CATALOGUE

2007-2008

PRODUCTS AND SYSTEMS
FOR ELECTRICAL INSTALLATIONS
AND INFORMATION NETWORKS

legrand®

Transformers, control, signalling and industrial sockets...

Control and signalling transformers

(p. 310)

New in 2007

Osmoz: control and signalling units

(p. 324)

Cam switches

(p. 335)

Marking system

- CAB 3 marking and isolating sleeves (p. 370)
- Logicab 2 (p. 378)

Control and signalling transformers:
⊕ compact

> Compact size

> More functions with half as many catalogue numbers

and also automatic connection transformers:
⊕ fast

> Time saving: 20 seconds per connection

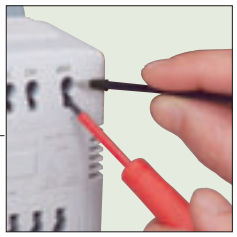
> No series of re-tightening operations

control and signalling transformers
single-phase - automatic connection

NEW

c UL us

442 02



Example of automatic connection with insulated flat screwdriver

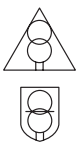
Technical characteristics (p. 312)
Protection (p. 317)

IP 2X or XXB up to 400 VA
IP XXA over 400 VA
IK 04
Conform to IEC EN 61558-2-2 and 2-4 or 2-6, UL 506 and CSA C22-2-No 66
UL USA and Canada agreements
Active parts protected by cover
Products suitable for building equipment conforming to standards EN 61131-2, EN 60204-1 et EN 60439-1
Interference filtering
Direct fixing possibility on symmetrical rail ⊔ up to 250 VA
Secondary equipped with:
• 2 earth connection strips
• 2 O-V strips
• 1 outgoing strip

Control and safety

24 V
230-400 V ± 15 V (primary) / 24 V (secondary)

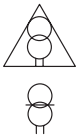
Pack	Cat.Nos	Power in VA according to IEC and CSA	Power in VA according to UL	Instantaneous admissible power at cos φ = 0.5
1	442 01	40	40	50
1	442 02	63	63	88
1	442 03	100	100	170
1	442 04	160	140	250
1	442 05	250	210	420
1	442 06	400	300	850



Control and circuit isolation

230 V
230-400 V ± 15 V (primary) / 230 V (secondary)

Pack	Cat.Nos	Power in VA according to IEC and CSA	Power in VA according to UL	Instantaneous admissible power at cos φ = 0.5
1	442 51	40	40	50
1	442 52	63	63	86
1	442 53	100	100	150
1	442 54	160	140	250
1	442 55	250	210	430
1	442 56	400	300	1 200



Red catalogue numbers: New products

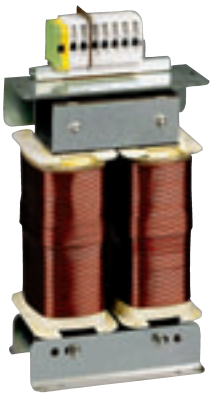
control and signalling transformers

NEW

single-phase - screw connection


442 14


442 68


442 71


442 96

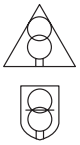
Technical characteristics (p. 312)
Protection (p. 317)

IP 2X or XXB up to 400 VA - IP XXA over 400 VA - IK 04
Conform to IEC EN 61558-2-2 and 2-4 or 2-6, UL506 and CSA C22-2-No 66
UL USA and Canada agreements
Products suitable for building equipment conforming to standards EN 61131-2, EN 60204-1 and EN 60439-1
Active parts protected by cover up to 1 000 VA
Interference filtering (except Cat.Nos 442 16/17/18)
Direct fixing possibility on symmetrical rail ⊔ up to 250 VA
Supplied with connection strip 0 V secondary / earth up to 1 000 VA

Control and safety

24 V
230 V ± 15 V (primary) / 24 V (secondary)

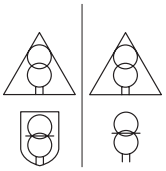
Pack	Cat.Nos	Power in VA according to IEC and CSA	Power in VA according to UL	Instantaneous admissible power at cos φ = 0.5
1	442 11	40	40	50
1	442 12	63	63	88
1	442 13	100	100	170
1	442 14	160	140	250
1	442 15	250	210	420
1	442 16	400	300	850
1	442 17	630	500	1 500
1	442 18	1 000	700	2 000

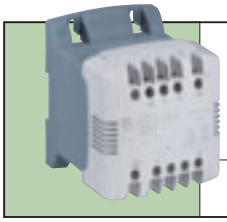


Control and safety (24 V)
Control and isolation (48 V)

24-48 V
230-400 V ± 15 V (primary) / 24-48 V (secondary)
Supplied with 2 coupling strips

Pack	Cat.Nos	Power in VA according to IEC and CSA	Power in VA according to UL	Instantaneous admissible power at cos φ = 0.5
1	442 31	40	40	52
1	442 32	63	63	87
1	442 33	100	100	150
1	442 34	160	140	250
1	442 35	250	210	420
1	442 36	400	300	900
1	442 37	630	500	1 700
1	442 38	1 000	700	2 000
1	442 39	1 600	700	8 500
1	442 40	2 500	1 400	3 300





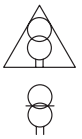
460 V ± 20 V (primary) / 24 V or 230 V (secondary) and 230 - 400 V ± 15 V (primary) / 12 - 24 V (secondary)

please consult us

Control and circuit isolation

115-230 V
230-400 V ± 15 V (primary) / 115-230 V (secondary)
Supplied with 2 coupling strips

Pack	Cat.Nos	Power in VA according to IEC and CSA	Power in VA according to UL	Instantaneous admissible power at cos φ = 0.5
1	442 61	40	40	50
1	442 62	63	63	86
1	442 63	100	100	150
1	442 64	160	140	250
1	442 65	250	210	430
1	442 66	400	300	1 200
1	442 67	630	500	1 600
1	442 68	1 000	700	2 000
1	442 69	1 600	700	6 100
1	442 70	2 500	1 300	7 100
1	442 71	4 000	2 400	11 400
1	442 72	5 000	3 300	17 500
1	442 73	6 300	3 700	16 000
1	442 74	8 000	4 500	32 100



Inrush current limiter

1 — 442 96

Limits the current peak when power supplies and ferromagnetic transformers are energised to a maximum of 5 times the primary nominal rating
This limitation enables exact sizing of the circuits upstream of the primary (inverters, generator sets, wire cross-sections, MCBs, etc) and the use of a type B MCB for line protection on the primary
Modular unit comprising:
- 1 control and power electronic card
- 1 x 20 A relay used to shunt the device after each activation

For rated powers up to 4500 VA
The addition of auxiliary relay Cat.No 040 68 (p. 148) enables limiting for rated powers up to 9000 VA (i.e. a rated current of 40 A)
Conforming to standard IEC EN 60947-4-3
Rated voltage 230 V
Fixed by clipping onto symmetrical rail ⊔
Wiring diagrams (p. 312)
Dim.: Height 83.5 x Width 71.5 x Depth 67 mm

Red catalogue numbers: New products

control and signalling transformers
single-phase

■ Dimensions

Fig. 1: 40 to 400 VA

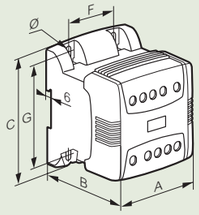
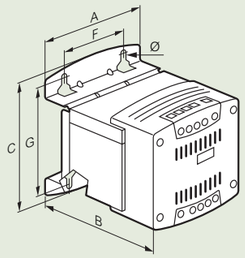
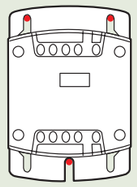


Fig. 2: 630-1 000 VA





Attachment at 3 points possible with through oblong on the secondary side

Fig. 3: 1600-2500 VA

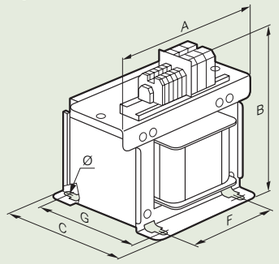
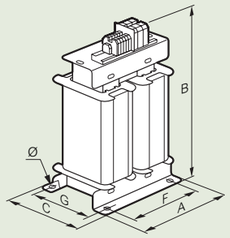


Fig. 4: 4000 to 8000 VA

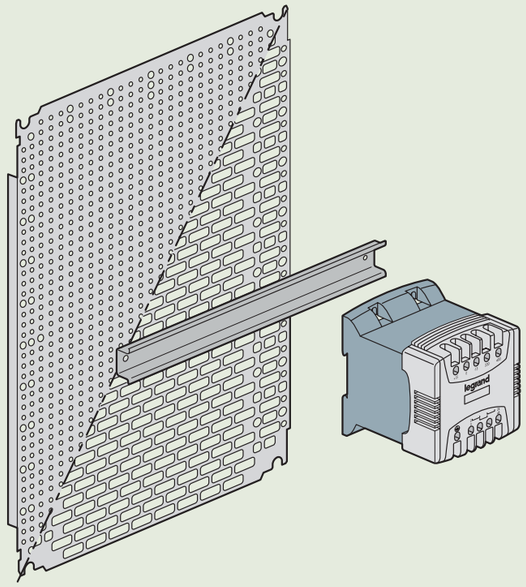


Cat.Nos	Power (VA)	Fig.	Dimensions (mm)			Fixing(1) (mm)			Weight (Kg)
			A	B	C	F	G	Ø	
442 01/51	40	1	95	94	113	50	100	5.2	1.45
442 02/52	63	1	95	101	113	50	100	5.2	1.75
442 03/53	100	1	95	111	113	50	100	5.2	2.15
442 04/54	160	1	95	128	113	50	100	5.2	2.35
442 05/55	250	1	107	139	115	50	100	5.2	4
442 06/56	400	1	121	156	140	62.5	125	5.2	5.8
442 11/31/61	40	1	94	78	113	50	100	5.2	1.23
442 12/32/62	63	1	94	85	113	50	100	5.2	1.56
442 13/33/63	100	1	94	94	113	50	100	5.2	1.95
442 14/34/64	160	1	94	112	113	50	100	5.2	2.6
442 15/35/65	250	1	106	123	115	50	100	5.2	3.82
442 16/36/66	400	1	120	140	140	62.5	125	5.2	5.62
442 17/37/67	630	2	150	158	206	100	175	7	9.9
442 18/38/68	1 000	2	150	199	206	100	175	7	14.9
442 39/69	1 600	3	220	245	191	150	153	9	25.6
442 40/70	2 500	3	300	292	171	200	114	9	33.1
442 71	4 000	4	230	340	205	180	130	11	31
442 72	5 000	4	240	390	205	180	130	11	40
442 73	6 300	4	240	390	205	180	130	11	45
442 74	8 000	4	240	390	280	180	140	11	64

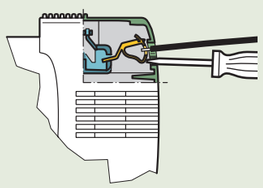
(1) Direct fixing possibility on symmetrical rail ⊐ up to 250 VA

■ Fixing

On perforated plates Lina 25 and on Lina 12.5 plates
On symmetrical rail ⊐ up to 250 VA
3 fixing centres pitch 25 mm up to 1 000 VA

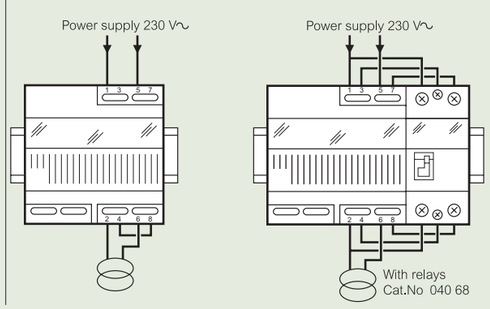


■ Automatic connection transformers cabling



Automatic connection transformers connect via flat screwdriver max. Ø3.5 mm

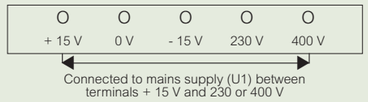
■ Cabling diagram for inrush current limiter Cat.No 442 96



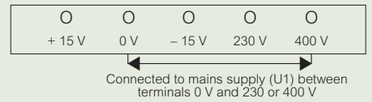
■ Characteristics

Single - phase 50-60 Hz - class I
Insulation voltage between windings: 4 510 V
Max. ambiant operating temperature without derating: 50 °C

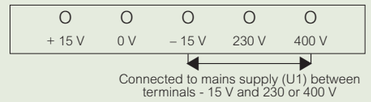
Use of adjustment taps



1) If $U_1 > 230$ or 400 V
2) If $I_2 < I_{2n}$ (if load is lower than rated load, the secondary voltage must be reduced)



If $U_1 = 230$ or 400 V with a load $I_2 = I_{2n}$



If $U_1 < 230$ or 400 V with a load $I_2 = I_{2n}$

Transformer sizing

P inrush = 0.8 (Σ Pm + Σ Pr + Pa)
Σ Pm = Sum of all contactors holding powers
Σ Pr = Sum of all indicators light powers
Pa = Inrush power of the largest contactor

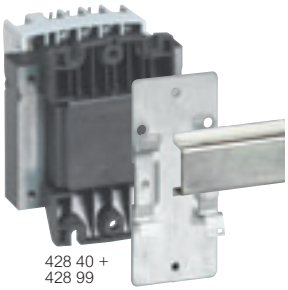
Cat.Nos	Power (VA)	Admissible instantaneous power (VA) at cos φ of:									No-load loss	Loss at rated voltage(1)	Voltage drop (%) with cos φ of:			Efficiency (%) with cos φ of:			Ucc (%)	Connection			
																				Primary cable (mm²)		Secondary cable (mm²)	
		0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1	(W)	(W)	0.3	0.6	1	0.3	0.6	1		flexible	rigid	flexible	rigid
Primary 230-400 V ± 15 V - Secondary 24 V and Primary 230 V ± 15 V - Secondary 24 V																							
442 01/11	40	62	57	53	50	48	47	46	47	58	3.9	7.5	8.9	10.8	8.9	62	76	84	10.3	1 to 4	1 to 4	1 to 4	1 to 4
442 02/12	63	110	100	94	88	83	80	78	78	91	6.0	14.3	7.6	9.5	8.6	57	73	81	9.1	1 to 4	1 to 4	1 to 4	1 to 4
442 03/13	100	230	210	180	170	150	140	140	130	150	8.2	17.9	6.3	8.6	9.2	63	77	85	8.5	1 to 4	1 to 4	1 to 4	1 to 4
442 04/14	160	340	300	270	250	230	220	210	210	230	11.2	25.0	5.9	7.8	7.9	66	79	86	7.4	1 to 4	1 to 4	1 to 4	1 to 4
442 05/15	250	550	490	450	420	400	380	370	370	430	14.9	31.6	5.2	6.6	6.2	70	83	89	6.1	1 to 4	1 to 4	1 to 4	1 to 4
442 06/16	400	1 600	1 200	1 000	850	740	650	590	540	510	18.3	46.3	2.2	3.8	5.6	72	84	90	4.2	1 to 4	1 to 4	1 to 4	1 to 4
442 17	630	2 700	2 200	1 800	1 500	1 300	1 200	1 100	1 000	1 000	24.1	53.7	2.0	3.3	4.6	78	88	92	3.7	1 to 16	1 to 16	1 to 16	1 to 16
442 18	1 000	3 400	2 800	2 300	2 000	1 800	1 600	1 500	1 400	1 300	44.2	73.9	1.3	2.1	2.8	80	89	93	2.3	1 to 16	1 to 16	1 to 16	1 to 16
Primary 230-400 V ± 15 V - Secondary 24-48 V																							
442 31	40	63	58	55	52	50	48	48	49	60	3.9	7.3	8.7	10.5	8.5	62	77	84	10.0	1 to 4	1 to 4	1 to 4	1 to 4
442 32	63	110	102	94	87	83	79	77	78	91	6.0	14.2	7.5	9.4	8.5	57	73	82	9.0	1 to 4	1 to 4	1 to 4	1 to 4
442 33	100	200	180	160	150	140	130	130	130	150	8.2	15.1	7.3	9.3	8.9	66	80	87	8.9	1 to 4	1 to 4	1 to 4	1 to 4
442 34	160	340	300	270	250	230	220	210	210	230	11.2	24.6	5.8	7.6	7.7	66	80	87	7.2	1 to 4	1 to 4	1 to 4	1 to 4
442 35	250	550	490	450	420	400	380	370	370	430	14.9	31.4	5.2	6.6	6.2	70	83	89	6.1	1 to 4	1 to 4	1 to 4	1 to 4
442 36	400	1 800	1 300	1 100	900	800	700	600	600	500	18.3	46.3	2.1	3.7	5.6	72	84	90	4.2	1 to 4	1 to 4	1 to 4	1 to 4
442 37	630	2 700	2 200	1 900	1 700	1 500	1 300	1 200	1 200	1 200	24.1	49.4	2.0	3.0	3.9	79	88	93	3.3	1 to 16	1 to 16	1 to 16	1 to 16
442 38	1 000	3 400	2 800	2 300	2 000	1 800	1 600	1 500	1 400	1 300	44.2	74.4	1.3	1.9	2.9	80	89	93	2.4	1 to 16	1 to 16	1 to 16	1 to 16
442 39	1 600	12 800	10 900	9 500	8 500	7 700	7 100	6 700	6 400	6 600	65.5	94.7	1.1	1.6	1.9	84	91	94	1.7	2.5 to 10	1.5 to 16	4 to 16	1.5 to 25
442 40	2 500	4 300	3 900	3 600	3 300	3 100	3 000	2 900	2 900	3 400	86.5	143.4	1.8	2.2	2.0	84	91	95	1.9	4 to 16	1.5 to 25	4 to 35	2.5 to 50
Primary 230-400 V ± 15 V - Secondary 230 V and Primary 230-400 V ± 15 V - Secondary 115-230 V																							
442 51/61	40	62	57	53	50	48	47	46	47	57	3.9	7.4	8.7	10.5	8.8	62	76	84	10.1	1 to 4	1 to 4	1 to 4	1 to 4
442 52/62	63	110	100	93	86	82	78	76	76	90	6.0	11.8	7.6	9.6	8.9	62	76	84	9.2	1 to 4	1 to 4	1 to 4	1 to 4
442 53/63	100	200	180	160	150	140	140	130	130	150	8.2	17.3	7.2	9.2	8.6	63	78	85	8.7	1 to 4	1 to 4	1 to 4	1 to 4
442 54/64	160	330	300	270	250	240	230	220	220	250	11.2	23.4	5.8	7.4	7.1	67	80	87	6.9	1 to 4	1 to 4	1 to 4	1 to 4
442 55/65	250	560	510	460	430	410	390	380	370	430	14.9	31.7	5.2	6.6	6.2	70	83	89	6.1	1 to 4	1 to 4	1 to 4	1 to 4
442 56/66	400	2 200	1 700	1 400	1 200	1 000	910	830	760	730	18.3	43.9	2.1	3.6	5.2	73	85	90	4.1	1 to 4	1 to 4	1 to 4	1 to 4
442 67	630	2 700	2 200	1 800	1 600	1 400	1 200	1 100	1 000	1 000	24.1	53.2	2.1	3.3	4.5	78	88	92	3.6	1 to 16	1 to 16	1 to 16	1 to 16
442 68	1 000	3 400	2 800	2 300	2 000	1 800	1 600	1 500	1 400	1 300	44.2	73.6	1.3	2.0	2.7	80	89	93	2.2	1 to 16	1 to 16	1 to 16	1 to 16
442 69	1 600	8 700	7 500	6 600	6 100	5 400	5 000	4 700	4 500	4 700	65.5	95.3	1.1	1.5	1.8	83	91	94	1.5	2.5 to 10	1.5 to 16	2.5 to 10	1.5 to 16
442 70	2 500	9 200	8 300	7 600	7 100	6 700	6 300	6 200	6 100	7 100	86.5	150.1	1.8	2.3	2.2	83	91	94	2.0	4 to 16	1.5 to 25	4 to 16	1.5 to 25
442 71	4 000	16 500	14 300	12 700	11 400	10 500	9 800	9 200	8 900	9 500	87.4	234.8	2.1	2.9	3.3	84	91	94	2.7	4 to 16	1.5 to 25	4 to 16	1.5 to 25
442 72	5 000	28 500	23 400	19 900	17 500	15 600	14 200	13 100	12 300	12 300	87.4	279.0	1.5	2.3	2.9	84	91	95	2.3	4 to 16	1.5 to 25	4 to 16	1.5 to 25
442 73	6 300	19 900	18 300	17 000	16 000	15 300	14 800	14 600	14 800	17 900	117.9	272.9	2.2	2.6	2.3	87	93	96	2.3	4 to 16	1.5 to 25	4 to 16	1.5 to 25
442 74	8 000	44 600	39 200	35 200	32 100	29 800	28 000	26 700	26 100	28 500	195.0	336.5	1.3	1.7	1.8	88	93	96	1.6	4 to 16	1.5 to 25	4 to 16	1.5 to 25

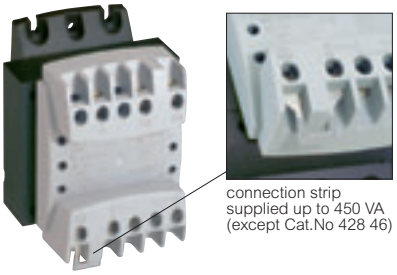
■ Associated protection

Nominal power (VA) acc. to IEC and CSA	24 V		48 V		115 V		230 V	
	Rating	MCBs Cat.Nos	Rating	MCBs Cat.Nos	Rating	MCBs Cat.Nos	Rating	MCBs Cat.Nos
40	2	T2AL(2)	1	T1AL(2)	0.4	T0.4AL(2)	0.2	T0.2AL(2)
63	3.15	T3,15AL(2)	1.6	T1,6AL(2)	0.63	T0,63AL(2)	0.315	T0,315AL(2)
100	4	063 91	2	063 89	1	063 88	0.5	063 86
160	8	063 93	4	063 91	2	063 89	1	063 88
250	10	063 94	6	063 92	2	063 89	1	063 88
400	16	063 96	8	063 93	4	063 91	2	063 89
630	25	063 98	13	063 95	6	063 92	3	063 90
1 000	40	064 00	20	063 97	8	063 93	4	063 91
1 600	63	064 74	32	063 99	13	063 95	8	063 93
2 500	100	064 76	50	064 73	20	063 97	10	063 94
4 000					32	063 99	16	063 96
5 000					40	064 00	20	063 97
6 300					50	064 73	25	063 98
8 000					63	064 74	32	063 99

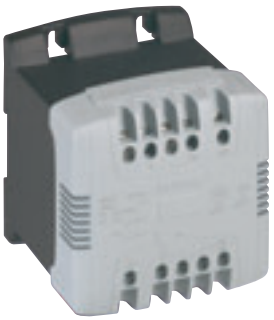
(1) Total loss at nominal voltage
(2) Fuse IEC 127 (5x20 T type cartridge fuse) - T: Time - lag fuse - L: Low breaking capacity

equipment transformers
single-phase


428 40 +
428 99


428 41
supplied with
connection strip

connection strip
supplied up to 450 VA
(except Cat.No 428 46)


428 75


427 92

Technical characteristics (p. 315)

IP 2X or XXB up to 450 VA (up to 310 VA in 12-24 V) - IK 04
Clip on fixing possibility up to 160 VA with accessories Cat.No 044 16 or 428 99
Transformers with 2 secondary voltage supplied with coupling strip
Transformers up to 450 VA supplied with isolated strip for 0 V connection secondary / earth (except Cat.No 428 46)
Conform to IEC EN 61558-2-6 for 12 V and 24 V and conform to IEC EN 61558-2-4 for 48 V, 115 V and 230 V
Products suitable for building equipment conforming to standards EN 61131-2, EN 60204-1 and EN 60439-1

Safety

12 - 24 V
230-400 V (primary) / 12 - 24 V (secondary)

Pack	Cat.Nos	Power (VA)	Primary terminal flexible cable (mm²)	Secondary terminal flexible cable (mm²)
1	428 40	40	1 to 4	1 to 4
1	428 41	63	1 to 4	1 to 4
1	428 42	100	1 to 4	1 to 4
1	428 43	160	1 to 4	1 to 4
1	428 44	220	1 to 4	1 to 4
1	428 45	310	1 to 4	1 to 16
1	428 46	450	1 to 4	1 to 16
1	428 47	630	1 to 4	1 to 16
1	428 49	1 000	0.25 to 6	4 to 35

Safety (24 V) or isolation (48 V)

24 - 48 V
230-400 V (primary) / 24 - 48 V (secondary)

Pack	Cat.Nos	Power (VA)	Primary terminal flexible cable (mm²)	Secondary terminal flexible cable (mm²)
1	428 70	40	1 to 4	1 to 4
1	428 71	63	1 to 4	1 to 4
1	428 72	100	1 to 4	1 to 4
1	428 73	160	1 to 4	1 to 4
1	428 74	220	1 to 4	1 to 4
1	428 75	310	1 to 4	1 to 4
1	428 76	450	1 to 4	1 to 4
1	428 77	630	1 to 4	1 to 16

Circuits isolation

115 - 230 V
230-400 V (primary) / 115 - 230 V (secondary)

Pack	Cat.Nos	Power (VA)	Primary terminal flexible cable (mm²)	Secondary terminal flexible cable (mm²)
1	427 85	40	1 to 4	1 to 4
1	427 86	63	1 to 4	1 to 4
1	427 87	100	1 to 4	1 to 4
1	427 88	160	1 to 4	1 to 4
1	427 89	220	1 to 4	1 to 4
1	427 90	310	1 to 4	1 to 4
1	427 91	450	1 to 4	1 to 4
1	427 92	630	1 to 4	1 to 4

Accessories

5	428 99	Plate for clip on rail up to 160 VA
10	044 16	For clip on rail (90° mounting) of transformers up to 160 VA with 2 claws Tapped hole for Ø4 mm screw

Voltage 440 to 480 on request

equipment transformers
single-phase

■ Characteristics

Insulation voltage:
- between windings: 4 470 V
- between primary and earth: 2 240 V
- between secondary and earth: 250 V for 12 and 24 V and 1 780 V for 48, 115 and 230 V

Fig. 1

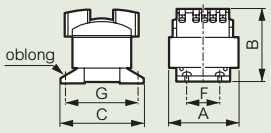


Fig. 2

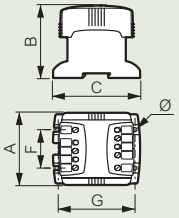


Fig. 3

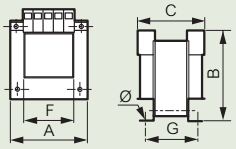
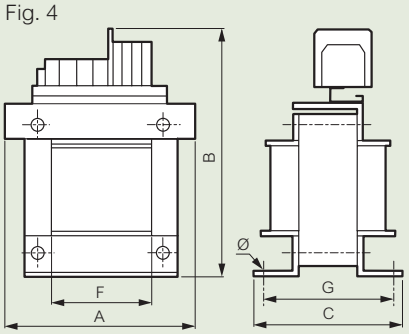


Fig. 4



Cat.Nos	Power (VA)	AIO (VA) cos φ 0.5	Fig.	Dimensions (mm)			Fixing (mm)			Weight (kg)	No load loss (W)	Total losses at 100% load (W)	Voltage drop (%)		Efficiency (%)		Ucc (%)	Connection PRI cable (mm²)		lug Ø (mm)	Connection SEC cable (mm²)		lug Ø (mm)
				A	B	C	F	G	Ø				cos φ 1	cos φ 0.45	cos φ 1	cos φ 0.45		flexible	rigid		flexible	rigid	
Single-phase safety transformers: Primary 230-400 V - Sec 12-24 V																							
428 40	40	55	1	84	70	98	40	86	4.5	0.9	3.7	13.1	18.3	12.7	0.75	0.58	15.6	1 to 4	1 to 4	4.5	1 to 4	1 to 4	4.5
428 41	63	91	1	84	77	98	40	86	4.5	1.3	4.9	16.3	13.5	10.2	0.79	0.64	11.8	1 to 4	1 to 4	4.5	1 to 4	1 to 4	4.5
428 42	100	140	1	84	86	98	40	86	4.5	1.6	6.2	21.0	10.5	8.7	0.83	0.68	9.5	1 to 4	1 to 4	4.5	1 to 4	1 to 4	4.5
428 43	160	205	1	84	104	98	40	86	4.5	2.4	9.1	31.8	8.8	7.4	0.83	0.69	7.9	1 to 4	1 to 4	4.5	1 to 4	1 to 4	4.5
428 44	220	290	1	96	115	110	40	98	4.5	3.4	12.6	40.0	6.9	6.3	0.85	0.71	6.5	1 to 4	1 to 4	4.5	1 to 4	1 to 4	4.5
428 45	310	345	2	106	123	115	50	100	5.2	3.82	14.2	54.9	7.3	6.2	0.85	0.72	8.2	1 to 4	1 to 4	4.5	1 to 4	1 to 4	4.5
428 46	450	1 100	3	126	126	126	90	94	6.5	6	21.8	63.9	6.0	3.2	0.88	0.76	4.9	1 to 4	1 to 4	4.5	1 to 16	1 to 25	6.5
428 47	630	1 520	3	126	126	141	90	105	6.5	8	25.5	62.4	4.3	2.6	0.91	0.82	3.5	1 to 4	1 to 4	4.5	1 to 16	1 to 25	6.5
428 49	1 000	4 130	4	220	222	170	122	140	7	14.7	43.3	76.2	2.9	1.8	0.93	0.86	2.4	0.25 to 6	0.5 to 10	-	4 to 35	2.5 to 50	-
Single-phase safety or isolation transformers: Primary 230-400 V - Sec 24-48 V																							
428 70	40	55	1	84	70	98	40	86	4.5	0.9	3.7	12.9	18.0	12.5	0.76	0.58	15.4	1 to 4	1 to 4	4.5	1 to 4	1 to 4	4.5
428 71	63	91	1	84	77	98	40	86	4.5	1.3	4.9	16.5	13.7	10.3	0.79	0.63	11.9	1 to 4	1 to 4	4.5	1 to 4	1 to 4	4.5
428 72	100	140	1	84	86	98	40	86	4.5	1.6	6.2	21.0	10.4	8.7	0.83	0.68	9.4	1 to 4	1 to 4	4.5	1 to 4	1 to 4	4.5
428 73	160	205	1	84	104	98	40	86	4.5	2.4	9.1	31.6	8.7	7.3	0.84	0.70	7.8	1 to 4	1 to 4	4.5	1 to 4	1 to 4	4.5
428 74	220	290	1	96	115	110	40	98	4.5	3.4	12.6	39.5	6.7	6.2	0.85	0.71	6.3	1 to 4	1 to 4	4.5	1 to 4	1 to 4	4.5
428 75	310	345	2	106	123	115	50	100	5.2	3.82	14.2	54.9	7.3	6.2	0.85	0.72	8.2	1 to 4	1 to 4	4.5	1 to 4	1 to 4	6.5
428 76	450	708	2	120	140	140	62.5	125	5.2	5.62	18.4	66.0	6.2	5.4	0.87	0.75	4.6	1 to 4	1 to 4	4.5	1 to 4	1 to 4	6.5
428 77	630	1 520	3	126	126	141	90	105	6.5	8	25.5	64.3	4.2	2.6	0.91	0.82	3.5	1 to 4	1 to 4	4.5	1 to 16	1 to 25	6.5
Single-phase circuits isolation transformers: Primary 230-400 V - Sec 115-230 V																							
427 85	40	55	1	84	70	98	40	86	4.5	1	3.7	10.9	15.6	12.6	0.79	0.62	14.2	1 to 4	1 to 4	4.5	1 to 4	1 to 4	4.5
427 86	63	91	1	84	77	98	40	86	4.5	1.3	4.9	15.6	12.5	9.7	0.80	0.65	11.0	1 to 4	1 to 4	4.5	1 to 4	1 to 4	4.5
427 87	100	140	1	84	86	98	40	86	4.5	1.6	6.2	21.1	10.7	8.9	0.83	0.68	9.7	1 to 4	1 to 4	4.5	1 to 4	1 to 4	4.5
427 88	160	205	1	84	104	98	40	86	4.5	2.4	9.1	32.3	8.8	7.3	0.83	0.69	7.9	1 to 4	1 to 4	4.5	1 to 4	1 to 4	4.5
427 89	220	290	1	96	115	110	40	98	4.5	3.4	12.6	40.1	6.8	6.2	0.85	0.71	6.4	1 to 4	1 to 4	4.5	1 to 4	1 to 4	4.5
427 90	310	345	2	106	123	115	50	100	5.2	3.82	14.2	54.0	7.3	6.2	0.85	0.72	6.7	1 to 4	1 to 4	4.5	1 to 4	1 to 4	4.5
427 91	450	708	2	120	140	140	62.5	125	5.2	5.62	18.4	64.0	5.9	5.1	0.88	0.76	4.3	1 to 4	1 to 4	4.5	1 to 4	1 to 4	4.5
427 92	630	1 520	3	126	126	123	90	105	6.5	7.8	25.5	64.6	4.3	2.6	0.91	0.81	4.2	1 to 4	1 to 4	4.5	1 to 4	1 to 4	4.5

■ Which transformer for which circuit?

Each circuit needs a specific transformer output: transformer sizing But, to size an equipment transformer it is not enough to add up the powers of the operating circuits, the permissible instantaneous power must be considered (inrush power)

■ How to calculate a transformer's power and size?

For equipment including automatic devices, transformer's power depends on:
- The max. power needed at a given moment (inrush power)
- Constant power absorbed by the circuit
- Voltage drop
- Power factor

1) Determining the inrush power

To determine the inrush power, we make the following assumptions:
- Two inrushes cannot occur at the same time
- Power factor cos φ 0.5 at closing
- Max. 80 % of devices power supplied at the same time

Empirically and to simplify, this power can be calculated using the following formula:

P inrush = 0.8 (Σ Pm + Σ Pv + Pa)

Σ Pm: sum of all contactors holding powers
Σ Pv: sum of all indicators light powers
Pa: inrush power of the largest contactor

Example:

A machine tool control cabinet contains:
- 10 contactors for 4-kW motors, holding power 8 VA
- 4 contactors for 18.5-kW motor, holding power 20 VA
- 1 contactor for 45-kW motor, holding power 20 VA, inrush power 250 VA cos φ 0.5
- 25 remote control relays, holding power 4 VA
- 45 signalling lights, consumption 1 VA

Σ Pm = 10 x 8 VA = 80 VA
4 x 20 VA = 80 VA
1 x 20 VA = 20 VA
25 x 4 VA = 100 VA
280 VA

Σ Pv = 45 x 1 VA = 45 VA
Pa = 250 VA

P inrush = 0.8 (280 + 45 + 250) = 460 VA at cos φ 0.5

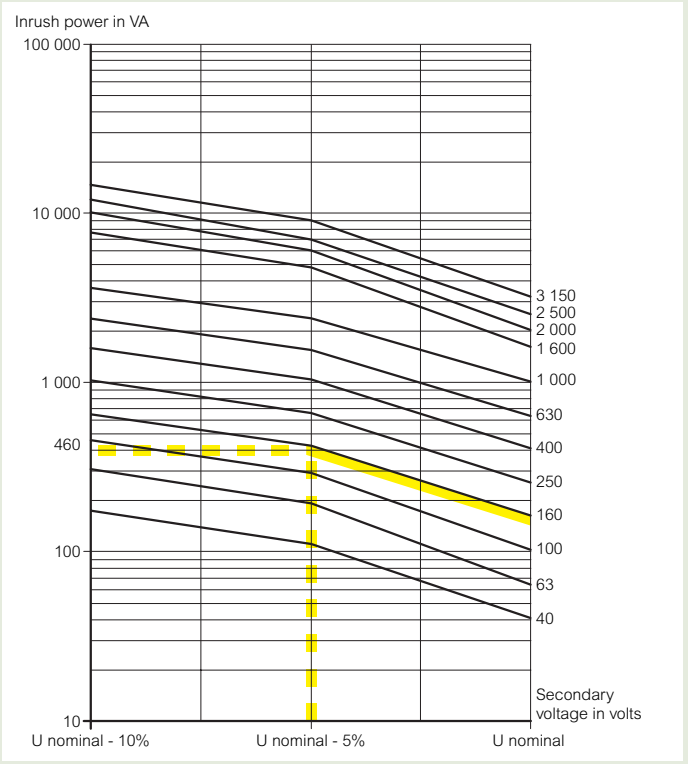
2) Determining the transformer's size

Especially for control transformers, just read the size below from the inrush power at cos φ 0.5:

Nominal power VA IEC and CSA	Permissible instantaneous power VA IEC/EN 61558-2-2 with cos φ of:								
	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
40	90	80	72	66	61	57	53	51	53
63	160	140	130	120	110	100	90	90	90
100	210	190	170	160	150	140	130	130	140
160	480	400	350	300	270	240	220	200	190
250	830	690	590	510	450	400	360	330	310
400	1600	1400	1200	1000	900	800	800	700	700
630	2000	1800	1500	1400	1200	1100	1100	1000	1000
1000	5400	4600	4000	3600	3200	3000	2700	2600	2500
1600	9000	8000	7200	6600	6100	5700	5400	5300	5600
2500	7300	6600	6000	5700	5200	4900	4700	4600	5100
4000	34500	28800	24400	17000	16600	16400	14800	13400	12400
5000	29000	23000	20000	17000	16000	14000	13000	12000	12000
6300	20000	18000	17000	16000	15000	15000	15000	15000	18000
8000	45000	39000	35000	32000	30000	28000	27000	26000	29000

Inrush power of 460 VA at cos φ 0.5 entails minimum size of 250 VA

Voltage drop sizing curves at cos φ 0.5



For power of 460 VA cos φ 0.5, the curve at U nominal - 5 %* indicates a value of 160 VA
* Value deliberately selected as a precaution

3) Checking the choice

Make a check according to each piece of equipment:
- calculate the total sum of the holding powers of the windings and of the live indicator lights
- then apply a factor: either that of 80 % of devices held live at the same time, or that from the actual calculations for your equipment

The sizing power must be equal to or more than the result of this calculation

Rule for determining the secondary protection rating:

To check that the device chosen is suitable, an approximate minimum short-circuit value at the furthest point of the installation can be obtained using the following formula:

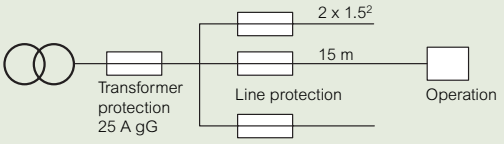
$$I\ c/c\ mini = \frac{Us}{\left(\frac{U^2s}{P} \times \frac{U\ c/c\ \%}{100}\right) + \frac{2\rho l}{S}}$$

Us = transformer secondary voltage
P = transformer power
U c/c % = transformer short-circuit voltage
l = line length in m
S = line cross-section in mm²
ρ copper = 0.027 Ω mm²/m

Choose the protection rating so as to obtain a cut-off time of 5" max. for the current I c/c defined above:

gG fuse: $In \leq \frac{I\ c/c\ min.}{4}$ type C MCB: $In \leq \frac{I\ c/c\ min.}{8}$

Example: control transformer 630 VA - 230/24 V Cat.No 442 17



$$I\ c/c\ min. = \frac{24}{\left(\frac{24^2}{630} \times \frac{3.7}{100}\right) + \frac{2 \times 0.027 \times 15}{1.5}} = 41.82\ A$$

$\frac{41.82}{4} = 10.45 \rightarrow$ gG 10 A max. $\frac{41.82}{8} = 5.22 \rightarrow$ DX 5 A max. C.curve

protection of transformers and their lines

■ Protection of lines

General

Lines must be protected against overloads and short-circuits. Protection against overloads is only compulsory if the line is likely to be affected by an overload current. This protection can be installed at the head or end of the line. Protection against short-circuits is compulsory in all installations ; this protection has to be installed at the head of the line.

Supply line (transformer primary)

The transformer is a devicethat cannot generate overloads. Its supply line requires protection against short-circuits only. When a transformer is energised, a very high inrush current is produced (in the region of 25 In) for approximately 10 ms. The line protection must take these 2 factors into consideration. Legrand offers 3 possibilities: aM fuse cartridges, type D MCBs (average value of the magnetic 12 In, with a standard adjustment range between 10 and 14 In), type C MCBs (average value of the magnetic 7 In, with a standard adjustment range between 5 and 10 In).

Minimal protection rating for primary supply line on transformer(1)

Power	230 V single - phase				400 V single - phase			230 V three - phase			400 V three - phase		
	aM Cartridge	MCBs C curve or MCCBs	MCBs D curve or MCCBs	type B MCB with inrush current limiter	aM Cartridge	MCBs C curve or MCCBs	MCBs D curve or MCCBs	aM Cartridge	MCBs C curve or MCCBs	MCBs D curve or MCCBs	aM Cartridge	MCBs C curve or MCCBs	MCBs D curve or MCCBs
40 VA	0.5A 130 95	1A 064 60		1A	0.25A	1A 064 60			1A 064 80			1A 064 80	
63 VA	1A 130 01	2A 064 61		1A	0,5A 130 95	1A 064 60			1A 064 60			1A 064 60	
100 VA	1A 130 01	3A 069 62	1A 066 25	1A	1A 130 01	2A 064 61	1A 066 25		2A 064 81			1A 064 80	
160 VA	2A 130 02	6A 064 64	2A 066 26	1A	1A 130 01	2A 064 61	1A 066 25		2A 064 81			2A 064 81	
220 VA	2A 130 02	6A 064 64	2A 066 26	2A	1A 130 01	3A 064 62	2A 066 26		3A 064 82			2A 064 81	
250 VA	2A 130 02	6A 064 64	3A 066 27	2A	2A 130 02	3A 064 62	2A 066 26		3A 064 82			2A 064 81	
310 VA	4A 130 04	10A 064 66	3A 066 27	2A	2A 130 02	6A 064 64	2A 066 26		6A 064 84			3A 064 82	
400 VA	4A 130 04	10A 064 66	6A 066 29	2A	2A 130 02	6A 064 64	2A 066 26	2A 130 02	6A 064 84	3A 066 47	2A 130 02	3A 064 82	2A 066 46
450 VA	4A 130 04	10A 064 66	6A 066 29	3A	2A 130 02	6A 064 64	3A 066 27	2A 130 02	6A 064 84	3A 066 47	2A 130 02	6A 064 84	2A 066 46
630 VA	6A 130 06	16A 064 88	6A 066 29	3A	4A 130 04	10A 064 66	6A 066 29	4A 130 04	10A 064 86	6A 066 49	2A 130 02	6A 064 84	2A 066 46
800 VA	6A 130 06	16A 064 68	10A 066 31	6A	4A 130 04	10A 064 66	6A 066 29	4A 130 04	10A 064 86	6A 066 49	2A 130 02	6A 064 84	3A 066 47
1 000 VA	10A 130 10	20A 064 89	10A 066 31	6A	4A 130 04	16A 064 68	6A 066 29	4A 130 04	16A 064 88	6A 066 49	4A 130 04	10A 064 86	3A 066 47
1 250 VA	10A 130 10	25A 064 70	16A 066 31	6A	6A 130 06	16A 064 68	10A 066 31	6A 130 06	16A 064 88	10A 066 51	4A 130 04	10A 064 86	6A 066 49
1 600 VA	10A 130 10	32A 064 71	16A 066 33	10A	6A 130 06	20A 064 69	10A 066 31	6A 130 06	20A 064 89	10A 066 51	4A 130 04	16A 064 88	6A 066 49
2 000 VA	12A 130 12	40A 064 72	20A 066 34	10A	8A 130 08	25A 064 70	16A 066 33	10A 130 10	25A 064 90	16A 066 53	6A 130 06	16A 064 88	6A 066 49
2 500 VA	16A 130 16	50A 064 73	25A 066 35	16A	10A 130 10	32A 064 71	16A 066 33	10A 130 10	32A 064 91	16A 066 53	6A 130 06	20A 064 89	10A 066 51
4 kVA	20A 130 25	80A 064 75	32A 066 36	20A	16A 130 16	40A 064 72	20A 066 34	16A 130 16	50A 064 93	25A 066 55	10A 130 10	32A 064 91	16A 066 53
5 kVA	32A 140 32	80A 064 75	40A 066 37	25A	16A 130 16	50A 064 73	25A 066 35	20A 130 20	63A 064 94	32A 066 56	12A 130 12	40A 064 92	16A 066 53
6.3 kVA	32A 140 32	100A 064 76	50A 066 38	32A	20A 130 20	63A 064 74	32A 066 36	25A 130 25	80A 064 95	40A 066 57	16A 130 16	50A 064 93	20A 066 54
8 kVA	40A 140 40	160A 251 25	63A 066 39	40A	25A 130 25	80A 064 75	40A 066 37	32A 140 32	100A 064 96	50A 066 58	20A 130 20	63A 064 94	25A 066 55
10 kVA	63A 150 63	160A 251 25	80A 066 40		32A 140 32	100A 064 76	50A 066 38	32A 140 32	100A 064 96	50A 066 58	20A 130 20	63A 064 94	32A 066 56
12.5 kVA	63A 150 63	160A 251 25	100A 066 41		40A 140 40	160A 251 25	63A 066 39	40A 140 40	125A 064 97	63A 066 59	25A 130 25	80A 064 95	32A 066 56
16 kVA	80A 150 80	160A 251 25	125A 066 42		50A 140 50	160A 251 25	80A 066 40	50A 140 50	160A 251 25	80A 066 60	32A 140 32	100A 064 96	40A 066 57
20 kVA	100A 150 96	160A 251 25	160A 251 25		63A 150 63	160A 251 25	100A 066 41	63A 150 63	160A 251 25	100A 066 61	40A 140 40	125A 064 97	50A 066 58
25 kVA	125A 150 97	250A 252 06	250A 252 06		80A 150 80	160A 251 25	125A 066 42	80A 150 80	160A 251 25	125A 066 62	50A 140 50	160A 251 25	63A 066 59
31.5 kVA	160A	250A 252 06	250A 252 06		100A 150 96	160A 251 25	160A 251 25	100A 150 96	160A 251 25	160A 251 25	63A 150 63	160A 251 25	80A 066 60
40 kVA	200A	320A 255 22	320A 255 22		125A 150 97	250A 252 06	250A 252 06	125A 150 97	250A 252 06	250A 252 06	63A 150 63	160A 251 25	100A 066 61
50 kVA	315A	400A 255 23	400A 255 23		160A	250A 252 06	250A 252 06	160A	250A 252 06	250A 252 06	80A 150 80	160A 251 25	125A 066 62
63 kVA	315A	500A 255 25	500A 255 25		200A	320A 255 22	320A 255 22	200A	320A 255 22	320A 255 22	100A 150 96	160A 251 25	160A 251 25
80 kVA								250A	400A 255 23	400A 255 23	160A	250A 252 06	250A 252 06
100 kVA								315A	500A 255 25	500A 255 25	160A	250A 252 06	250A 252 06
125 kVA								400A	600A 255 24	600A 255 24	200A	320A 255 22	320A 255 22
160 kVA								500A	800A 258 02	800A 258 02	250A	400A 255 23	400A 255 23
200 kVA								630A	1 250A 258 04	1 250A 258 04	315A	500A 255 25	500A 255 25
250 kVA								630A	1 600A 257 04	1 600A 257 04	400A	630A 255 24	630A 255 24

Operating line (transformer secondary)

This line must be protected against overloads (ensure that the protection rating chosen is ≤ transformer secondary current) and short-circuits (ensure that a short-circuit occurring at the furthest point of the line will trigger the protective device within 5 seconds. Legrand offers two possibilities: gG cartridge fuses, type C MCBs (magnetic set to 7 In average). If the transformer only supplies a single operating line, and provided the calculations show perfect compatibility, transformer protection (if on the secondary) and line protection can be one and the same. A single protective device performs both functions (see table of transformer protective devices). If the transformer supplies several operating lines, overload and short-circuit calculations must be performed for each individual line

(1) These values are given for information only for transformers with inrush currents of around 25 In.

protection of transformers and their lines

■ Protection of transformers

According to IEC/EN 61558 standards, transformers must be protected against overloads and short-circuits which may occur during normal operations

The standards do not specify the location or type of protective device: it is the manufacturer's responsibility to select the most suitable position, either on the primary or secondary side.
Legrand has selected secondary protection. The rating, type and location of the protective device are indicated on the front of its devices

Single-phase: Control, safety isolating, isolating, equipment and installation transformers

Nominal power	12 V		24 V		48 V		115 V		230 V	
IEC and CSA	Rating	MCBS Cat.Nos	Rating	MCBS Cat.Nos	Rating	MCBS Cat.Nos	Rating	MCBS Cat.Nos	Rating	MCBS Cat.Nos
40 VA	4	T4 AL(1)	2	T2 AL(1)	1	T1 AL(1)	0.4	T0.4 AL(1)	0.2	T0.2 AL(1)
63 VA	5	T5 AL(1)	2.5	T2.5 AL(1)	1.25	T1.25 AL(1)	0.5	T0.5 AL(1)	0.25	T0.25 AL(1)
100 VA	8	T8 AE(1)	4	T4 AE(1)	2	T2 AL(1)	0.8	T0.8 AL(1)	0.4	T0.4 AL(1)
160 VA	16	133 16	8	133 08	3.15	T3, 15 AE(1)	1.6	T1.6 AL(1)	0.63	T0.63 AL(1)
220 VA	20	133 20	10	133 10	5	T5 AE1)	2	T2 AL(1)	1	T1 AL(1)
250 VA	20	133 20	10	133 10	6	133 06	2	T2 AL(1)	1	T1 AL(1)
310 VA	25	133 25	12	-	6	133 06	2.5	T2.5 AE(1)	1.25	T1.25 AL(1)
400 VA	32	143 32	16	133 16	8	133 08	4	133 04	2	133 02
450 VA	40	143 40	20	133 20	10	133 10	4	133 04	2	133 02
630 VA	50	143 50	25	133 25	12	133 12	6	133 06	4	133 04
800 VA	63	153 63	32	143 32	16	133 16	8	133 08	4	133 04
1000 VA	80	153 80	40	143 40	20	133 20	8	133 08	4	133 04
1250 VA	100	153 96	50	143 50	25	133 25	10	133 10	6	133 06
1600 VA	125	153 97	63	153 63	32	143 32	16	133 16	8	133 08
2000 VA			80	153 80	40	143 40	16	133 16	8	133 08
2500 VA			100	153 96	50	143 50	20	143 20	10	133 10
4 KVA					80	143 80	32	143 32	16	133 16
5 KVA					100	153 96	40	143 40	20	133 20
6.3 KVA					125	153 97	50	143 50	25	133 25
8 KVA							80	153 80	32	143 32
10 KVA							80	153 80	40	143 40
12.5 KVA							100	153 96	50	143 50
16 KVA							160	163 55	80	153 80
20 KVA							160	163 55	80	153 80
25 KVA							200	-	100	153 96
31.5 KVA							250	173 65	125	153 97
40 KVA							400	178 75	160	163 55
50 KVA							400	178 75	200	-
63 KVA							500	181 25	250	173 65

(1) Fuses IEC 127 (cartridge 5 x 20 T type)

Three - phase: Control, safety isolating, isolating, equipment and installation transformers

Nominal power	24 V		42 V		230 V		400 V	
	Rating	MCBS Cat.Nos	Rating	MCBS Cat.Nos	Rating	MCBS Cat.Nos	Rating	MCBS Cat.Nos
400 VA	10	133 10	6	133 06	1	133 01	1	133 01
630 VA	16	133 16	10	133 10	2	133 02	1	133 01
1000 VA	25	133 25	16	133 16	4	133 04	2	133 02
1600 VA	40	143 40	25	133 25	4	133 04	4	133 04
2500 VA	63	153 63	40	143 40	6	133 06	4	133 04
4 KVA	100	153 96	63	153 63	10	133 10	6	133 06
6.3 KVA	160	163 55	100	153 96	16	133 16	10	133 10
10 KVA	250	173 65	160	163 55	25	133 25	16	133 16
16 KVA					40	143 40	25	133 25
25 KVA					63	153 63	40	143 40
40 KVA					100	153 96	63	153 63
50 KVA					125	153 97	80	153 80
63 KVA					160	163 55	100	153 96
80 KVA					200	-	125	153 97
100 KVA					250	173 65	160	163 55
125 KVA					315	178 70	200	-
160 KVA					400	178 75	250	173 65
200 KVA					500	181 25	315	178 70
250 KVA					630	181 30	400	178 75

■ Main transformer functions:

• Changing voltage:

Isolation transformer
(basic insulation between primary and secondary)

Auto-transformer
(no insulation between primary and secondary)

• Control circuit power supply

Control transformer
(basic insulation between primary and secondary)

• Protection against electric shock

- Protection against direct and indirect contact by:

Safety isolating transformers
(reinforced insulation between primary and secondary, no-load voltage < 50 V)

- Protection against indirect contact by:

Isolating transformers
(reinforced insulation between primary and secondary)

The transformer function(s) can either be defined by the equipment designer or can be imposed by installation guidelines or the equipment standard.

Definitions:
- Electric shocks: physiological effect resulting from an electrical current through a human or animal body (IEV 195-01-04)
- Direct contact: electric contact of persons or animals with live parts (195-06-03)
- Indirect contact: electric contact of persons or animals with exposed-conductive-parts which have become live under fault conditions (195-06-04)

filtered rectified power supplies
single-phase


470 23


470 24

Power supplies for PLCS and peripheral equipment, and all other uses which need 24 V DC
Supplied with an insulated coupling bar for fast connection between the – and ⏚ terminals up to 15 A
Clip-on only up to 24 W, clip-on or screw fixing up to 120 W
Above 120 W: screw fixing
Conform to standards IEC and EN 61558-2-6, UL 60950 and CAN/CSA-C22.2 No 60 950.00
UL USA and Canada agreements
Products suitable for building equipment conforming to standards EN 61131-2, EN 60204 and EN 60439-1

Single-phase power supplies

Consisting of:
- a safety transformer with interference filtering
- double operating terminals
- filter capacitors
- fused protection in the secondary
- a green operating voltage present indicator

24 V⎓

230-400 V ± 15 V∿ (primary) / 24 V⎓(secondary)

Pack	Cat.Nos	Output (W)	Current (A)	Terminal capacity Flexible cables Input	Output
1	470 21	24	1(2)	6	6
1	470 22	60	2.5(2)	6	6
1	470 23	120	5	6	6
1	470 24	240	10	6	6
1	470 25	360	15	6	6

Lexic single-phase power supplies

see p. 158

filtered rectified power supplies
single-phase

■ Dimensions

Fig. 1

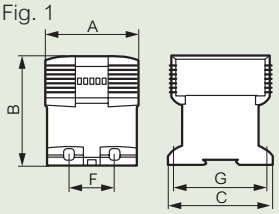
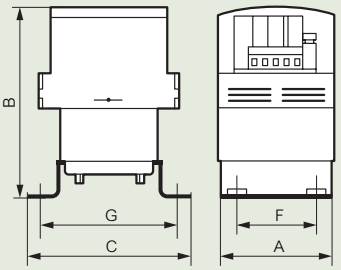


Fig. 2

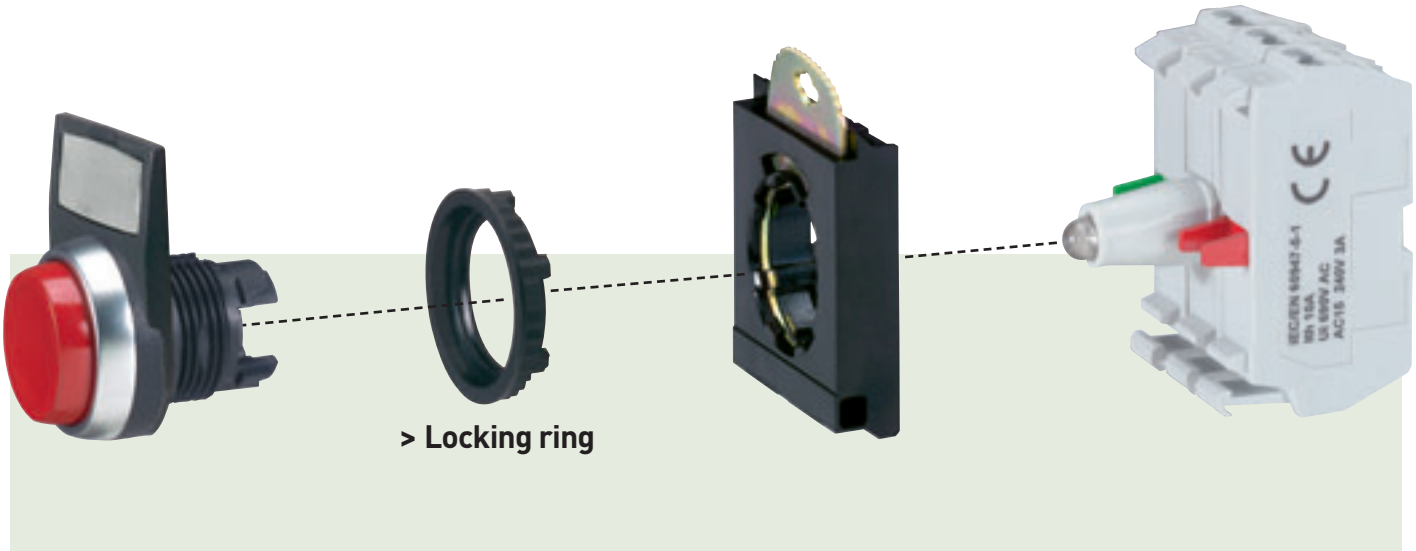


Cat. Nos	Out voltage (V)	Out current (A)	Fig	Dimensions (mm) A	B	C	Fixing (mm) F	G	Ø	Weight (kg)
470 21	24	1	1	68	98	88				1
470 22	24	2.5	1	93	121	105	45	94	4.6	2.45
470 23	24	5	1	105	135	115	45	104	4.6	3.6
470 24	24	10	2	126	186	175	75	150	5.5	6.35
470 25	24	15	2	126	206	175	75	150	5.5	7.6

Cat. Nos	Primary on-load current (A) at 230 V	at 400 V	Operating voltages Open circuit (V)	On-load (V)	On-load 100 mA and primary voltage + 10 %	Nominal on-load and primary voltage - 15 %	No-load losses (W)	Total losses at 100% load (W)	Voltage drop %
470 21	0.18	0.10	29.0	22.8	31.2	20.2	4.4	10.3	27.03
470 22	0.47	0.27	27.8	23.3	30.4	20.4	8.3	16.3	19.46
470 23	0.88	0.51	27.5	23.2	30.2	20.3	11.4	25.4	18.68
470 24	1.88	1.09	27.7	23.5	30.5	20.5	20	45.3	18.20
470 25	2.53	1.46	27.5	23.2	30.2	20.2	23	54.7	18.70

Heads, blocks and connection...

Designed to last !



> Heads

"Both ergonomic and clearly visible"

- Insulating material ensures electrical safety
- Integrated anti-rotation tab
- Legend holder frame keeps IP 66 protection
- Optimized dimensions

> Clips

"Contact blooks can be assembled in any order..."

- Enhanced rigidity
- For 1, 3 and 5 blocks
- Blocks are simply snapped onto the clip

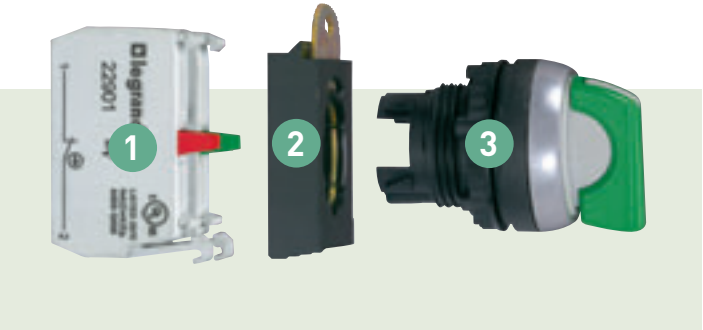
> Blocks

"Safe, robust and durable"

- Securely fixed by clipping into place
- LED blocks combining long life and economy (100 000 hours)
- Corrosion resistanct to some chemicals and sea air, etc
- Compliant with RoHS European directive (concerning restriction of hazardous substances)

Configurations

"A range designed to meet all requirements and all situations"



> Complete units

- Control and signalling units are supplied ready for use with head and pre-assembled block/clip
- A single product code provides a solution for the most common needs

> Separate units

- Maximum flexibility
- Numerous possible solutions

> Ready-assembled control stations

- Innovative design
- 1, 2 or 3 buttons

New heads...

Robust and clearly marked !

Selector switches

with key or handle

IP 66

IK 5

Head with anti-rotation tab

Double touch

Innovative design

Mushroom head

EN 418 illuminated

Illuminated head

5 colours, LED light source

: Ø22.3 mm cut-out

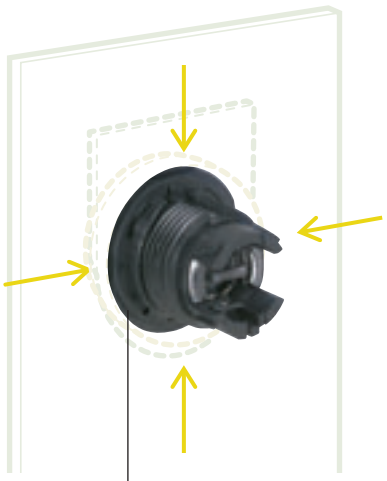
: optional cut-out required for anti-rotation tab

> Advantages

"We're full of innovative ideas: from listening to your needs, and watching your work"

- On all heads, rotation is prevented by a tab which retracts when not required
- Insulating material ensures electrical safety
- Design and shape help avoid build-up of dirt and make the switch easy to clean
- EN 418 illuminated mushroom head with yellow collar for side-on visual indication
- Optimized ergonomic design
- Innovative functions: illuminated emergency stop mushroom head, etc
- Optimized dimensions: low-profile heads

Simplicity, speed, choice !



Auto-grip ring

head held firmly in the drilling hole during assembly

Locking ring

to fix the head

Fixing

locate block onto head and lock in place with rotating metallic latch

> Advantages

"Our objective is to simplify and shorten time of installation:"

- Head held firmly in place by auto-grip ring, allows single-hand mounting while fixing the locking ring with 4 anti-rotation pins
- Foolproof method of positioning the block sub-assembly correctly on the head
- Rotation metallic latch easily accessible with a screwdriver where space is limited