

Switching Devices – Capacitor Contactors

Power Quality Solutions



Switching Devices – Capacitor Contactors

Specially designed for damping of inrush current in LV PFC systems

SABA KHAZEN

General

When a capacitor is switched to an AC voltage, the result is a resonant circuit damped to a greater or lesser degree. The switching of capacitors can cause high inrush currents, particularly when they are switched in parallel to others already activated in the power line, and if high short-circuit powers are present on the line.

Capacitor contactors with damping resistors make use of pre-switching auxiliary contacts. They close before the main contacts and pre-load the capacitor thus avoiding current peak values.

This influences positively the life expectancy of the capacitor significantly in addition to the positive impact on the power quality (avoiding transients and voltage sags that otherwise may be caused by switching in capacitors).



Applications

- Damping of inrush current in low-voltage PFC systems
- For PFC systems with and without reactors

Features

- Excellent damping of inrush current
- Improved power quality (e.g. avoidance of voltage sags)
- Longer useful service life of main contacts of capacitor contactor
- Soft switching of capacitor and thus longer useful service life
- Enhanced mean life expectancy of PFC system
- Reduced ohmic losses
- Leading contacts with wiper function
- Tamper-proof and protected resistors
- Easy access for cable connection
- Voltage range: 400 ... 690 V
- Output range: 12.5 ... 100 kvar
- Series J110/J230 for PFC systems without reactors
- Series N110/N230 for PFC systems with reactors only
- AC6b utilization category (B44066S****J***)

Approvals

- cUL file 224924
- CCC (Certificate for China Compulsory Product Certification)

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Technical data

Type		B44066*****J230/J110/N230/N110								
Main contacts			S1810	S2410	S3210	S5010	S6210	S7410	S9010	S9910
Rated insulation voltage V _I	V _{IS}	[V AC]	690 ¹⁾	690 ¹⁾	690 ¹⁾	690 ¹⁾	690 ¹⁾	690 ¹⁾	1,000 ¹⁾	1,000 ¹⁾
Admissible frequency of operation		1/h	120	120	120	120	120	80	80	80
Contact life		million operations	0.25	0.15	0.15	0.15	0.15	0.12	0.12	0.12
Cable cross section										
solid or standard	⊗	[mm ²]	1.5–6	2.5–25	2.5–25	4–50	4–50	4–50	0.5–95/10–120	0.5–95/10–120
flexible	⊗	[mm ²]	1.5–4	2.5–16	2.5–16	10–35	10–35	10–35	0.5–70/10–95	0.5–70/10–95
flexible with multicore cable end	⊗	[mm ²]	1.5–4	2.5–16	2.5–16	6–35	6–35	6–35	0.5–70/10–95	0.5–70/10–95
Cables per clamp			2	1	1	1	1	1	2	2
Operating range of magnet coils										
in multiples of control voltage	V _S		0.85–1.1	0.85–1.1	0.85–1.1	0.85–1.1	0.85–1.1	0.85–1.1	0.85–1.1	0.85–1.1
Auxiliary contacts ¹⁾										
Rated insulation voltage V _I	V _{IS}	[V AC]	690 ¹⁾	690 ¹⁾	690 ¹⁾	690 ¹⁾	690 ¹⁾	690 ¹⁾	690 ¹⁾	690 ¹⁾
Rated current I _{th}										
at ambient temperature										
max. 40 °C		I _{coth} [A]	16	10	10	10	10	10	10	10
max. 60 °C		I _{coth} [A]	12	6	6	6	6	6	6	6
Utilization category AC15										
220 to 240 V		I _{coth} [A]	12	3	3	3	3	3	3	3
380 to 440 V		I _{coth} [A]	4	2	2	2	2	2	2	2
Short circuit protection										
Highest fuse rating		I _{coth} [A]	25	20	20	20	20	20	20	20
slow, gL (gG)										
Auxiliary contacts		NO/NC	1/0	1/0	1/0	1/0	1/0	1/0	1/0	1/0

IEC 947-4-1, IEC 947-5-1, EN 60947-4-1, EN 60947-5-1, VDE 0660. Dimensional drawing: see datasheet

¹⁾ Applies to networks with grounded star point, overvoltage category I to IV, pollution severity 3 (industrial standard), $V_{imp} = 8$ kV. Values for other conditions on request.

Main technical parameters

Capacitor power at ambient temperature, voltage, 50/60 Hz						Rated current		Weight	Ordering code
380 – 400 V	415 – 440 V	660 – 690 V				+50 °C	+60 °C	kg	
+50 °C kvar	+60 °C kvar	+50 °C kvar	+60 °C kvar	+50 °C kvar	+60 °C kvar	A	A		
110 V coil									
0–12.5	0–12.5	0–13	0–13	0–20	0–20	18	18	0.34	B44066S1810J110
10–20	10–20	10.5–22	10.5–22	17–33	17–33	28	28	0.60	B44066S2410J110
10–25	10–25	10.5–27	10.5–27	17–41	17–41	36	36	0.60	B44066S3210J110
20–50	20–50	23–53	23–53	36–82	36–82	72	72	1.10	B44066S6210J110
20–75	20–60	23–75	23–64	36–120	36–100	108	87	1.10	B44066S7410J110
33–80	33–75	36–82	36–77	57–120	57–120	115	108	2.30	B44066S9010J110
33–100	33–90	36–103	36–93	57–148	57–148	144	130	2.30	B44066S9910J110
230 V coil									
0–12.5	0–12.5	0–13	0–13	0–20	0–20	18	18	0.34	B44066S1810J230
10–20	10–20	10.5–22	10.5–22	17–33	17–33	28	28	0.60	B44066S2410J230
10–25	10–25	10.5–27	10.5–27	17–41	17–41	36	36	0.60	B44066S3210J230
20–33.3	20–33.3	23–36	23–36	36–55	36–55	48	48	1.10	B44066S5010J230
20–50	20–50	23–53	23–53	36–82	36–82	72	72	1.10	B44066S6210J230
20–75	20–60	23–75	23–64	36–120	36–100	108	87	1.10	B44066S7410J230
33–80	33–75	36–82	36–77	57–120	57–120	115	108	2.30	B44066S9010J230
33–100	33–90	36–103	36–93	57–148	57–148	144	130	2.30	B44066S9910J230

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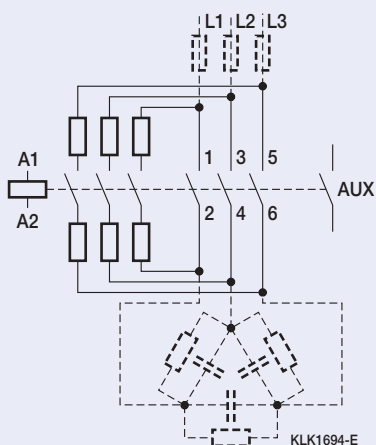
Main technical parameters

Capacitor power at ambient temperature, voltage, 50 / 60 Hz						Rated current		Weight	Ordering code
380 – 400 V		415 – 440 V		660 – 690 V					
+50 °C kvar	+60 °C kvar	+50 °C kvar	+60 °C kvar	+50 °C kvar	+60 °C kvar	+50 °C A	+60 °C A	kg	
110 V coil									
0–12.5	0–12.5	0–13	0–13	0–20	0–20	18	18	0.23	B44066S1810N110*
10–20	10–20	10.5–22	10.5–22	17–33	17–33	28	28	0.50	B44066S2410N110*
10–25	10–25	10.5–27	10.5–27	17–41	17–41	36	36	0.90	B44066S3210N110*
20–50	20–50	23–53	23–53	36–82	36–82	72	72	0.90	B44066S6210N110*
20–75	20–60	23–75	23–64	36–120	36–100	108	87	0.90	B44066S7410N110*
33–80	33–75	36–82	36–77	57–120	57–120	115	108	2.20	B44066S9010N110*
33–100	33–90	36–103	36–93	57–148	57–148	144	130	2.20	B44066S9910N110*
230 V coil									
0–12.5	0–12.5	0–13	0–13	0–20	0–20	18	18	0.23	B44066S1810N230*
10–20	10–20	10.5–22	10.5–22	17–33	17–33	28	28	0.50	B44066S2410N230*
10–25	10–25	10.5–27	10.5–27	17–41	17–41	36	36	0.50	B44066S3210N230*
20–33.3	20–33.3	23–36	23–36	36–55	36–55	48	48	0.90	B44066S5010N230*
20–50	20–50	23–53	23–53	36–82	36–82	72	72	0.90	B44066S6210N230*
20–75	20–60	23–75	23–64	36–120	36–100	108	87	0.90	B44066S7410N230*
33–80	33–75	36–82	36–77	57–120	57–120	115	108	2.20	B44066S9010N230*
33–100	33–90	36–103	36–93	57–148	57–148	144	130	2.20	B44066S9910N230*

* without CCC

Connection diagrams

All types B44066S****J*** (with preload resistors),
B44066S1810J230 and B44066S1810J110 with wires on
the bottom, B44066S9010J230 and B44066S9910J230
with resistors inside housing



All types B44066S****N*** (without preload resistors)

