KATKO'S EASY TO USE RANGE OF ENCLOSED SWITCHES

Polycarbonate (IP66) or ABS (IP65) enclosure.
Good resistance against UV and many chemicals. Available in grey/black or yellow/red.

stainless steel screw fixing

Retained handle, you don't need to unscrew to remove the cover

Provision for 3 padlocks

5 cable entries:
M20 & M25 mm as standard on the top and bottom and M20 on the base. Knock-out glands are easy to open.

Retrofit 'snap on' auxilliary contacts.
No need to touch existing cabling.

Neutral & earth terminals
fitted on 3 pole switch.
Only earth on 4 pole switch.

Large cable terminals
1,5 - 16 mm^2 up to 40A
2,5 - 35 mm^2 up to 80A

Door interlock with defeat mechanism

Self-extinguishing material and excellent insulating properties

Padlocking in OFF-position prevents access to the actuator.

Reliable position indication

Fully rated Load Break Switch. Breaking capacity of 8xAC23 rating. Back up fuse rating to match motor manufacturers recommendation

Enclosure mounting screws (4,5 mm in diameter) isolated from the inside housing keeping the integrity of the IP65/IP66 rating.

'Plug in' switch. Enables unplugging the switch for easy cabling

IP / NEMA CLASSIFICATIONS OF PROTECTION

IP CLASSIFICATIONS

Ingress protection class of enclosures is according to IEC 60 529 given in form of IP classification, a two digit coding which is shown below.

FIRST NUMBER
Protection against solid objects

IP

- 0 No protection.
- 1 Protected against solid objects up to 50mm eg accidental touch by hands.
- 2 Protected against solid objects up to 12mm eg fingers.
- 3 Protected against solid objects up to 2,5mm eg (tools + small wires).
- 4 Protected against solid objects up to 1mm eg (tools + small wires).
- 5 Protected against dust - limited ingress permitted (no harmful deposit).
- 6 Totally protected against dust.

SECOND NUMBER
Protection against liquids

IP

- 0 No protection.
- 1 Protected against vertically falling drops of water.
- 2 Protected against direct sprays of water up to 15° from the vertical.
- 3 Protected against sprays up to 60° from the vertical.
- 4 Protected against water sprayed from all directions - limited ingress permitted.
- 5 Protected against low pressure jets of water from all directions - limited ingress permitted.
- 6 Protected against strong jets of water eg for use on shipdecks - limited ingress permitted.
- 7 Protected against the affects of immersion between 15cm and 1m.
- 8 Protected against long periods of immersion under pressure.

NEMA/UL CLASSIFICATIONS

The National Electrical Manufacturers Association (NEMA) is a US Manufacturers organisation. NEMA performance criteria and test methods are used by Underwriters' Laboratories as guidelines for investigation and listing of electrical enclosures.

NEMA

1	Indoor use primarily to provide a degree of protection against contact with the enclosed equipment and against a limited amount of falling dirt.
2	Indoor use to provide a degree of protection against limited amounts of falling water and dirt.
3	Outdoor use to provide a degree of protection against windblown dust, rain and sleet; undamaged by the formation of ice on the enclosure.
3R	Outdoor use to provide a degree of protection against rain and sleet; undamaged by the formation of ice on the enclosure.
3S	Outdoor use to provide a degree of protection against windblown dust, rain and sleet; external mechanisms remain operable while ice laden.
4	Indoor or outdoor use to provide a degree of protection against splashing water, windblown dust and rain, hose directed water; undamaged by the formation of ice on the enclosure.
4X	Indoor or outdoor use to provide a degree of protection against splashing water, windblown dust and rain, hose directed water; undamaged by the formation of ice on the enclosure. Resists corrosion.
6	Indoor or outdoor use to provide a degree of protection against the entry of water during temporary submersion at a limited depth; undamaged by the formation of ice on the enclosure.
6P	Indoor or outdoor use to provide a degree of protection against the entry of water during prolonged submersion at a limited depth.
11	Indoor use to provide by oil immersion a degree of protection of the enclosed equipment against the corrosive effects of corrosive liquids and gases.
12/12K	Indoor use to provide a degree of protection against dust, falling dirt and dripping noncorrosive liquids.
13	Indoor use to provide a degree of protection against dust, and spraying of water oil and noncorrosive coolants.

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.

SWITCH DISCONNECTOR FUSE

A switch-disconnector in which one or more poles have a fuse in series in a composite unit.

UTILIZATION CATEGORY

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

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.

OPERATING TEMPERATURE

The normal operating temperature for Katko switches is in the range -40 to +80°C. For higher ambient temperatures than +40°C the maximum load of the switch might be derated. For the right application, please contact KATKO for further information.

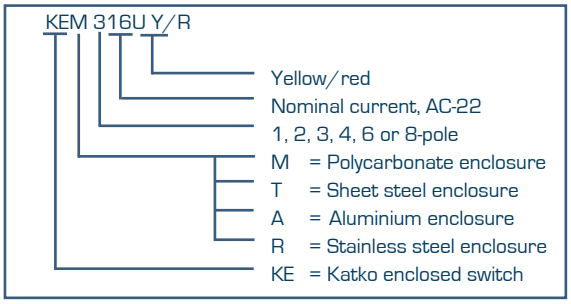
CONFORMITY TO STANDARDS

Katko switches are designed to comply with both national and international standards.
-Switches tested acc. to IEC 60 947
-AC 23 / 690V ratings
-50 kA R.M.S values
-CB certificates
-UL, $_{C}$UL listed (UL 60947-4-1A)
-Fuse holder acc. to IEC 60 269 / UL 4248-1

- Enclosures:

Polycarbonate (KEM)	IP66/IP65
ABS (KEM)	IP65
Sheet steel (KET)	IP65
Aluminium (KEA)	IP66/IP65
Stainless steel (KER)	IP66/IP65

- Tested according to IEC 60 947-3 and UL 60947-4-1A
- CB certificates
- Comply with ISO 9001 and ISO 14001
- AC-23, 690V ratings
- R.M.S values 50 kA
- Multiple break with silver rivets
- Airgap 12,5 mm
- Door interlock
- Lockable handle
- Reliable position indication
- Standard grey/black and yellow/red series
  grey/black= grey cover, black handle
  yellow/red= yellow cover, red handle
- Standard models 3P, 4P, 6P and 8P
- 1P and 2P available



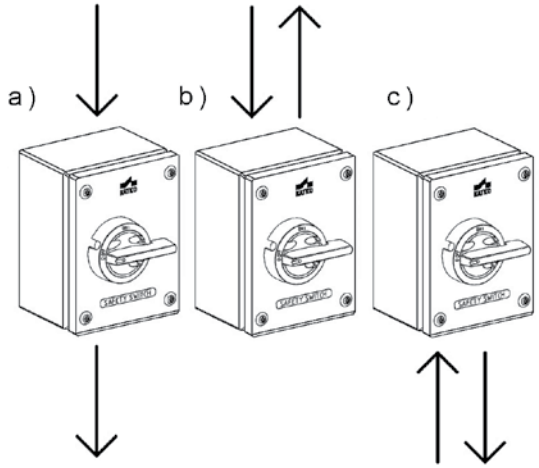
NOTE: When ordering the grey/black series no abbreviation is needed.

KATKO SWITCHES - FOR HEAVY DUTY

- Superior life span even in most demanding environments such as papermills, chemical plants, steelworks and food processing plants.

EASY TO INSTALL

- Retrofit snap-on auxilliary contacts
- Flexible installation, incoming and outgoing cables for example:
  a) KEM 3400: In from the top, out from the bottom of the enclosure
  b) KEM 3400 Y: in- and outgoing cables from the top of the enclosure
  c) KEM 3400 A: in- and outgoing cables from the bottom of the enclosure



NOTE: When ordering switches with ampere rating 200A or higher, please mention the intended cabling directions if other than shown in a).

RECOMMENDED ENCLOSURE FOR DIFFERENT CABLE SIZES

Polycarbonate Enclosures	Cable size mm²	Sheet Steel Enclosures	Cable size mm²	Aluminium Enclosures	Cable size mm²	Stainless Steel Enclosures
U2	3x2.5+2-5	TE005/TR007	3x2.5+2-5	A2	3x2.5+2-5	H23
	3x6+6		3x6+6		3x6+6	
U3	3x10+10		3x10+10	A3	3x10+10	H32
	3x16+16		3x16+16		3x16+16	
	3x25+16	TR01	3x25+16		3x25+16	
U4	3x35+16	TR02	3x35+16		3x35+16	H02
	3x50+25		3x50+25	A4	3x50+25	
MF11, MF12	3x70+35		3x70+35		3x70+35	
MF03, MF04	3x95+50	TR03	3x95+50	A5	3x95+50	H03
	3x120+70		3x120+70		3x120+70	
	3x185+95		3x185+95		3x185+95	
	3x240+120	TR04/TR05	3x240+120		3x240+120	H04-H08

ALWAYS CHOOSE THE RIGHT SWITCH FOR THE RIGHT PURPOSE!

SAFETY SWITCHES / ISOLATORS 10-630 A
TECHNICAL DATA

SAFETY SWITCHES / ISOLATORS		10 A	16 A	25 A	40 A	63 A	80 A	125 A	160 A
Rated insulation voltage, U_i (V)		690	690	690	690	690	690	690	690
Rated thermal current, I_{th} (A)		20	25	40	63	80	100	160	200
Nominal values with cable size (mm²)		2.5	4	10	16	25	35	70	95
Rated operational current, I_e (A)									
AC-21	400/415V	20	25	40	63	80	100	160	200
	500V	20	25	40	63	80	100	160	200
	690V	20	25	40	63	80	100	160	200
AC-22	400/415V	10	16	25	40	63	80	125	160
	500V	10	16	25	40	63	80	125	160
	690V	10	16	25	40	63	80	125	160
AC-23	400/415V	10	16	25	40	40	63	100	135
	500V	10	16	25	32	40	40	80	125
	690V	10	16	25	32	40	40	80	125
Rated operational power for 3-phase (1500 r.p.m.) squirrel cage induction motors (kW)									
AC-23	400/415V	5.5	7.5	11	22	22	30	55	75
	500V	5.5	7.5	15	22	30	30	55	75
	690V	7.5	11	22	30	37	37	55	90
Rated fused short circuit current									
Back-up fuse (A)		63	63	63	63	80	80	160	160
R.M.S. value, I_k (kA)		50	50	50	50	50	50	50	50
Peak value (kA)		7.2	7.2	7.2	7.2	8.7	8.7	15	15
Impulse withstand voltage, U_{imp} (kV)		8	8	8	8	8	8	8	8
Rated short circuit making capacity, I_{cm} (kA)									
	690V	2.5	2.5	2.5	2.5	3.3	3.3	5.1	5.1
Rated short time withstand current (1 s), I_{cw} (kA)									
	690V	1.7	1.7	1.7	1.7	2.3	2.3	3.5	3.5
Rated breaking capacity, I_{cn} (A)									
AC-23	400/415V	80	128	200	320	320	504	800	1080
	500V	80	128	200	256	320	320	640	1000
	690V	80	128	200	256	320	320	640	1000
Electrical endurance (operations)		3000	3000	3000	3000	3000	3000	2000	2000
Mechanical endurance (operations)		50000	50000	50000	50000	50000	50000	16000	16000
Terminals / Bolt size Cu (mm²)		1.5-16	1.5-16	1.5-16	1.5-16	2.5-35	2.5-35	6-70	6-70
Max terminal torque (Nm)		1.8	1.8	1.8	1.8	2.5	2.5	6	6
1) KEx x200 - KEx x250									
2) KEx x200C - KEx x250C									

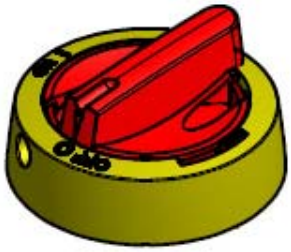
SAFETY SWITCHES / ISOLATORS 10-630 A
TECHNICAL DATA

	200 A[1]	200 A[2]	250 A[1]	250 A[2]	315 A	400 A	630 A		Safety switches / Isolators
	1000	1000	1000	1000	1000	1000	1000		Rated insulation voltage, U_i (V)
	200	200	250	250	315	400	630		Rated thermal current, I_{th} (A)
	95	95	120	120	185	240	2x185		Nominal values with cable size (mm²)
									Rated operational current
	200	200	250	250	315	400	630	400/415V	
	200	200	250	250	315	400	630	500V	AC-21
	200	200	250	250	315	400	630	690V	
	200	200	250	250	315	400	630	400/415V	
	200	-	250	-	315	400	630	500V	AC-22
	200	-	250	-	315	400	630	690V	
	200	200	250	250	315	400	630	400/415V	
	200	-	250	-	315	400	500	500V	AC-23
	200	-	250	-	315	400	500	690V	
									Rated operational power for 3-phase (1500 r.p.m.) squirrel cage induction motors (kW)
	110	110	132	132	160	200	355	400/415V	
	132	-	160	-	200	250	355	500V	AC-23
	160	-	250	-	315	355	500	690V	
									Rated fused short circuit current
	250	250	250	250	400	400	630		Back-up fuse (A)
	50	50	50	50	50	50	50		R.M.S. value, I_k (kA)
	18	22	18	22	26	26	32		Peak value (kA)
	8	8	8	8	8	8	8		Impulse withstand voltage, U_{imp} (kV)
									Rated short circuit making capacity, I_{cm} (kA)
	7	7	7	7	12	12	17	690V	
									Rated short time withstand current (1 s), I_{cw} (kA)
	5	6	5	6	7	7	10	690V	
									Rated breaking capacity, I_{cn} (A)
	1600	1600	2000	2000	2520	3200	5040	400/415V	
	1600	-	2000	-	2520	3200	4000	500V	AC-23
	1600	-	2000	-	2520	3200	4000	690V	
	2000	2000	2000	2000	2000	2000	2000		Electrical endurance (operations)
	16000	16000	16000	16000	10000	10000	10000		Mechanical endurance (operations)
	M10	M8	M10	M8	M10	M10	M12		Terminals / Bolt size Cu (mm²)
	30-44	15-22	30-44	15-22	30-44	30-44	50-75		Max terminal torque (Nm)

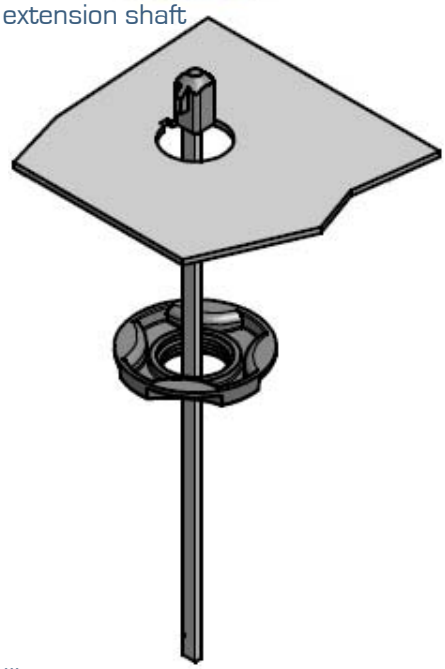
LOAD BREAK SWITCHES 16-630 A
ROTARY AND TOGGLE SWITCHES

ASSEMBLY EXAMPLE

LK10 handle

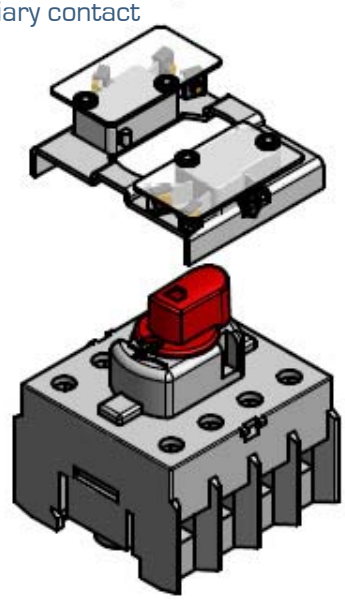


L=200 AD11 extension shaft



¨Snap-on¨ Auxiliary contact

4P KU-switch



General information:

The professional range of KATKO Load Break Switches consists of rotary and toggle switches. Types KU, VKA and VKE are rotary switches while KUE and EVA are toggle switches. The KATKO range is available from 16 A up to 630 A. Also 800-3150 A is available on request.

- KU/VKA 16 - 250 A
- KUE/EVA 16 - 250 A
- VKE 125 - 630 A

Rotary switches are available as 3-pole, 4-pole, 6-pole and 8-pole. Katko switches are rated up to 690V. Katko Load Break Switches comply with and are tested according to IEC 60 947-3, IEC 60 269-2, UL 60947-4-1A (16-150 A), CCA, CB, ISO 9001, ISO 14001 and RINA (KU, VKA, KKV332).

Features:

- Compact size
- DIN-rail mounting
- Double break with silver rivets
- 12.5 mm air gap in open position
- AC-23, 690 V
- 50 kA RMS
- Position indicator
- Snap-on auxiliary contacts
- Adjustable shaft
- Door interlock
- Lockable handles
- Load break (will break at least 8xAC-23 current)