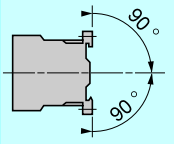
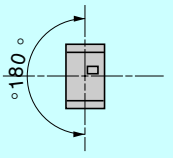
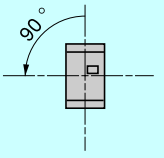
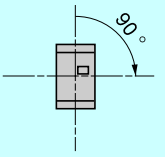
Control relays
K mini-control relays

Environment

Conforming to standards			IEC/EN 60947-1, 60947-5-1, NF C 63-140, VDE 0660		
Approvals			UL, CSA, DEMKO, NEMKO, SEMKO		
Operating position	**Vertical axis**		**Horizontal axis**		
					
	Without derating		Without derating	Possible positions for **CA2-K** only, with derating, call our Customer information centre on 0870 608 8 608.	
Connection			Min	Max	Max to IEC/EN 60947
Screw clamp connections	Solid cable	**mm²**	1 x 1.5	2 x 4	1 x 4 + 1 x 2.5
	Flexible cable without cable end	**mm²**	1 x 0.75	2 x 4	2 x 2.5
	Flexible cable with cable end	**mm²**	1 x 0.34	1 x 1.5 + 1 x 2.5	1 x 1.5 + 1 x 2.5
Spring terminal connections	Solid cable	**mm²**	1 x 0.75	1 x 1.5	2 x 1.5
	Flexible cable without cable end	**mm²**	1 x 0.75	1 x 1.5	2 x 1.5
Faston connectors	Clip	**mm**	2 x 2.8 or 1 x 6.35		
Solder pins for printed circuit board	With locating device between power circuit and control circuit		4 mm x 35 microns		
Tightening torque	Philips head n° 2 and Ø 6	**N.m**	0.8…1.3		
Terminal referencing	Conforming to standards EN 50005 and EN 50011		Up to 8 contacts		
Protective treatment	Conforming to IEC/EN 60068 (DIN 50016)		"TC" (Klimafest, Climateproof)		
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact (devices with screw clamp terminals or pins for printed circuit board)		
Ambient air temperature around the device	Storage	**°C**	- 50...+ 80		
	Operation	**°C**	- 25...+ 50		
Maximum operating altitude	Without derating	**m**	2000		
Vibration resistance 5...300 Hz	Control relay open		2 gn		
	Control relay closed		4 gn		
Flame resistance	Conforming to UL 94		Self-extinguishing material V1		
	Conforming to NF F 16-101 and 16-102		Conforming to requirement 2		
Shock resistance (half sine wave, 11 ms)	Control relay open		10 gn		
	Control relay closed		15 gn		
Safe circuit separation	Conforming to VDE 0106 and IEC/EN 60536		VLSV (Very Low Safety Voltage), up to 400 V		

Control circuit characteristics

Type of control relay			**CA2-K**	**CA3-K**	**CA4-K**
Rated control circuit voltage (Uc)		**V**	∿ 12...690	⎓ 12...250	⎓ 12...120
Control voltage limits (≤ 50 °C) single-voltage coil	For operation		0.8...1.15 Uc	0.8...1.15 Uc	0.7...1.3 Uc
	For drop-out		≤ 0.2 Uc	≤ 0.1 Uc	≤ 0.1 Uc
Mechanical durability at Uc In millions of operating cycles	50/60 Hz coil		10	–	–
	Standard ⎓ coil		–	20	–
	Wide range, low consumption ⎓ coil		–	–	30
Maximum operating rate	In operating cycles per hour		10,000	10,000	6000
Average consumption at 20 °C and at Uc	Inrush		30 VA	3 W	1.8 W
	Sealed		4.5 VA	3 W	1.8 W
Heat dissipation		**W**	1.3	3	1.8
Operating time at 20 °C and at Uc	Between coil energisation and				
	- opening of the N/C contacts	**ms**	5...15	25...35	25...35
	- closing of the N/O contacts	**ms**	10...20	30...40	30...40
	Between coil de-energisation and				
	- opening of the N/O contacts	**ms**	10...20	10	10...20
	- closing of the N/C contacts	**ms**	15...25	15	15...25
Maximum immunity to micro breaks		**ms**	2	2	2

References: pages 6/10 and 6/11 Dimensions: page 6/14 Schemes: page 6/15

Control relays
K mini-control relays

Contact characteristics of mini-control relays and instantaneous contact blocks

Number of contacts	On **CA●-K**			4
	On **LA1-K**			2 or 4 for CA2-K and CA3-K: 2 for CA4-K
Rated operational voltage (Ue)	Up to		**V**	690
Rated insulation voltage (Ui)	Conforming to IEC/EN 60947-1, IEC/EN 60947-5-1		**V**	690
	Conforming to VDE 0110 group C		**V**	750
	Conforming to CSA C 22-2 n° 14		**V**	600
Conventional thermal current (Ith)	For ambient temperature ≤ 50 °C		**A**	10
Operational current frequency			**Hz**	Up to 400
Minimum switching capacity	U min (DIN 19 240)		**V**	17
	I min		**mA**	5
Short-circuit protection	Conforming to IEC/EN 60947-1 & VDE 0660, gG fuse		**A**	10
Rated making capacity	Conforming to IEC/EN 60947-1	I rms	**A**	110
Overload current	Permissible for	1 s	**A**	80
		500 ms	**A**	90
		100 ms	**A**	110
Insulation resistance			**MΩ**	> 10
Make before break distance	**CA●-K and LA1-K**: linked contacts as per INRS, BIA and CNA specifications		**mm**	0.5 (see schemes, page 6/15)

Operational power of contacts
Conforming to IEC/EN 60947-5-1

a.c. supply, category AC-15
Electrical durability (valid up to 3600 operating cycles per hour) on an inductive load such as the coil of an electromagnet: making current (cos φ 0.7) = 10 times breaking current (cos φ 0.4).

V	24	48	110/ 127	220/ 230	380/ 400	440	600/ 690
VA	48	96	240	440	800	880	1200
VA	17	34	86	158	288	317	500
VA	7	14	36	66	120	132	200
VA	1000	2050	5000	10,000	14,000	13,000	9000

1 million operating cycles
3 million operating cycles
10 million operating cycles
Occasional making capacity

d.c. supply, category DC-13
Electrical durability (valid up to 1200 operating cycles per hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

V	24	48	110	220	440	600
W	120	80	60	52	51	50
W	55	38	30	28	26	25
W	15	11	9	8	7	6
W	720	600	400	300	230	200

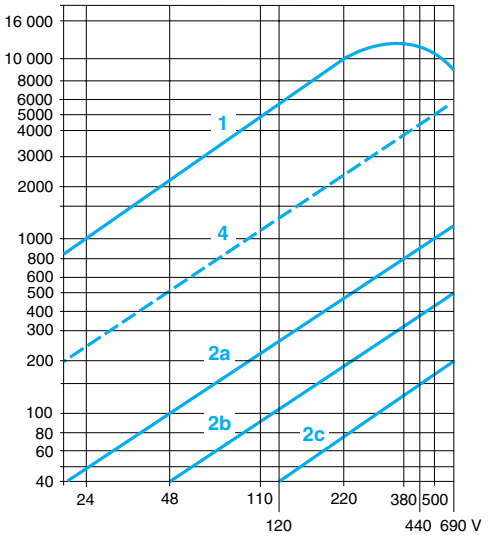
1 Breaking limit of contacts valid for:
- maximum of 50 operating cycles at 10 s intervals (breaking current = making current x cos φ 0.7).

2 Electrical durability of contacts for:
- 1 million operating cycles (2a),
- 3 million operating cycles (2b),
- 10 million operating cycles (2c).

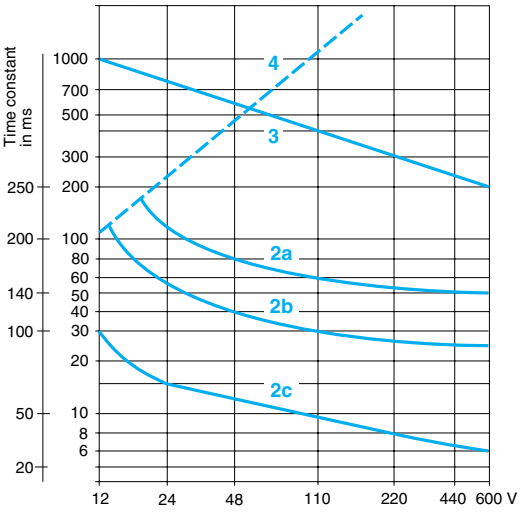
3 Breaking limit of contacts valid for:
- maximum of 20 operating cycles at 10 s intervals with current passing for 0.5 s per operating cycle.

4 Thermal limit.

Power broken in VA



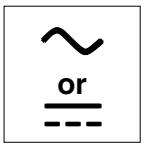
Power broken in W



References: page 6/12
Dimensions: page 6/14
Schemes: page 6/15

Control relays

K mini-control relays
For control circuit: a.c. or d.c.

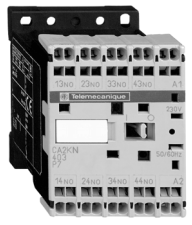


CA2-KN40●●

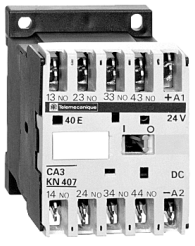
Mini-control relays for a.c. control circuit

- Mounted on 35 mm ⎓ rail or Ø 4 screw fixing.
- Screws in open “ready-to-tighten” position.

Control circuit Consumption	Auxiliary contacts		Basic reference. Complete with code indicating control circuit voltage (1)	Weight kg
Screw clamp connections				
4.5 VA	4	–	**CA2-KN40●●**	0.180
	3	1	**CA2-KN31●●**	0.180
	2	2	**CA2-KN22●●**	0.180
Spring terminal connections				
4.5 VA	4	–	**CA2-KN403●●**	0.180
	3	1	**CA2-KN313●●**	0.180
	2	2	**CA2-KN223●●**	0.180
Faston connectors, 1 x 6.35 or 2 x 2.8				
4.5 VA	4	–	**CA2-KN407●●**	0.180
	3	1	**CA2-KN317●●**	0.180
	2	2	**CA2-KN227●●**	0.180
Solder pins for printed circuit boards				
4.5 VA	4	–	**CA2-KN405●●**	0.210
	3	1	**CA2-KN315●●**	0.210
	2	2	**CA2-KN225●●**	0.210



CA2-KN403●●



CA3-KN407●●

Mini-control relays for d.c. control circuit

- Mounted on 35 mm ⎓ rails or Ø 4 screw connections.
- Screws in open “ready-to-tighten” position.

Screw clamp connections				
3 W	4	–	**CA3-KN40●●**	0.225
	3	1	**CA3-KN31●●**	0.225
	2	2	**CA3-KN22●●**	0.225
Spring terminal connections				
3 W	4	–	**CA3-KN403●●**	0.225
	3	1	**CA3-KN313●●**	0.225
	2	2	**CA3-KN223●●**	0.225
Faston connectors, 1 x 6.35 or 2 x 2.8				
3 W	4	–	**CA3-KN407●●**	0.225
	3	1	**CA3-KN317●●**	0.225
	2	2	**CA3-KN227●●**	0.225
Solder pins for printed circuit boards				
3 W	4	–	**CA3-KN405●●**	0.255
	3	1	**CA3-KN315●●**	0.255
	2	2	**CA3-KN225●●**	0.255

(1) Standard control circuit voltages (for other voltages, please call our Customer information centre on 0870 608 8 608).

Control relays CA2-K (0.8...1.15 Uc) (*0.85...1.1 Uc*)

Volts ∿ 50/60 Hz	**12**	**20**	**24**(2)	**36**	**42**	**48**	**110**	**115**	**127**	***220/ 230***	**230**	***230/ 240***	***380/ 400***	**400**	***400/ 415***	**440**	**500**	***660/ 690***
Code	J7	Z7	B7	C7	D7	E7	F7	FE7	FC7	*M7*	P7	*U7*	*Q7*	V7	*N7*	R7	S7	*Y7*

Up to and including 240 V, coil with integral suppression device available: add **2** to the code required. Example: **J72**

Control relays CA3-K (0.8...1.15 Uc)

Volts ⎓	**12**	**20**	**24**(2)	**36**	**48**	**60**	**72**	**100**	**110**	**125**	**200**	**220**	**230**	**240**	**250**
Code	JD	ZD	BD	CD	ED	ND	SD	KD	FD	GD	LD	MD	MPD	MUD	UD

Coil with integral suppression device available: add **3** to the code required. Example: **JD3**.

(2) When connecting an electronic sensor or timer in series with the coil of the control relay, select a 20 V coil (∿ control voltage code Z7, ⎓ control circuit voltage code ZD) so as to compensate for the incurred voltage drop.

Characteristics: pages 6/8 and 6/9
Dimensions: page 6/14
Schemes: page 6/15

Control relays

K mini-control relays
For control circuit: a.c. or d.c.

CA4-KN40●●●

Low consumption mini-control relays (a.c. control circuit)

- Mounted on 35 mm ⊔ rail or Ø 4 screw fixing.
- Screws in open “ready-to-tighten” position.

Control circuit Consumption	Auxilliary contacts		Basic reference. Complete with code indicating control circuit voltage (1)	Weight kg
Screw clamp connections				
1.8 W	4	–	**CA4-KN40●●**	0.235
	3	1	**CA4-KN31●●**	0.235
	2	2	**CA4-KN22●●**	0.235
Spring terminal connections				
1.8 W	4	–	**CA4-KN403●●**	0.235
	3	1	**CA4-KN313●●**	0.235
	2	2	**CA4-KN223●●**	0.235
Faston connectors, 1 x 6.35 or 2 x 2.8				
1.8 W	4	–	**CA4-KN407●●**	0.235
	3	1	**CA4-KN317●●**	0.235
	2	2	**CA4-KN227●●**	0.235
Solder pins for printed circuit boards				
1.8 W	4	–	**CA4-KN405●●**	0.265
	3	1	**CA4-KN315●●**	0.265
	2	2	**CA4-KN225●●**	0.265

(1) Standard control circuit voltages (for other voltages, please call our Customer information centre on 0870 608 8 608).

Control relays CA4-K (Wide range coil: 0.7...1.3 Uc)

Volts ⎓	**12**	**20**	**24**	**48**	**72**	**110**	**120**
Code	JW3	ZW3	BW3	EW3	SW3	FW3	GW3

Characteristics: pages 6/8 and 6/9
Dimensions: page 6/14
Schemes: page 6/15

Control relays

K mini-control relays
Instantaneous and time delay auxiliary contact blocks

LA1-KN20

LA1-KN40

Instantaneous auxiliary contact blocks

Clip-on front mounting, 1 block per control relay

Type of connection	Composition		Reference	Weight
				kg
Screw clamp	2	–	**LA1-KN20**	0.045
	–	2	**LA1-KN02**	0.045
	1	1	**LA1-KN11**	0.045
	4	–	**LA1-KN40** (1)	0.045
	3	1	**LA1-KN31** (1)	0.045
	2	2	**LA1-KN22** (1)	0.045
	1	3	**LA1-KN13** (1)	0.045
	–	4	**LA1-KN04** (1)	0.045
Spring terminal	2	–	**LA1-KN203**	0.045
	–	2	**LA1-KN023**	0.045
	1	1	**LA1-KN113**	0.045
	4	–	**LA1-KN403** (1)	0.045
	3	1	**LA1-KN313** (1)	0.045
	2	2	**LA1-KN223** (1)	0.045
	1	3	**LA1-KN133** (1)	0.045
	–	4	**LA1-KN043** (1)	0.045
Faston connectors 1 x 6.35 or 2 x 2.8	2	–	**LA1-KN207**	0.045
	–	2	**LA1-KN027**	0.045
	1	1	**LA1-KN117**	0.045
	4	–	**LA1-KN407** (1)	0.045
	3	1	**LA1-KN317** (1)	0.045
	2	2	**LA1-KN227** (1)	0.045
	1	3	**LA1-KN137** (1)	0.045
	–	4	**LA1-KN047** (1)	0.045

Electronic time delay contact blocks

LA2-KT2●

- Relay output with common point changeover contact, ∿ or ⎓ 240 V, 2 A maximum
- Control voltage: 0.85...1.1 Uc
- Maximum switching capacity: 250 VA or 150 W
- Operating temperature: - 10...+ 60 °C
- Reset time: 1.5 s during the time delay period, 0.5 s after the time delay period

Clip-on front mounting, 1 block per control relay

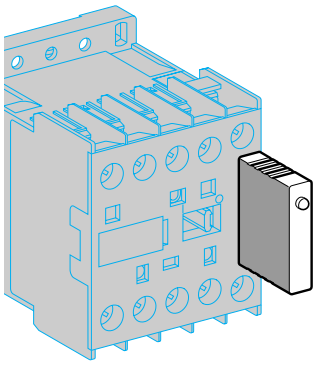
Voltage	Type	Timing range	Composition	Reference	Weight
V		**s**			kg
∿ or ⎓ 24...48	On-delay	1...30	1	**LA2-KT2E**	0.040
∿ 110...240	On-delay	1...30	1	**LA2-KT2U**	0.040

For other electronic timers type RE7, see pages 6/26 to 6/34.

(1) Block of 4 contacts for use only on CA2-K and CA3-K

Control relays

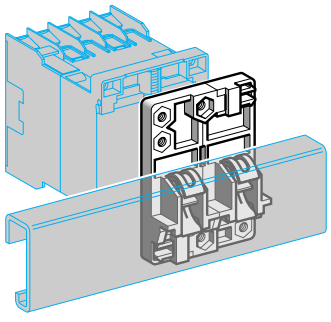
K mini-control relays
Suppressor modules
Mounting and marking accessories



LA4-K●●●

Suppressor modules incorporating LED indicator

Mounting and connection	Type	For voltages	Sold in lots of	Unit reference	Weight kg
Clips onto front of relay with locating device. No tools required for connection.	Varistor (1)	∿ and ⎓ 12...24 V	5	**LA4-KE1B**	0.010
		∿ and ⎓ 32...48 V	5	**LA4-KE1E**	0.010
		∿ and ⎓ 50...129 V	5	**LA4-KE1FC**	0.010
		∿ and ⎓ 130...250 V	5	**LA4-KE1UG**	0.010
	Diode + Zener diode (2)	⎓ 12...24 V	5	**LA4-KC1B**	0.010
		⎓ 32...48 V	5	**LA4-KC1E**	0.010
	RC (3)	∿ 220...250 V	5	**LA4-KA1U**	0.010



LA9-D973

Mounting accessories

Description	Application		Sold in lots of	Unit reference	Weight kg
Mounting plates	On 1 ⊔ rail	Clip-on fixing	1	**LA9-D973**	0.025
	On 2 ⊔ rails	110/120 mm fixing centres	10	**DX1-AP25**	0.065

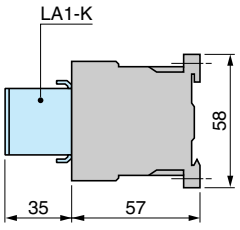
Marking accessories

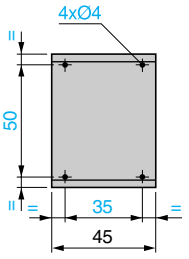
Description	Application		Sold in lots of	Unit reference	Weight kg
Marker holder	Clip-on fixing on front face	–	100	**LA9-D90**	0.001
Clip-in markers	4 maximum per relay	Strips of 10 identical numbers 0 to 9	25	**AB1-R●** (4)	0.002
		Strips of 10 identical capital letters A to Z	25	**AB1-G●** (4)	0.002

(1) Protection by limitation of the transient voltage to 2 Uc max.
Maximum reduction of transient voltage peaks.
Slight time delay on drop-out (1.1 to 1.5 times the normal time).
(2) No overvoltage or oscillation frequency.
Polarised component.
Slight time delay on drop-out (1.1 to 1.5 times the normal time).
(3) Protection by limitation of the transient voltage to 3 Uc max and limitation of the oscillation frequency.
Slight time delay on drop-out (1.2 to 2 times the normal time).
(4) Complete the reference by replacing the ● with the required character.

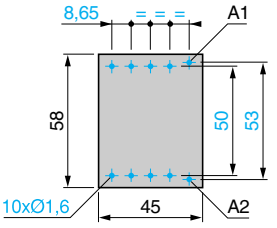
Dimensions:
page 6/14

Mini-control relays
CA2-K, CA3-K, CA4-K
On panel



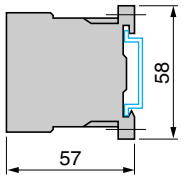


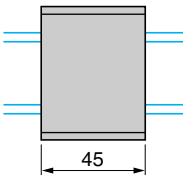
On printed circuit board



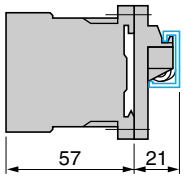
Contactor pins Ø 1.55

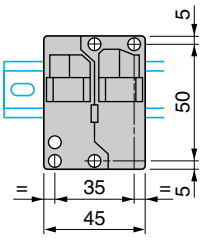
On mounting rail AM1-DP200 or AM1-DE200 (⎵ 35 mm)



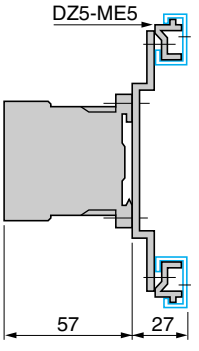


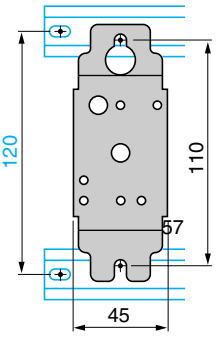
On asymmetrical rail with clip-on mounting plates
LA9-D973



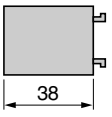


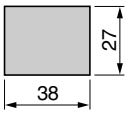
DX1-AP25



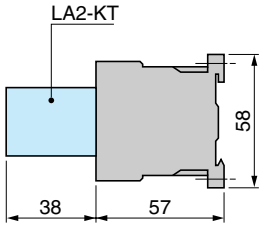


Electronic time delay contact blocks
LA2-KT

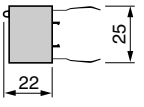


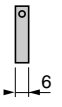


On mini-control relay

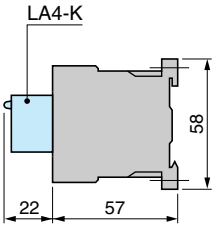


Suppressor modules
LA4-K





On mini-control relay

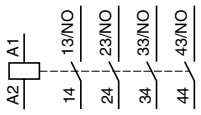


Characteristics: pages 6/8 and 6/9
References: pages 6/10 to 6/13
Schemes: page 6/15

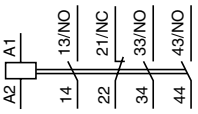
Control relays
K mini-control relays

Mini-control relays
CA2-K, CA3-K, CA4-K

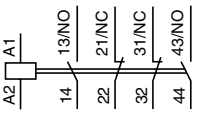
4 N/O



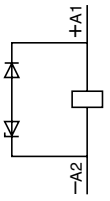
3 N/O + 1 N/C



2 N/O + 2 N/C

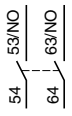


With integral suppression device
CA4-K

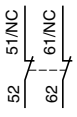


Instantaneous auxiliary contact blocks LA1-K
for CA2-K, CA3-K, CA4-K

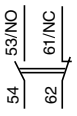
2 N/O
LA1-KN20
LA1-KN207



2 N/C
LA1-KN02
LA1-KN027



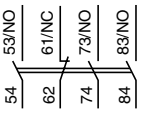
1 N/O + 1 N/C
LA1-KN11
LA1-KN117



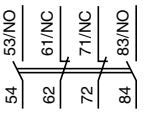
for CA2-K, CA3-K

4 N/O
LA1-KN40
LA1-KN407

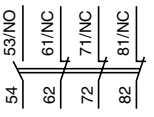
3 N/O + 1 N/C
LA1-KN31
LA1-KN317



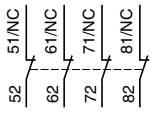
2 N/O + 2 N/C
LA1-KN22
LA1-KN227



1 N/O + 3 N/C
LA1-KN13
LA1-KN137

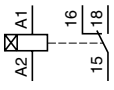


4 N/C
LA1-KN04
LA1-KN047



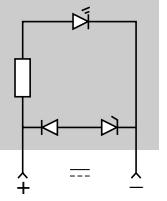
Electronic time delay contact blocks LA2-KT
for CA2-K, CA3-K, CA4-K

1 C/O
LA2-KT2

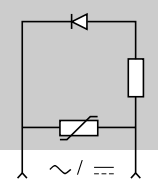


Suppressor modules

LA4-KC



LA4-KE



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6.2