Residual Current Circuit Breaker With Overcurrent Protection

ESRO Series RCBO

Leading Manufacturer Protects Solar Power Safety

Rev1.0 2022/12/06

ESRO1-50 RCBO

- Comply with standard IEC61009-1

Detail features

IP 20 Degree Protection

Terminals are finger touch proof.
Prevent electrical shock by accidental touch

Red/Green indication

Clear indication fo the ON/OFF operational status of device

Select Code

E	S	RO	1	- 50	/ □	□ /	□ /	□
1	2	3	4	5	6	7	8	9

Electrical Features		
Code	**Name**	**Description**
1	ONCCY brand	E
2	AC	S
3	RCBO	RO
4	Series	1 : Series1
5	Frame Current	50
6	Tripping curve	B / C / D
7	Rated current	6:6A 10:10A 16:16A 20:20A 25:25A 32:32A 40:40A 50:50A
8	Poles	1P+N
9	Type	A:A type AC:AC type

Technical Data

Electrical Features	
Mode	Electronic
Type	A / AC
Tripping curve	B C D
Pole No.	1P+N
Rated voltage	240V~
Rated frequency	50/60Hz

Rated current	6-50A
Rated residual operating current(IΔn)	30.100.300mA
Residual operating current range	0.5 IΔn~IΔn
Rated conditional short-circuit current(Inc)	10000A
Energy limiting	class 3
Electrical and Mechanical life	20000

ESRO1-50 RCBO

Standard: IEC61009-1

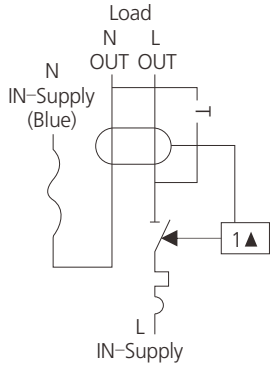
Overload Current Protection Characteristics						
Test Procedure	**Type**	**Test Current**	**Initial State**	**Tripping or Non-tripping Time Limit**	**Expected Result**	**Remark**
A	B.C.D	1.13In	Cold	t≤1h	no tripping	
B	B.C.D	1.45In	After test A	t≤1h	tripping	The current steadily rises to the specified value within 5s
C	B.C.D	2.55In	Cold	1s<t<60s	tripping	
D	B	3In	Cold	t≤0.1s	no tripping	Turn on the auxiliary switch to close the current
	C	5In				
	D	10In				
E	B	5In	Cold	t≤0.1s	tripping	Turn on the auxiliary switch to close the current
	C	10In				
	D	20In				

Residual Current Operating Breaking Time							
Type	**In/A**	**IΔn/A**	**Residual Current(IΔ)Is Corresponding To The Following Breaking Time(S)**				
AC type	Any value	Any value	In	2In	5In	5A.10A.20A.50A.100A.200A.500A	
A type		> 0.01	1.4In	2.8In	7In		
			0.3	0.15	0.04	0.04	Max breaking time

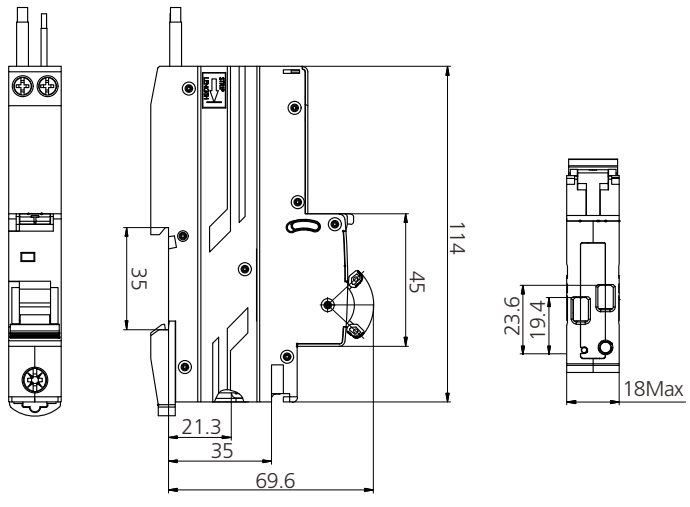
The general type RCBO whose current IΔn is 0.03mA or less can use 0.25A instead of 5IΔn.

Installation	
Fault current indicator window	Yes
Protection degree	IP20
Ambient temperature	-5~+40°C and its average over a period of 24h does not exceed +35°C
Storage temperature	-25~+ 70°C
Terminal connection type	Cable / U-type busbar / Pin-type busbar
Terminal size top for cable	10mm²
Terminal size bottom for cable	25mm²
Tightening torque	2.5N·m/1.2N·m
Mounting	On DIN rail FN 60715 (35mm) by means of fast clip device
Connection	Top and bottom

The wiring diagram

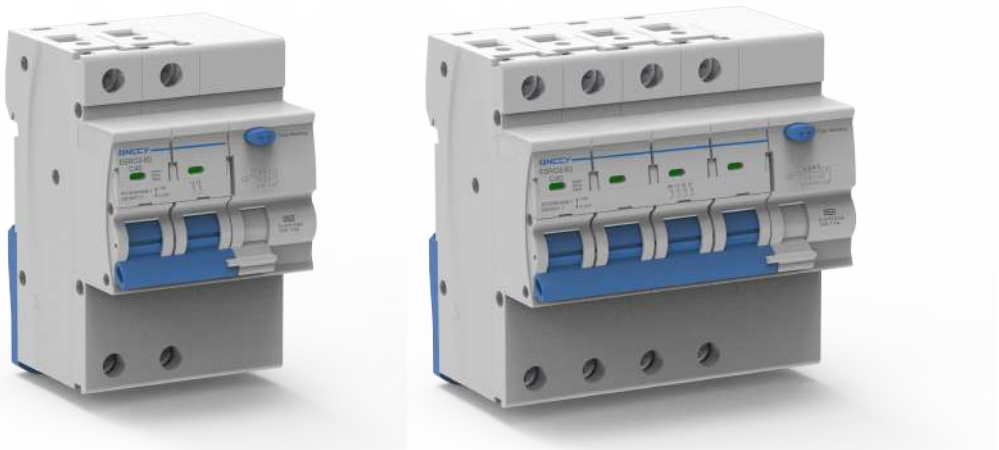


Dimensions(mm)



ESRO2-63 RCBO

- Adopt integrated circuits
- Breaking capacity 6kA/10kA
- Comply with standard IEC61009-1



Detail features

Fit for various connection terminal

Choice to use Busbar or cable in the same terminal cage,provides reliable termination

Test button

T: press test button monthly

Select Code

E	S	RO	2	- 63	/ □	□ /	□	□ /	□
1	2	3	4	5	6	7	8	9	10

Electrical Features		
Code	**Name**	**Description**
1	ONCCY brand	E
2	AC	S
3	RCBO	RO
4	Series	2 : Series2
5	Frame Current	63
6	Tripping curve	B / C / D
7	Rated current	6:6A 10:10A 16:16A 20:20A 25:25A 32:32A 40:40A 50:50A 63:63A
8	Poles	2:2P 4:4P 1P+N 3P+N
9	Type	A:A type AC:AC type B:B type
10	Mode	E:Electronic M:Electromagnetic

Technical Data

Electrical Features	
Mode	Electronic / Electromagnetic
Type	A / AC / B
Tripping curve	B C D
Pole No.	2P / 4P
Rated voltage	230/400V~
Rated frequency	50/60Hz

Rated current	6-63A
Rated residual operating current(IΔn)	30.100.300mA
Residual operating current range	0.5 IΔn~IΔn
Rated conditional short-circuit current(Inc)	6000A / 10000A
Energy limiting	class 3
Electrical and Mechanical life	20000

ESRO2-63 RCBO

Standard: IEC61009-1

Overload Current Protection Characteristics						
Test Procedure	**Type**	**Test Current**	**Initial State**	**Tripping or Non-tripping Time Limit**	**Expected Result**	**Remark**
A	B.C.D	1.13In	Cold	t≤1h	no tripping	
B	B.C.D	1.45In	After test A	t≤1h	tripping	The current steadily rises to the specified value within 5s
C	B.C.D	2.55In	Cold	1s<t<60s	tripping	
D	B	3In	Cold	t≤0.1s	no tripping	Turn on the auxiliary switch to close the current
	C	5In				
	D	10In				
E	B	5In	Cold	t≤0.1s	tripping	Turn on the auxiliary switch to close the current
	C	10In				
	D	20In				

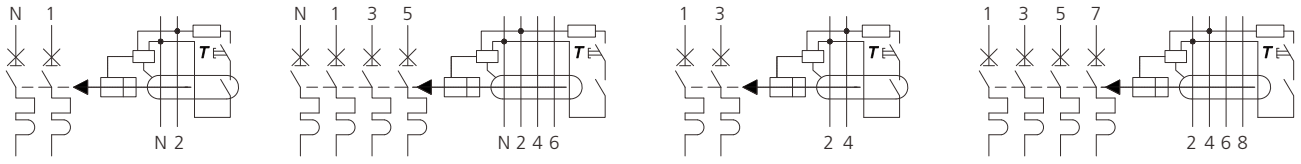
Residual Current Operating Breaking Time							
Type	**In/A**	**IΔn/A**	**Residual Current(IΔ)Is Corresponding To The Following Breaking Time(S)**				
AC type	Any value	Any value	In	2In	5In	5A.10A.20A.50A.100A.200A.500A	
A type		> 0.01	1.4In	2.8In	7In		
			0.3	0.15	0.04	0.04	Max breaking time

The general type RCBO whose current IΔn is 0.03mA or less can use 0.25A instead of 5IΔn.

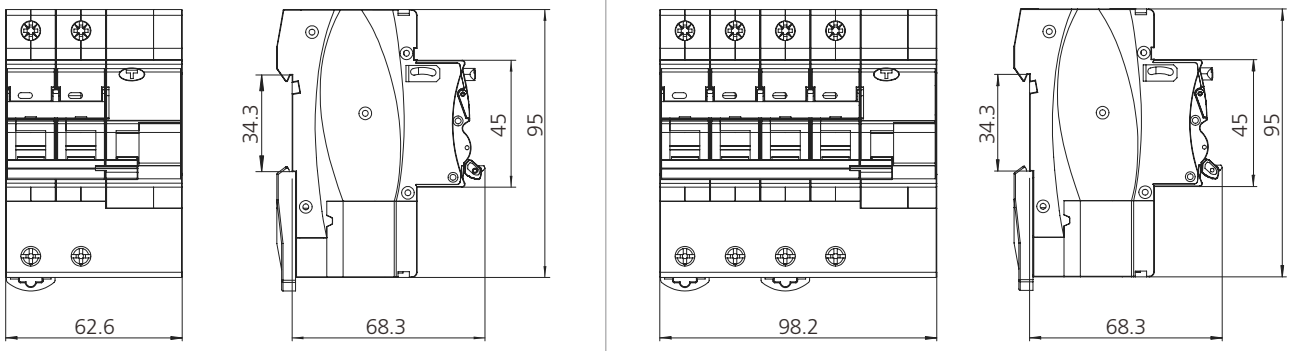
Installation	
Fault current indicator window	Yes
Protection degree	IP20
Ambient temperature	−5~+40°C and its average over a period of 24h does not exceed +35°C
Storage temperature	−25~+ 70°C

Terminal connection type	Cable / U-type busbar / Pin-type busbar
Terminal size top for cable	25mm²
Tightening torque	2.5N·m
Mounting	On DIN rail FN 60715 (35mm)
Connection	Top and bottom

The wiring diagram



Dimensions(mm)



2P 4P

ESRO3-40 RCBO

- Comply with standard IEC61009-1

Detail features

Air circulation

When two poles are placed adjacent to each other,these channels form a tunnel resulting in effective air circulation around individual poles

Bi-connect Termination Possible

Choice to use Busbar and/or cable in the same terminal,provides reliable termination

Select Code

E	S	RO	3	- 40	/ □	□	/ □	/ □
1	2	3	4	5	6	7	8	9

Electrical Features		
Code	**Name**	**Description**
1	ONCCY brand	E
2	AC	S
3	RCBO	RO
4	Series	3:Series3
5	Frame Current	40
6	Tripping curve	B / C / D
7	Rated current	6:6A 10:10A 16:16A 20:20A 25:25A 32:32A 40:40A
8	Poles	1P+N
9	Type	A:A type AC:AC type

Technical Data

Electrical Features	
Mode	Electronic
Type	A / AC
Tripping curve	B C D
Pole No.	1P+N
Rated voltage	240V~
Rated frequency	50/60Hz

Rated current	6-40A
Rated residual operating current(IΔn)	30.100.300mA
Residual operating current range	0.5 IΔn~IΔn
Rated conditional short-circuit current(Inc)	6000A
Energy limiting	class 3
Electrical and Mechanical life	20000

ESRO3-40 RCBO

Standard: IEC61009-1

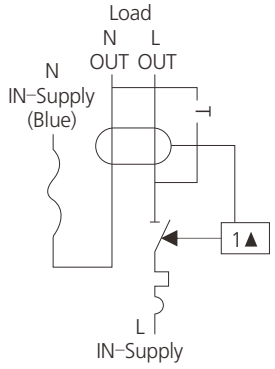
Overload Current Protection Characteristics						
Test Procedure	**Type**	**Test Current**	**Initial State**	**Tripping or Non-tripping Time Limit**	**Expected Result**	**Remark**
A	B.C.D	1.13In	Cold	t≤1h	no tripping	
B	B.C.D	1.45In	After test A	t≤1h	tripping	The current steadily rises to the specified value within 5s
C	B.C.D	2.55In	Cold	1s<t<60s	tripping	
D	B	3In	Cold	t≤0.1s	no tripping	Turn on the auxiliary switch to close the current
	C	5In				
	D	10In				
E	B	5In	Cold	t≤0.1s	tripping	Turn on the auxiliary switch to close the current
	C	10In				
	D	20In				

Residual Current Operating Breaking Time							
Type	**In/A**	**IΔn/A**	**Residual Current(IΔ)Is Corresponding To The Following Breaking Time(S)**				
AC type	Any value	Any value	In	2In	5In	5A.10A.20A.50A.100A.200A.500A	
A type		> 0.01	1.4In	2.8In	7In		
			0.3	0.15	0.04	0.04	Max breaking time

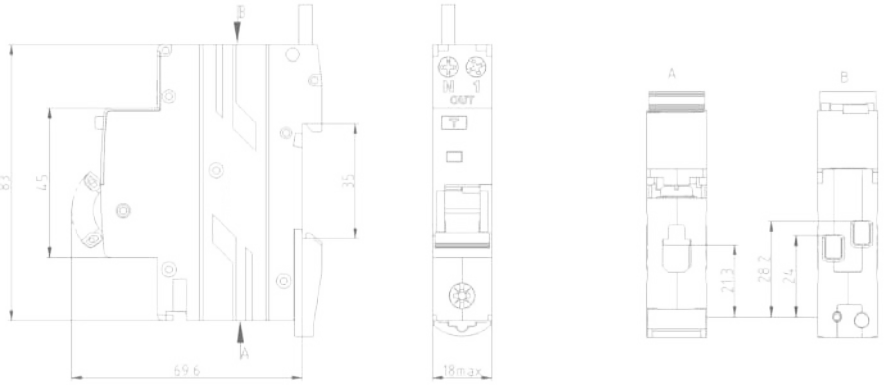
The general type RCBO whose current IΔn is 0.03mA or less can use 0.25A instead of 5IΔn.

Installation	
Fault current indicator window	Yes
Protection degree	IP20
Ambient temperature	-5~+40°C and its average over a period of 24h does not exceed +35°C
Storage temperature	-25~+ 70°C
Terminal connection type	Cable / U-type busbar / Pin-type busbar
Terminal size top for cable	10mm²
Terminal size bottom for cable	25mm²
Tightening torque	2.5N·m/1.2N·m
Mounting	On DIN rail FN 60715 (35mm) by means of fast clip device
Connection	Top and bottom

The wiring diagram

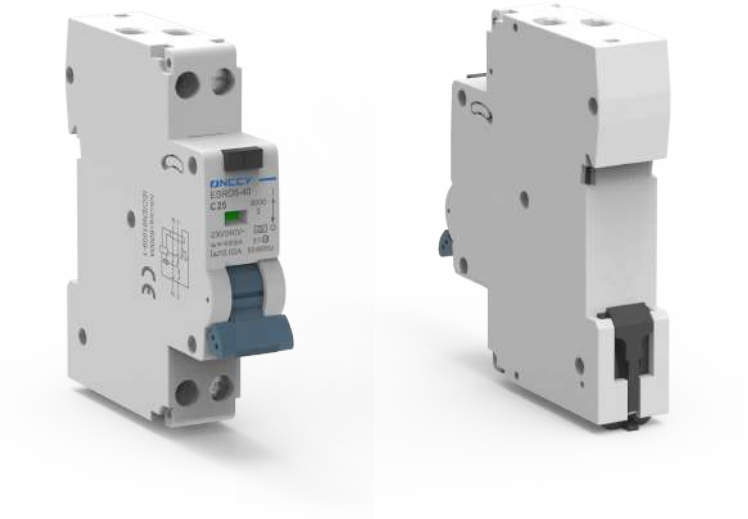


Dimensions(mm)



ESRO5-40 RCBO

- Comply with standard IEC61009-1
- Breaking capacity 6kA



Detail features

Din Rail Mounting

Two step snapping mechanism for easy & efficient mountion in 35mm DIN Rail steadily

Test button

Testing product's performance regularly

Select Code

E	S	RO	5	- 40	/ □	□ / □ / □
1	2	3	4	5	6	7 8 9

Electrical Features		
Code	**Name**	**Description**
1	ONCCY brand	E
2	AC	S
3	RCBO	RO
4	Series	5:Series5
5	Frame Current	40
6	Tripping curve	B / C
7	Rated current	6:6A 8:8A 10:10A 13:13A 16:16A 20:20A 25:25A 32:32A 40:40A
8	Poles	1:1P+N
9	Type	A:A type AC:AC type

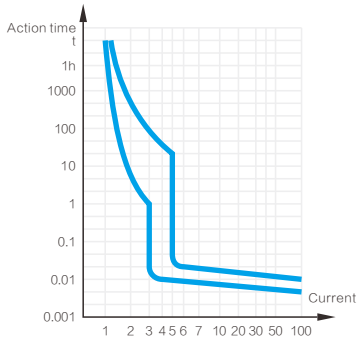
Technical Data

Electrical Features	
Mode	Electronic
Type	A / AC
Rated current(In)	6/8/10/13/16/20/25/32/40A
Pole No.	1P+N
Rated voltage	240V~
Rated frequency	50/60Hz
Insulation voltage(Ui)	500V

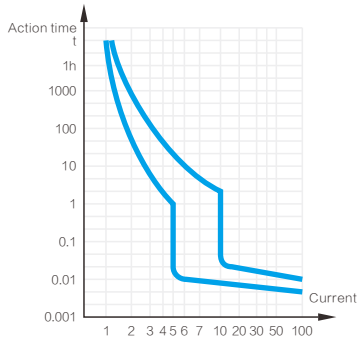
Rated residual operating current(IΔn)	10.30.100.300mA
Rated breaking capacity	6000A
Energy limiting	Class 3
Rated impulse withstand voltage(1.5/50) Uimp	4000V
Dielectric test voltage at ind.Freq.for 1 min	2000V
Pollution degree	2
Thermo-magnetic release characteristic	B.C

ESRO5-40 RCBO

Standard: IEC61009-1



B curve



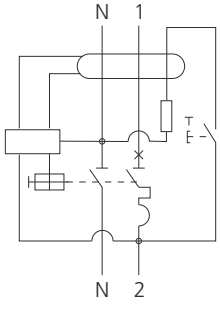
C curve

Thermal Tripping						
As per IEC 60898	NO tripping current	Tripping current I_2	Time Limits t	Hold current I_4	Trip current I_5	Trip Limits t
B Curve	1.13x I_N	1.45x I_N	⩾1h	3x I_N	5x I_N	⩾1s
			< 1h			< 1s
C Curve	1.13x I_N	1.45x I_N	⩾1h	5x I_N	10x I_N	⩾1s
			< 1h			< 1s

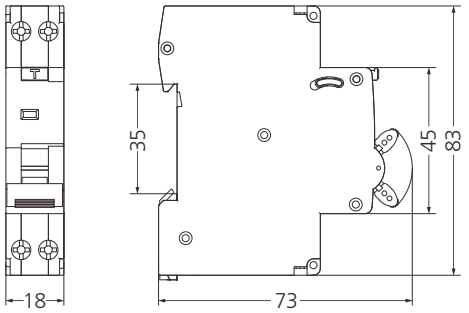
Residual Current Circuit Breaker Tripping Current Range			
Type	Tripping current IΔ/A		
AC		0.5IΔn<IΔ<IΔn	
A	Legging Angle	IΔn<0.01A	IΔn<0.01A
	0°	0.35IΔn<IΔ<1.4Δn	0.35IΔn<IΔ<2Δn
	90°	0.25IΔn<IΔ<1.4Δn	0.25IΔn<IΔ<2Δn
	135°	0.11IΔn<IΔ<1.4Δn	0.11IΔn<IΔ<2Δn

Installation	
Electrical/Mechanical life	4000/10000 Cycles
Contact position indicator	Yes
Protection degree	IP20
Reference temperature for setting of thermal element	30°C
Ambient temperature	−5~+40°C and its average over a period of 24h does not exceed +35°C
Storage temperature	−25~+ 70°C
Terminal connection type	Cable/Pin -type busbar
Terminal size top/bottom for cable	16mm² 18-5AWG
Terminal size top/bottom for busbar	16mm² 18-5AWG
Tightening torque	2.5N·m 22In-lbs
Mounting	On DIN rail FN 60715 (35mm) by means of fast clip device
Connection	Power supply from top

The wiring diagram

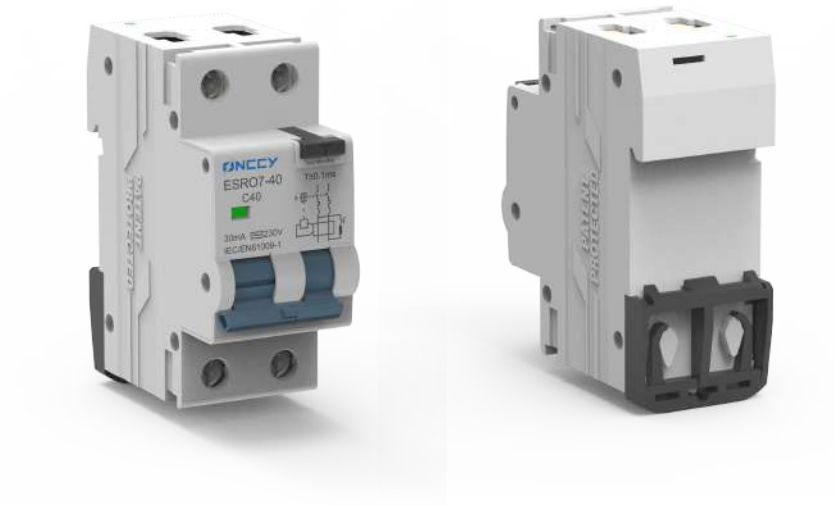


Dimensions(mm)



ESRO7-40 RCBO

- Breaking capacity 6kA/10kA
- Long mechanical and electrical endurance over 20000 cycles operation
- N pole can be switched



Detail features

Cable/Busbar connection

Free choice to connect by U-type/Pin-type busbar as well as cable

Clear and independent Indication

RCD part trip only when earth leakage occurs

Select Code

E	S	RO	7	- 40 /	□	□ /	□ /	□ /	□
1	2	3	4	5	6	7	8	9	10

Electrical Features		
Code	**Name**	**Description**
1	ONCCY brand	E
2	AC	S
3	RCBO	RO
4	Series	7:Series7
5	Frame Current	40
6	Tripping curve	B / C / D
7	Rated current	6:6A 10:10A 16:16A 20:20A 25:25A 32:32A 40:40A
8	Poles	1P+N
9	Type	A:A type AC:AC type
10	Mode	E:Electronic M:Electromagnetic

Technical Data

Electrical Features	
Mode	Electronic / Electromagnetic
Type	A / AC
Tripping curve	B C D
Pole No.	1P+N
Rated voltage	240V~
Rated frequency	50/60Hz

Rated current	6-40A
Rated residual operating current(IΔn)	30.100.300mA
Residual operating current range	0.5 IΔn~IΔn
Rated conditional short-circuit current(Inc)	6000A
Energy limiting	class 3
Electrical and Mechanical life	20000

ESRO7-40 RCBO

Standard: IEC61009-1

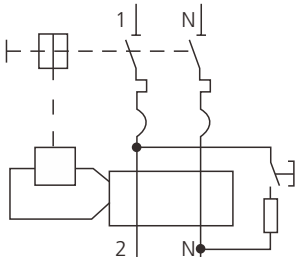
Overload Current Protection Characteristics						
Test Procedure	**Type**	**Test Current**	**Initial State**	**Tripping or Non-tripping Time Limit**	**Expected Result**	**Remark**
A	B.C.D	1.13In	Cold	t≤1h	no tripping	
B	B.C.D	1.45In	After test A	t≤1h	tripping	The current steadily rises to the specified value within 5s
C	B.C.D	2.55In	Cold	1s<t<60s	tripping	
D	B	3In	Cold	t≤0.1s	no tripping	Turn on the auxiliary switch to close the current
	C	5In				
	D	10In				
E	B	5In	Cold	t≤0.1s	tripping	Turn on the auxiliary switch to close the current
	C	10In				
	D	20In				

Residual Current Operating Breaking Time							
Type	**In/A**	**IΔn/A**	**Residual Current(IΔ)Is Corresponding To The Following Breaking Time(S)**				
AC type	Any value	Any value	In	2In	5In	5A.10A.20A.50A.100A.200A.500A	
A type		> 0.01	1.4In	2.8In	7In		
			0.3	0.15	0.04	0.04	Max breaking time

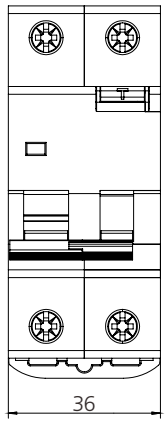
The general type RCBO whose current IΔn is 0.03mA or less can use 0.25A instead of 5IΔn.

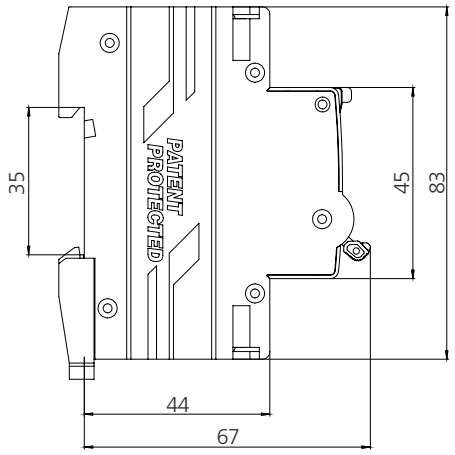
Installation	
Fault current indicator window	Yes
Protection degree	IP20
Ambient temperature	−5~+40°C and its average over a period of 24h does not exceed +35°C
Storage temperature	−25~+ 70°C
Terminal connection type	Cable
Terminal size top for cable	25mm²
Terminal size bottom for cable	25mm²
Tightening torque	2.5N·m
Mounting	On DIN rail FN 60715 (35mm) by means of fast clip device
Connection	Top and bottom

The wiring diagram



Dimensions(mm)





ESRO100-63 RCBO

- Cover and base material: DMC
- Mass production products can pass: 10kA
- Long mechanical and electrical endurance

Detail features

IP20 Degree Protection

Terminals are finger touch proof. Prevent electrical shock by accidental touch

Red/Green indication

With overload current,short circuit and residual current protection on each pole

Din Rail Mounting

Two step snapping mechanism for easy & efficient mountion in 35mm DIN Rail steadily

Technical Data

Electrical Features	
Mode	Electronic
Type	A / AC
Tripping curve	B C D
Pole No.	2P
Rated voltage	240V~
Rated frequency	50/60Hz

Rated current	6-63A
Rated residual operating current(IΔn)	30.100.300mA
Residual operating current range	0.5 IΔn~IΔn
Rated conditional short-circuit current(Inc)	10000A
Energy limiting	class 3
Electrical and Mechanical life	20000

ESRO100-63 RCBO

Standard: IEC61009-1

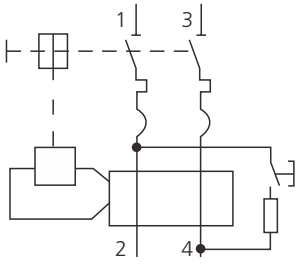
Overload Current Protection Characteristics						
Test Procedure	**Type**	**Test Current**	**Initial State**	**Tripping or Non-tripping Time Limit**	**Expected Result**	**Remark**
A	B.C.D	1.13In	Cold	t≤1h	no tripping	
B	B.C.D	1.45In	After test A	t≤1h	tripping	The current steadily rises to the specified value within 5s
C	B.C.D	2.55In	Cold	1s<t<60s	tripping	
D	B	3In	Cold	t≤0.1s	no tripping	Turn on the auxiliary switch to close the current
	C	5In				
	D	10In				
E	B	5In	Cold	t≤0.1s	tripping	Turn on the auxiliary switch to close the current
	C	10In				
	D	20In				

Residual Current Operating Breaking Time							
Type	**In/A**	**IΔn/A**	**Residual Current(IΔ)Is Corresponding To The Following Breaking Time(S)**				
AC type	Any value	Any value	In	2In	5In	5A.10A.20A.50A.100A.200A.500A	
A type		> 0.01	1.4In	2.8In	7In		
			0.3	0.15	0.04	0.04	Max breaking time

The general type RCBO whose current IΔn is 0.03mA or less can use 0.25A instead of 5IΔn.

Installation	
Fault current indicator window	Yes
Protection degree	IP20
Ambient temperature	−5~+40°C and its average over a period of 24h does not exceed +35°C
Storage temperature	−25~+ 70°C
Terminal connection type	Cable
Terminal size top for cable	25mm^2
Terminal size bottom for cable	25mm^2
Tightening torque	2.5N·m
Mounting	On DIN rail FN 60715 (35mm) by means of fast clip device
Connection	Top and bottom

The wiring diagram



Dimensions(mm)