KATKO | LoadSafe

SWITCHES ACCORDING TO IEC 60 947-3

SWITCH

A mechanical switching device capable of making, carrying and breaking currents under normal circuit conditions which may include specified operating overload conditions and also carrying for a specified time currents under specified abnormal circuit conditions such as those of short circuit.
Note: A switch may be capable of making, but not breaking, short-circuit currents.

DISCONNECTOR

A mechanical switching device which, in the open position, complies with the requirements specified for the isolating function.
Disconnector: (working definition) device without on-load making and breaking capacity.

SWITCH DISCONNECTOR / LOAD BREAK SWITCH

A switch capable of making, carrying and breaking currents under normal circuit conditions and which, in the open position, complies with the isolating requirements specified for a disconnector.

UTILIZATION CATEGORY

Utilization category	Use / Application
AC-20A	Connecting and disconnecting under no-load.
AC-21A	Switching of resistive loads including moderate overloads
AC-22A	Switching of mixed loads, inductive and resistive loads including moderate overloads
AC-23A	Switching of motor loads or other highly inductive loads
AC-23Ae	Switching of motor loads with higher locked rotor currents *

* Requirements given by asynchronous motors of design NE and HE, according to IEC 60034-12, having extended/higher locked rotor apparent power and current than design N and H respectively, to achieve a higher efficiency class according to the requirements of IEC 60034-30-1.

PROTECTION AGAINST OVERVOLTAGE

U_{imp} (Impulse withstand voltage) defines the device's use in abnormal network conditions with overvoltage due to lightning on overhead wires etc.
This characteristic also defines the device's dielectric quality.
Overvoltage protection is ensured by choosing the equipment according to U_{imp}. The 4 impulse withstand categories of use at 400V/ 690V (IEC 60 364-4-44) are:

Category	U_{imp}	Applications
1	2,5 kV	specially protected equipment
2	4 kV	Portable tools, motors, etc.
3	6 kV	Equipment placed in distribution networks
4	8 kV	Equipment placed at the head of an installation.

The U_{imp} rating for most of the Katko switches is 8kV.

INSTALLATION ENVIRONMENT TEMPERATURE

To assure the best of operation of KATKO switches the ambient air temperature of installation environment should be in the range of -40°C to + 60°C.
When the ambient temperatures exceed +40°C, the maximum load of the switch may have to be derated. Please contact KATKO for assistance.

CONFORMITY TO STANDARDS

Katko switches are designed to comply with both national and international standards.
-Switches tested acc. to IEC 60 947
-AC-23A / 690V ratings (KU 250, 400 & 800A AC-23A 1000V)
-50 kA R.M.S values
-CB certificates
-UL, $_{C}$UL listed (UL 60947-4-1A)

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LOAD BREAK SWITCHES 16-800 A
ROTARY AND TOGGLE SWITCHES

General information:

The professional range of KATKO Load Break Switches consists of rotary and toggle switches. Types KU and VKA are rotary switches while KUE and EVA are toggle switches. The KATKO range is available from 16 A up to 800 A. Also 1000-3150 A is available on request.

- KU 16 - 800 A
- KUE 16 - 125 A
- VKA 200 - 250 A
- EVA 125 - 250 A

Rotary switches are available as 3-pole, 4-pole, 6-pole and 8-pole. Katko switches are rated up to 690V (KU 800, 400 and 250 A switches are rated up to 1000V). Katko Load Break Switches comply with and are tested according to:

Standards:
IEC 60 947-3
IEC 60 269-2
UL 60947-4-1A (16-150 A)

Approvals and certificates:
CCA
CB
Lloyd's Register (KU 16 - 160 A)
VDE (KU 200 - 800 A)

Manufacturing and quality processes:
ISO 9001
ISO 14001

General installation and life-cycle manual

Katko's general installation manual is available on Katko's website at www.katko.com/terms-conditions.

This manual contains important information about installation and maintenance of Katko's products and must be read by any user of Katko products.

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TECHNICAL DATA
LOAD BREAK SWITCHES

LOAD BREAK SWITCHES		KU ROTARY LBS															
		16A	25A	40A	63A	80A	100A	125A (N)	125A	160A	160A (P)	200A	250A	315A	400A	630A	800A
Rated insulation voltage, U_i (V)		800	800	800	800	800	800	800	800	800	1000	1000	1000	1000	1000	1000	1000
Rated thermal current, I_{th} (A)		25	40	63	80	100	125	125	160	200	200	250	315	315	400	630	800
Nominal values with cable size (mm^2)		4	10	16	25	35	70	50	70	95	95	95	120	185	240	2x185	2x240
Rated operational current, I_e (A)																	
AC-21A	400/415V	25	40	63	80	100	125	125	160	160	160	200	250	315	400	630	800
	500V	25	40	63	80	100	125	125	160	160	160	200	250	315	400	630	800
	690V	25	40	63	80	100	125	125	160	160	160	200	250	315	400	630	800
AC-22A	400/415V	16	25	40	63	80	100	125	125	160	160	200	250	315	400	630	800
	500V	16	25	40	63	80	100	80	125	160	160	200	250	315	400	630	800
	690V	16	25	40	63	80	100	80	125	160	160	200	250	315	400	630	800
AC-23A	400/415V	16	25	40	40	63	100	63	125	160	160	200	250	315	400	630	800
	500V	16	25	32	40	40	63	40	80	100	160	200	250	315	400	630	800
	690V	16	25	32	40	40	63	40	80	100	160	200	250	315	400	630	800
	1000V	-	-	-	-	-	-	-	-	-	-	-	135	-	200	-	400
Rated operational power for 3-phase (1500 r.p.m.) squirrel cage induction motors (kW)																	
AC-23	400/415V	7.5	11	15	22	30	55	30	55	90	90	110	132	160	200	355	400
	500V	7.5	15	22	30	30	37	30	55	55	110	132	160	200	250	400	560
	690V	11	22	30	37	37	55	37	75	90	132	160	250	315	355	630	800
Rated fused short circuit current																	
Back-up fuse (A)		63	63	63	80	80	160	125	160	160	250	250	250	400	400	630	800
R.M.S. value, I_k (kA)		50	50	50	50	50	65	30	65	65	100••••	100••••	100••••	100	100	100	100
Peak value (kA)		7.2	7.2	7.2	8.7	8.7	15	10	15	15	26	26	26	42	42	76	76
Impulse withstand voltage, Uimp (kV)		8	8	8	8	8	8	8	8	8	12	12	12	12	12	12	12
Rated short circuit making capacity, I_{cm} (kA)																	
	690V	2.5	2.5	2.5	3.1••	3.1••	8	3.1••	8	8	14	14	14	27,5	27,5	60	60
Rated short time withstand current (1 s), I_{cw} (kA)																	
	690V	1.7	1.7	1.7	2.0	2.0	5	2.0	5	5	8•••	8•••	8•••	13.5•••	13.5•••	28•••	28•••
Rated breaking capacity, I_{cn} (A)																	
AC-23	400/415V	128	200	256	320	504	800	504	1000	1280	1280	1600	2000	2520	3200	5040	6400
	500V	128	200	256	320	320	504	320	640	800	1280	1600	2000	2520	3200	5040	6400
	690V	128	200	256	320	320	504	320	640	800	1280	1600	2000	2520	3200	5040	6400
Electrical endurance (number of operations)		3000	3000	3000	3000	3000	2000	3000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Mechanical endurance (number of operations)		50000	50000	50000	50000	50000	16000	50000	16000	16000	16000	16000	16000	10000	10000	10000	10000
Terminals / Bolt size Cu (mm^2)		1.5-16	1.5-16	1.5-16	2.5-35	2.5-35	6-70	2.5-35	6-70	6-70	M8	M8	M8	M10	M10	M12	M12
Max terminal torque (Nm)		1.8	1.8	1.8	2.5	2.5	6	2.5	6	6	15-22	15-22	15-22	30-44	30-44	50-75	50-75

• 415 V

•• 2.5kA when CCC marked

••• 1000V

•••• 50kA with 315A fuse

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TECHNICAL DATA
LOAD BREAK SWITCHES

KUE TOGGLE LBS						EVA TOGGLE LBS				VKA ROTARY LBS		LOAD BREAK SWITCHES	
16A	25A	40A	63A	80A	125A	125A	160A	200A	250A	200A	250A		
800	800	800	800	800	690	690	690	690	690	1000	1000	Rated insulation voltage, U_i (V)	
25	40	63	80	100	125	160	200	200	250	200	250	Rated thermal current, I_{th} (A)	
4	10	16	25	35	50	70	95	95	120	95	120	Nominal values with cable size (mm^2)	
												Rated operational current, I_e (A)	
25	40	63	80	100	125	160	200	200	250	200	250	400/415V	AC-21A
25	40	63	80	100	125	-	-	-	-	200	250	500V	
25	40	63	80	100	125	-	-	-	-	200	250	690V	
16	25	40	63	80	125	125	160	200	250	200	250	400/415V	AC-22A
16	25	40	63	80	80	-	-	-	-	-	-	500V	
16	25	40	63	80	80	-	-	-	-	-	-	690V	
16	25	25	40	63	63	80	125	160	200	200	250	400/415V	AC-23A
16	20	20	32	32	32	-	-	-	-	-	-	500V	
16	20	20	32	32	32	-	-	-	-	-	-	690V	
-	-	-	-	-	-	-	-	-	-	-	-	1000V	
												Rated operational power for 3-phase (1500 r.p.m.) squirrel cage induction motors (kW)	
7.5	11	11	22	30	30	45	75	75	90	110	132	400/415V	AC-23
7.5	11	11	22	22	22	55	75	-	-	-	-	500V	
11	15	15	30	30	30	55	90	-	-	-	-	690V	
												Rated fused short circuit current	
63	63	63	80	80	125	160	160	250	250	250	250	Back-up fuse (A)	
50	50	50	50	50	30	50	50	50	50	50	50	R.M.S. value, I_k (kA)	
7.2	7.2	7.2	8.7	8.7	10	15	15	21	21	22	22	Peak value (kA)	
8	8	8	8	8	8	8/6	8/6	6	6	8	8	Impulse withstand voltage, Uimp (kV)	
												Rated short circuit making capacity, I_{cm} (kA)	
2.5	2.5	2.5	3.1••	3.1••	3.3	5.1	5.1	11.4•	11.4•	11.4•	11.4•	690V	
												Rated short time withstand current (1 s), I_{cw} (kA)	
1.7	1.7	1.7	2.0	2.0	2.3	3.5	3.5	6.5•	6.5•	6.5•	6.5•	690V	
												Rated breaking capacity, I_{cn} (A)	
128	200	200	320	504	504	800	840	1600	1600	1600	2000	400/415V	AC-23
128	160	160	256	256	320	640	1000	-	-	-	-	500V	
128	160	160	256	256	320	640	1000	-	-	-	-	690V	
3000	3000	3000	3000	3000	3000	2000	2000	2000	2000	2000	2000	Electrical endurance (number of operations)	
50000	50000	50000	50000	50000	50000	16000	16000	16000	16000	16000	16000	Mechanical endurance (number of operations)	
1.5-16	1.5-16	1.5-16	2.5-35	2.5-35	2.5-50	6-70	6-70	M8	M8	M8	M8	Terminals / Bolt size Cu (mm^2)	
1.8	1.8	1.8	2.5	2.5	2.5	6	6	15-22	15-22	15-22	15-22	Max terminal torque (Nm)	

• 415 V

•• 2.5kA when CCC marked

••• 1000V

•••• 50kA with 315A fuse