



Products Catalogue
2017-2018



Be Smart , Be Safe

معرفی گروه صنعتی لنا و محصولات کانل

گروه صنعتی لنا در راستای مدیریت و بهینه سازی مصرف انرژی در کشور و همچنین انتقال دانش فنی و تکنولوژی روز جهان، پس از تولید و ارائه تجهیزات روشنایی تحت لیسانس کمپانی ان وی سی انگلستان، اقدام به تولید و ارائه تجهیزات برق صنعتی تحت لیسانس کمپانی کانل کانادا در کارخانه خود واقع در شهرک صنعتی اشتهارد نموده است.

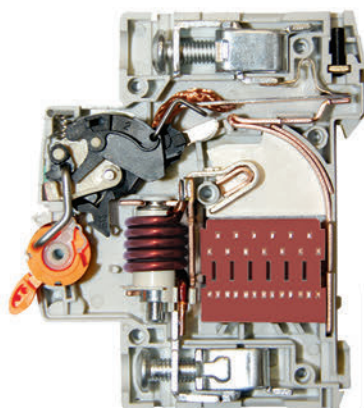
کالاهای تولیدی این شرکت علاوه بر تاییدیه های معتبر جهانی مانند SEMKO, CE و KEMA، دارای تاییدیه های مهم داخلی مانند نشان استاندارد ملی ایران و تاییدیه شرکت توانیر نیز می باشند.

کلید محصولات دارای ۵ سال ضمانت بوده و عبارتند از:

- کلیدهای مینیاتوری (MCB-AC)** از ۰/۵ آمپر الی ۱۲۵ آمپر در انواع یک پل تا چهار پل، تک فاز با نول (1P+N)، سه فاز با نول (3P+N)، در سه نوع روشنایی (B)، موتوری (C) و موتوری سنگین و خازنی (D) با قدرت قطع ۶ الی ۱۰ کیلو آمپر
- کلیدهای مینیاتوری (MCB-DC)** از یک آمپر الی ۶۳ آمپر در انواع یک پل و دو پل در دو تیپ روشنایی (B) و موتوری (C)
- کلیدهای اتوماتیک (MCCB)** از ۱۶ آمپر الی ۱۲۵۰ آمپر با قدرت قطع ۳۶ الی ۸۵ کیلو آمپر در انواع ثابت و قابل تنظیم
- کلیدهای جریان نشستی (RCCB)** جهت مصارف صنعتی و خانگی از ۱۶ آمپر الی ۱۰۰ آمپر با حساسیت ۱۰ الی ۳۰۰ میلی آمپر
- کلیدهای ترکیبی (RCBO)** از ۳ آمپر الی ۴۰ آمپر با حساسیت ۱۰ الی ۳۰۰ میلی آمپر
- سایر تجهیزات و لوازم جانبی شامل کنتاکت های کمکی، شانت تریپ و... قابل نصب بر روی کلید محصولات

ساختار داخلی و ویژگی های کلیدهای مینیاتوری کانل

- بدنه از جنس پلی آمید به همراه گلاس فایبر جهت حفاظت در برابر آتش سوزی
- استفاده از مکنند و بوبین متناسب با نوع و آمپرهای مختلف جهت عکس العمل مناسب و کاهش زمان قطع
- تنظیم بی متال توسط پیچ تنظیم متناسب با جریان کلید و لاک شدن در کارخانه به منظور افزایش دقت عملکرد کلید در اضافه بار
- استفاده از آلایژ نقره در کنتاکت به منظور افزایش طول عمر و دستیابی به بهترین عملکرد
- استفاده از پرچ های برنجی به تعداد ۷ عدد در کلیدهای AC و DC به منظور اطمینان هر چه بیشتر از مقاومت کلید در زمان اتصال کوتاه و یا ضربه
- طراحی ویژه جرقه گیر با استفاده از صفحات مسی در ابعاد استاندارد متناسب با نوع AC و DC بودن محصول و جداسازی توسط عایق به منظور کوچک کردن جرقه های ایجاد شده و جلوگیری از بروز آتش سوزی
- استفاده از دو لایه محافظ در دو طرف جرقه گیر به منظور جلوگیری از آسیب حرارت ناشی از جرقه به پوسته
- استفاده از ترمینال های با کیفیت و آبکاری شده، مقاوم در برابر زنگ زدگی ناشی از رطوبت و اتصال به هادی ها
- ارائه انواع کلیدهای مینیاتوری AC از ۵/۰ تا ۱۲۵ آمپر در انواع یک پل تا چهار پل، تک فاز با نول، سه فاز با نول، در سه نوع روشنایی (B)، موتوری (C) و موتوری سنگین و خازنی (D)
- ارائه انواع کلیدهای مینیاتوری DC از ۱ تا ۶۳ آمپر در انواع یک پل و دو پل در دو تیپ روشنایی B، موتوری C
- رنگ بندی شاسی کلید متناسب با جریان نامی
- دارای محل نصب لیبل جهت نشان گذاری کلید در تابلو برق
- دارای نشانگر وضعیت قطع و وصل
- قابلیت نصب پلمب روی شستی کلید
- امکان اتصال کلید به ریل و باس بار
- امکان نصب انواع لوازم جانبی در هر دو طرف کلید
- دارای نشان استاندارد ملی ایران و تاییدیه شرکت توانیر
- دارای تاییدیه های معتبر بین المللی
- دارای ۵ سال گارانتی بدون قید و شرط



رنگ بندی شستی کلیدهای مینیاتوری کانل

۲۰ آمپر	۲۲ آمپر	۲۵ آمپر	۲۶ آمپر	۳۲ آمپر	۴۰ آمپر	۵۰ آمپر	۶۳ آمپر	۱۰۰ آمپر	۱۶۰ آمپر	۲۰۰ آمپر	۲۵۰ آمپر	۳۰۰ آمپر	۴۰۰ آمپر	۵۰۰ آمپر	۶۳۰ آمپر	۱۰۰۰ آمپر
مشکی	صورتی	قهوه ای	سبز	قرمز	طوسی	آبی	نارنجی	بنفش	مشکی	سفید	مشکی	سفید	مشکی	مشکی	مشکی	مشکی

CONTENTS

06 ~ 09	EP7 Series Miniature Circuit Breaker (MCB-AC)	کلیدهای مینیاتوری AC
11 ~ 13	EP7DC Series Miniature Circuit Breaker (MCB-DC)	کلیدهای مینیاتوری DC
15 ~ 17	EP7R Series Residual Current Circuit Breaker (RCCB)	کلیدهای محافظ جان (جریان نشتی)
19 ~ 22	EP7BL Series Residual Current Operated Circuit Breaker (RCBO)	کلیدهای کمباین (ترکیبی)
24 ~ 25	EP7BA Series Circuit Breaker Accessories	لوازم جانبی
27 ~ 31	EP7M3 Series Molded Case Circuit Breaker (MCCB)	کلیدهای اتوماتیک



EP7series

Miniature Circuit Breaker

کلیدهای مینیاتوری AC



EP7 series Miniature Circuit Breaker

Technical Data

Standard	Confirming to IEC/EN 60898-1-ISI2611 IEC/EN 60947-2
Breaking capacity	6KA-10KA
Protection	Against overload and short circuit
Rated current (In)	0.5,1,2,3,4,6,10,16,20,25,32,40,50,63A
Rated voltage (Ue)	1 pole,1p+N 240/415V AC 50/60Hz 2,3,3p+N, 4pole 415V AC 50/60Hz
Rated insulation voltage (Ui)	500V
Rated impulse withstand voltage (Uimp)	6000V
Selectivity class	3
Ambient temperature	-5°C to +45°C , Max 90% humidity
Characteristic	Thermal operating limit: (1.13-1.45) x In Magnetic operating: B: (3-5) x In C: (5-10) x In D: (10-20) x In
Number of poles	1P, 1P+N,2P,3P,3P+N and 4P
Type of trip	Thermal / magnetic release
Type of terminal	Lug type and Pin type
Terminal capacity	16mm ² Flexible or 25mm ² rigid up to 25A rating 25mm ² Flexible or 35mm ² rigid for 32A to 63A ratings
Protection degree	IP20
Installation	Mounting on 35mm DIN rail
Width	17.5mm per pole
Weight Per Pole (g)	~107g

Accessories:

- Auxiliary Contact (OF)
- Alarm Switch (SD)
- Shunt Tripper
- Over Voltage / Under Voltage Tripper
- * See Page 24

Rated current (A)	B curve	C curve	D curve	Packing unit
0.5	EP7/1-B0.5	EP7/1-C0.5	EP7/1-D0.5	12
1	EP7/1-B1	EP7/1-C1	EP7/1-D1	12
2	EP7/1-B2	EP7/1-C2	EP7/1-D2	12
3	EP7/1-B3	EP7/1-C3	EP7/1-D3	12
4	EP7/1-B4	EP7/1-C4	EP7/1-D4	12
6	EP7/1-B6	EP7/1-C6	EP7/1-D6	12
10	EP7/1-B10	EP7/1-C10	EP7/1-D10	12
16	EP7/1-B16	EP7/1-C16	EP7/1-D16	12
20	EP7/1-B20	EP7/1-C20	EP7/1-D20	12
25	EP7/1-B25	EP7/1-C25	EP7/1-D25	12
32	EP7/1-B32	EP7/1-C32	EP7/1-D32	12
40	EP7/1-B40	EP7/1-C40	EP7/1-D40	12
50	EP7/1-B50	EP7/1-C50	EP7/1-D50	12
63	EP7/1-B63	EP7/1-C63	EP7/1-D63	12

0.5	EP7/1-B0.5N	EP7/1-C0.5N	EP7/1-D0.5N	6
1	EP7/1-B1N	EP7/1-C1N	EP7/1-D1N	6
2	EP7/1-B2N	EP7/1-C2N	EP7/1-D2N	6
3	EP7/1-B3N	EP7/1-C3N	EP7/1-D3N	6
4	EP7/1-B4N	EP7/1-C4N	EP7/1-D4N	6
6	EP7/1-B6N	EP7/1-C6N	EP7/1-D6N	6
10	EP7/1-B10N	EP7/1-C10N	EP7/1-D10N	6
16	EP7/1-B16N	EP7/1-C16N	EP7/1-D16N	6
20	EP7/1-B20N	EP7/1-C20N	EP7/1-D20N	6
25	EP7/1-B25N	EP7/1-C25N	EP7/1-D25N	6
32	EP7/1-B32N	EP7/1-C32N	EP7/1-D32N	6
40	EP7/1-B40N	EP7/1-C40N	EP7/1-D40N	6
50	EP7/1-B50N	EP7/1-C50N	EP7/1-D50N	6
63	EP7/1-B63N	EP7/1-C63N	EP7/1-D63N	6

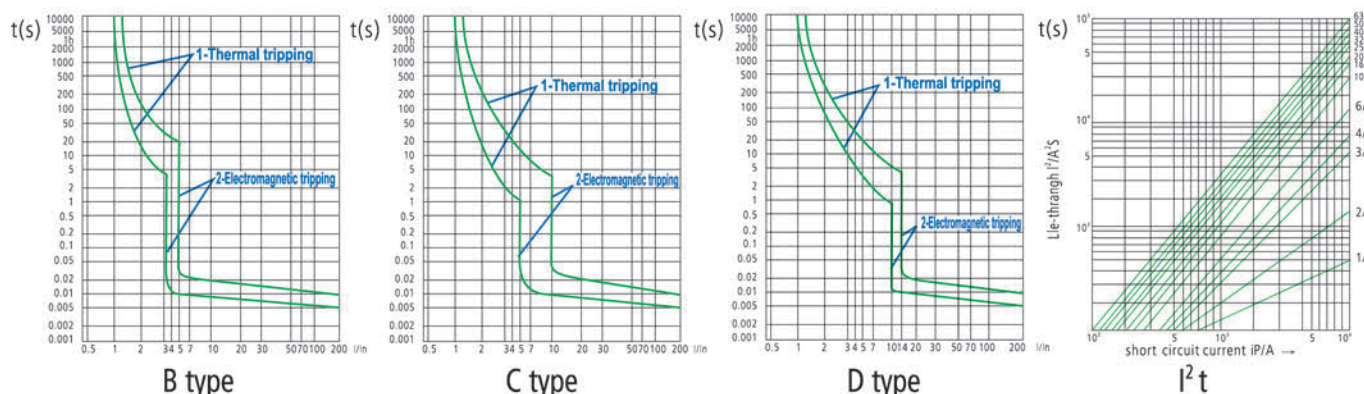
0.5	EP7/2-B0.5	EP7/2-C0.5	EP7/2-D0.5	6
1	EP7/2-B1	EP7/2-C1	EP7/2-D1	6
2	EP7/2-B2	EP7/2-C2	EP7/2-D2	6
3	EP7/2-B3	EP7/2-C3	EP7/2-D3	6
4	EP7/2-B4	EP7/2-C4	EP7/2-D4	6
6	EP7/2-B6	EP7/2-C6	EP7/2-D6	6
10	EP7/2-B10	EP7/2-C10	EP7/2-D10	6
16	EP7/2-B16	EP7/2-C16	EP7/2-D16	6
20	EP7/2-B20	EP7/2-C20	EP7/2-D20	6
25	EP7/2-B25	EP7/2-C25	EP7/2-D25	6
32	EP7/2-B32	EP7/2-C32	EP7/2-D32	6
40	EP7/2-B40	EP7/2-C40	EP7/2-D40	6
50	EP7/2-B50	EP7/2-C50	EP7/2-D50	6
63	EP7/2-B63	EP7/2-C63	EP7/2-D63	6





Rated current (A)	B curve	C curve	D curve	Packing unit
0.5	EP7/3-B0.5	EP7/3-C0.5	EP7/3-D0.5	4
1	EP7/3-B1	EP7/3-C1	EP7/3-D1	4
2	EP7/3-B2	EP7/3-C2	EP7/3-D2	4
3	EP7/3-B3	EP7/3-C3	EP7/3-D3	4
4	EP7/3-B4	EP7/3-C4	EP7/3-D4	4
6	EP7/3-B6	EP7/3-C6	EP7/3-D6	4
10	EP7/3-B10	EP7/3-C10	EP7/3-D10	4
16	EP7/3-B16	EP7/3-C16	EP7/3-D16	4
20	EP7/3-B20	EP7/3-C20	EP7/3-D20	4
25	EP7/3-B25	EP7/3-C25	EP7/3-D25	4
32	EP7/3-B32	EP7/3-C32	EP7/3-D32	4
40	EP7/3-B40	EP7/3-C40	EP7/3-D40	4
50	EP7/3-B50	EP7/3-C50	EP7/3-D50	4
63	EP7/3-B63	EP7/3-C63	EP7/3-D63	4
0.5	EP7/3-B0.5N	EP7/3-C0.5N	EP7/3-D0.5N	3
1	EP7/3-B1N	EP7/3-C1N	EP7/3-D1N	3
2	EP7/3-B2N	EP7/3-C2N	EP7/3-D2N	3
3	EP7/3-B3N	EP7/3-C3N	EP7/3-D3N	3
4	EP7/3-B4N	EP7/3-C4N	EP7/3-D4N	3
6	EP7/3-B6N	EP7/3-C6N	EP7/3-D6N	3
10	EP7/3-B10N	EP7/3-C10N	EP7/3-D10N	3
16	EP7/3-B16N	EP7/3-C16N	EP7/3-D16N	3
20	EP7/3-B20N	EP7/3-C20N	EP7/3-D20N	3
25	EP7/3-B25N	EP7/3-C25N	EP7/3-D25N	3
32	EP7/3-B32N	EP7/3-C32N	EP7/3-D32N	3
40	EP7/3-B40N	EP7/3-C40N	EP7/3-D40N	3
50	EP7/3-B50N	EP7/3-C50N	EP7/3-D50N	3
63	EP7/3-B63N	EP7/3-C63N	EP7/3-D63N	3
0.5	EP7/4-B0.5	EP7/4-C0.5	EP7/4-D0.5	3
1	EP7/4-B1	EP7/4-C1	EP7/4-D1	3
2	EP7/4-B2	EP7/4-C2	EP7/4-D2	3
3	EP7/4-B3	EP7/4-C3	EP7/4-D3	3
4	EP7/4-B4	EP7/4-C4	EP7/4-D4	3
6	EP7/4-B6	EP7/4-C6	EP7/4-D6	3
10	EP7/4-B10	EP7/4-C10	EP7/4-D10	3
16	EP7/4-B16	EP7/4-C16	EP7/4-D16	3
20	EP7/4-B20	EP7/4-C20	EP7/4-D20	3
25	EP7/4-B25	EP7/4-C25	EP7/4-D25	3
32	EP7/4-B32	EP7/4-C32	EP7/4-D32	3
40	EP7/4-B40	EP7/4-C40	EP7/4-D40	3
50	EP7/4-B50	EP7/4-C50	EP7/4-D50	3
63	EP7/4-B63	EP7/4-C63	EP7/4-D63	3

1. Curves



2. Endurance(operations)

Category	Operations	Operation frequency	Rated current (A)
Electrical endurance	4000	240/h 120/h	0.5~32 40~63
Mechanical endurance	10000	240/h	0.5~63

3. Please refer to table below for temperature compensation correction

I_n A	Temperature compensation coefficient under various operational temperature								
	-10°C	0°C	10°C	20°C	30°C	40°C	50°C	55°C	60°C
0.5~6	1.20	1.14	1.09	1.05	1.00	0.96	0.80	0.75	0.70
10~32	1.18	1.12	1.08	1.04	1.00	0.96	0.92	0.88	0.84
40~63	1.16	1.12	1.08	1.03	1.00	0.9	0.87	0.83	0.80

4. Wiring

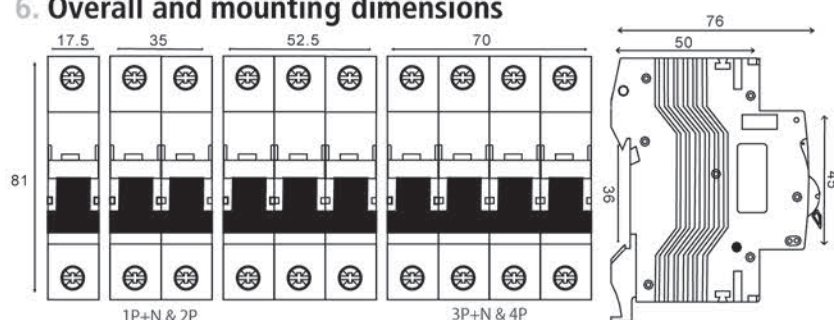
The suitable conductors should be used for connection, see table for relative parameters.

Rated current I_n (A)	Nominal cross section area (mm ²)	Tightening torque (N.m)
0.5~6	1	2
10	1.5	2
16, 20	2.5	2
25	4	2
32	6	2
40, 50	10	2
63	16	2

5. Features

The breaker is characterized by compact design, light weight, elegant appearance, high breaking capacity, swift releasing, long service life, Different handle color for different rated current, with contactor condition indicator. Two-way junction of the auxilliary contacts

6. Overall and mounting dimensions





EP7DCseries

Miniature Circuit Breaker

کلیدهای مینیاتوری DC

EP7DC series

Miniature Circuit Breaker

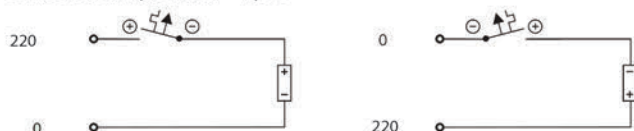
Technical Data

Standard	Confirming to IEC/EN 60898-2-ISR12611 IEC/EN 60947-2
Breaking capacity	3KA-6KA
Protection	Against overload and short circuit
Rated current (In)	1,2,3,4,6,10,16,20,25,32,40,50,63A
Rated voltage (Ue)	240V-DC Per Pole
Operational Voltage (VDC)	Min: 12 / Max: 1P 250 2P 500
Rated insulation voltage Ui	500V
Rated impulse withstand voltage Uimp	2000V
Selectivity class	3
Ambient temperature	-5°C to +45°C Pursuant to EN / IEC60898
Characteristic	Thermal operating limit: (1.13-1.45) x In Magnetic operating: B: (4-7) x In C: (7-15) x In
Number of poles	1P, 2P
Type of trip	Thermal / magnetic release
Type of terminal	Lug type and Pin type
Terminal capacity	16mm ² Flexible or 25mm ² rigid up to 25A rating 25mm ² Flexible or 35mm ² rigid for 32A to 63A ratings
Protection degree	IP20
Installation	Mounting on 35mm DIN rail
Width	17.5mm per pole

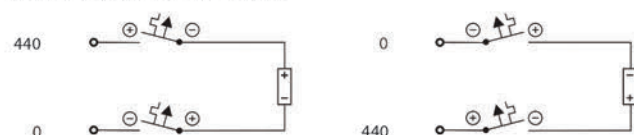
Accessories

- Auxiliary Contact (OF)
- Alarm Switch (SD)
- Shunt Tripper
- Over Voltage / Under Voltage Tripper
- * See Page 26

Connection example at 220V = 1-pole



Connection example at 440V = 2-pole



EP7DC-MCB-DC

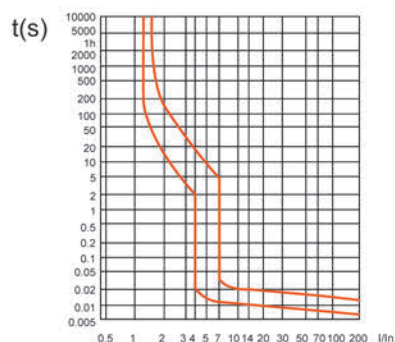


Rated current (A)	B curve	C curve	Packing unit
1	EP7DC/1-B1	EP7DC/1-C1	12
2	EP7DC/1-B2	EP7DC/1-C2	12
3	EP7DC/1-B3	EP7DC/1-C3	12
4	EP7DC/1-B4	EP7DC/1-C4	12
6	EP7DC/1-B6	EP7DC/1-C6	12
10	EP7DC/1-B10	EP7DC/1-C10	12
16	EP7DC/1-B16	EP7DC/1-C16	12
20	EP7DC/1-B20	EP7DC/1-C20	12
25	EP7DC/1-B25	EP7DC/1-C25	12
32	EP7DC/1-B32	EP7DC/1-C32	12
40	EP7DC/1-B40	EP7DC/1-C40	12
50	EP7DC/1-B50	EP7DC/1-C50	12
63	EP7DC/1-B63	EP7DC/1-C63	12

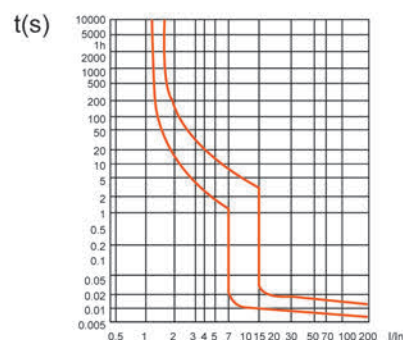
2	EP7DC/2-B2	EP7DC/2-C2	6
3	EP7DC/2-B3	EP7DC/2-C3	6
4	EP7DC/2-B4	EP7DC/2-C4	6
6	EP7DC/2-B6	EP7DC/2-C6	6
10	EP7DC/2-B10	EP7DC/2-C10	6
16	EP7DC/2-B16	EP7DC/2-C16	6
20	EP7DC/2-B20	EP7DC/2-C20	6
25	EP7DC/2-B25	EP7DC/2-C25	6
32	EP7DC/2-B32	EP7DC/2-C32	6
40	EP7DC/2-B40	EP7DC/2-C40	6
50	EP7DC/2-B50	EP7DC/2-C50	6
63	EP7DC/2-B63	EP7DC/2-C63	6



1. Curves



B type



C type

2. Endurance(operations)

Category	Operations	Operation frequency	Rated current (A)
Electrical endurance	4000	240/h 120/h	1.0~32 40~63
Mechanical endurance	10000	240/h	1.0~63

3. Please refer to table below for temperature compensation correction

In A	Temperature compensation coefficient under various operational temperature								
	-10°C	0°C	10°C	20°C	30°C	40°C	50°C	55°C	60°C
1~6	1.20	1.14	1.09	1.05	1.00	0.96	0.80	0.75	0.70
10~32	1.18	1.12	1.08	1.04	1.00	0.96	0.92	0.88	0.84
40~63	1.16	1.12	1.08	1.03	1.00	0.9	0.87	0.83	0.80

4. Wiring

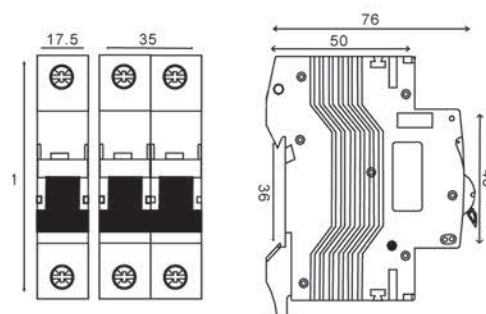
The suitable conductors should be used for connection, see table for relative parameters.

Rated current In(A)	Nominal cross section area (mm ²)	Tightening torque (N.m)
1~6	1	2
10	1.5	2
16, 20	2.5	2
25	4	2
32	6	2
40, 50	10	2
63	16	2

5. Features

The breaker is characterized by compact design, light weight, elegant appearance, high breaking capacity, swift releasing, long service life, Different handle color for different rated current, with contactor condition indicator.

6. Overall and mounting dimensions





EP7R series

Residual Current Circuit Breaker

کلیدهای محافظ جان (جریان نشتی)

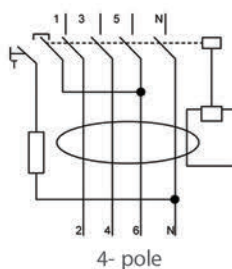
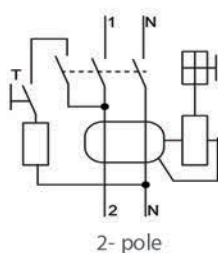
EP7R series

Residual Current Circuit Breaker

Technical Data

Standard	Confirming to EN / IEC61008-1
Rated conditional short-circuit current, I_{nc}	6KA,10KA
Protection	Ground fault
Rated current, I_n	16,25,32,40,50,63,80A
Number of poles	2(1+N),4(3+N)pole
Rated sensitivity currents, $I_{\Delta n}$	10,30,100,300mA
sensitivity	AC  and Pulsating DC (Type A) 
Rated residual non-operating current, $I_{\Delta no}$	$0.5 \times I_{\Delta n}$
Rated impulse withstand voltage U_{imp}	6000V
Rated voltages	2pole 4pole
	230VAC 230/400VAC
Ambient temperature	-25°C~+45°C, Max.95%humidity
Residual current off-time at $I_{\Delta n}$	$\leq 0.1s$
Rated residual current making & breaking capacity, $I_{\Delta m}$	500A for $I_n=16,25,32,40A$ 630A for $I_n=63A$ 800A for $I_n=80A$
Type of trip	Electro-magnetic release
Type of terminal	Lug type and Pin type
Terminal capacity	Cables up to 35mm ²
protection degree	IP20
Installation	35mm DIN rail

Connection Diagrams



Rated current (A)	$I_{\Delta n}$	Type AC 	Type A 	Packing unit
16	10mA	EP7R2/16/10	EP7R2/16/10-A	1
25		EP7R2/25/10	EP7R2/25/10-A	1
16	30mA	EP7R2/16/30	EP7R2/16/30-A	1
25		EP7R2/25/30	EP7R2/25/30-A	1
32		EP7R2/32/30	EP7R2/32/30-A	1
40		EP7R2/40/30	EP7R2/40/30-A	1
50		EP7R2/50/30	EP7R2/50/30-A	1
63		EP7R2/63/30	EP7R2/63/30-A	1
80		EP7R2/80/30	EP7R2/80/30-A	1
16	100mA	EP7R2/16/100	EP7R2/16/100-A	1
25		EP7R2/25/100	EP7R2/25/100-A	1
32		EP7R2/32/100	EP7R2/32/100-A	1
40		EP7R2/40/100	EP7R2/40/100-A	1
50		EP7R2/50/100	EP7R2/50/100-A	1
63		EP7R2/63/100	EP7R2/63/100-A	1
80		EP7R2/80/100	EP7R2/80/100-A	1
16	300mA	EP7R2/16/300	EP7R2/16/300-A	1
25		EP7R2/25/300	EP7R2/25/300-A	1
32		EP7R2/32/300	EP7R2/32/300-A	1
40		EP7R2/40/300	EP7R2/40/300-A	1
50		EP7R2/50/300	EP7R2/50/300-A	1
63		EP7R2/63/300	EP7R2/63/300-A	1
80		EP7R2/80/300	EP7R2/80/300-A	1
16	10mA	EP7R4/16/10	EP7R4/16/10-A	1
25		EP7R4/25/10	EP7R4/25/10-A	1
16	30mA	EP7R4/16/30	EP7R4/16/30-A	1
25		EP7R4/25/30	EP7R4/25/30-A	1
32		EP7R4/32/30	EP7R4/32/30-A	1
40		EP7R4/40/30	EP7R4/40/30-A	1
50		EP7R4/50/30	EP7R4/50/30-A	1
63		EP7R4/63/30	EP7R4/63/30-A	1
80		EP7R4/80/30	EP7R4/80/30-A	1
16	100mA	EP7R4/16/100	EP7R4/16/100-A	1
25		EP7R4/25/100	EP7R4/25/100-A	1
32		EP7R4/32/100	EP7R4/32/100-A	1
40		EP7R4/40/100	EP7R4/40/100-A	1
50		EP7R4/50/100	EP7R4/50/100-A	1
63		EP7R4/63/100	EP7R4/63/100-A	1
80		EP7R4/80/100	EP7R4/80/100-A	1
16	300mA	EP7R4/16/300	EP7R4/16/300-A	1
25		EP7R4/25/300	EP7R4/25/300-A	1
32		EP7R4/32/300	EP7R4/32/300-A	1
40		EP7R4/40/300	EP7R4/40/300-A	1
50		EP7R4/50/300	EP7R4/50/300-A	1
63		EP7R4/63/300	EP7R4/63/300-A	1
80		EP7R4/80/300	EP7R4/80/300-A	1



1. Life

In	Operating cycles		Operating frequency (operations/h)
	On-load operating cycles	Off-load operating cycles	
16,25,32	2000	2000	240
40,63,80	2000	1000	120

2. Breaking time of residual current

In (A)	I _{Δn} (A)	Breaking time of residual current				
		I _{Δn} (A)	2I _{Δn} (A)	5I _{Δn} (A)	5A, 10A, 20A, 50A 100A, 200A, 500A	
16, 25, 32, 40, 50, 63, 80	0.01, 0.03, 0.1, 0.3	0.1s	0.08s	0.04s	0.04s	Max. Breaking time

3. Wiring

The suitable conductors should be used for connection, see table below for relative parameters.

Rated current In (A)	Nominal cross section area of lead (mm ²)	Tightening torque (N·m)
16	2.5	2.5
25	4	2.5
32	6	2.5
40	10	2.5
50	12	2.5
63	16	2.5
80	25	2.5

4. Features

When designing residual current devices, manufacturing technology and type of routine tests, the IEC / EN 61008 standards were considered. Important features are:

Up to date design

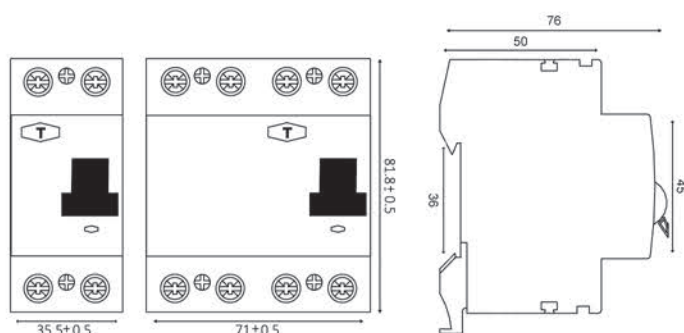
User-friendly connection of conductors and busbars

Resistance to current surges; unwanted tripping excluded

Simple and solid fixing to a 35 mm mounting rail in compliance with EN 60715

Additional colour display of main contacts position (red: contacts closed, green: contacts open)

5. Overall and mounting dimensions





EP7BLseries

Residual Current Operated
Circuit Breaker (RCBO)

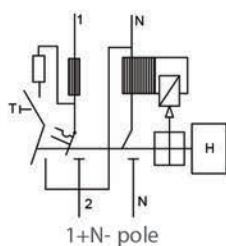
کلیدهای کمباین (ترکیبی)

EP7BL series (Electro Magnetic) Residual Current Operated Circuit Breaker

Technical Data

Standard	EN / IEC61009-1
Breaking capacity	6KA,10KA
Protection	Ground fault, overcurrent and short circuit
Rated current, I _n	3,6,10,16,20,25,32,40A
Rated sensitivity currents, I _{Δn}	10,30,100,300mA
Rated voltage	230VAC
Rated Frequency	50/60
Characteristic	B.C
Rated residual current operated making & breaking capacity I _{Δm}	500A
Rated residual non-operated current I _{Δno}	0.5I _{Δn}
Rated impulse withstand voltage U _{imp}	4000V
Number of poles	1P+N
Ambient temperature	-25°C~+45°C,Max.95% humidity
Residual current off-time	≤ 0.1 sec.
Type of trip	Ground fault Over current
	Electronic/Electro-magnetic Thermal-magnetic
Protection degree	IP20
Installation	35mm DIN rail
Width	2 modules (35mm)
Type of Terminal	Lug type and Pin type
Terminal capacity	10mm ² flexible/16mm ² rigid

Connection Diagram





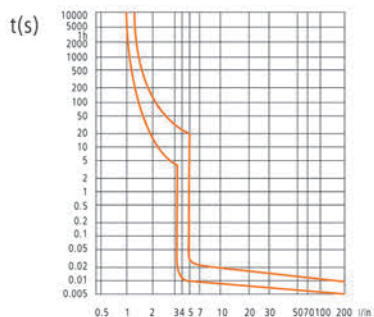
Rated current (A)	$I_{\Delta n}$	B curve	C curve	Packing unit
3	AC  10mA	EP7BL-B3/10	EP7BL-C3/10	6
6		EP7BL-B6/10	EP7BL-C6/10	6
10		EP7BL-B10/10	EP7BL-C10/10	6
16		EP7BL-B16/10	EP7BL-C16/10	6
20		EP7BL-B20/10	EP7BL-C20/10	6
25		EP7BL-B25/10	EP7BL-C25/10	6
32		EP7BL-B32/10	EP7BL-C32/10	6
40		EP7BL-B40/10	EP7BL-C40/10	6
3	AC  30mA	EP7BL-B3/30	EP7BL-C3/30	6
6		EP7BL-B6/30	EP7BL-C6/30	6
10		EP7BL-B10/30	EP7BL-C10/30	6
16		EP7BL-B16/30	EP7BL-C16/30	6
20		EP7BL-B20/30	EP7BL-C20/30	6
25		EP7BL-B25/30	EP7BL-C25/30	6
32		EP7BL-B32/30	EP7BL-C32/30	6
40		EP7BL-B40/30	EP7BL-C40/30	6
3	AC  100mA	EP7BL-B3/100	EP7BL-C3/100	6
6		EP7BL-B6/100	EP7BL-C6/100	6
10		EP7BL-B10/100	EP7BL-C10/100	6
16		EP7BL-B16/100	EP7BL-C16/100	6
20		EP7BL-B20/100	EP7BL-C20/100	6
25		EP7BL-B25/100	EP7BL-C25/100	6
32		EP7BL-B32/100	EP7BL-C32/100	6
40		EP7BL-B40/100	EP7BL-C40/100	6
3	AC  300mA	EP7BL-B3/300	EP7BL-C3/300	6
6		EP7BL-B6/300	EP7BL-C6/300	6
10		EP7BL-B10/300	EP7BL-C10/300	6
16		EP7BL-B16/300	EP7BL-C16/300	6
20		EP7BL-B20/300	EP7BL-C20/300	6
25		EP7BL-B25/300	EP7BL-C25/300	6
32		EP7BL-B32/300	EP7BL-C32/300	6
40		EP7BL-B40/300	EP7BL-C40/300	6

Rated current (A)	I _{Δn}	B curve	C curve	Packing unit
6	AC/DC  10mA	EP7BL-B6/10-A	EP7BL-C6/10-A	6
10		EP7BL-B10/10-A	EP7BL-C10/10-A	6
16		EP7BL-B16/10-A	EP7BL-C16/10-A	6
6	AC/DC  30mA	EP7BL-B6/30-A	EP7BL-C6/30-A	6
10		EP7BL-B10/30-A	EP7BL-C10/30-A	6
16		EP7BL-B16/30-A	EP7BL-C16/30-A	6
20		EP7BL-B20/30-A	EP7BL-C20/30-A	6
25		EP7BL-B25/30-A	EP7BL-C25/30-A	6
32		EP7BL-B32/30-A	EP7BL-C32/30-A	6
40		EP7BL-B40/30-A	EP7BL-C40/30-A	6
6	AC/DC  100mA	EP7BL-B6/100-A	EP7BL-C6/100-A	6
10		EP7BL-B10/100-A	EP7BL-C10/100-A	6
16		EP7BL-B16/100-A	EP7BL-C16/100-A	6
20		EP7BL-B20/100-A	EP7BL-C20/100-A	6
25		EP7BL-B25/100-A	EP7BL-C25/100-A	6
32		EP7BL-B32/100-A	EP7BL-C32/100-A	6
40		EP7BL-B40/100-A	EP7BL-C40/100-A	6
6	AC/DC  300mA	EP7BL-B6/300-A	EP7BL-C6/300-A	6
10		EP7BL-B10/300-A	EP7BL-C10/300-A	6
16		EP7BL-B16/300-A	EP7BL-C16/300-A	6
20		EP7BL-B20/300-A	EP7BL-C20/300-A	6
25		EP7BL-B25/300-A	EP7BL-C25/300-A	6
32		EP7BL-B32/300-A	EP7BL-C32/300-A	6
40		EP7BL-B40/300-A	EP7BL-C40/300-A	6

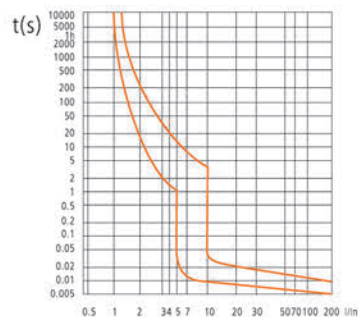


EP7BL-RCBO

1. Curves



B type



C type

2. Breaking time of residual current

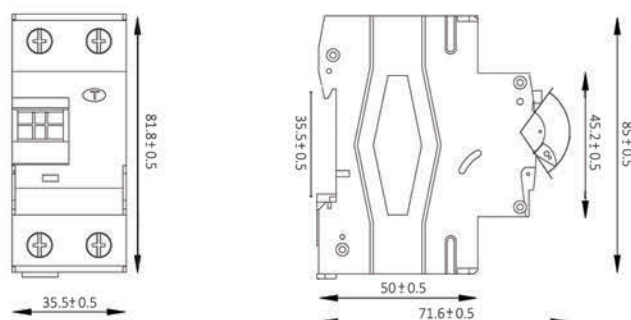
In (A)	IΔn (A)	Max. Breaking times			
		IΔn	2IΔn	5IΔn	5A, 10A, 20A, 50A, 100A, 200A,
6~40	0.01,0.03,0.1,0.3	0.3s	0.15 s	0.04s	0.04s

3. Wiring

The suitable conductors should be used for connection, see table below for relative parameters.

Rated current I_n (A)	Cross section area S (mm ²)	Tightening torque (N . m)
3~6	1	2
10	1.5	2
16~20	2.5	2
25	4	2
32	6	2
40	10	2

4. Overall and mounting dimensions





EP7BA series

Circuit Breaker Accessories

لوازم جانبی



EP7BA series Circuit Breaker Accessories

Technical Data

Standard	Confirming to EN / IEC60947-5-1
Rated insulation voltage	Ui 500V
Rated voltage	230V AC
Rated frequency(Hz)	50/60Hz
Utilization catagory	AC14, AC15
Ambient temperature(°C)	-5~+40°C, Max 95%humidity
Storage temprature(°C)	-40~+75°C
Electric endurance	30000
Mechanical endurance	40000
Dielectric strength	2000V/1min
Protection degree	IP20

OF Auxiliary Contact

Type code	Rated voltage (V)	Rated current (A)
OF	240 AC	6
OF	415 AC	3
OF	24 DC	6
OF	48 DC	2

Dielectric strength: 24kV/1min

Electro-mechanical endurance: ≥ 5000

Mounted on the left side of the MCB EP7, indicating "ON", "OFF" status of combined MCB.

Terminal Connection Height: H1=31mm H2=16mm H3=1.3mm

SD Alarm Switch

Type code	Rated voltage (V)	Rated current (A)
SD	240AC	6
SD	415 AC	3
SD	24 DC	6
SD	48 DC	2

Rated insulating voltage (Ui):500V

Operate voltage range: 70~100% Us

Dielectric strength:2kV/1min

Electro-mechanical endurance: ≥ 4000

Is used to connect ON/OFF auxiliary contact, work as circuit breaker ON/OFF indicator in case of faulty (tripping)

MX Shunt Tripper

Type code	Rated voltage (V)
MX	100~415 AC
MX	415 AC
MX	24 DC
MX	110~130DC

Rated insulating voltage(Ui):500V

Operate voltage range: 70~100% Us

Contact capacity: AC:3A/400V, AC:6A/230V, AC:9A/125V

Dielectric strength: 2kV/1min

Electro-mechanical endurance: ≥ 4000

Mounting on the right/left side of MCB, used to trip the combined MCB by remote controlling device.

Terminal Connection Height:19mm

MN Over-voltage/Under-voltage Tripper

Type code	Rated voltage (V)
MN23A	240 AC

Rated insulating voltage (Ui): 500V

Over-voltage tripping range: $280V \pm 5\%$

Under-voltage tripping range: $170V \pm 5\%$

Electro-mechanical endurance: ≥ 4000

Mounted on the right/leftside of circuit breaker, actuate the combined device to trip in case of under-voltage or over-voltage , effectively prevent the device from closing operation under abnormal power voltage condition.





EP7M3series

Molded Case Circuit Breaker

کلیدهای اتوماتیک

EP7M3 series

Molded Case Circuit Breaker

■ Range of application and Standard

■ Range of application

EP7M3 series (MCCB) is supplied with rated insulation voltage 800V and used for circuit of AC 50/60Hz, rated operating voltage AC 400V, rated ampere 16A-1250A. Equipped with the protection devices for over-current, short circuit and under voltage, the product is capable of preventing damage of circuits and supplying units the product according to IEC 60947-2.

■ Function

EP7M3 series (MCCB) can be connected with the shunt release, under voltage release, Auxiliary contact, Alarm contact, Electric operation mechanism, Rotary handle operating mechanism etc. Auxiliary product for MCCB.

- 1) Under voltage release use for circuits and power supply's under voltage protection
- 2) Shunt release use to trip the combined MCCB by remote controlling device.
- 3) Auxiliary contact use for MCCB to control circuit and signal circuit for automatic control.
- 4) Alarm contact use to overload, short circuit protection and under voltage trip for the MCCB'S Protect device.
- 5) Electric operation mechanism is used to automatic and remote control the "ON" or "OFF" for the MCCB
- 6) Rotary handle operating mechanism is used for operating out of distribution box and used for mechanical interlock when the mccb in the switch on state.

■ Working operation requirement

■ Altitude of installation

Altitude of installation shall be less than 2000m, and the capacity reduction is adopted for being used at +2000m

■ Condition of the atmosphere

The relative temperature of the atmosphere is not more than 50% when the highest temperature is +40 °C, and the relative temperature is higher under lower temperature (e.g. 90% at +20°C), and the condensation formed on the surface of the products for temperature change shall be considered.

■ Installation conditions

Any installation place of the external magnetic field direction should not exceed 5 times of the geomagnetic field, Vertical installation, handle up to position, turning on the power supply installation area should be no significant impact and vibration.

■ Mode of connection

Using screw terminals, fasten the screw to fix the wire.





EP7M3 series

Molded Case Circuit Breaker

Technical Data

MCCB Adjustable/fix			
Technical Data			
standards IEC/EN 60947-2			
Frame size	125	160	250
Number of poles	3p	3p	3p
Breaking Capacity Level	L	M	M
Rated Ultimate Short-circuit Breaking Capacity 400/415V Icu(KA rms)	36	50	50
Rated Service Short-circuit Breaking Capacity 400/415V Ics(KA rms)	27	36	36
Utilization category to IEC/EN 60947-2	A	A	A
Lifespan,mechanical operation	8500	7000	7000
Maximum operating frequency ops/h	120	120	120
Lifespan,electrical AC-1 400/415V 50/60 Hz	1500	1000	1000
Rated current(A) In	16/20/25/32/40/ 50/63/80/100/125A	16/20/25/32/40/50/ 63/80/100/125/160A	100/125/160/180/ 200/225/250A
setting range			
overload release (Ir)	-	0.8-1.0In	0.8-1.0In
short-circuit release (Ii)	10In	10In	10In
ambient temperature			
storage	-25...+70 °C	-25...+70 °C	-25...+70 °C
operation	-5...+40 °C	-5...+40 °C	-5...+40 °C
Degree of protection	IP20	IP20	IP20
Rated impulse withstand voltage: Uimp(V)			
main contacts	8000	8000	8000
Auxiliary contacts	4000	4000	4000
Rated operational voltage (Ue)	415VAC	415VAC	415VAC
Overvoltage category/pollution degree	III/3	III/3	III/3
Rated insulation voltage(Ui)	800V	800V	800V
weight(kg/set)	0.86	1.55	2.25
total opening delay at short-circuit(ms)	≤200ms	≤200ms	≤200ms
Accessories:			
Indication Accessories			
OF	*	*	*
SD	*	*	*
Control Accessories			
MX(AC400,230V,DC 220V)	*	*	*
MN(AC 400,230V)	*	*	*
Extended Rotary Handle (Round and Square)	*	*	*
AC Motor Mechanism (AC400,230V)	*	*	*
Mechanical Interlock	-	*	*
Mounting&Connection			
Fixed,Front Connection	*	*	*
Fixed,Rear Connection	*	*	*
Plug-in , Rear Connection	*	*	*
Plug-in ,Front Connection	*	-	*
Drawer-out ,Rear Connection	-	-	-
Connection			
Spreader	*	*	*
Protection			
phase Barrier	*	*	*
Electronic type			
"* " shows it has this option.			
"-" means it has no this option.			

EP7M3 series

Molded Case Circuit Breaker

Technical Data

MCCB Adjustable			
Technical Data			
standards IEC/EN 60947-2			
Frame size	630	800	1250
Number of poles	3p	3p	3p
Breaking Capacity Level	M	M	M
Rated Ultimate Short-circuit Breaking Capacity 400/415V Icu(KA rms)	85	85	80
Rated Service Short-circuit Breaking Capacity 400/415V Ics(KA rms)	60	55	50
Utilization category to IEC/EN 60947-2	A	A	A
Lifespan,mechanical operation	4000	2500	2500
Maximum operating frequency ops/h	60	20	20
Lifespan,electrical AC-1 400/415V 50/60 Hz	1000	500	500
Rated current(A) In	400/500/630A	400/500/630 /700/800A	700/800/900 1000/1250A
setting range			
overload release (Ir)	0.8-1.0In	electronic type	
short-circuit release (Ii)	10In	according to page ...	
ambient temperature			
storage	-25...+70 °C	-25...+70 °C	-25...+70 °C
operation	-5...+40 °C	-5...+40 °C	-5...+40 °C
Degree of protection	IP20	IP20	IP20
Rated impulse withstand voltage Uimp(V)			
main contacts	8000	8000	8000
Auxiliary contacts	4000	4000	4000
Rated operational voltage (Ue)	415VAC	415VAC	415VAC
Overvoltage category/pollution degree	III/3	III/3	III/3
Rated insulation voltage(Ui)	800V	800V	800V
weight(kg/set)	5.00	9.30	17.20
total opening delay at short-circuit(ms)	≤200ms	≤200ms	≤200ms
Accessories:			
Indication Accessories			
OF	*	*	*
SD	*	*	*
Control Accessories			
MX(AC400,230V,DC 220V)	*	*	*
MN(AC 400,230V)	*	*	*
Extended Rotary Handle (Round and Square)	*	*	*
AC Motor Mechanism (AC400,230V)	*	*	*
Mechanical Interlock	*	*	*
Mounting&Connection			
Fixed,Front Connection	*	*	*
Fixed,Rear Connection	*	*	*
Plug-in , Rear Connection	*	*	*
Plug-in ,Front Connection	-	-	-
Drawer-out ,Rear Connection	*	*	*
Connection			
Spreader	*	*	*
Protection			
phase Barrier	*	*	*
Electronic type			
"*" shows it has this option.			
"-" means it has no this option.			



EP7M3- MCCB

EP7M3 series

Molded Case Circuit Breaker

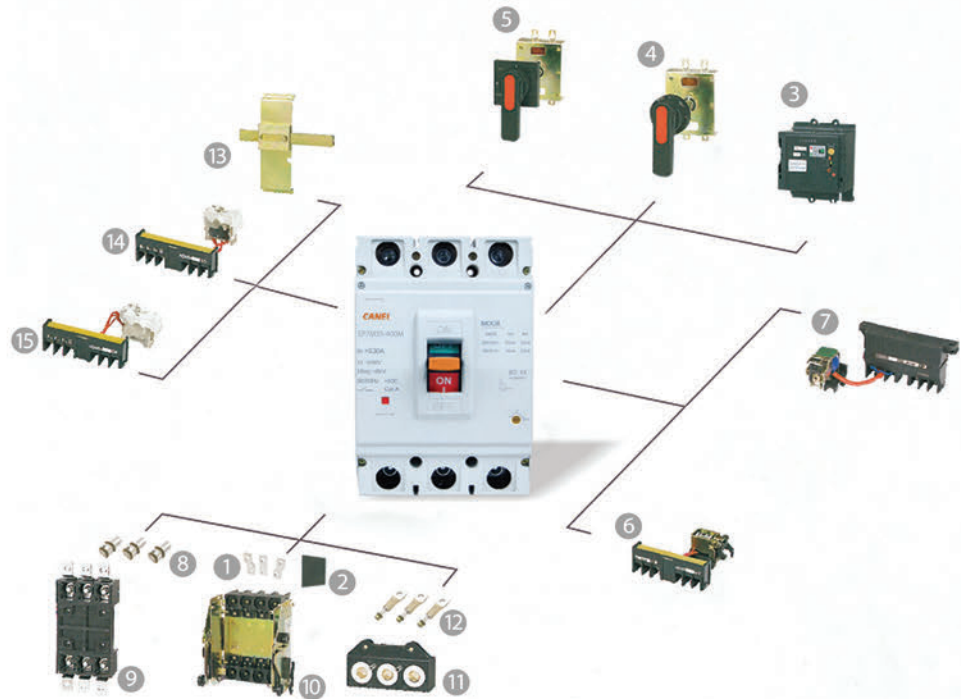
Internal Accessories



*Unique accessory cover opens with two screws

*Practical accessories can be installed with one touch

- *auxiliary switch
- *alarm switch
- *shunt trip
- *undervoltage trip



1 Spreader	6 MX	11 Plug-in Rear Connection
2 Phase Barrier	7 MN	12 Fixed Rear Connection
3 AC Motor Mechanism	8 Plug-in Connecting Terminal	13 Mechanical Interlock
4 Round Extended Rotary Handle	9 Plug-in Front Connection	14 SD
5 Square Extended Rotary Handle	10 Drawer-out Rear Connection	15 OF

EP7M3 series

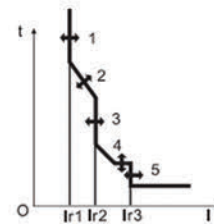
Molded Case Circuit Breaker

Electronic Tripping Device

800, In=800A



Electronic Trip Characteristics Curve



- 1-The overload long time delay Current action $I_{r1}(A)$, according to the different rated current of circuit breaker can adjust be 10 gears.
- 2-Adjust long time delay current Time $t1(S)$, can be adjust 4 gears.
- 3-Short circuit and short time delay Current action $I_{r2}(X I_{r1})$, according to the different rated current of circuit breaker, can adjust be 10 gears .
- 4-Adjust long time delay current Time $t2(s)$, can be adjust 5 gears .
- 5-Short circuit split-second response Current action $I_{r3}(X I_{r1})$, can adjust be 10 gears.
- 6-Pre-alarm response Current $I_{r0}(X I_{r1})$, can adjust be 7 gears

Overload:

When the current reach 110% of the max current ,the LED of Overload will light.

Pre-alarm:

When the current reach the set value of Pre-alarm ,the LED of Pre-alarm will light,
(The error current $\pm 10\%$)

Operation:

When the current reach 40% of the max current ,the LED of Work will light.



SERIES	POLES	Product Dimension [mm]				Installation Dimension [mm]		
		L1	L2	L3	L4	a	b	d
125L	3	75.5	131	85	68	25	112	$\Phi 3.5$
160M	3	92	150	108	92	30	129	$\Phi 4.5$
250M	3	106	165	128	112	35	126	$\Phi 4.5$
400M , 630M	3	150	257	149	117	44	194	$\Phi 7$
800M	3	210	280	160	125	70	243	$\Phi 7$
1250M	3	210	340	182	139	70	303	$\Phi 7$



EP7

کلید مینیاتوری AC



EP7DC

کلید مینیاتوری DC



EP7R/2

کلید جریان نشتی ۲ پل



EP7R/4

کلید جریان نشتی ۴ پل



EP7BL

کلید ترکیبی



EP7F

کلید فیوز مینیاتوری



EP7PI

کلید قطع و وصل



EP7SO

آلارم رنگ اخبار



EP7BA/OF

کنساکت کمکی



EP7BA/MX

شدت تریپ



EP7TM

نایمر



EP7S1

محافظ رلی



EP7C1

کنتاکتور



EP7PM

آمپر متر



EP7M3

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