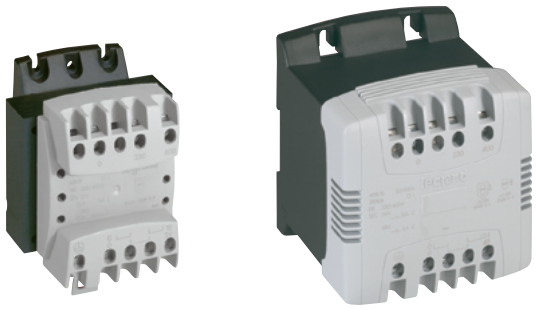
128, av. du Maréchal-de-Lattre-de-Tassigny - 87045 LIMOGES Cedex
Tel. : 33(0)5 55 06 87 87
www.legrand.com

Safety and isolating transformer single-phase

Cat.Nos: 4 427 92/95 - 0 427 85 to 91
4 428 46/47/49/52/53/62/65/77/80
0 428 40 to 45 - 0 428 55 to 61 - 0 428 70 to 76
0 428 99 - 0 044 16



1. GENERAL CHARACTERISTICS

Equipment intended to supply control and signalling equipment inside an enclosure (contactors, relays, PLCs, etc.). Dry-type equipment with natural air cooling.
Single-phase 50 - 60 Hz Class I.
Protected against involuntary or accidental contact with live parts.
Products suitable for building equipment compliant with standards EN 61131-2, EN 60204-1 and EN 61439-1.

2. RANGE

Supplied with coupling strip up to 450 VA (310 VA in 12-24 V~)
Supplied with insulated strip for 0 V secondary/earth connection except Cat. No. 4 428 46.

Power according to IEC	Primary: 230/400 V			
	Secondary: 12/24 V~	Secondary: 24 V~	Secondary: 24/48 V~	Secondary: 115/230 V
40 VA	0 428 40 (1)	0 428 55 (1)	0 428 70 (1)	0 427 85 (2)
63 VA	0 428 41 (1)	0 428 56 (1)	0 428 71 (1)	0 427 86 (2)
100 VA	0 428 42 (1)	0 428 57 (1)	0 428 72 (1)	0 427 87 (2)
160 VA	0 428 43 (1)	0 428 58 (1)	0 428 73 (1)	0 427 88 (2)
220 VA	0 428 44 (1)	0 428 59 (1)	0 428 74 (1)	0 427 89 (2)
310 VA	0 428 45 (1)	0 428 60 (1)	0 428 75 (1)	0 427 90 (2)
400 VA	4 428 46 (1)	-	-	-
450 VA	-	0 428 61 (1)	0 428 76 (1)	0 427 91 (2)
500 VA	4 428 52 (1)	4 428 65 (1)	4 428 80 (1)	4 427 95 (2)
630 VA	4 428 47 (1)	4 428 62 (1)	4 428 77 (1)	4 427 92 (2)
800 VA	4 428 53 (1)	-	-	-
1000 VA	4 428 49 (1)	-	-	-

(1) Compliant with IEC EN 61558-2-2/2-6
(2) Compliant with IEC EN 61558-2-2/2-4

3. CONNECTION

3.1 Connection terminal block:

- from 40 VA to 400 VA and 630 VA (115/230 V): terminal equipped with cable clamp plate with Philips slotted combination head screws
- from 630 VA to 1000 VA (SELV): primary with cable clamp plate, secondary with cage terminal

3.2 Terminals capacity

Power (VA)	Secondary (V)	Primary cable connection (mm^2)		Secondary cable connection (mm^2)	
		flexible	rigid	flexible	rigid
40	all voltages	1 to 4	1 to 4	1 to 4	1 to 4
63	all voltages	1 to 4	1 to 4	1 to 4	1 to 4
100	all voltages	1 to 4	1 to 4	1 to 4	1 to 4
160	all voltages	1 to 4	1 to 4	1 to 4	1 to 4
220	all voltages	1 to 4	1 to 4	1 to 4	1 to 4
310	all voltages	1 to 4	1 to 4	1 to 4	1 to 4
400	12/24	1 to 4	1 to 4	1 to 4	1 to 4
450	24 - 24/48 115/230	1 to 4	1 to 4	1 to 4	1 to 4
500	12/24 - 24	1 to 4	1 to 4	1 to 10	1 to 10
	24/48 115/230	1 to 4	1 to 4	1 to 4	1 to 4
630	all voltages	1 to 4	1 to 4	1 to 10	1 to 10
800	12/24	1 to 4	1 to 4	1 to 10	1 to 10
1000	12/24	1 to 4	1 to 4	1 to 10	1 to 10

4. TECHNICAL CHARACTERISTICS

4.1 General characteristics

Insulation voltage:
- 4470 V between windings
- 2240 V between primary and ground
- 250 V (12; 24 and 48 V) / 1780 V (115 and 230 V) between secondary and earth
Ambient temperature: 40 °C

4.2 Mechanical characteristics

IK 04 (versions with cover)
- Covered versions: Polyamide 6/6 RAL 7035 - Base: glass-filled polyamide 6/6 RAL 9005.
Clipping onto rail up to 160 VA with mounting plate Cat.No 0 428 99 (vertical installation) or 2 clips Cat.Nos 0 044 16 (horizontal installation).
- Bare versions: from 500 VA to 1000 VA: galvanised steel base
Circuit: varnish-protected
Operating temperature: - 20° C to + 40° C
Storage temperature: - 20° C to + 70° C
Glow wire resistance IEC 60695-2-11: 850 °C

5. ELECTRICAL CHARACTERISTICS

■ 5.1 Determining transformer power

Start with the inrush power calculated previously and use the permissible instantaneous power tables (A.I.P.).

Control and safety transformer
Primary 230/400 V +/- 15 V - Secondary 12-24 V

Cat.No	Power (VA)	A.I.P. at cos φ of
		0.5
0 428 40	40	55
0 428 41	63	91
0 428 42	100	140
0 428 43	160	205
0 428 44	220	290
0 428 45	310	345
0 428 46	400	1000
4 428 52	500	950
4 428 47	630	1520
4 428 53	800	2130
4 428 49	1000	2900

Control and safety transformer
Primary 230/400 V +/- 15V - Secondary 24 V

Cat.No	Power (VA)	A.I.P. at cos φ of
		0.5
0 428 55	40	55
0 428 56	63	91
0 428 57	100	140
0 428 58	160	205
0 428 59	220	290
0 428 60	310	345
0 428 61	450	708
4 428 65	500	950
4 428 62	630	1520

Open-type control and safety transformers (24 V) or open-type isolating transformers (48 V)
Primary 230/400 V +/- 15 V - Secondary 24/48 V

Cat.No	Power (VA)	A.I.P. at cos φ of
		0.5
0 428 70	40	55
0 428 71	63	80
0 428 72	100	150
0 428 73	160	160
0 428 74	220	290
0 428 75	310	345
4 428 76	450	708
4 428 80	500	950
4 428 77	630	1520

Bare control and safety transformers
Primary 230/400 V +/- 15 V - Secondary 115/230 V

Cat.No	Power (VA)	A.I.P. at cos φ of
		0.5
0 427 85	40	55
0 427 86	63	91
0 427 87	100	140
0 427 88	160	205
0 427 89	220	290
0 427 90	310	345
4 427 91	450	708
4 427 95	500	950
4 427 92	630	1520

■ 5.2 Transformer protection

Primary protection can be provided by type D circuit breakers or type aM fuses.
Secondary protection can be provided by type C circuit breakers or type gG fuses.

Minimum rating for transformer primary supply line protection (1)

Power (VA)	230 V			400 V		
	aM cartridge fuse	MCB C	MCB D	aM cartridge fuse	MCB C	MCB D
40	0,5 A	1 A		0,25 A	1 A	
	0 130 01	4 077 76		0 130 92	4 077 76	
63	1 A	2 A		0,5 A	1 A	0,5 A
	0 130 01	4 077 77		0 130 95	4 077 76	4 080 07
100	1A	3 A	1 A	1 A	2 A	1 A
	0 130 01	4 077 78	4 080 08	0 130 01	4 077 77	4 080 08
160	2 A	4 A	2 A	1 A	2 A	1 A
	0130 02	4 077 79	4 080 09	0 130 01	4 077 77	4 080 08
220	2 A	6 A	3 A	1 A	3 A	2 A
	013002	4 077 80	4 080 10	0 130 01	4 077 78	4 080 09
310	4 A	8 A	3 A	2 A	4 A	2 A
	0 130 04	4 077 81	4 080 10	0 130 02	4 077 79	4 080 09
400	4 A	10 A	4 A	2 A	6 A	3 A
	0 130 04	4 077 82	4 080 11	0 130 02	4 077 80	4 080 10
450	4 A	10 A	6 A	2 A	6 A	3 A
	0 130 04	4 077 82	4 080 12	0 130 02	4 077 80	4 080 10
500	6 A	16 A	6 A	4 A	8 A	4 A
	0 130 06	4 077 84	4 080 12	0 130 04	4 077 81	4 080 11
630	6 A	16 A	6 A	4 A	8 A	4 A
	0 130 06	4 077 84	4 080 12	0 130 04	4 077 81	4 080 11
800	10 A	20 A	10 A	4 A	16 A	6 A
	0 130 10	4 077 85	4 080 14	0 130 04	4 077 84	4 080 12
1000	10 A	20 A	10 A	4 A	16 A	6 A
	0 130 10	4 077 85	4 080 14	0 130 04	4 077 84	4 080 12

(1) These values are given as a guide for transformers with inrush currents of approximately 25 In

5. ELECTRICAL CHARACTERISTICS (continued)

5.2 Transformer protection (continued)

Minimum rating for transformer secondary supply line protection [1]

Rated power (VA)	12 V		24 V		48 V		115 V		230 V	
	Fuse	Circuit breaker	Fuse	Circuit breaker	Fuse	Circuit breaker	Fuse	Circuit breaker	Fuse	Circuit breaker
40	4 A		2 A		1 A		0,4 A		0.2	
	T4AL		T2AL		T1AL		T0.4AL		T0.2AL	
63	5 A		2,5 A		1,25 A		0,5 A		0.25	
	T5AL		T2.5AL		T1.25AL		T0.5AL		T0.25AL	
100	8 A	8 A	4 A	4 A	2 A	2 A	0,8 A	1 A	0,4 A	0,5 A
	T8AE	4 076 97	T4AE	4 076 95	T2AL	4 076 93	T0.8AL	4 076 92	T0.4AL	4 076 91
160	16 A	13 A	6 A	5 A	3,15 A	4 A	1,6 A	2 A	0,63 A	1 A
	0 133 16	4 076 99	0 133 06	4 076 96	T3.15AE	4 076 95	T1.6AL	4 076 93	T0.63AL	4 076 92
220	20 A	20 A	10 A	10 A	5 A	6 A	2 A	2 A	1 A	1 A
	0 133 20	4 077 01	0 133 10	4 076 98	T5AE	4 076 96	T2AL	4 076 93	T1AL	4 076 92
310	25 A	25 A	12 A	13 A	6 A	6 A	2,5 A	3 A	1,25 A	2 A
	0 133 25	4 077 02	0 133 12	4 076 99	0 133 06	4 076 96	T2.5AE	4 076 94	T1.25AL	4 076 93
400	32 A	32 A	16 A	16 A	8 A	8 A	4 A	4 A	2 A	2 A
	0 143 32	4 077 03	0 133 16	4 077 00	0 133 08	4 076 97	0 133 04	4 076 95	0 133 02	4 076 93
450	40 A	40 A	20 A	20 A	10 A	10 A	4 A	4 A	2 A	2 A
	0 143 40	4 077 04	0 133 20	4 077 01	0 133 10	4 076 98	0 133 04	4 076 95	0 133 02	4 076 93
500	50 A	50 A	25 A	25 A	12 A	13 A	6 A	6 A	4 A	3 A
	0 143 50	4 076 59	0 133 25	4 077 02	0 133 12	4 076 99	0 133 06	4 076 96	0 133 04	4 076 94
630	50 A	50 A	25 A	25 A	12 A	13 A	6 A	6 A	4 A	3 A
	0 143 50	4 076 59	0 133 25	4 077 02	0 133 12	4 076 99	0 133 06	4 076 96	0 133 04	4 076 94
800	63 A	63 A	32 A	32 A	16 A	16 A	8 A	8 A	4 A	4 A
	0 153 63	4 076 60	0 143 32	4 077 00	0 133 16	4 077 00	0 133 08	4 076 97	0 133 04	4 076 95
1000	80 A	80 A	40 A	40 A	20 A	20 A	8 A	8 A	4 A	4 A
	0 153 80	4 091 40	0 143 40	4 077 04	0 133 20	4 077 01	0 133 08	4 076 97	0 133 04	4 076 95

T: time-delay fuse
L: low breaking capacity

5.3 Electrical characteristics

Primary 230/400 V +/- 15 V - Secondary 12-24 V

Cat.No	Power (VA)	Losses no-load (W)	Total losses at load (W)	Voltage drop (%)		Efficiency (%)		Ucc (%)
				cos φ = 1	cos φ = 0.45	cos φ = 1	cos φ = 0.45	
0 428 40	40	3.7	13.3	18.3	12.7	75	58	15.6
0 428 41	63	4,9	16.7	13.5	10.2	80	64	11.8
0 428 42	100	6.2	21.0	10.5	8.7	83	68	9.5
0 428 43	160	9.1	32.8	8.8	7.4	83	69	7.9
0 428 44	220	12.6	38.8	6,9	6,3	85	71	6.5
0 428 45	310	14.2	54.9	7.3	6.2	85	72	8.2
0 428 46	400	21.8	61.4	6.0	3,2	88	76	8.1
4 428 52	500	14.6	52.6	6.7	3,9	90	81	6,3
4 428 47	630	25.5	62.4	4,3	2,6	91	82	6.8
4 428 53	800	21.0	60.0	4,9	3,1	93	86	5.5
4 428 49	1000	43.3	75.3	2.9	1,8	93	86	5.0

5. ELECTRICAL CHARACTERISTICS (continued)

■ 5.4 Electrical characteristics (continued)

Primary 230/400 V +/- 15 V - Secondary 24 V

Cat.No	Power (VA)	Losses no-load (W)	Total losses at load (W)	Voltage drop (%)		Efficiency (%)		Ucc (%)
				cos φ = 1	cos φ = 0.45	cos φ = 1	cos φ = 0.45	
0 428 55	40	3.7	13.3	18.3	12.7	75	58	15.6
0 428 56	63	4,9	16.7	13.5	10.2	80	64	11.8
0 428 57	100	6.2	21.0	10.5	8.7	83	68	9.5
0 428 58	160	9.1	31.8	8.8	7.4	83	69	7.9
0 428 59	220	12.6	40.0	6,9	6,3	85	71	6.5
0 428 60	310	14.2	54.9	7.3	6.2	85	72	8.2
0 428 61	450	18.4	46.0	6.2	5,4	92	84	4.6
4 428 65	500	14.6	52.6	6.7	3,9	90	81	6,3
4 428 62	630	25.5	62.4	4,3	2,6	91	82	6.8

Primary 230/400 V +/- 15 V - Secondary 24/48 V

Cat.No	Power (VA)	Losses no-load (W)	Total losses at load (W)	Voltage drop (%)		Efficiency (%)		Ucc (%)
				cos φ = 1	cos φ = 0.45	cos φ = 1	cos φ = 0.45	
0 428 70	40	3,9	7.7	6,3	6.5	83	71	6.1
0 428 71	63	5.2	11.7	7.7	6,9	83	72	6,9
0 428 72	100	7.9	14.2	4,1	4,5	87	76	4.6
0 428 73	160	7.9	21.2	7.3	7.6	87	77	7.4
0 428 74	220	10.7	24.0	5.5	6.7	90	78	6,3
0 428 75	310	12.0	34.5	6.4	8.4	89	77	8.2
0 428 76	450	18.4	46.0	6.2	5.7	92	84	4.6
4 428 80	500	14.6	48.6	6.4	3,9	91	82	6,3
4 428 77	630	25.5	64.3	4,2	2,6	91	82	6.8

Primary 230/400 V +/- 15 V - Secondary 115/230 V

Cat.No	Power (VA)	Losses no-load (W)	Total losses at load (W)	Voltage drop (%)		Efficiency (%)		Ucc (%)
				cos φ = 1	cos φ = 0.45	cos φ = 1	cos φ = 0.45	
0 427 85	40	3.7	10.9	15.6	12.6	80	60	14.2
0 427 86	63	4,9	15.6	12.5	9.7	80	65	11.0
0 427 87	100	6.2	21.1	10.7	8.9	80	70	9.7
0 427 88	160	9.1	32.3	8.8	7.3	80	70	7.9
0 427 89	220	12.6	40.1	6.8	6.2	85	70	6.4
0 427 90	310	14.2	54.0	7.3	6.2	85	70	8.2
0 427 91	450	18.4	64.0	5,9	5,1	90	80	4,3
4 427 95	500	14.6	48.1	6	3,8	91	82	6.1
4 427 92	630	25.5	64.6	4,3	2,6	90	80	6.6

6. DIMENSIONS

Fig. 1

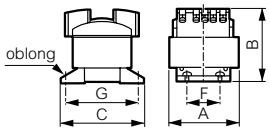


Fig. 2

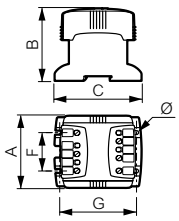
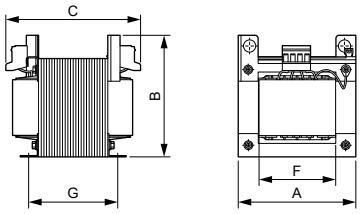


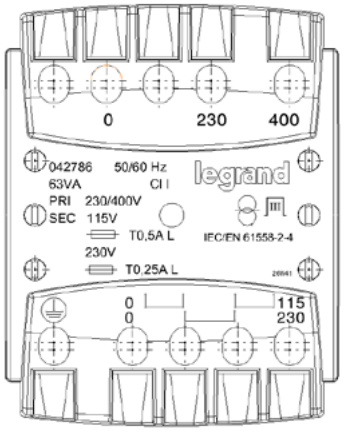
Fig. 3



Cat.No	Fig.	Dimensions (mm)			Fixing (mm)			Weight (kg)
		A	B	C	F	G	Ø	
0 428 40	1	84	70	98	40	86	4,5	0.9
0 428 41	1	84	77	98	40	86	4,5	1,3
0 428 42	1	84	86	98	40	86	4,5	1,6
0 428 43	1	84	104	98	40	86	4,5	2.4
0 428 44	1	96	115	110	40	98	4,5	3,4
0 428 45	2	106	123	115	50	100	5.2	3,8
4 428 46	3	120	120	109	90	82	7	6
4 428 52	3	120	120	124	90	97	7	6
4 428 47	3	150	147	125	122	86	8	8
4 428 53	3	150	147	145	122	106	8	9.5
4 428 49	3	150	147	165	122	126	8	14.7
0 428 55	1	84	70	98	40	86	4,5	0.9
0 428 56	1	84	77	98	40	86	4,5	1,3
0 428 57	1	84	86	98	40	86	4,5	1,6
0 428 58	1	84	104	98	40	86	4,5	2.4
0 428 59	1	96	115	110	40	98	4,5	3,4
0 428 60	2	106	123	115	50	100	5.2	3,8
0 428 61	2	120	140	140	62.5	125	5.2	5.6
4 428 65	3	120	120	124	90	97	7	5.7
4 428 62	3	150	147	125	122	86	8	8
0 428 70	1	84	77	98	40	86	4,5	1,3
0 428 71	1	84	86	98	40	86	4,5	1,6
0 428 72	1	84	104	98	40	86	4,5	2.4
0 428 73	1	84	104	98	40	86	4,5	2.4
0 428 74	1	96	115	110	40	98	4,5	3,4
0 428 75	2	106	123	115	50	100	5.2	3,8
0 428 76	2	120	140	140	62.5	125	5.2	5.6
4 428 80	3	120	120	124	90	97	7	6
4 428 77	3	150	147	125	122	86	8	8
0 427 85	1	84	70	98	40	86	4,5	1
0 427 86	1	84	77	98	40	86	4,5	1,3
0 427 87	1	84	86	98	40	86	4,5	1,6
0 427 88	1	84	104	98	40	86	4,5	2.4
0 427 89	1	96	115	110	40	98	4,5	3,4
0 427 90	2	106	123	115	50	100	5.2	3,8
0 427 91	2	120	140	140	62.5	125	5.2	5.6
4 427 95	3	120	120	124	90	97	7	6.6
4 427 92	3	150	147	125	122	86	8	7.8

7. MARKING

Information available on the cover or on top of the product.



Note : The information provided in this section is for guidance only. Actual data and marking layout may vary depending on the product version

8. STANDARDS AND REGULATIONS

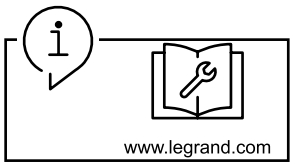
Compliant with IEC EN 61558-2-2 and 2-4 or 2-6 standards

RoHS
Compliance with the 2011/65/EU Directive (RoHS), as modified by the 2015/863/EU Delegated Directive, on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

REACH
The substances identified as SVHC (Substances of Very High Concern) according to the REACH Regulation (1907/2006), if present in the products at a concentration above 0.1% weight by weight, are declared inside the European SCIP database. At the date of publication of this document none of the substance listed in the annex XIV is present in this product.

WEEE
WEEE Directive (2012/19/EU): the sale of this product includes a contribution to the appointed environmental bodies of each European country in charge of handling, at the end of their life, the products falling within the scope of the EU Directive on Electrical and Electronic Equipment Waste

9. OTHER INFORMATION



PEP sheet: available on online catalogue

For more technical information, contact the technical support of Legrand.
Unless otherwise indicated, the data reported in this document refers exclusively to the test conditions according to the product standards. For different product usage conditions, inside electrical equipment or any other installation context, refer to the equipment's regulatory requirements, local regulations, and system design specifications.