YCM8E series

Electronic Adjustable Circuit Breaker

OPERATION INSTRUCTION

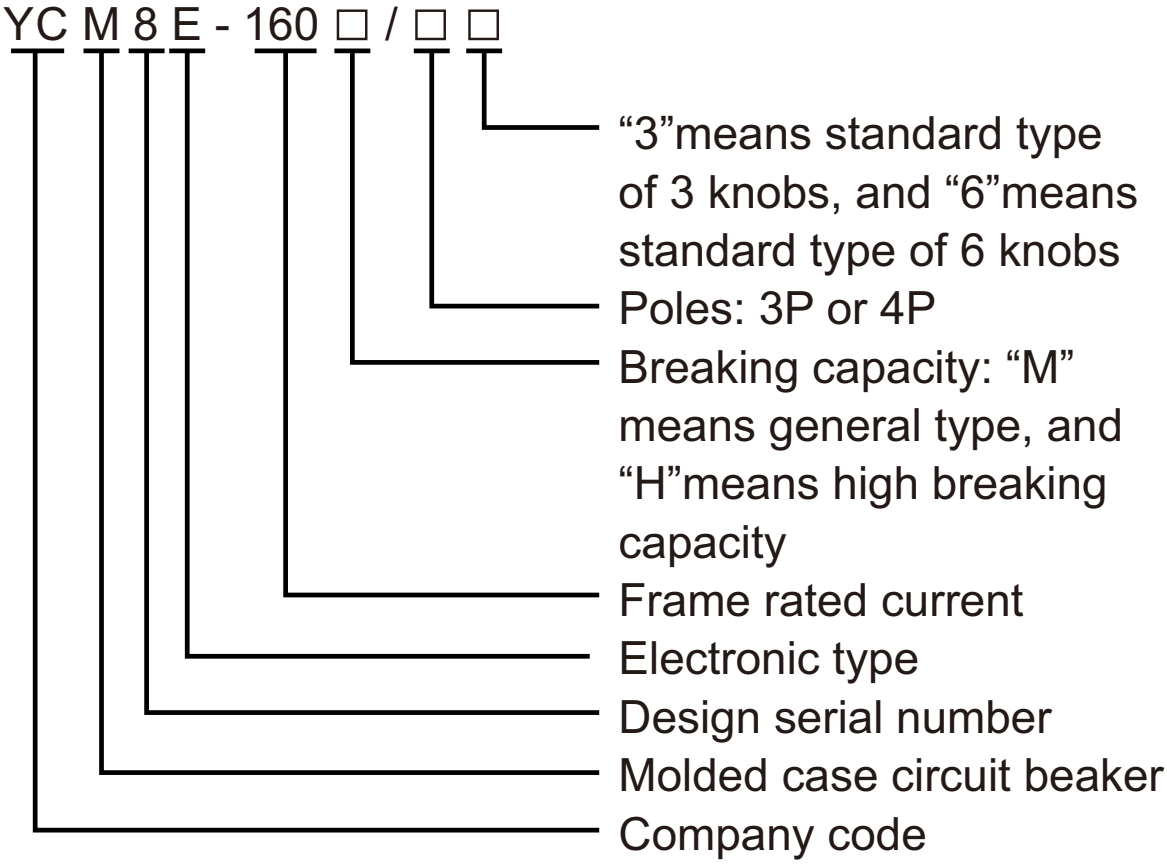
Standard: IEC 60947-2

CNC Deliver Power For Better Life

⚠ Before installing and using this product, please read this manual carefully and pay more attention to safety.

3.Type designation

The model and meaning of the circuit breaker are as follows:



YCM8E series

1. General

Electronic type molded case circuit breakers are suitable for the AC 50Hz circuit with rated voltage of 690V or below, and rated current up to 1250A; generally, for power distribution. Circuit breakers of rated current 630A or below can also be used for motor protection. Under normal circumstances, the circuit breakers can be used for infrequent switching of the circuit and infrequent starting of the motor respectively.

2. Operating conditions

- Ambient temperature: -5°C ~ + 40°C, and the average temperature within 24 hours cannot exceed +35°C.
- Relative humidity: the relative humidity shall not exceed 50% at a maximum ambient temperature of 40°C; and the relative humidity can be higher when the temperature is low. E.g., the humidity can be 90% when the temperature is 20°C.
- Altitude: below 2000 meter.
- The installation site should be a place where there is no risk of explosion and where the medium is not sufficient to corrode the metal and destroy the insulation by gases and conductive dusts.
- Pollution class is 3 in a place without rain or snow.

Table 1 Accessories

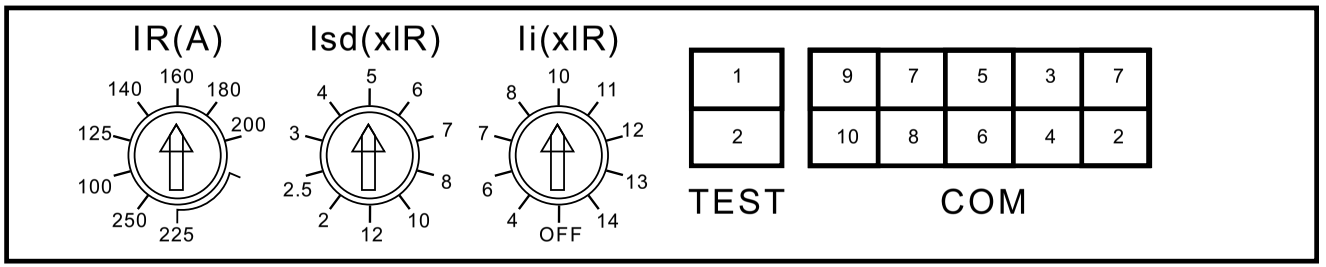
Accessory name / Accessory code / Release mode													
Alarm contact	208												
Shunt release		210											
Auxiliary contact			220										
Undervoltage release				230									
Auxiliary switch + Shunt release					240								
Two groups of auxiliary switch						260							
Undervoltage release + Auxiliary switch							270						
Alarm switch + Shunt release								218					
Alarm switch + Auxiliary switch									228				
Alarm switch + Undervoltage release										238			
Alarm switch + Two groups of auxiliary switch											268		
Auxiliary switch + Alarm switch + Undervoltage release												278	
Two groups of auxiliary switch + Shunt release													280
Magnetic release only	208	210	220	230	240	260	270	218	228	238	268	278	280
Compound release	308	310	320	330	340	360	370	318	328	338	368	378	380

Table 2 Main parameter of YCM8E

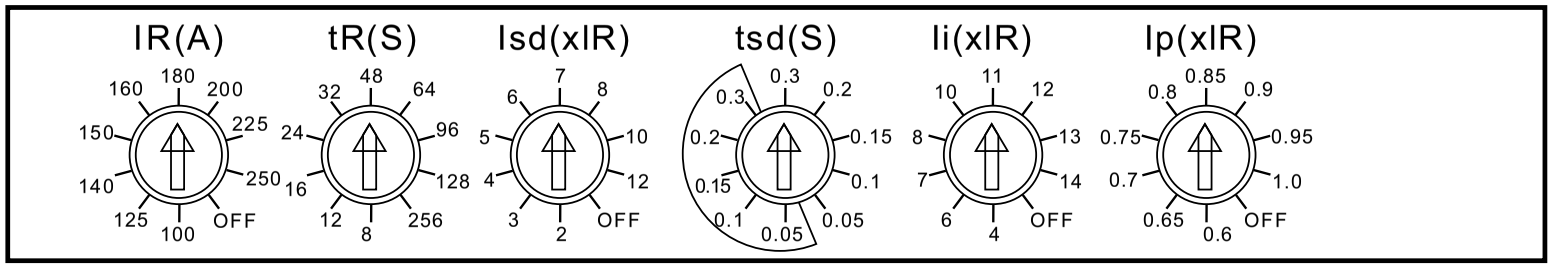
Model	Rated current In (A)	Rated insulation voltage Ui (V)	Rated operation voltage Ue (V)	Rated ultimate short-circuit breaking capacity Icu(KA) 400V	Rated service short-circuit breaking capacity Ics (kA) 400V	Number of poles	Ir (A)
YCM8E-160H	32,63,100, 160	1000V	400V	35	25	3,4	12-32, 25-63, 40-100, 63-160
YCM8E-250H	250	1000V	400V	35	25	3,4	100-250
YCM8E-400H	400	1000V	400V	50	35	3,4	200-400
YCM8E-630H	630	1000V	400V	50	35	3,4	400-630
YCM8E-800H	630,800	1000V	400V	50	35	3,4	400-630,500-800
YCM8E-1250H	10,001,250	1000V	400V	50	35	3,4	630-1000,850-1250

4.Adjustable Panel of Electronic Controller

Three knob



Six knob



Operation and precaution

1.Please use the appropriate tools
The protection parameter adjustment of the controller is very convenient, please use a small one-piece screwdriver with a blade size of 3x1mm, gently insert it into the slot of the encoder adjustment knob, rotate the screwdriver handle to make the arrow of the knob point to required parameter scale, and then the adjustment is finished.

2.Precaution
1)When adjusting parameters, avoid the knob arrow pointing to the middle of the two scales.
2)The protection current thresholds for overload, short circuit and instantaneous action cannot be cross-set and ensure IR< Isd< Ii. For example, if Ii < Isd, the short circuit short delay function will fail.

Protective features
1.Symbol Description
The following are the symbols used in the feature description, from IEC 60947-2.
I: Main circuit current
Inm: Frame current
In: Controller rated working current
IR: Overload long-delay tripping setting current
tR: Overload long-delay setting current
Isd: Short-circuit short-delay tripping setting current
tsd: Short-circuit short-delay setting current
Ii: Short-circuit short instantaneous tripping setting current

Ip: Pre-alarm setting current

2. Overload long-delay protection

Overload long-delay protection is used to prevent the circuit and equipment from overheating when overloaded.

IR setting range

In (A)	Encoder setting IR (A)	Communication setting IR (A)	
32	12, 14, 16, 19, 22, 24, 26, 29, 32, OFF	12-32, OFF	Step length 1 A
63	25, 28, 32, 35, 41, 44, 50, 57, 63, OFF	25-63, OFF	
100	40, 45, 50, 55, 60, 70, 80, 90, 100, OFF	40-100, OFF	
160	63, 75, 80, 90, 100, 125, 140, 150, 160, OFF	63-160, OFF	
250	100, 125, 140, 150, 160, 180, 200, 225, 250, OFF	100-250, OFF	
400	200, 225, 250, 280, 300, 320, 350, 375, 400, OFF	200-400, OFF	
630	400, 440, 460, 480, 500, 530, 560, 600, 630, OFF	400-630, OFF	
800	500, 550, 600, 630, 660, 700, 740, 780, 800, OFF	500-800, OFF	
1000	630, 680, 700, 750, 800, 850, 900, 950, 1000, OFF	630-1000, OFF	
1250	850, 900, 950, 1000, 1050, 1100, 1150, 1200, 1250, OFF	850-1250, OFF	

tR setting range

In (A)	Encoder setting IR (A)	Communication setting IR (A)	
32-1250	8, 12, 16, 24, 32, 48, 64, 96, 128, 256	8-256	Step length 1 A

Note: there is no gear of 256s for 1250A

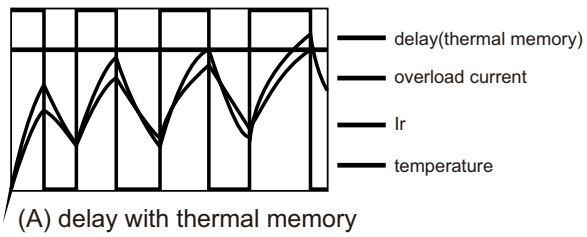
Overload long-delay protective feature:

tR setting value			In = 32A - 1250A									
			8	12	16	24	32	48	64	96	128	256
Tripping time	Distribution protection	1.05 IR	No action in 2 hour									
		1.3 IR	No action in 1 hour									
		2 IR	8	12	16	24	32	48	64	96	128	256
	Motor protection	1.05 IR	No action in 2 hour									
		1.2 IR	No action in 1 hour									
		1.5 IR	14.2	21.3	28.4	42.7	56.9	85.3	113.8	117.7	227.6	455.1
		2 IR	8	12	16	24	32	48	64	96	128	256
		7.2 IR	0.62	0.93	1.23	1.85	2.47	3.70	4.94	7.41	9.88	19.75
		Trip level	-	-	5	5	10A	10A	10	10	20	20
Note: action time tolerance: ±20%, inherent error 40ms												

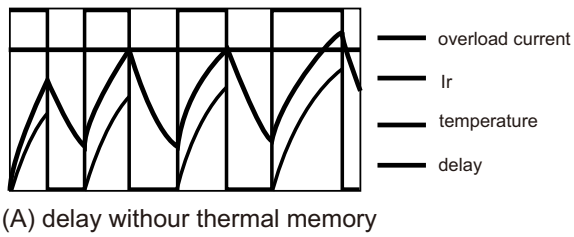
Note: the overload long-delay protection uses an inverse time protection curve and the calculation formula is T=(2IR/I)2 * tR; 1.2IR ≤ I ≤ Isd
e.g. IR=250A, I=600A, tR=96s, put the number into the formula：T=(2*250/600)2*96=66.67 (s)

3. Thermal memory

The thermal memory function is designed according to the circuit temperature rising model. It can be clearly seen by comparing below diagram (A) and (B) that the temperature rising is the same under the same current (IR) fluctuation, while the circuit breaker will trip by the long-delay with thermal memory. This shows that the thermal memory function can be very effective in reducing the thermal stresses of the circuits and equipment, slowing down adverse factors such as ageing, insulation strength deterioration of circuits and equipment and extending the life of circuits and equipment.



(A) delay with thermal memory



(A) delay withour thermal memory

The power of controller overload thermal memory will be fully released within 30 minutes. For the full thermal memory function, it requires an auxiliary power module, otherwise the thermal memory value will be automatically cleared when the system is powered down.

4.Short-circuit short-delay protection

Short-circuit short-delay protection is aimed at short-circuit faults of medium strength and provides selective protection for the distribution system.

Isd setting range

In (A)	Encoder setting Isd (n*IR)	Communication setting IR (A)	
32-1250	n=2, 3, 4, 5, 6, 7, 8, 10, 12, OFF	n=2-12, OFF	Step length 0.5

tsd setting range

In (A)	Encoder setting tsd (s)	Communication setting tsd (s)
32-1250	0.05, 0.1, 0.15, 0.2, 0.3	0.05, 0.1, 0.15, 0.2, 0.3

Short-circuit short-delay protection action characteristics

Setting time: tsd (s)			0.05	0.1	0.15	0.2	0.3
Action time (s)	Isd≤I ≤1.5 Isd	I^2t ON Inverse time limit	T=(1.5Isd/I)2*tsd				
	1.5 Isd ≤I≤Ii	I^2t OFF time limit	0.05±0.02	0.1±0.03	0.15±0.03	0.2±0.04	0.3±0.06
Note: action time tolerance: ±20%, inherent error 40ms							

5. Short-circuit instantaneous protection

Ii setting range

In (A)	Encoder setting Ii (*IR)	Communication setting tsd (s)
32-250	4, 6, 7, 8, 10, 11, 12, 13, 14, OFF	4-14,OFF,step length 0.5
400-1250	4, 6, 7, 8, 9, 10, 11, 12, 14, OFF	

Short-circuit instantaneous protection action characteristics

Loading current	I ≤ 0.85 Ii	I ≥ 1.15 Ii
Action time	No action	≤ 80 ms

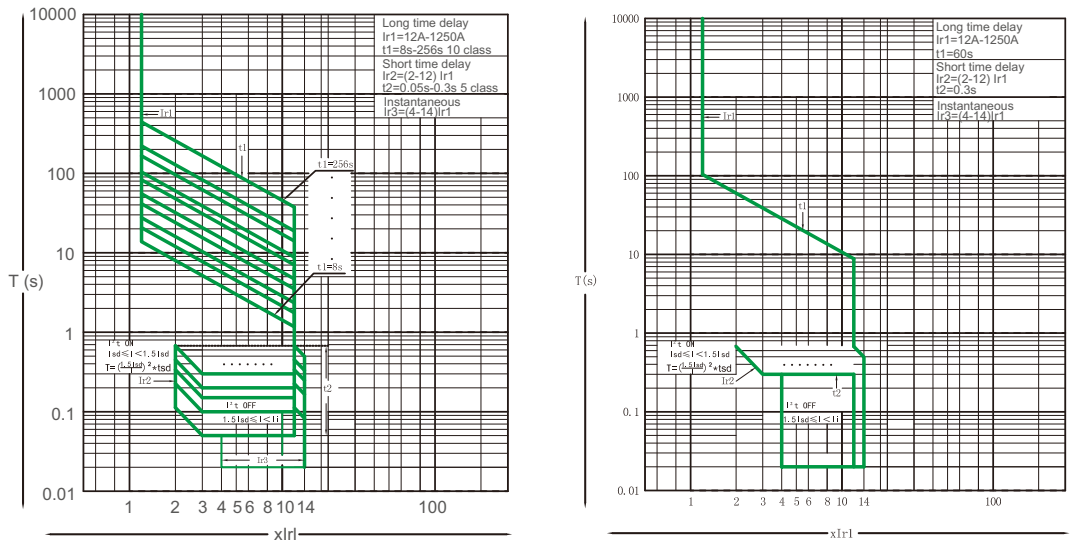
6.Overload pre-alarm
Ip setting range

In (A)	Encoder setting Ip (*IR)	Communication setting tsd (s)
32-160	0.9, 0.95, 1.0, OFF	0.9-1.0, OFF, step length 0.05
250-1250	0.6, 0.65, 0.7, 0.75, 0.8, 0.85, 0.9, 0.95, 1.0, OFF	0.9-1.0, OFF, step length 0.05

Overload pre-alarm characteristics:

Loading current	I ≤ 0.9 Ip	I ≥ 1.1 Ip
Action time	Pre-alarm indicator does not light up	Pre-alarm indicator lights up

5.Curve

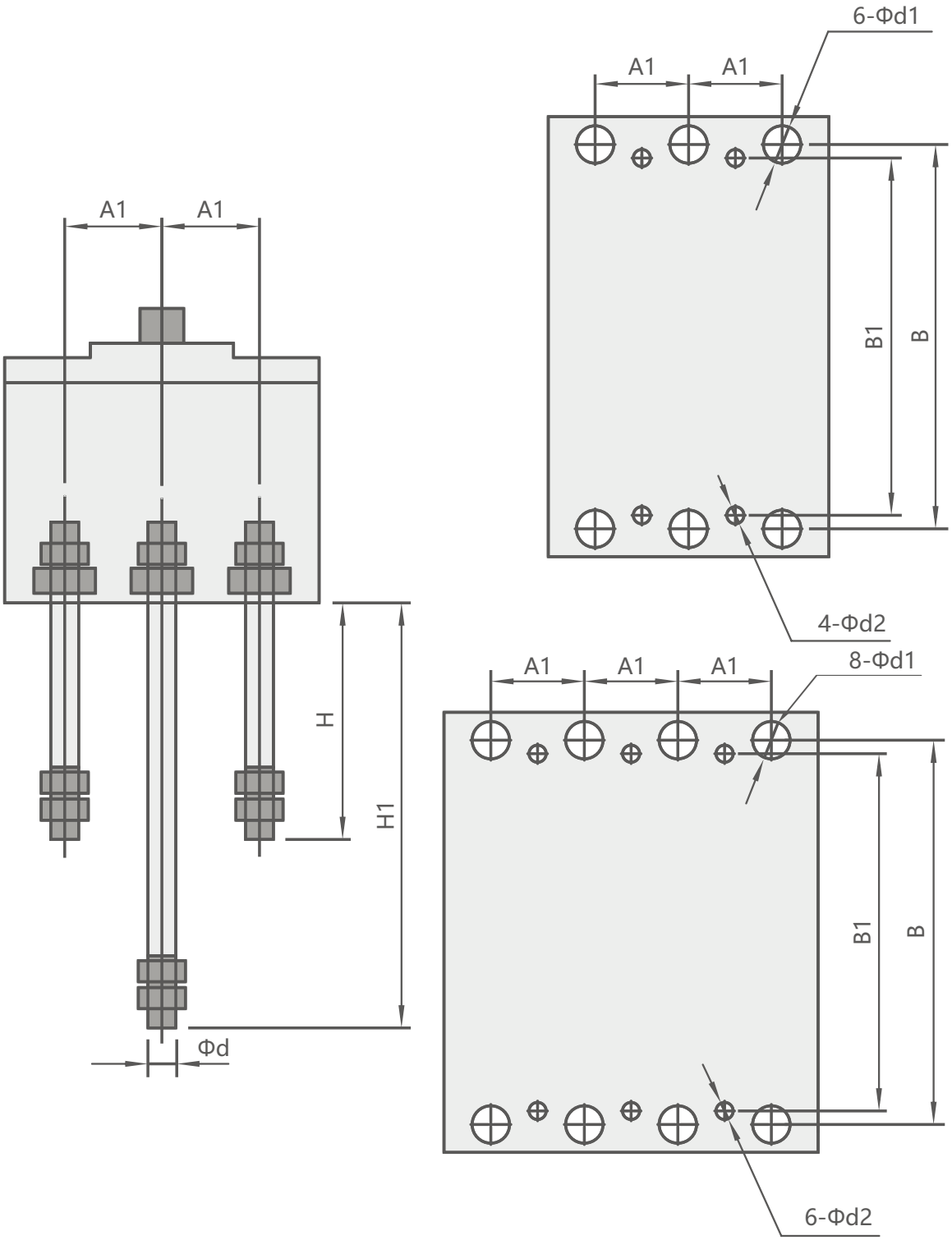


6.Wiring Requirements

Standard wire matched rated current during standard action characteristics test

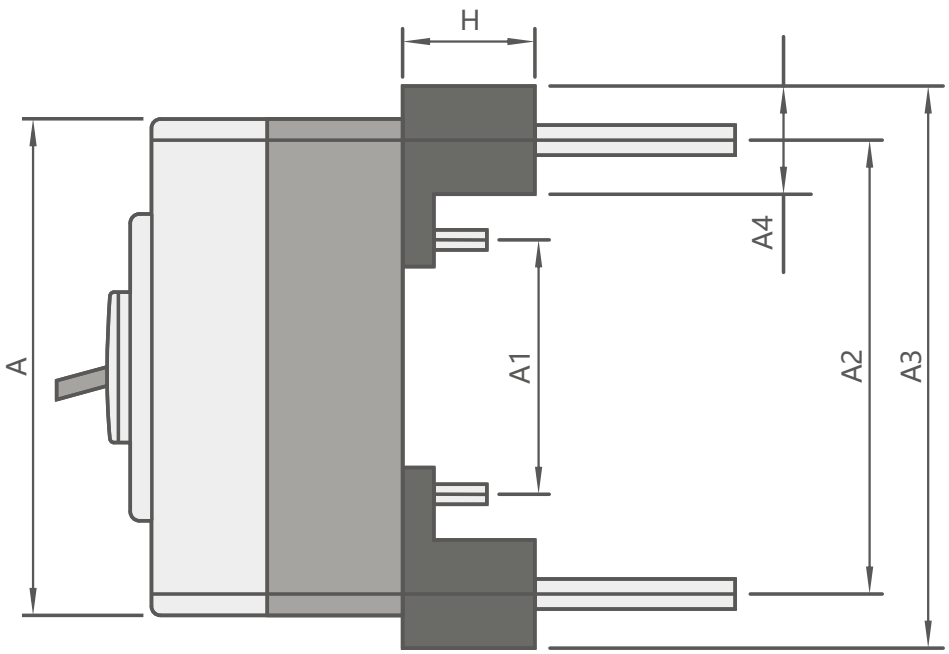
No.	Rated current	Standard wire required mm^2	Rated current	Standard wire required mm^2
1	0-8A	1.0	9-12A	1.5
2	13-15A	2.5	16-20A	2.5
3	21-25A	4.0	26-32A	6.0
4	33-50A	10.0	51-65A	16.0
5	66-85A	25.0	86-100A	35.0
6	101-115A	35.0	116-130A	50.0
7	131-150A	50.0	151-175A	70.0
8	176-200A	95.0	201-225A	95.0
9	226-250A	120.0	251-275A	150.0
10	276-300A	185.0	301-350A	185.0
11	351-400A	240.0	401-500A	$2\times150mm^2$
12	501-630A	$2\times185mm^2$	631-800A	$2\times240mm^2$
13	801-1000A	$2\times300mm^2$	1001-1250A	$2\times400mm^2$

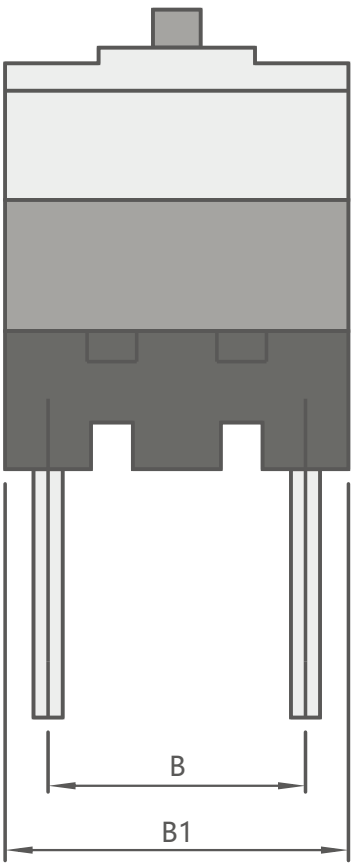
7.Overall and mounting dimensions(mm)

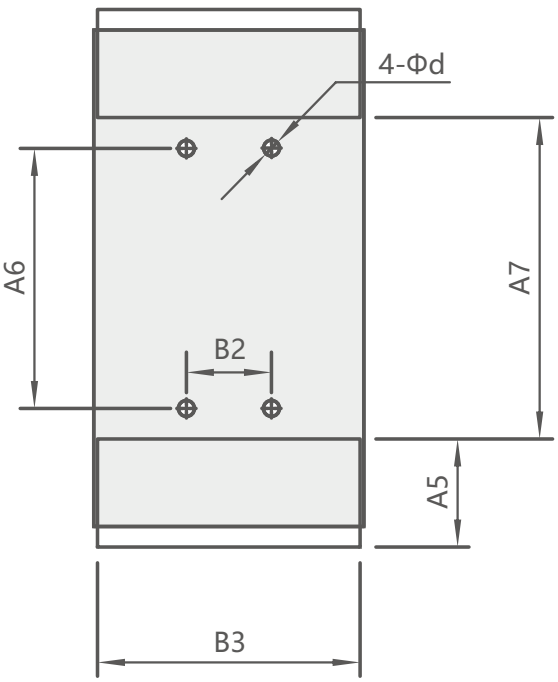


Mode	Dimension of back-board wiring							
Electronic adjustable circuit breaker	A1	B	B1	H	H1	Φd	Φd1	Φd2
-	25	114	111	62	87	6	14	5
-	25	114	111	62	87	6	14	5
YCM8E-160H	30	134	132	72	112	8	18	5
	30	134	132	72	112	8	18	5
YCM8E-250H	35	144	126	87	126	12	24	5
	35	144	126	87	126	12	24	5
YCM8E-400H	44	230	194	83	136	18	35	7
	44	230	194	83	136	18	35	7
YCM8E-630H	44	230	194	83	136	18	35	7
	44	230	194	83	136	18	35	7
YCM8E-800H	70	243	243	174	243	26	48	7
	70	243	243	174	243	26	48	7
YCM8E-1000H YCM8E-1250H	70	243	243	174	243	26	48	7
	70	243	243	174	243	26	48	7

Overall and mounting dimensions(mm)







Mode	Dimension of back-board wiring													
Electronic adjustable circuit breaker	A	A1	A2	A3	A4	A5	A6	A7	H	B	B1	B2	B3	Φd2
-	130	54	114	140	29	31	54	80	48	75	50	25	78	5.2
-	130	54	114	140	29	31	54	80	48	75	50	25	78	5.2
YCM8E-160H	155	54	134	168	38	40	54	92	52	90	60	30	93	6.5
	155	54	134	168	38	40	54	92	52	90	60	30	93	6.5
YCM8E-250H	165	54	144	182	45	47	54	90	50	105	70	70	108	6.5
	165	54	144	182	45	47	54	90	50	105	70	70	108	6.5
YCM8E-400H	257	140	230	282	55	55	140	171	60	134	87	44	136	8.2
	257	140	230	282	55	55	140	171	60	134	87	44	136	8.2
YCM8E-630H	257	140	230	282	55	55	140	171	60	134	87	44	136	8.2
	257	140	230	282	55	55	140	171	60	134	87	44	136	8.2
YCM8E-800H	275	155	243	298	55	56	155	187	60	206	140	70	208	8.2
	275	155	243	298	55	56	155	187	60	206	140	70	208	8.2
YCM8E-1000H	275	155	243	298	55	56	155	187	60	206	140	70	208	8.2
YCM8E-1250H	275	155	243	298	55	56	155	187	60	206	140	70	208	8.2

Ordering instruction

1.Name and model of circuit breaker
2.Rated current and setting multiples of circuit breakers
3.Accessories Name and Rated Voltage

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CERTIFICATE

Product Model: YCM8E

Standard: IEC 60947-2

Inspector : CNC003

Production date: Printed on the product or package.

This product is qualified according to the delivery inspection

CNC ELECTRIC

Tel: 0086-577-61989999 Fax: 0086-577-61891122

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