to16	1 to16	1
1 600	115 V - 230 V	220	231	191	150	153	9	26	2·5to10	1·5to16	2·5to10	1·5to16	2
	24 V	220	231	191	150	153	9	25·6	2·5to10	1·5to16	Ø 10 lug	Ø 10 lug	2
2 500	115 V - 230 V	300	286	171	200	114	9	33·1	4 to 25	1·5to25	4 to 25	1·5to25	2
	24 V	300	286	171	200	114	9	33·1	4 to 25	1·5to25	Ø 10 lug	Ø 10 lug	2
4 000	115 V - 230 V	220	394	160	180	112	10	27·5	4 to 25	1·5to25	4 to 25	1·5to25	3

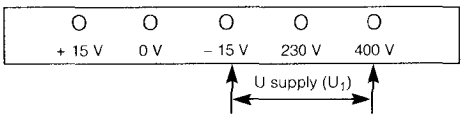
(1) 40, 63 and 100 VA can also be mounted on to a ⊔ rail



1) if $U_1 > 230$ or 400 V
2) if $I_2 < I_{2n}$ (if the load is less than the nominal load reduce the secondary voltage)



if $U_1 \simeq 230$ or 400 V with load $I_2 \simeq I_{2n}$



if $U_1 < 230$ or 400 V with load $I_2 \simeq I_{2n}$

Sizing of transformer

P inrush = 0·8 (Σ Pm + Σ Pr + Pa)

(1) Approval pending