

LKM1 Series Moulded Case Circuit Breaker

1. Application

LKM1 series moulded case circuit breaker is one of products developed and manufactured by adopting international advanced technology. It is supplied with rated insulating voltage 550 and 800V and used for circuit of AC 50/60Hz, rated operating voltage AC 400V (or below), rated operating current up to 1600A for infrequent changing over and starting of the motors. The products conform to IEC60947-2 standard.

2. Main Technical Specification

Table 1

Type	Rated current (A)	Pole	Rated insulating voltage (V)	Rated operating voltage (V)	Arcing-over distance (mm)	Ultimate short circuit breaking capacity (kA)	Services short circuit breaking capacity (kA)	Operation performance		Utilization category	
								Load	Unload		
LKM1-63L	(6),10,16,20,	3,4	500V	400V	0	25	18	1500	8500	A	
LKM1-63M	25,32,40,50,63				0	50	35				
LKM1-125L	(10),16,20,25,				0(≤50)	35	22				
LKM1-125M	32,40,50,63,				0(≤50)	50	35				
LKM1-125H	80,100, 125				0(≤50)	85	50				
LKM1-250L	100,125,160,				≤50	35	22				1000
LKM1-250M	180,200,225,		≤50		50	35					
LKM1-250H	250		≤50		85	50					
LKM1-400L	225,250,315,		≤50		50	35	1000	4000			
LKM1-400M	350,400		≤100		65	42					
LKM1-630L	400		≤100		50	35					
LKM1-630M	500		≤100		65	42					
LKM1-630H	630	≤100	100	65							
LKM1-800M	630,700,800	≤100	75	50	3	1000			4000		
LKM1-800H		≤100	100	65							
LKM1-1250M	1000,1250	≤100	100	65			3	1000		4000	
LKM1-1250H		≤100	125	75							
LKM1-1600M	1600	≤100	150	80							

Note: 6A without thermal protection

The N-pole of four-poles breaker is sited at the right side of the product has four types:

Type A: Without current trip-lease on N pole which making all the time, not closing and opening with the other three poles.

Type B: Without current trip-release on N pole which closing and opening with the other poles.

Type C: With current trip-release which closing and opening with the other three poles.

Type D: With current trip-release which making all the time not closing and opening with the other three poles.

3. Protection Characteristic

The thermodynamic release of a circuit breaker provides the feature of inverse time-delay, while the magnetic release is the instantaneous operation as shown on table 2(distribution circuit breaker) and table 3 (motor protection circuit breaker).



LKM1-125L/3P



LKM1-125L



LKM1-250L



LKM1-400L



LKM1 630L

Table 2

Rated current of release (A)	Thermodynamic release(ambient temperature land +40C Marine +45C)		Operating current of magnetic release (A)
	1.05In(cold state) Inoperative time(h)	1.30In(heat state) Operative time(h)	
10 < In < 63	≥ 1	< 1	10In±20%
63 < In < 100	≥ 2	< 2	5In±20%
100 < In < 800	≥ 2	< 2	10In±20%

Table 3

Rated current of release (A)	Thermodynamic release(ambient temperature land +40C Marine +45C)				Operating current of magnetic release (A)
	1.0In(cold state) non-trip time(h)	1.20In(heat state) trip time (h)	1.50In(heat state) trip time (h)	7.2In(cold state) trip time(h)	
10 < In < 250	≥ 2	< 2	≤ 4min	4s < Tp < 10s	12In±20%
250 < In < 630			≤ 8min	6s < Tp < 20s	

4. Accessories of Circuit Breaker

4.1 The external accessories of the breaker

Motor-driven operation device

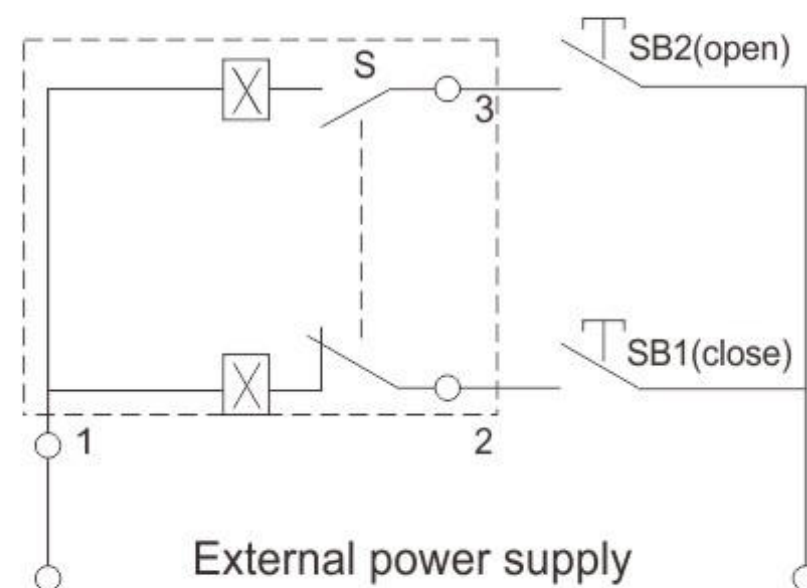
1) Wiring diagram of type CDM electromagnetic operation device(fitting LKM1-63,100,225) see the following drawing (wiring diagram of the external accessories of the breaker in the dotted frame)



Back panel connection



Plug-in



Code description: SB1N SB2 stand for push button.(provided by users themselves)

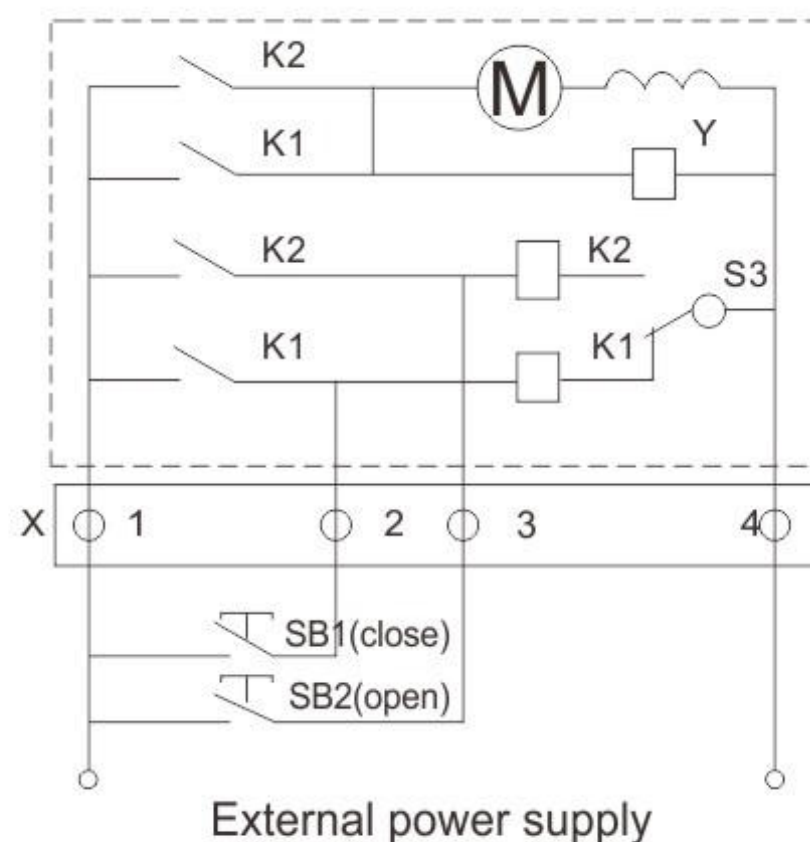
Number "1"、"2"、"3" stand for number of wiring terminals.

Voltage rating: AC50/60Hz 230V 400V, DC 220V

2) Wiring of type CD motor-driven operation device (fitting LKM1-400s 630、800) see belows (wiring diagram of the external accessories of the breaker in the dotted frame)



Electromagnetic operation device



Code description: " SB " SB2 stand for push button, (provided by users themselves)

" X " stands for line connection terminals

Voltage rating: AC50/60Hz 230V 400V, DC220V

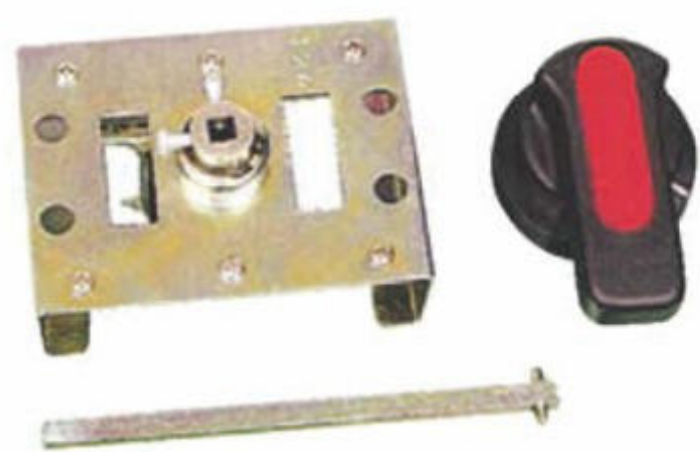


Motor-driven operation device

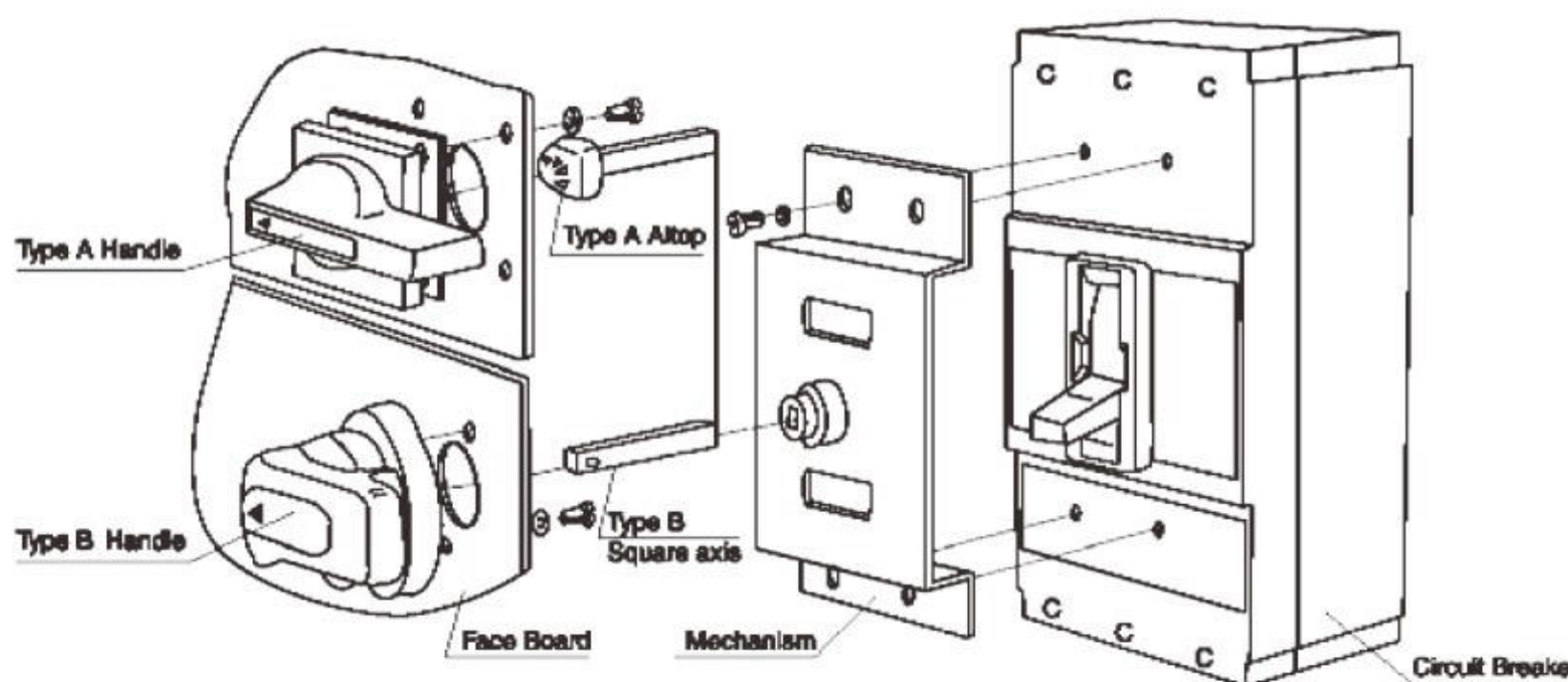
• **Rotary handle operation device**

The mechanism is used in moulded case circuit breaker to operate the draw-out panel. Power distribution panel and supply box outside the panel by turning the handle, and to ensure the door of panel would not be opened when the breaker being on.

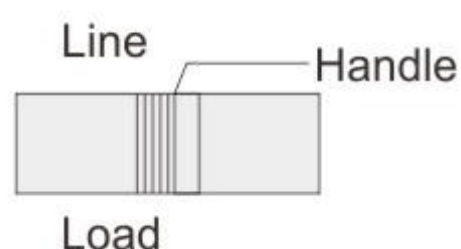
The hand-drive mechanism can be equipped with two types of operation, one is "A" model square handle , the other is "B" model round handle.



Rotary handle operation device



4.2 Release pattern and accessories code



SHT: Shunt release; UVR: Under-voltage release;
 AX: Auxiliary contact; AL: Alarm contact

Release pattern and accessories code	Name	Type	LKM1-63, 125, 250	LKM 1-400	LKM1-630	LKM1-800
200, 300	Without accessories		200: magnetic release (only short circuit protection) 300: thermal magnetic release(both overload and short circuit protection)			
208, 308	Alarm contact		AL	AL	AL	AL
210, 310	Shunt release		SHT	SHT	SHT	SHT
220, 320	Auxiliary contact		AX	AX	AX	AX
230, 330	Under-voltage release		UVR	UVR	UVR	UVR
240, 340	Shunt release Auxiliary contact		SHT AX	SHT AX	SHT AX	AX SHT
250, 350	Shunt release Under-voltage release		SHT UVR	SHT UVR	SHT UVR	UVR SHT
260, 360	Two group of auxiliary contact		AX AX	AX AX	AX AX	AX AX
270, 370	Under-voltage release Auxiliary contact		AX UVR	AX UVR	AX UVR	UVR AX
218, 318	Shunt release Alarm contact		AL SHT	SHT AL	AL SHT	AL SHT
228, 328	Alarm contact Auxiliary contact		AL AX	AL AX	AL AX	AL AX
238, 338	Under-voltage release Alarm contact		AL UVR	AL UVR	AL UVR	AL UVR
248, 348	Shunt release, Alarm contact, Auxiliary contact		AL AX SHT	SHT AL AX	AL AX SHT	AL AX SHT
268, 368	Two group of auxiliary contact, Alarm contact		AL AX AX	AL AX AX	AL AX AX	AL AX AX
278, 378	Shunt release, Alarm contact, Under-voltage release		AL AX UVR	AL AX UVR	AL AX UVR	AL UVR AX

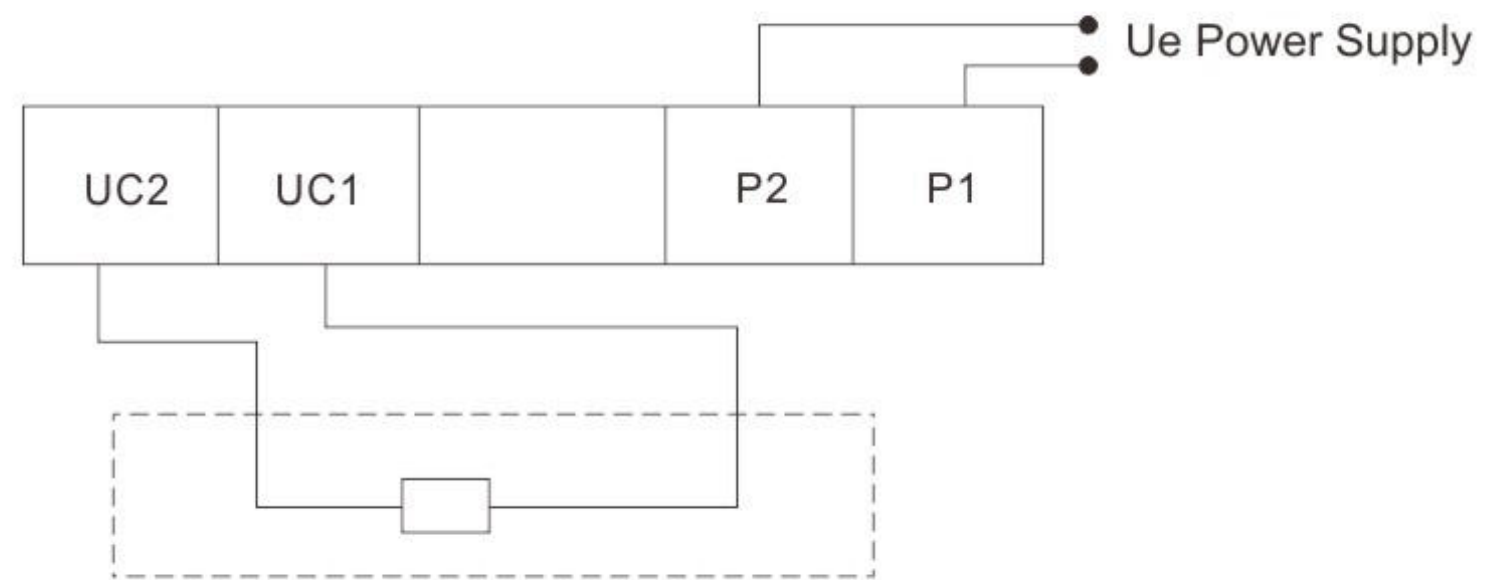
According to user's demands, accessories could lead to direct wire out coming or line wiring terminals could be added(please mark out in case of making order).

• **Under-voltage release**

Wring diagram of the under-voltage module connected externally (the internal accessories in the dotted frame)
 Ue: AC50/60HZ 230V, 400V



Under-voltage release



When the operation voltage is 35%~70% of the rated voltage, the under-voltage release should make the breaker trip correctly.

When the operation voltage is 85%-110% of the rated voltage, the under-voltage release should make the breaker close.

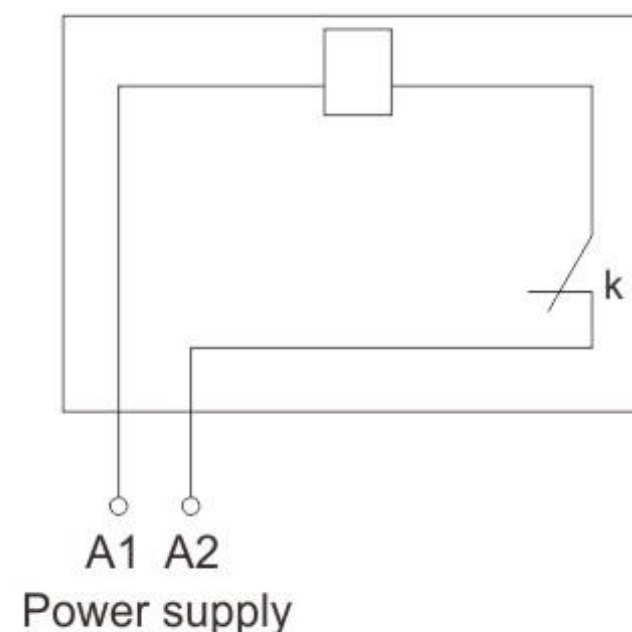
In case of the operation voltage less than 35% of the rated voltage, the under-voltage should prevent the breaker from closing.

Note: Only the under-voltage release should be energized in advanced, the breaker could be re-cramped and turned-on, otherwise the breaker will be damaged.

• **Shunt release**

Scheme of wiring(the internal accessories in the dotted frame)

"K" is the slow motion switch normal-close contact connect the coil in series in the shunt release. It turns-on or turns-off voluntarily as soon as the breaker on or off.



Voltage rating: AC50/60HZ 230V 400V, DC 110V 220V

The shunt release should make the breaker trip reliably when the operation voltage is 70% ~ 110%of the rated control voltage.

Alarm contact



Alarm contact

The position of the breaker in "off "or "on"	
The position of the breaker in "free trip" (alarm)	<p>B₁₁ and B₁₂ switch from "dose" to "open", status of B₁₁ and B₁₄ switch from "open" to "close"</p>

• Auxiliary Contact



Auxiliary Contact

When the breaker is in "off"		For the breaker with frame current 400A and above
When the breaker is in "on"	When the breaker is in "off", the contacts switch from "close" to "open". When the breaker is in "off1", the contacts switch from "open" to "close"	

5. Outline and Installation Dimensions

Type	Outline Dimensions(mm)																												Installation Dimensions							
	Front panel connection														Back panel connection						Plug-in connection															
	W	W1	L	L1	L2	H	H1	H2	H3	H4	C	D	E	F	G	W2	W3	L4	H5	H6	CD	OD1	L5	L6	H7	H8	Hd	H10	J	K	Φd1	M	A	B	Φd	
LM1-63L	76	50	135	170	117	74	92	20	7	4	65	28.5	48	22	14	100	75	117	44	66	8	8						60.7					25	117	3.5	
LKM1-63M	76	50	135	170	117	82	98.5	26	7	4	85	28.5	48	22	14	100	75	117	44	68	8	6						62					25	117	3.5	
LKM1-125L	92	60	150	185	132	66	86	24	7	4	88	35.5	50	22	17.5	122	90	129	68	108	26	16	92	168	50	62	74	17.5	56	60	6.5	M8	30	129	4.5	
LKM1-125M	92	60	150	185	132	86	104	24	7	4	68	35.5	50	22	17.5	122	90	129	68	108	26	16	92	168	50	62	74	17.5	56	60	6.5	M8	30	129	4.5	
LKM1-125H	92	60	150	185	132	86	104	24	7	4	88	35.5	50	22	17.5	122	90	129	68	108	26	16	92	168	50	62	74	17.5	56	60	6.5	M8	30	129	4.5	
LKM1-250L	107	70	165	215	144	86	110	24	5	4	102	31.5	50	22	17	142	105	126	66	110	20	20	94	183	50	69.5	84.5	17.5	54	70	6.5	M8	35	126	5	
LKM1-250M	107	70	165	215	144	103	127	24	5	4	102	31.5	50	22	17	142	105	126	66	110	20	20	94	183	50	69.5	84.5	17.5	54	70	6.5	M8	35	126	5	
LKM1-250H	107	70	165	215	144	103	127	24	5	4	102	31.5	50	22	17	142	105	126	66	110	20	20	94	183	50	69.5	84.5	17.5	54	70	6.5	M8	35	126	5	
LKM1-400L	150	96	257	357	224	105	155	38	8	6	128	64.5	89	65	026	198	144	194	60	120	33	33	169	279	60	83.5	106.5	21	129	60	8.5	M10	44	194	7	
LKM1-400M	182	116	270	370	234	110	160	43	8	6	134	70	89	65	029	198	144	200	65	125	36	36	169	299	60	92	110	21	123	100	8.5	M12	58	200	7	
LKM1-630L	182	116	270	370	234	110	160	43	8	6	134	70	69	65	029	240	174	200	65	126	36	36	169	299	60	92	110	21	123	100	8.5	M12	68	200	7	
LKM1-630M	182	116	270	370	234	110	160	43	8	6	134	70	89	65	029	240	174	200	65	125	36	36	169	299	60	92	110	21	123	100	8.5	M12	58	200	7	
LKM1-630H	210	140	280	380	243	106	145	33	30	128									128														70	243	7.2	
LKM1-800M	210	140	280	380	243	106	145	33	30	128									128														70	243	7.2	
LKM1-800H	210	140	280	380	243	106	145	33	30	128									128														70	243	7.2	
LKM1-1250M	210	140	393			200																														
LKM1-1250H	210	140	393			200																														
LKM1-1600M	210	140	393			200																														

