Installation contactors

Installation contactors are electromagnetic switching devices for controlling electrical loads. The product is typically applied for lighting control, resistive loads and small inductive loads in commercial applications.

Installation contactors are versatile switching devices for use in general applications. Applied in electrical systems, installation contactors provide reliable, safe and efficient management of electrical circuits . The nearly silent operation of the product is ideal for lighting and HVAC in general commercial applications.

Iskra's complete range of installation contactors for control of electrical installations are applied in commercial buildings, hotels, hospitals, shopping centers, sporting facilities, convention centers, stadiums/arenas, warehouses and public places.

Iskra Installation Contactors and accessories comply with the latest standards for Magnetic Motor Controllers and Auxiliary Devices:

- UL 60947-1 - Low Voltage Switchgear and Controlgear - Part 1: General Rules
- UL 60947-4-1A - Low Voltage Switchgear and Controlgear - Part 4-1: Contactors and motor-starters - Electromechanical contactors and motor-starters
- UL 60947-5-1 - Low Voltage Switchgear and Controlgear - Part 5-1: Control Circuit Devices and Switching Elements - Electromechanical Control Circuit Devices

The standard for Industrial Control Equipment UL 508 has been harmonized with the relevant product standards of the IEC standard for Low Voltage Switchgear and Controlgear IEC 60947. This harmonization work was undertaken with the intent of creating standards that, while being based upon and adopting IEC requirements, would incorporate sufficient national differences to ease the transition from UL 508 to UL 60947-4-1A. This goal has largely been accomplished in all cases. While the UL 508 and UL 60947 series standards do not look the same, when taking into account the national differences included in the harmonized standards, they are essentially technically identical. From January 27, 2017 all UL certified products must meet UL 60947-4-1 A only.

For universal switching

- Induction motors (single or three phase)
- Electric heating
- Lighting
- Electronic equipment

Advanced operation

- Remote control

Other benefits

- Silent hum-free operation
- AC/DC version with overvoltage protection
- AC only operation version available
- Fast switching
- Wide application
- Mounting on 35 mm rail
- Sealing terminal covers (touch safe terminals)
  Control voltages up to 240 V

UL/CSA Installation Contactors
from 20 A up to 63 A

UL and CSA approved designs

Contactors acc. to UL 60947-4-1 (2-pole, 1 module)

AC 20 A

Type	General Use	Motor Load at 230 V	Control voltage at 60 Hz	Wiring diagram	Ordering No.	Weight (g/lbs)	Packaging (pcs)
IKA220-20	20 A	1 HP	230 V	A1 1 3 / A2 2 4	30.046.825	130/0.286	6
IKA220-20			120 V		30.047.024	130/0.286	
IKA220-20			24 V		30.047.025	130/0.286	
IKA220-11	20 A	1 HP	230 V	A1 1 R3 / A2 2 R4	30.047.289	130/0.286	6
IKA220-11			120 V		30.047.026	130/0.286	
IKA220-11			24 V		30.047.027	130/0.286	
IKA220-10	20 A	1 HP	230 V	A1 1 / A2 2	30.047.290	130/0.286	6
IKA220-10			120 V		30.047.028	125/0.275	
IKA220-10			24 V		30.047.029	125/0.275	
IKA220-01	20 A	1 HP	230 V	A1 R1 / A2 R2	30.047.291	130/0.286	6
IKA220-01			120 V		30.047.030	125/0.275	
IKA220-01			24 V		30.047.031	125/0.275	
IKA220-02	20 A	1 HP	230 V	A1 R1 R3 / A2 R2 R4	30.047.291	130/0.286	6
IKA220-02			120 V		30.047.032	130/0.286	
IKA220-02			24 V		30.047.033	130/0.286	

Contactors acc. to UL 60947-4-1 (4-pole, 2 modules)

AC 25 A

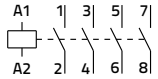
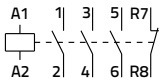
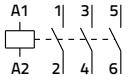
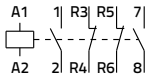
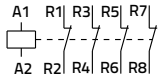
Type	General Use	Motor Load at 460 V	Control voltage at 60 Hz	Wiring diagram	Ordering No.	Weight (g/lbs)	Packaging (pcs)
IKA425-40	25 A	5 HP	230 V	A1 1 3 5 7 / A2 2 4 6 8	30.046.827	230/0.507	3
IKA425-40			120 V		30.047.034	230/0.507	
IKA425-40			24 V		30.047.035	230/0.507	
IKA425-31	25 A	5 HP	230 V	A1 1 3 5 R7 / A2 2 4 6 R8	30.047.293	230/0.507	3
IKA425-31			120 V		30.047.036	230/0.507	
IKA425-31			24 V		30.047.037	230/0.507	
IKA425-30	25 A	5 HP	230 V	A1 1 3 5 / A2 2 4 6	30.047.294	225/0.496	3
IKA425-30			120 V		30.047.038	225/0.496	
IKA425-30			24 V		30.047.039	225/0.496	
IKA425-22	25 A	5 HP	230 V	A1 1 R3 R5 7 / A2 2 R4 R6 8	30.047.295	230/0.507	3
IKA425-22			120 V		30.047.040	230/0.507	
IKA425-22			24 V		30.047.041	230/0.507	
IKA425-04	25 A	5 HP	230 V	A1 R1 R3 R5 R7 / A2 R2 R4 R6 R8	30.047.296	230/0.507	3
IKA425-04			120 V		30.047.042	230/0.507	
IKA425-04			24 V		30.047.043	230/0.507	

Other control voltages are on request - define type and voltage

UL/CSA Installation Contactors
from 20 A up to 63 A

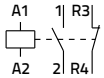
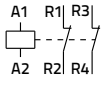
Contactors acc. to UL 60947-4-1 (4-pole, 3 modules)

63 A AC

Type	General Use	Motor Load at 460 V	Control voltage at 60 Hz	Wiring diagram	Ordering No.	Weight (g/lbs)	Packaging (pcs)
IKA440-40	40 A	15 HP	230 V		30.045.700	350/0.771	5
IKA440-40	40 A		120 V		30.045.612	350/0.771	
IKA440-40	40 A		24 V		30.045.613	350/0.771	
IKA463-40	63 A	20 HP	230 V		30.045.592	350/0.771	
IKA463-40	63 A		120 V		30.045.614	350/0.771	
IKA463-40	63 A		24 V		30.045.615	350/0.771	
IKA440-31	40 A	15 HP	230 V		30.045.701	350/0.771	5
IKA440-31	40 A		120 V		30.045.616	350/0.771	
IKA463-31	40 A		24 V		30.045.617	350/0.771	
IKA463-31	63 A	20 HP	230 V		30.045.702	350/0.771	
IKA463-31	63 A		120 V		30.045.618	350/0.771	
IKA463-31	63 A		24 V		30.045.619	350/0.771	
IKA440-30	40 A	15 HP	230 V		30.045.703	340/0.749	5
IKA440-30	40 A		120 V		30.045.620	340/0.749	
IKA463-30	40 A		24 V		30.045.621	340/0.749	
IKA463-30	63 A	20 HP	230 V		30.045.704	340/0.749	
IKA463-30	63 A		120 V		30.045.622	340/0.749	
IKA463-30	63 A		24 V		30.045.623	340/0.749	
IKA440-22	40 A	15 HP	230 V		30.045.705	350/0.771	5
IKA440-22	40 A		120 V		30.045.624	350/0.771	
IKA463-22	40 A		24 V		30.045.625	350/0.771	
IKA463-22	63 A	20 HP	230 V		30.045.706	350/0.771	
IKA463-22	63 A		120 V		30.045.626	350/0.771	
IKA463-22	63 A		24 V		30.045.627	350/0.771	
IKA440-04	40 A	15 HP	230 V		30.045.707	350/0.771	5
IKA440-04	40 A		120 V		30.045.628	350/0.771	
IKA463-04	40 A		24 V		30.045.629	350/0.771	
IKA463-04	63 A	20 HP	230 V		30.045.708	350/0.771	
IKA463-04	63 A		120 V		30.045.630	350/0.771	
IKA463-04	63 A		24 V		30.045.631	350/0.771	

Contactors acc. to UL 60947-4-1 (2-pole, 1 module)

20 A AC/DC HUM-FREE

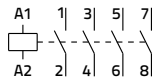
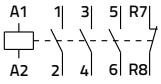
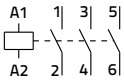
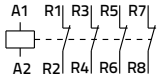
Type	General Use	Motor Load at 230 V	Control voltage at 60 Hz	Wiring diagram	Ordering No.	Weight (g/lbs)	Packaging (pcs)
IKD220-20	20 A	1 HP	230 V AC		30.046.826	130/0.286	6
			220 V DC				
IKD220-20	20 A		120 V AC		30.047.044	130/0.286	
			110 V DC				
IKD220-20	20 A		24 V AC/DC		30.047.045	130/0.286	
IKD220-11	20 A	1 HP	230 V AC		30.047.297	130/0.286	6
			220 V DC				
IKD220-11	20 A		120 V AC		30.047.046	130/0.286	
			110 V DC				
IKD220-11	20 A		24 V AC/DC		30.047.047	130/0.286	
IKD220-10	20 A	1 HP	230 V AC		30.047.298	125/0.275	6
			220 V DC				
IKD220-10	20 A		120 V AC		30.047.048	125/0.275	
			110 V DC				
IKD220-10	20 A		24 V AC/DC		30.047.049	125/0.275	
IKD220-01	20 A	1 HP	230 V AC		30.047.299	125/0.275	6
			220 V DC				
IKD220-01	20 A		120 V AC		30.047.050	125/0.275	
			110 V DC				
IKD220-01	20 A		24 V AC/DC		30.047.051	125/0.275	
IKD220-02	20 A	1 HP	230 V AC		30.047.300	130/0.286	6
			220 V DC				
IKD220-02	20 A		120 V AC		30.047.052	130/0.286	
			110 V DC				
IKD220-02	20 A		24 V AC/DC		30.047.053	130/0.286	

Other control voltages are on request - define type and voltage

UL/CSA Installation Contactors
from 20 A up to 63 A

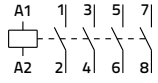
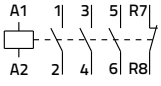
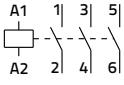
Contactors acc. to UL 60947-4-1 (4-pole, 2 modules)

25 A AC/DC HUM-FREE

Type	General Use	Motor Load at 460 V	Control voltage at 60 Hz	Wiring diagram	Ordering No.	Weight (g/lbs)	Packaging (pcs)
IKD425-40	25 A	5 HP	230 V AC		30.046.828	250/0.551	6
			220 V DC				
IKD425-40	25 A		120 V AC		30.047.054	250/0.551	
			110 V DC				
IKD425-40	25 A		24 V AC/DC		30.047.055	250/0.551	
IKD425-31	25 A	5 HP	230 V AC		30.047.301	250/0.551	6
			220 V DC				
IKD425-31	25 A		120 V AC		30.047.056	250/0.551	
			110 V DC				
IKD425-31	25 A		24 V AC/DC		30.047.057	250/0.551	
IKD425-30	25 A	5 HP	230 V AC		30.047.302	245/0.540	6
			220 V DC				
IKD425-30	25 A		120 V AC		30.047.058	245/0.540	
			110 V DC				
IKD425-30	25 A		24 V AC/DC		30.047.059	245/0.540	
IKD425-22	25 A	5 HP	230 V AC		30.047.303	250/0.551	6
			220 V DC				
IKD425-22	25 A		120 V AC		30.047.060	250/0.551	
			110 V DC				
IKD425-22	25 A		24 V AC/DC		30.047.061	250/0.551	
IKD425-04	25 A	5 HP	120 V AC		30.047.062	250/0.551	6
			110 V DC				
IKD425-04	25 A		120 V AC		30.047.062	250/0.551	
			110 V DC				
IKD425-04	25 A		24 V AC/DC		30.047.063	250/0.551	

Contactors acc. to UL 60947-4-1 (4-pole, 3 modules)

63 A AC/DC HUM-FREE

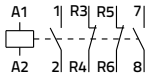
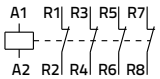
Type	General Use	Motor Load at 460 V	Control voltage at 60 Hz	Wiring diagram	Ordering No.	Weight (g/lbs)	Packaging (pcs)
IKD440-40	40 A	15 HP	230 V AC		30.045.709	420/0.926	5
			220 V DC				
IKD440-40	40 A		120 V AC		30.045.632	420/0.926	
			110 V DC				
IKD440-40	40 A		24 V AC/DC		30.045.633	420/0.926	
IKD463-40	63 A	20 HP	230 V AC		30.045.593	420/0.926	
			220 V DC				
IKD463-40	63 A		120 V AC		30.045.634	420/0.926	
			110 V DC				
IKD463-40	63 A		24 V AC/DC		30.045.635	420/0.926	
IKD440-31	40 A	15 HP	230 V AC		30.045.710	420/0.926	5
			220 V DC				
IKD440-31	40 A		120 V AC		30.045.636	420/0.926	
			110 V DC				
IKD440-31	40 A		24 V AC/DC		30.045.637	420/0.926	
IKD463-31	63 A	20 HP	230 V AC		30.045.711	420/0.926	
			220 V DC				
IKD463-31	63 A		120 V AC		30.045.638	420/0.926	
			110 V DC				
IKD463-31	63 A		24 V AC/DC		30.045.639	420/0.926	
IKD440-30	40 A	15 HP	230 V AC		30.045.712	410/0.904	5
			220 V DC				
IKD440-30	40 A		120 V AC		30.045.640	410/0.904	
			110 V DC				
IKD440-30	40 A		24 V AC/DC		30.045.641	410/0.904	
IKD463-30	63 A	20 HP	230 V AC		30.045.713	410/0.904	
			220 V DC				
IKD463-30	63 A		120 V AC		30.045.642	410/0.904	
			110 V DC				
IKD463-30	63 A		24 V AC/DC		30.045.643	410/0.904	

Other control voltages are on request - define type and voltage

UL/CSA Installation Contactors
from 20 A up to 63 A

Contactors acc. to UL 60947-4-1 (4-pole, 3 modules)

63 A AC/DC HUM-FREE

Type	General Use	Motor Load at 460 V	Control voltage at 60 Hz	Wiring diagram	Ordering No.	Weight (g/lbs)	Packaging (pcs)
IKD440-22	40 A	15 HP	230 V AC		30.045.714	420/0.926	5
			220 V DC				
IKD440-22	40 A		120 V AC		30.045.644	420/0.926	
			110 V DC				
IKD440-22	40 A		24 V AC/DC		30.045.645	420/0.926	
IKD463-22	63 A	20 HP	230 V AC		30.045.715	420/0.926	
			220 V DC				
IKD463-22	63 A		120 V AC		30.045.646	420/0.926	
			110 V DC				
IKD463-22	63 A		24 V AC/DC		30.045.647	420/0.926	
IKD440-04	40 A	15 HP	230 V AC		30.045.594	420/0.926	5
			220 V DC				
IKD440-04	40 A		120 V AC		30.045.648	420/0.926	
			110 V DC				
IKD440-04	40 A		24 V AC/DC		30.045.649	420/0.926	

Other control voltages are on request - define type and voltage

Ordering data

IKA440 – 40 / 12 V

- 12 V – Control voltage
- 40 – Version of contacts
- IKA440 – Basic type

Installation Contactors
Accessories

Sealing cover for 2-pole, 1 module

Type	Ordering No.	Weight (g/lbs)	Packaging (pcs)
IK20-PP	37.425.061	1/0.002	2

Sealing cover for 4-pole, 2 modules

Type	Ordering No.	Weight (g/lbs)	Packaging (pcs)
IK25-PP	37.425.062	2/0.004	2

Sealing cover for 4-pole, 3 modules

Type	Ordering No.	Weight (g/lbs)	Packaging (pcs)
IK40/63-PP	37.423.463	3/0.006	2

Installation Contactors
Accessories

Ventilation modul

Type	Ordering No.	Weight (g/lbs)	Packaging (pcs)
IKV	37.425.296	13/0.028	1

Auxilliary switch

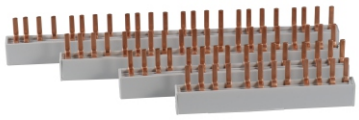
Ratings acc. to UL 508 (2-pole, ½ module)

Type	Rating code	Wiring diagram -20	Wiring diagram -11	Wiring diagram -02	Ordering No.	Weight (g/lbs)	Packaging (pcs)
IKN20UL	C300, Q300	33 43 / 34 44	31 43 / 32 44	31 41 / 32 42	38.046.050	30/0.066	1
IKN11UL	C300, Q300				38.046.049	30/0.066	
IKN02UL	C300, Q300				38.046.051	30/0.066	

4-phase busbars for installation contactors up to 32 A

- insulated

Type	Module width	Lenght (mm)	Ordering No.	Weight (g/lbs)	Packaging (pcs)
L/32-8P	4	66	38.046.061	60/0.132	10
L/32-12P	6	98	38.046.062	86/0.189	
L/32-16P	8	138	38.046.063	114/0.215	
L/32-20P	10	173	38.046.064	141/0.310	
L/32-24P	12	208	38.046.065	169/0.372	



Single pin terminals for installation contactors up to 32 A

- insulated

Type	Pin lenght	Cross-section rigid/flexible (mm^2)	Screw	Ordering No.	Weight (g/lbs)	Packaging (pcs)
S/32-1P	13.5/32 (total)	6-25/4-16	PZ2	38.046.066	12/0.026	25

Double pin terminals for installation contactors 40 -63 A

- insulated terminals for parallel connection

Type	Pin lenght	Cross-section rigid/flexible (mm^2)	Screw	Ordering No.	Weight (g/lbs)	Packaging (pcs)
S/63-2P	15	6-50/4-35	PZ2	38.046.067	22/0.048	25

Technical characteristics

Dimensions

TECHNICAL DATA

	Type	Symbol	Unit	IKA220	IKD220	IKA425	IKD425
GENERAL	Standards			UL 60947-4-1A, C22.2 No. 60947-4-1A-07, IEC/EN 61095, IEC/EN 60947-4-1			
	Approvals			CE, UL, CSA			
	Module width			1		2	
	Number of poles			2		4	
	Degree of protection			IP20 (IP40 when installed in installation box - distribution board)			
	Pollution degree			3			
	Ambient temperature (closed)			5 °F ... 104 °F / -5 °C ... +40 °C [1]			
	Storage temperature			-22 °F ... 176 °F / -30 °C ... +80 °C			
	Maximum altitude U_i and U_e is reduced for 1.2 % and I_e for 0.4 % for every additional 100 m		m	2,000			
	Number of contactors or switches side-by-side: ≤40 °C			no limitation			
	Noise level (operation)		dB	30	20	30	20
	Vibration resistance according to IEC/EN 60068-2-6	a	g	switched off: 2 (Z and X axis) / switched on: 3 (Z axis) and 1 (X axis)			
	Shock resistance according to IEC/EN 6068-2-27	a	g	switched off: 10 (Z and X axis) / switched on: 15 (Z axis) and 2 (X axis)			
	Maximum operating frequency with no load		op. c./h	3,000			
	Mechanical endurance		op. c.	3,000,000	10,000,000	3,000,000	10,000,000
	Weight		g/lbs	130/0.2866	130/0.2866	230/0.5071	250/0.5512
MAIN CIRCUIT	Contact reliability			≥17 V; ≥50 mA			
	Minimum distance of open contacts			0.118 in /3.6 mm			
	Power dissipation per pole		W	1.7	1.7	2	2
	Overload current withstand capability: 10 s		A	72		68	
	Maximum back-up fuse for short-circuit protection gL and gG: coordination type 1 (at prospective current 3 kA) coordination type 2 (at prospective current 3 kA)	I_v	A			25	25
				20	20		
	Maximum back-up fuse for short-circuit protection K5 acc. to UL and CSA	I_v	A	20	20	25	25
	Rated insulation voltage	U_i	V	IEC: 440 ; UL/CSA: 480			
	Rated impulse withstand voltage	U_{imp}	kV	4			
	Rated operational voltage	U_e	V	IEC: 230 ; UL/CSA: 240		IEC: 400 ; UL/CSA: 480	
	Rated frequency	f	Hz	50/60			
	Thermal current	I_{th}	A	20		25	
	Rated operational current for AC-1, AC-7a and AC-21	I_e	A	20		20	
	Operational power for AC-1, AC-7a and AC-21: single-phase 230 V three-phase 230 V three-phase 400 V	P_e	kW	4		5.4	
						9	
						16	
	Maximum operating frequency for AC-1, AC-7a and AC-21		op. c./h	600			
	Electrical endurance for AC-1, AC-7a and AC-21		op. c.	200,000			
	Rated operational current for AC-2	I_e	A	12		14	
	Operational power for AC-2: single-phase 230 V three-phase 230 V three-phase 400 V	P_e	kW	1.8		2	
						3.6	
						6	
	Maximum operating frequency for AC-2		op. c./h	120			
	Electrical endurance for AC-2		op. c.	100,000			
	Rated operational current for AC-22	I_e	A	20		25	
	Operational power for AC-22: single-phase 230 V three-phase 230 V three-phase 400 V	P_e	kW	3.7		4.6	
						8	
						13.8	
	Maximum operating frequency for AC-22		op. c./h	300			
	Electrical endurance for AC-22		op. c.	50,000			
	Rated operational current for AC-3, AC-7b and AC-23	I_e	A	NO: 9 / NC: 6		8.5	
	Operational power for AC-3, AC-7b and AC-23: single-phase 230 V three-phase 230 V three-phase 400 V	P_e	kW	NO: 1.3 / NC: 0.75		1.3	
						2.2	
						4	
	Maximum operating frequency for AC-3, AC-7b and AC-23		op. c./h	600			
	Electrical endurance for AC-3, AC-7b and AC-23		op. c.	300,000		500,000	

[1] Ambient temperature (open) -13 ... 104 °F / -25 ... +40 °C for version with 2NO and 4NO contacts

TECHNICAL DATA

	Type	Symbol	Unit	IKA220	IKD220	IKA425	IKD425
MAIN CIRCUIT	Rated motor power acc. to standards UL and CSA:						
	single-phase 115 V/120 V	P_e	HP	1/3	1/3	1/3	1/3
	single-phase 208 V			3/4	3/4	3/4	3/4
	single-phase 230 V/240 V			1	1	1	1
	three-phase 115 V/120 V					1	1
	three-phase 208 V					2	2
	three-phase 230 V/240 V					3	3
	three-phase 460 V/480 V					5	5
	Maximum operating frequency for motors acc. to UL and CSA		op. c./h	360			
	Electrical endurance for motors according to UL and CSA		op. c.	300,000		500,000	
	General use according to standards UL and CSA:						
	single-phase 240 V	I_e	A	20	20		
	three-phase 480 V					25	25
	Maximum operating frequency for general use acc. to UL and CSA		op. c./h	360			
	Electrical endurance for general use acc. to UL and CSA		op. c.	200,000			
	Switching of discharge lamps acc. to standards UL and CSA:						
	single-phase 240 V - standard ballast	I_e	A	20	20		
	three-phase 480 V - standard ballast					25	25
	Maximum operating frequency for discharge lamps acc. to UL and CSA		op. c./h	360			
	Electrical endurance for discharge lamps acc. to UL and CSA		op. c.	100,000			
	Rated operational current for AC-5a (at 230 V)	I_e	A	8.8		11.2	
	Maximum operating frequency for AC-5a		op. c./h	600			
	Electrical endurance for AC-5a		op. c.	100,000			
	Rated operational current for AC-5b (at 230 V)	I_e	A	8.8		9.7	
	Maximum operating frequency for AC-5b		op. c./h	600			
	Electrical endurance for AC-5b		op. c.	100,000			
	Rated operational current for AC-6a (at 230 V)	I_e	A	4		4.8	
	Maximum operating frequency for AC-6a		op. c./h	600			
	Electrical endurance for AC-6a		op. c.	100,000			
	Switching of capacitors AC-6b and AC-7c (at 230 V)	C	µF	30		36	
	Maximum operating frequency for AC-6b and AC-7c		op. c./h	600			
	Electrical endurance for AC-6b and AC-7c		op. c.	100,000			
	Rated operational current for DC-1 (L/R ≤ 1 ms):						
	1 pole ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC	I_e	A	20/15/10/6/0.6		25/20/15/6/0.6	
	2 poles in series ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC			25/18/15/10/6		25/25/20/10/6	
	3 poles in series ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC					25/25/25/20/15	
	4 poles in series ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC					25/25/25/20/15	
	Maximum operating frequency for DC-1		op. c./h	300			
	Electrical endurance for DC-1		op. c.	100,000			
	Rated operational current for DC-3 (L/R ≤ 2 ms):						
	1 pole ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC	I_e	A	10/5/2/1/0.1		15/8/4/1.3/0.2	
	2 poles in series ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC			20/10/8/4/0.4		25/10/8/4/0.4	
	3 poles in series ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC					25/25/25/15/3	
	4 poles in series ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC					25/25/25/20/8	
	Maximum operating frequency for DC-3		op. c./h	300			
	Electrical endurance for DC-3		op. c.	100,000			
	Rated operational current for DC-5 (L/R ≤ 7.5 ms):						
	1 pole ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC	I_e	A	10/4/1/0.3/0.06		15/5/3/0.5/0.1	
	2 poles in series ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC			20/8/6/2/0.2		25/15/10/4/0.4	
	3 poles in series ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC					25/25/20/12/2	
	4 poles in series ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC					25/25/25/15/5	
	Maximum operating frequency for DC-5		op. c./h	300			
	Electrical endurance for DC-5		op. c.	100,000			
	Terminal capacity:						
	rigid (solid and stranded)	S		16 ... 10 AWG / 1 ... 10 mm^2			
	flexible			16 ... 8 AWG / 1 ... 6 mm^2			
	Length of removed wire insulation			0.354 in / 9 mm			
	Screw			M3.5			
	Screw head			PZ1			
	Tightening torque			10.62 lb-in / 1.2 Nm			
AUXILIARY CIRCUIT	Contact reliability			≥17 V; ≥50 mA			
	Minimum distance of open contacts			0.118 in /3.6 mm			
	Power dissipation per pole		W	1.7		2.2	
	Overload current withstand capability:						
	10 s			72		68	
	Maximum back-up fuse for short-circuit protection gL and gG:						
	coordination type 1 (at prospective current 3 kA)	I_v	A			25	25
	coordination type 2 (at prospective current 3 kA)			20	20		

TECHNICAL DATA

	Type	Symbol	Unit	IKA220	IKD220	IKA425	IKD425
AUXILIARY CIRCUIT	Maximum back-up fuse for short-circuit protection K5 acc. to UL and CSA	U_i	V	20	20	25	25
	Rated insulation voltage	U_i	V	IEC: 440 ; UL/CSA: 480			
	Rated impulse withstand voltage	U_{imp}	kV	4			
	Rated operational voltage	U_e	V	IEC: 230/100 ; UL/CSA: 240 (AC), 250 (DC)			
	Rated frequency	f	Hz	50/60			
	Thermal current	I_{th}	A	20		25	
	Rated operational current for AC-15: single-phase 230 V single-phase 400 V	I_e	A	 6 4			
	Maximum operating frequency for AC-15		op. c./h	600			
	Electrical endurance for AC-15		op. c.	300,000		500,000	
	Switching of auxiliary loads according to standard UL and CSA			B300, P300			
	Maximum operating frequency for auxiliary loads according to UL and CSA		op. c./h	360			
	Electrical endurance for auxiliary loads according to UL and CSA		op. c.	100,000			
	Rated operational current for DC-13: 1 pole ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC 2 poles in series ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC 3 poles in series ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC 4 poles in series ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC	I_e	A	 6/4/1/0.3/0.05 6/6/4/1/0.1 6/6/6/3/1 6/6/6/4/2			
	Maximum operating frequency for DC-13		op. c./h	300			
	Electrical endurance for DC-13		op. c.	200,000			
	Terminal capacity: rigid (solid and stranded) flexible	S		 16...10 AWG / 1...10 mm^2 16... 8 AWG / 1...6 mm^2			
	Length of removed wire insulation			0.354 in / 9 mm			
	Screw			M3.5			
	Screw head			PZ1			
	Tightening torque			10.62 lb-in / 1.2 Nm			
COIL	Range of control voltage for switch-on	U_c	%	85 ... 110			
	Range of control voltage for drop out	U_c	%	AC: 75 ... 20 / DC: 75 ... 10 (where is applicable)			
	Kind of voltage			AC	AC/DC	AC	AC/DC
	Standard control voltages	U_c	V	12, 24, 48, 110, 120, 127, 208, 230, 240			
	Frequency of AC control voltage	f	Hz	60			
	Control mode			remote control with U_c			
	Impulse duration of control voltage: minimum maximum			 permanent permanent			
	Minimum duration between two impulses of control voltage		ms	AC: 150 / DC: 500 (where is applicable)			
	Surge immunity withstand voltage 1.2/50 µs acc. to standard IEC/EN 61000-4-5		kV	2			
	Coil consumption: switch-on operation		VA/W	 12/10 2.8/1.2	 2.1/2.1 2.1/2.1	 33/25 5.5/1.6	 2.6/2.6 [1] 2.6/2.6 [1]
	Delays: make brake		ms	 15 ... 25 10 ... 30	 15 ... 45 20 ... 50	 10 ... 30 10 ... 30	 15 ... 45 20 ... 70
	Terminal capacity: rigid (solid and stranded) flexible			 16 ... 14 AWG / 1 ... 2.5 mm^2 16 ... 14 AWG / 1 ... 2.5 mm^2			
	Length of removed wire insulation			0.276 in / 7 mm			
	Screw			M3			
	Screw head			PZ1			
	Tightening torque			5.31 lb-in / 0.6 Nm			
SAFETY	MTTF - Mean time to failure $MTTF = 1/\lambda = B10/(0.1\ n_{op})$		h	General Use: 4,166 Motor: 6,250		Motor: 10,416	
	$MTTF_d$ - Mean time to failure dangerous $MTTFd = 1/\lambda_d = B10_d/(0.1\ n_{op})$		h	General Use: 5,555 Motor: 8,333		Motor: 13,888	
	B10 - Number of operating cycles until 10 % of devices fail		op. c.	General Use: 150,000 Motor: 225,000		Motor: 375,000	
	$B10_d$ - Number of operating cycles until 10 % of device dangerous $B10_d = B10/$ ratio of dangerous failures		op. c.	General Use: 200,000 Motor: 300,000		Motor: 500,000	
	λ - Failure rate $\lambda = (0.1\ n_{op})/B10$		1/h	General Use: 0.00024 Motor: 0.00016		Motor: 0.000096	
	λ_d - Failure rate dangerous $\lambda_d = (0.1\ n_{op})/B10_d$		1/h	General Use: 0.00018 Motor: 0.00012		Motor: 0.000072	
	Ratio of dangerous failures		%	75			
	n_{op} - Operating cycles (operating cycles/h)		op. c./h	360			

[1] Coil consumption for contact version -04 is 3.8 VA / 3.8 W

Installation Contactors UL/CSA
up to 63 A

TECHNICAL DATA

	Type	Symbol	Unit	IKA440	IKD440	IKA463	IKD463
GENERAL	Standards			UL 60947-4-1A, C22.2 No. 60947-4-1A-07, IEC/EN 61095, IEC/EN 60947-4-1			
	Approvals			CE, UL, CSA			
	Module width			3			
	Number of poles			4			
	Degree of protection			IP20 (IP40 when installed in installation box - distribution board)			
	Pollution degree			3			
	Ambient temperature (open)			[1]			[2]
	Storage temperature			-22 °F ... 176 °F / -30 °C ... +80 °C			
	Maximum altitude U_i and U_e is reduced for 1.2 % and I_e for 0.4 % for every additional 100 m		m	2,000			
	Number of contactors or switches side-by-side: ≤40 °C			no limit	max. 3	no limit	max. 3
	Noise level (operation)		dB	30	20	30	20
	Vibration resistance according to IEC/EN 60068-2-6	a	g	switched off: 2 (Z and X axis) / switched on: 3 (Z axis) and 1 (X axis)			
	Shock resistance according to IEC/EN 6068-2-27	a	g	switched off: 10 (Z and X axis) / switched on: 15 (Z axis) and 2 (X axis)			
	Maximum operating frequency with no load		op. c./h	3.000			
	Mechanical endurance		op. c.	3,000,000	10,000,000	3,000,000	10,000,000
	Weight		g/lbs	350/0.7716	420/0.9259	350/0.7716	420/0.9259
MAIN CIRCUIT	Contact reliability			≥17 V; ≥50 mA			
	Minimum distance of open contacts			0.118 in /3.6 mm			
	Power dissipation per pole		W	4	4	8	8
	Overload current withstand capability: 10 s		A	176		240	
	Maximum back-up fuse for short-circuit protection gL and gG: coordination type 1 (at prospective current 3 kA) coordination type 2 (at prospective current 3 kA)	I_v	A	63 40	63 40	80 63	80 63
	Maximum back-up fuse for short-circuit protection K5 acc. to UL and CSA	I_v	A	60	60	70	70
	Rated insulation voltage	U_i	V	IEC: 440 ; UL/CSA: 480			
	Rated impulse withstand voltage	U_{imp}	kV	4			
	Rated operational voltage	U_e	V	IEC: 400 ; UL/CSA: 480			
	Rated frequency	f	Hz	50/60			
	Thermal current	I_{th}	A	40		63	
	Rated operational current for AC-1, AC-7a and AC-21	I_e	A	40		63	
	Operational power for AC-1, AC-7a and AC-21: single-phase 230 V three-phase 230 V three-phase 400 V	P_e	kW	8.7 16 26		13.3 24 40	
	Maximum operating frequency for AC-1, AC-7a and AC-21		op. c./h	600			
	Electrical endurance for AC-1, AC-7a and AC-21		op. c.	100,000			
	Rated operational current for AC-2	I_e	A	25		32	
	Operational power for AC-2: single-phase 230 V three-phase 230 V three-phase 400 V	P_e	kW	3.7 6.5 11.2		4.8 8.3 14.4	
	Maximum operating frequency for AC-2		op. c./h	120			
	Electrical endurance for AC-2		op. c.	50,000			
	Rated operational current for AC-22	I_e	A	40		63	
	Operational power for AC-22: single-phase 230 V three-phase 230 V three-phase 400 V	P_e	kW	7.4 12.7 22.2		11.6 20.1 34.9	
	Maximum operating frequency for AC-22		op. c./h	300			
	Electrical endurance for AC-22		op. c.	50,000			
	Rated operational current for AC-3, AC-3e, AC-7b and AC-23	I_e	A	22		30	
	Operational power for AC-3, AC-3e, AC-7b and AC-23: single-phase 230 V three-phase 230 V three-phase 400 V	P_e	kW	3.7 5.5 11		5 8.5 15	
	Maximum operating frequency for AC-3, AC-3e, AC-7b and AC-23		op. c./h	600			
	Electrical endurance for AC-3, AC-3e, AC-7b and AC-23		op. c.	150,000			

[1] Surrounding air temperature for 4NO contacts version -13 °F...104 °F / -25 °C ... 40 °C, for others contacts version 5 °F ... 104 °F / -15 °C ... +40 °C
[2] Surrounding air temperature for 4NO contacts version -13 °F...95 °F / -25 °C ... 35 °C, for others contacts version 5 °F ... 95 °F / -15 °C ... +35 °C

TECHNICAL DATA

	Type	Symbol	Unit	IKA440	IKD440	IKA463	IKD463
MAIN CIRCUIT	Rated motor power acc. to standards UL and CSA:						
	single-phase 115 V/120 V	P_e	HP	1	1	2	2
	single-phase 208 V			2	2	3	3
	single-phase 230 V/240 V			3	3	5	5
	three-phase 115 V/120 V			3	3	5	5
	three-phase 208 V			7 1/2	7 1/2	10	10
	three-phase 230 V/240 V			7 1/2	7 1/2	10	10
	three-phase 460 V/480 V			15	15	20	20
	Maximum operating frequency for motors acc. to UL and CSA		op. c./h	360			
	Electrical endurance for motors according to UL and CSA		op. c.	150,000			
	General use according to standards UL and CSA:						
	single-phase 240 V	I_e	A				
	three-phase 480 V			40	40	63	63
	Maximum operating frequency for general use acc. to UL and CSA		op. c./h	360			
	Electrical endurance for general use acc. to UL and CSA		op. c.	100,000			
	Switching of discharge lamps acc. to standards UL and CSA:						
	single-phase 240 V - standard ballast	I_e	A				
	three-phase 480 V - standard ballast			30	30	40	40
	Maximum operating frequency for discharge lamps acc. to UL and CSA		op. c./h	360			
	Electrical endurance for discharge lamps acc. to UL and CSA		op. c.	100,000			
	Rated operational current for AC-5a (at 230 V)	I_e	A	20		32	
	Maximum operating frequency for AC-5a		op. c./h	600			
	Electrical endurance for AC-5a		op. c.	100,000			
	Rated operational current for AC-5b (at 230 V)	I_e	A	17.6		22	
	Maximum operating frequency for AC-5b		op. c./h	600			
	Electrical endurance for AC-5b		op. c.	100,000			
	Rated operational current for AC-6a (at 230 V)	I_e	A	10.8		17.2	
	Maximum operating frequency for AC-6a		op. c./h	600			
	Electrical endurance for AC-6a		op. c.	100,000			
	Switching of capacitors AC-6b and AC-7c (at 230 V)	C	µF	220		330	
	Maximum operating frequency for AC-6b and AC-7c		op. c./h	600			
	Electrical endurance for AC-6b and AC-7c		op. c.	100,000			
	Rated operational current for DC-1 (L/R ≤ 1 ms):						
	1 pole ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC	I_e	A	40/25/18/4/1.2		63/26/20/4/1.2	
	2 poles in series ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC			40/38/32/10/8		63/42/34/10/8	
	3 poles in series ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC			40/40/40/30/20		63/63/60/35/30	
	4 poles in series ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC			40/40/40/40/40		63/63/63/63/63	
	Maximum operating frequency for DC-1		op. c./h	300			
	Electrical endurance for DC-1		op. c.	100,000			
	Rated operational current for DC-3 (L/R ≤ 2 ms):						
	1 pole ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC	I_e	A	22/10/5/1.5/0.3		25/11/5/1.5/0.3	
	2 poles in series ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC			40/20/16/5/1		45/22/18/5/1	
	3 poles in series ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC			40/40/32/15/4		63/45/35/18/5	
	4 poles in series ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC			40/40/40/40/10		63/63/63/63/10	
	Maximum operating frequency for DC-3		op. c./h	300			
	Electrical endurance for DC-3		op. c.	100,000			
	Rated operational current for DC-5 (L/R ≤ 7.5 ms):						
	1 pole ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC	I_e	A	20/8/4/1/0.2		25/10/5/1/0.2	
	2 poles in series ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC			40/18/14/5/0.8		45/20/15/5/0.8	
	3 poles in series ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC			40/40/28/12/3		63/44/30/15/4	
	4 poles in series ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC			40/40/40/35/8		63/63/60/45/10	
	Maximum operating frequency for DC-5		op. c./h	300			
	Electrical endurance for DC-5		op. c.	100,000			
	Terminal capacity:						
	rigid (solid and stranded)	S		14 ... 10 AWG / 1.5 ... 25 mm^2			
	flexible			14 ... 4 AWG / 1.5 ... 16 mm^2			
	Length of removed wire insulation			0.394 in / 10 mm			
	Screw			M5			
	Screw head			PZ2			
	Tightening torque			30.98 lb-in / 3.5 Nm			
AUXILIARY CIRCUIT	Contact reliability			≥17 V; ≥50 mA			
	Minimum distance of open contacts			0.118 in /3.6 mm			
	Power dissipation per pole		W	4		8	
	Overload current withstand capability:						
	10 s			176		240	
	Maximum back-up fuse for short-circuit protection gL and gG:						
	coordination type 1 (at prospective current 3 kA)	I_v	A	63	63	80	80
	coordination type 2 (at prospective current 3 kA)			40	40	63	63

TECHNICAL DATA

	Type	Symbol	Unit	IKA440	IKD440	IKA463	IKD463
AUXILIARY CIRCUIT	Maximum back-up fuse for short-circuit protection K5 acc. to UL and CSA	I_v	A	60	60	70	70
	Rated insulation voltage	U_i	V	IEC: 440 ; UL/CSA: 480			
	Rated impulse withstand voltage	U_{imp}	kV	4			
	Rated operational voltage	U_e	V	IEC: 230/100 ; UL/CSA: 240 (AC), 250 (DC)			
	Rated frequency	f	Hz	50/60			
	Thermal current	I_{th}	A	40		63	
	Rated operational current for AC-15:	I_e	A				
	single-phase 230 V			6			
	single-phase 400 V			4			
	Maximum operating frequency for AC-15		op. c./h	1,200			
	Electrical endurance for AC-15		op. c.	150,000			
	Switching of auxiliary loads according to standard UL and CSA			B300, P300			
	Maximum operating frequency for auxiliary loads according to UL and CSA		op. c./h	360			
	Electrical endurance for auxiliary loads according to UL and CSA		op. c.	100,000			
	Rated operational current for DC-13:	I_e	A				
	1 pole ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC			6/4/1/0.3/0.05			
	2 poles in series ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC			6/6/4/1/0.1			
	3 poles in series ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC			6/6/6/3/1			
	4 poles in series ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC			6/6/6/4/2			
	Maximum operating frequency for DC-13		op. c./h	300			
	Electrical endurance for DC-13		op. c.	200,000			
	Terminal capacity:	S					
	rigid (solid and stranded)			4 ...10 AWG / 1.5... 25 mm^2			
	flexible			4 ... 10 AWG / 1.5...16 mm^2			
	Length of removed wire insulation			0.394 in / 10 mm			
	Screw			M5			
	Screw head			PZ2			
	Tightening torque			30.98 lb-in / 3.5 Nm			
COIL	Range of control voltage for switch-on	U_c	%	85 ... 110			
	Range of control voltage for drop out	U_c	%	AC: 75 ... 20 / DC: 75 ... 10 (where is applicable)			
	Kind of voltage			AC	AC/DC	AC	AC/DC
	Standard control voltages	U_c	V	12, 24, 48, 110, 120, 127, 208, 230, 240			
	Frequency of AC control voltage	f	Hz	60			
	Control mode			remote control with U_c			
	Impulse duration of control voltage:						
	minimum			permanent			
	maximum			permanent			
	Minimum duration between two impulses of control voltage		ms	AC: 150 / DC: 500 (where is applicable)			
	Surge immunity withstand voltage 1,2/50 µs acc. to standard IEC/EN 61000-4-5		kV	2			
	Coil consumption:		VA/W				
	switch-on			15.4/6	5/5 [1)]	15.4/6	5/5 [1)]
	operation			7.7/3	5/5 [1)]	7.7/3	5/5 [1)]
	Delays:		ms				
	make			10 ... 20	15 ... 20	10 ... 20	15 ... 20
	brake			10 ... 15	35 ... 45	10 ... 15	35 ... 45
	Terminal capacity:						
	rigid (solid and stranded)			16 ... 14 AWG / 1 ... 2.5 mm^2			
	flexible			16 ... 14 AWG / 1 ... 2.5 mm^2			
	Length of removed wire insulation			0.315 in / 8 mm			
	Screw			M3			
	Screw head			PZ1			
	Tightening torque			5.31 lb-in / 0.6 Nm			
SAFETY	MTTF - Mean time to failure		h	General Use: 2,083			
	MTTF = $1/\lambda = B10/(0.1\ n_{op})$			Motor: 3,125			
	$MTTF_d$ - Mean time to failure dangerous		h	General Use: 2,777			
	$MTTFd = 1/\lambda_d = B10_d/(0.1\ n_{op})$			Motor: 4,166			
	B10 - Number of operating cycles until 10 % of devices fail		op. c.	General Use: 75,000			
				Motor: 112,500			
	$B10_d$ - Number of operating cycles until 10 % of device dangerous		op. c.	General Use: 100,000			
	$B10_d$ = B10/ratio of dangerous failures			Motor:150,000			
	λ - Failure rate		1/h	General Use: 0.00048			
	$\lambda = (0.1\ n_{op})/B10$			Motor: 0.00032			
	λ_d - Failure rate dangerous		1/h	General Use: 0.00036			
	$\lambda_d = (0.1\ n_{op})/B10_d$			Motor: 0.00024			
	Ratio of dangerous failures		%	75			
	n_{op} - Operating cycles (operating cycles/h)		op. c./h	360			

[1)] Coil consumption for -22 and -04 is 6.1 VA/6.1 W

IKN – Auxiliary switch

TECHNICAL DATA

	Type	Symbol	Unit	IKN
GENERAL	Standards			UL508, C22.2 No. 14, IEC/EN 60947-5-1
	Approvals			CE, UL, CSA
	Module width			0.5
	Number of poles			2
	Degree of protection			IP20 [1]
	Pollution degree			3
	Climatic conditions			
	Ambient temperature: open			
	closed			-13 °F ... 104 °F / -25 °C ... +40 °C
	Storage temperature			-22 °F ... 176 °F / -30 °C ... +80 °C
	Maximum altitude U_i and U_e is reduced for 1.2 % and I_e for 0.4 % for every additional 100 m		m	2,000
	Mechanical endurance		op. c.	3,000,000
	Weight			0.08 lb / 30 g
AUXILIARY CIRCUIT	Contact reliability			≥12 V; ≥5 mA
	Minimum distance of open contacts			0.142 in /3.6 mm
	Power dissipation per pole		W	0.3 (at I_{th} = 6 A)
	Maximum back-up fuse for short-circuit protection gL and gG: coordination type 2 (at prospective current 3 kA)	I_v	A	6
	Maximum back-up fuse for short-circuit protection KS acc. to UL and CSA	I_v	A	6
	Rated insulation voltage	U_i	V	500
	Rated impulse withstand voltage	U_{imp}	kV	4
	Rated operational voltage	U_e	V	IEC: 230 /400 UL: C300 (120 VAC, 240 VAC) UL: Q300 (125 VDC, 250 VDC)
	Rated frequency	f	Hz	50/60
	Thermal current	I_{th}	A	IEC: 6 ; UL: 2.5
	Rated operational current for AC-15: single-phase 230 V	I_e	A	6
	single-phase 400 V			4
	Electrical endurance for AC-15		op. c.	50,000
	Switching of auxiliary loads acc. to standard UL and CSA			C300, Q300
	Electrical endurance for auxiliary loads acc. UL and CSA		op. c.	50,000
	Rated operational current for DC-13: 1 pole ... 24 VDC/ 48 VDC / 60 VDC / 110 VDC / 220 VDC	I_e	A	6/4/1/0.3/0.05
	2 poles in series ... 24 VDC/ 48 VDC / 60 VDC / 110 VDC / 220 VDC			6/6/4/1/0.1
	Electrical endurance for DC-13		op. c.	50,000
	Switching of auxiliary loads acc. to standard UL and CSA			C300, Q300
	Electrical endurance for auxiliary loads acc. UL and CSA		op. c.	50,000
	Terminal capacity: rigid (solid and stranded)	S		16 ... 14 AWG / 1 ... 2.5 mm^2
	flexible			16 ... 14 AWG / 1 ... 2.5 mm^2
	Length of removed wire insulation			0.276 in / 7 mm
	Screw			M3
	Screw head			PZ1
	Tightening torque			7.08 lb-in / 0.8 Nm
SAFETY	MTTF - Mean time to failure $MTTF = 1/\lambda = B10/(0.1\ n_{op})$		h	694
	$MTTF_d$ - Mean time to failure dangerous $MTTFd = 1/\lambda_d = B10_d/(0.1\ n_{op})$		h	1,388
	B10 - Number of operating cycles until 10 % of devices fail		op. c.	25,000
	$B10_d$ - Number of operating cycles until 10 % of device dangerous $B10_d$ = B10/ratio of dangerous failures		op. c.	50,000
	λ - Failure rate $\lambda = (0.1\ n_{op})/B10$		1/h	0.00144
	λ_d - Failure rate dangerous $\lambda_d = (0.1\ n_{op})/B10_d$		1/h	0.00072
	Ratio of dangerous failures		%	50
	n_{op} - Operating cycles (operating cycles/h)		op. c./h	360

[1] IP40 when installed in installation box - distribution boards

Diagram 1

AC-1/230V/1-phase for IKA220, IKD220, IKA440, IKD440, IKA463, IKD463
AC-1/400V/3-phase for IKA425, IKD425

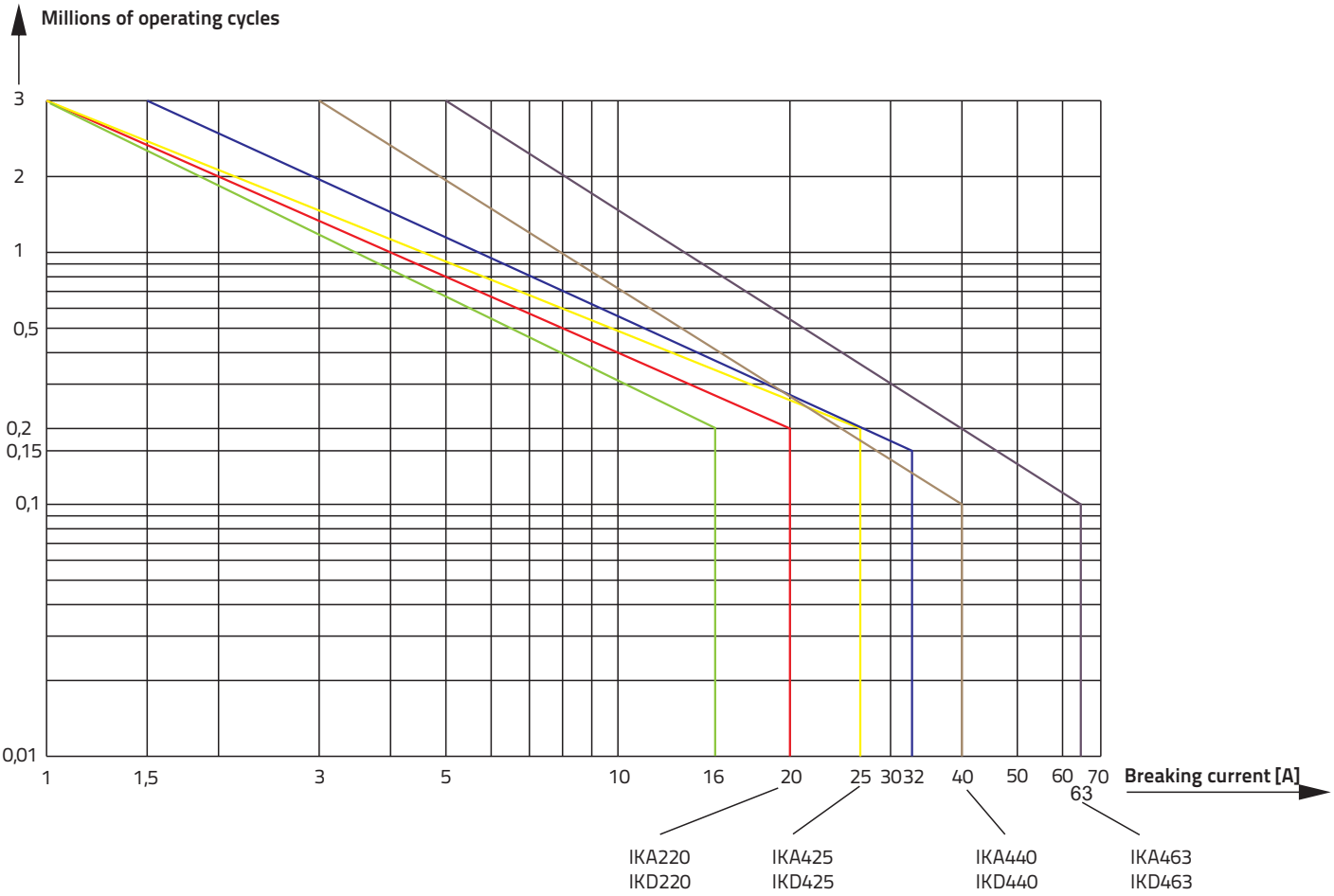


Diagram 2

AC-3, AC-3e/400V/3-phase for IKA425, IKD425, IKA440, IKD440, IKA463, IKD463

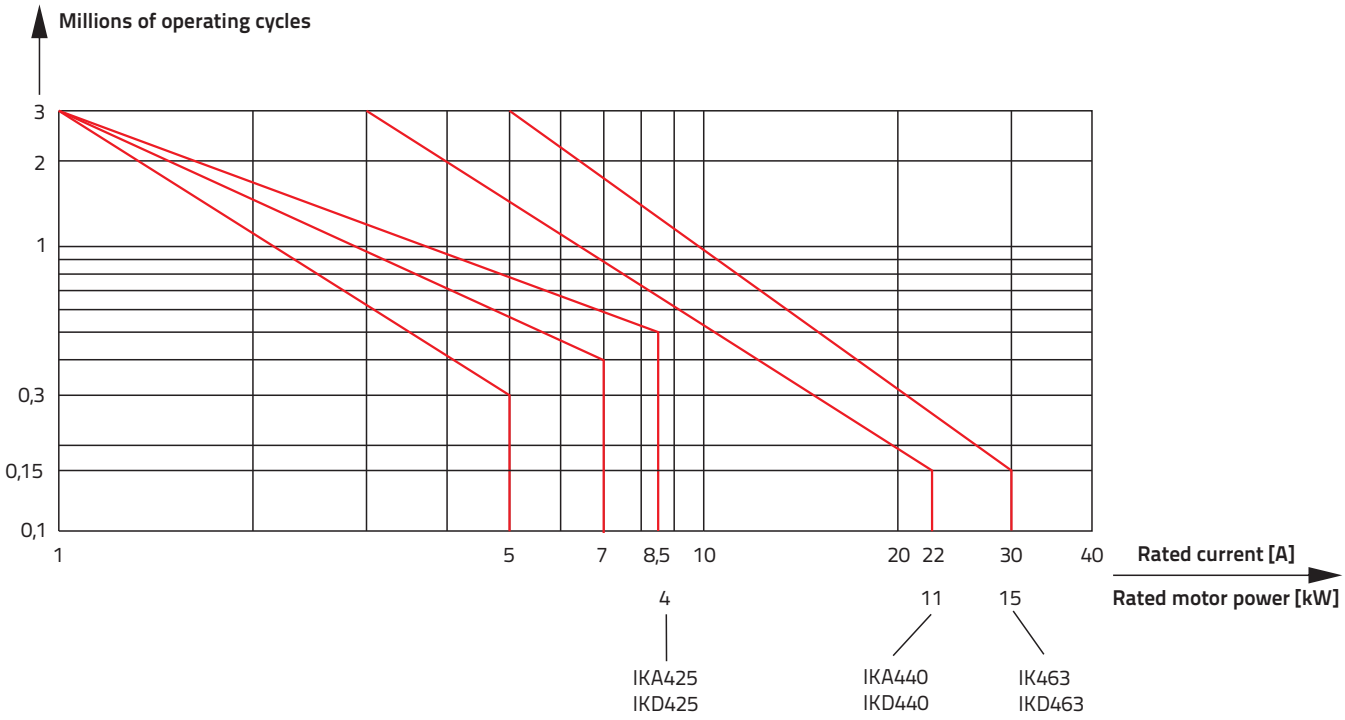
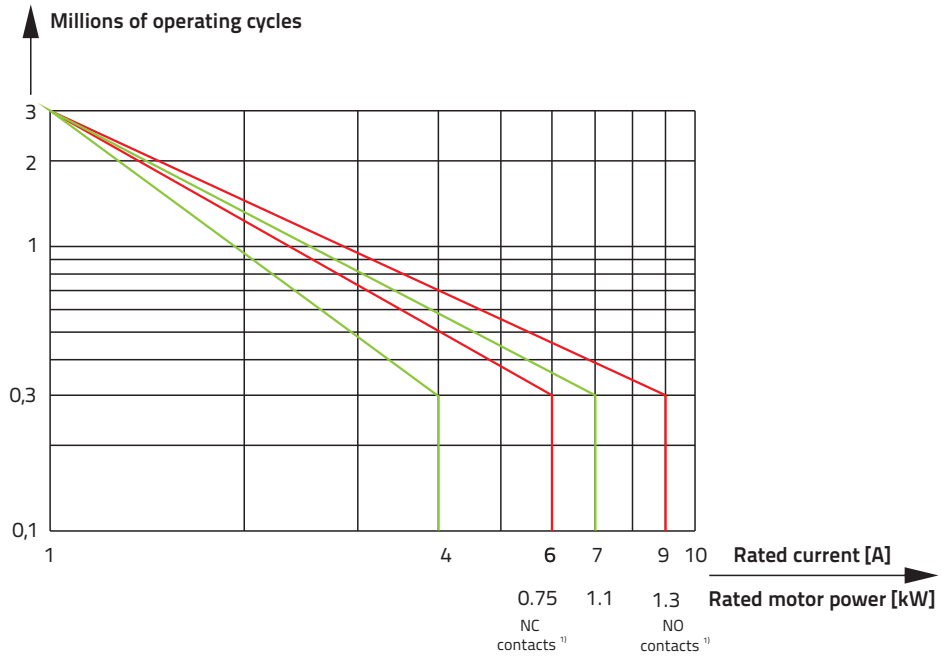


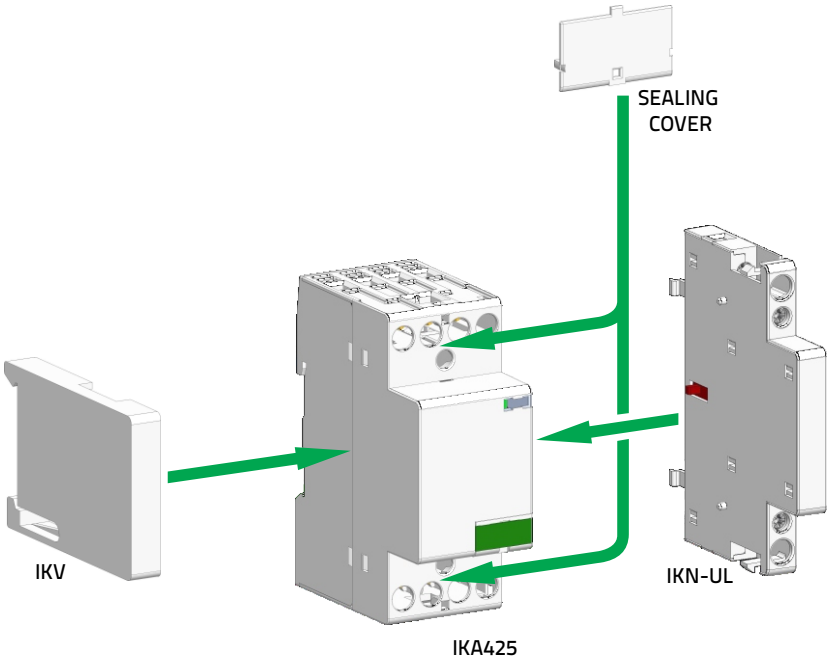
Diagram 3

AC-3, AC-3e/230V/1-phase for IKA220, IKD220



1) IKA220, IKD220

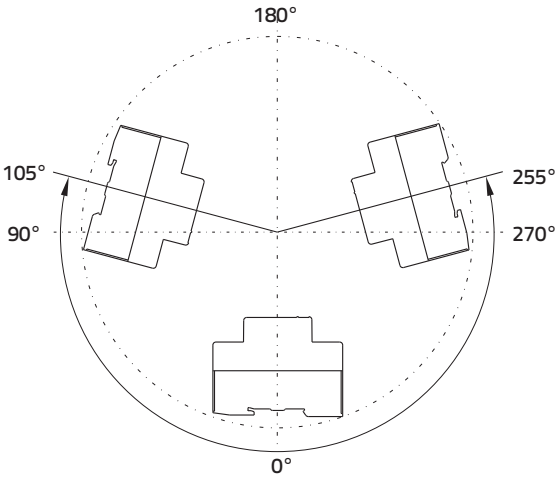
Mounting positions of accessories



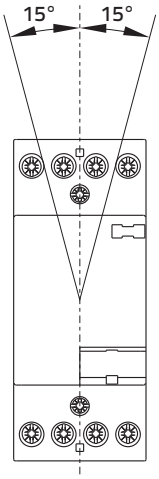
Installation Contactors
Operating Position, Dimensions

Operation position

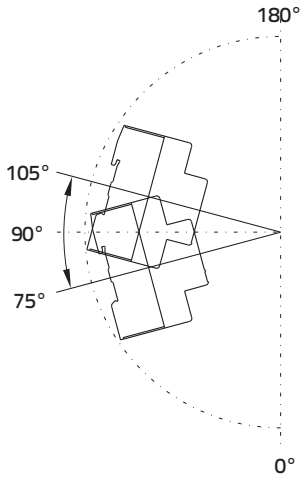
IKA220/425/ 440/ 463



All installation contactors



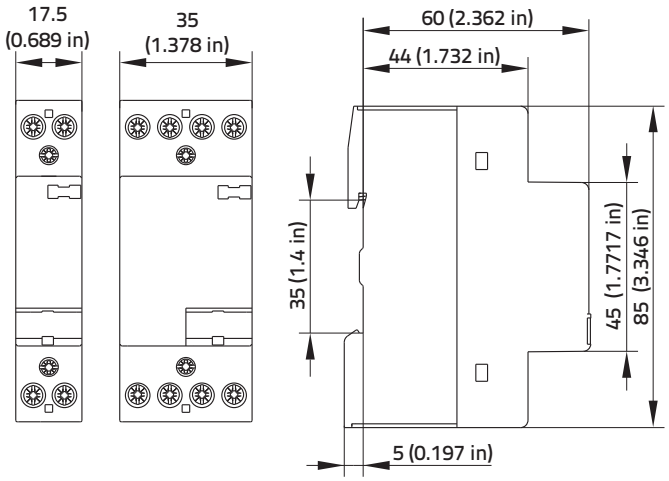
IKD220/425/440/463



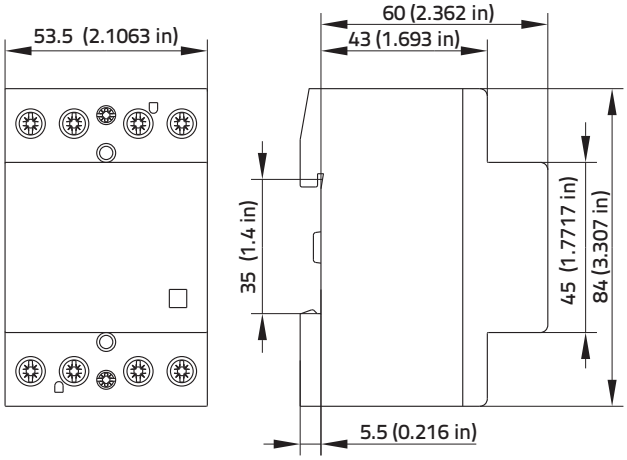
Dimension (in milimeters)

IKA220
IKD220

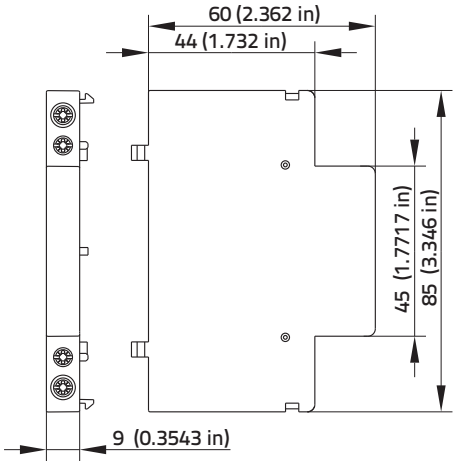
IKA425
IKD425



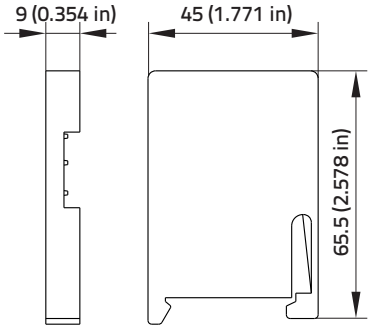
IKA440, IKD440
IKA463, IKD463



IKN



IKV



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