L&T Electrical & Automation

Enhanced protection for the entire family

Tripper®

CONTENTS


Tripbox PLUS

Tripbox PLUS

Value + Style

The TripBox PLUS range of Distribution Boards (DBs) offers the perfect blend of aesthetics and value. Crafted for modern homes, its features ensure ease of installation, enhanced safety, and protection from accidental damage – with a dash of style.

Safety + Style

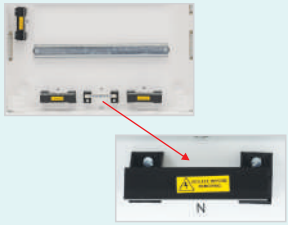
Options for flush and surface mounting

Pleasing powder-coated, matte finish RAL9003

Insulated Busbar

As per IS 8623 Standards

Shrouded neutral bars to avoid accidental contact with live parts



Ease of Installation

Reversible door for double-door Distribution Boards to adapt to site conditions

More space for ease of wiring

Protection from Damage

CRCA sheet steel for extra durability

Plastic corners for corner protection

Cement Spill Protector – to protect DB interior from cement splashes during civil work

SPN DBs

Metal DBs for Single Phase and Neutral (SPN) supply distribution

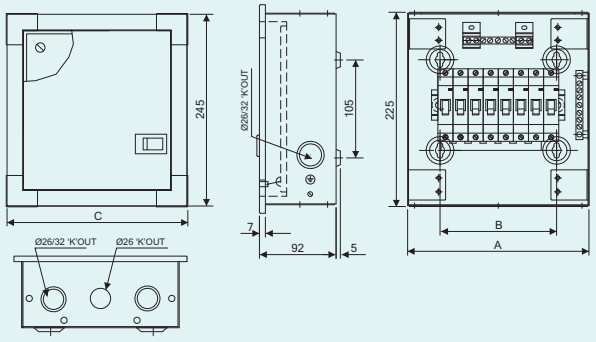
• As per IS 8623 • Available in 4, 6, 8,12 & 16-way • Ready-to-use DB complete with colour-coded wire set, 100A insulated bus bar, neutral bar/s with shroud/s, earth bar/s, cement-spill protector, cable ties, blanking plates and circuit identification label • Choice of metal or glazed door • Provision for DP MCB / Isolator / RCCB / RCBO as incomer and SP MCBs as outgoings

Ordering Info.

Description	Modules		IP43 Double Door	IP43 Glazed Door
	Incomer	Outgoing		
4-way (2+2)	2	2	PH104DDB	PH104DDG
6-way (2+4)	2	4	PH106DDB	PH106DDG
8-way (2+6)	2	6	PH108DDB	PH108DDG
12-way (2+10)	2	10	PH112DDB	PH112DDG
16-way (2+14)	2	14	PH116DDB	PH116DDG

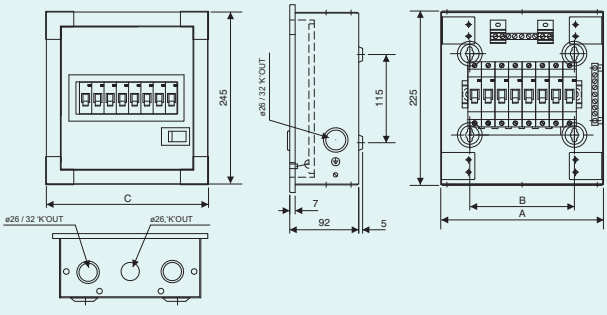
Dimensions

IP43 Double Door – Metal Door



				Top/Bottom	Top/Bottom	Side 'K'OUT
Way	A	B	C	ø26	Ø26/32	Ø26/32
4	140	65	160	—	4 Nos.	2 Nos.
6	175	100	195	—	4 Nos.	2 Nos.
8	210	135	230	2 Nos.	4 Nos.	2 Nos.
12	285	210	305	4 Nos.	4 Nos.	2 Nos.
16	365	290	385	6 Nos.	4 Nos.	2 Nos.

IP43 Double Door – Glazed Door



				Top/Bottom	Top/Bottom	Side 'K'OUT
Way	A	B	C	Ø26, 'K'OUT	Ø26/32 'K'KOUT	Ø26/32 'K'KOUT
4	140	65	160	—	4 Nos.	2 Nos.
6	175	100	195	---	4 Nos.	2 Nos.
8	210	135	230	2 Nos.	4 Nos.	2 Nos.
12	285	210	305	4 Nos.	4 Nos.	2 Nos.
16	365	290	385	6 Nos.	4 Nos.	2 Nos.

All dimensions are in mm

TPN DBs

Metal DBs for Three-Phase and Neutral (TPN) supply distribution

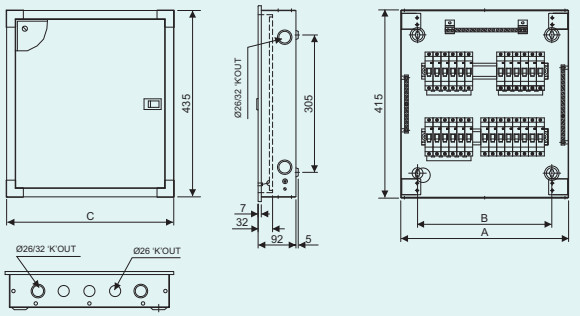
• As per IS 8623 • Available in 4,6,8,12-way • Ready-to-use DB complete with colour-coded wire set, 100A insulated busbar, neutral bar/s with shroud/s, earth bar/s, cement-spill protector, cable ties, blanking plates and circuit identification label
• Choice of metal or glazed door • Provision for FP MCB / Isolator / RCCB / RCBO as incomer and SP MCBs as outgoings

Ordering Info.

Description	Modules		IP43 Double Door	IP43 Glazed Door
	Incomer	Outgoing		
4-way	8	4+4+4	PH304DDB	PH304DDG
6-way	8	6+6+6	PH306DDB	PH306DDG
8-way	8	8+8+8	PH308DDB	PH308DDG
12-way	8	12+12+12	PH312DDB	PH312DDG

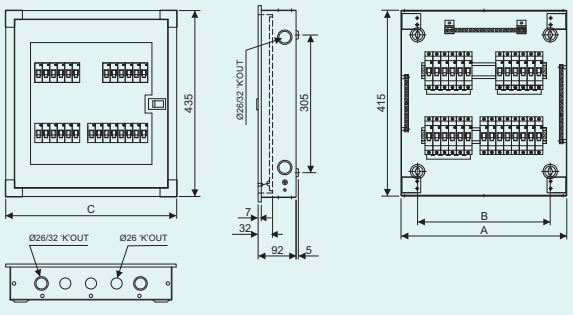
Dimensions

IP43 Double Door – Metal Door



Way	I/C	A	B	C	Top/Bottom Ø26	Top/Bottom Ø26/32	Side 'K'OUT Ø26/32
4	8P	330	255	350	6 Nos.	4 Nos.	4 Nos.
6	8P	370	295	390	6 Nos.	4 Nos.	4 Nos.
8	8P	440	365	460	8 Nos.	4 Nos.	4 Nos.
12	8P	630	555	650	16 Nos.	4 Nos.	4 Nos.

IP43 Double Door – Glazed Door



Way	I/C	A	B	C	Top/Bottom Ø26	Top/Bottom Ø26/32	Side 'K'OUT Ø26/32
4	8P	330	255	350	6 Nos.	4 Nos.	4 Nos.
6	8P	370	295	390	6 Nos.	4 Nos.	4 Nos.
8	8P	440	365	460	8 Nos.	4 Nos.	4 Nos.
12	8P	630	555	650	16 Nos.	4 Nos.	4 Nos.

All dimensions are in mm

Horizontal PPI DBs

Metal DBs for Three-Phase and Neutral (TPN) supply distribution with Per Phase Isolation (PPI)

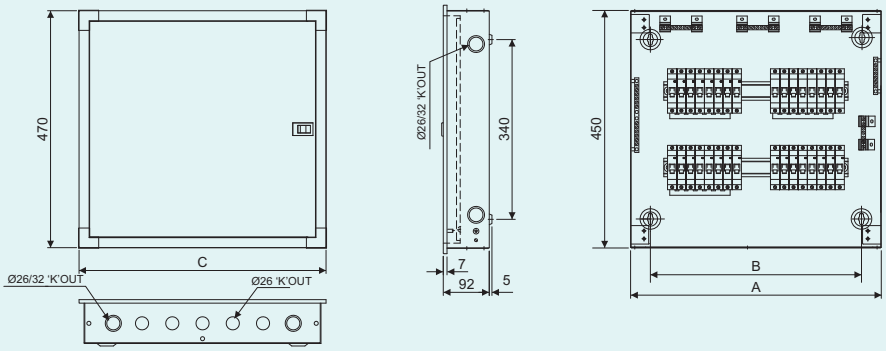
• As per IS 8623 • Available in 4,6,8,12-way • Ready-to-use DB complete with colour-coded wire set, 100A insulated busbar, neutral bar/s with shroud/s, earth bar/s, cement-spill protector, cable ties, blanking plates and circuit identification label
• Provision for FP MCB / Isolator / RCCB / RCBO as incomer, DP RCCB as sub-incomer and SP MCBs as outgoings

Ordering Info.

Description	Modules			
	Incomer	Sub-Incomer	Outgoing	IP43 Double Door
4-way	8	2+2+2	4+4+4	PHP304DDB
6-way	8	2+2+2	6+6+6	PHP306DDB
8-way	8	2+2+2	8+8+8	PHP308DDB
12-way	8	2+2+2	12+12+12	PHP312DDB

Dimensions

IP43 Double Door – Metal Door



					Top/Bottom	Top/Bottom	Side 'K'OUT
Way	I/C	A	B	C	Ø26	Ø26/32	Ø26/32
4+2	8P	375	300	395	6 Nos.	4 Nos.	4 Nos.
6+2	8P	470	395	490	10 Nos.	4 Nos.	4 Nos.
8+2	8P	540	465	560	12 Nos.	4 Nos.	4 Nos.
12+2	8P	680	605	700	16 Nos.	4 Nos.	4 Nos.

All dimensions are in mm

Phase Segregated DBs

Metal DBs for Three-Phase and Neutral (TPN) supply distribution with total phase segregation

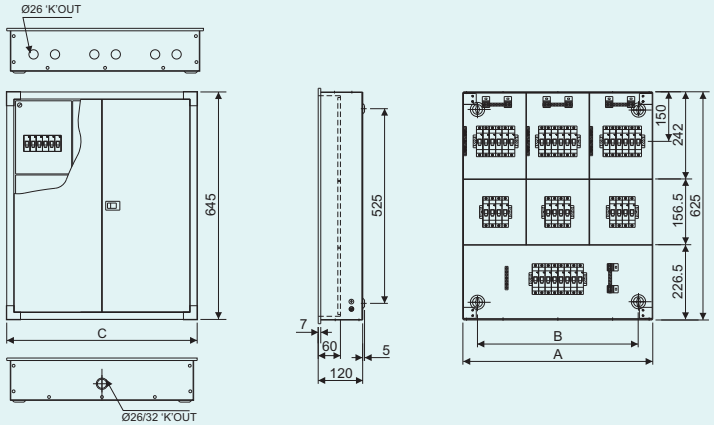
• As per IS 8623 • Available in 4,6,8,12-way • Ready-to-use DB complete with colour-coded wire set, 100A insulated busbar, neutral bar/s with shroud/s, earth bar/s, cement-spill protector, cable ties, blanking plates and circuit identification label • Provision for FP MCB / Isolator as incomer in modular incomer, DP RCCB / RCBO as sub-incomer and SP MCBs as outgoings

Ordering Info.

Description	Modules			
	Incomer	Sub-Incomer	Outgoing	IP43 Double Door
4-way	8	4+4+4	4+4+4	PHS304DDB
6-way	8	4+4+4	6+6+6	PHS306DDB
8-way	8	4+4+4	8+8+8	PHS308DDB
12-way	8	4+4+4	12+12+12	PHS312DDB

Dimensions

IP43 Double Door – Metal Door (Modular I/C)



					Ø26, 'K'OUT	Ø26/32
Way	I/C	A	B	C	Top	Bottom
4	8P	410	330	430	6 Nos.	1 No.
6	8P	520	440	540	6 Nos.	1 No.
8	8P	630	550	650	9 Nos.	1 No.
12	8P	845	765	865	12 Nos.	1 No.

All dimensions are in mm

Phase Selector DBs

Metal DBs for Three-Phase and Neutral (TPN) supply distribution with selector switches for phase selection

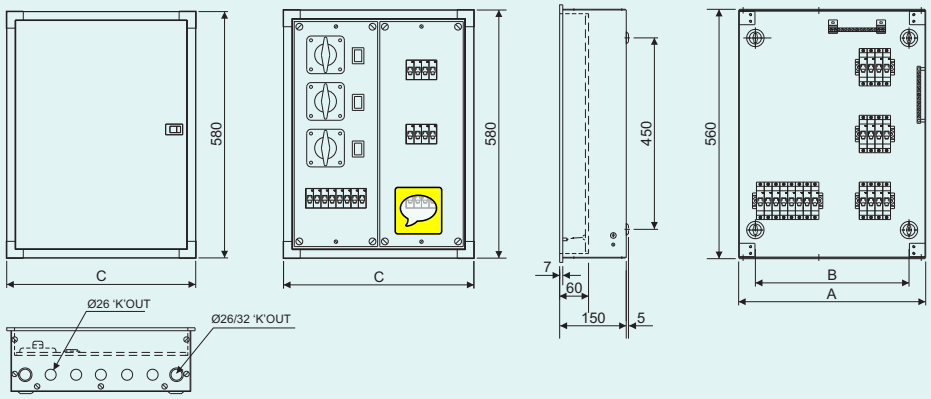
• As per IS 8623 • Available in 4,6,8,12-way • Ready-to-use DB – provided with 63A Salzer rotary switches / colour-coded wire set, 100A insulated busbar, neutral bar/s with shroud/s, earth bar/s, cement-spill protector, cable ties, blanking plates and circuit identification label • Provision for FP MCB / Isolator / RCCB / RCBO as incomer and SP MCBs as outgoings

Ordering Info.

Description	Modules		IP43 Double-Door
	Incomer	Outgoing	
4-way	8	4+4+4	PHC04DDB
6-way	8	6+6+6	PHC06DDB
8-way	8	8+8+8	PHC08DDB
12-way	8	12+12+12	PHC12DDB

Dimensions

IP43 Double Door – Metal Door



					Top/Bottom	
Way	I/C	A	B	C	Ø26 'K'OUT	Ø26/32 'K'OUT
4	8P	420	350	440	8 Nos.	4 Nos.
6	8P	455	385	475	10 Nos.	4 Nos.
8	8P	[illegible]	420	510	10 Nos.	4 Nos.
12	8P	560	490	580	14 Nos.	4 Nos.

All dimensions are in mm

VTPN DBs with Modular Incomer

Metal DBs with vertical busbar for Three-Phase and Neutral (TPN) supply distribution

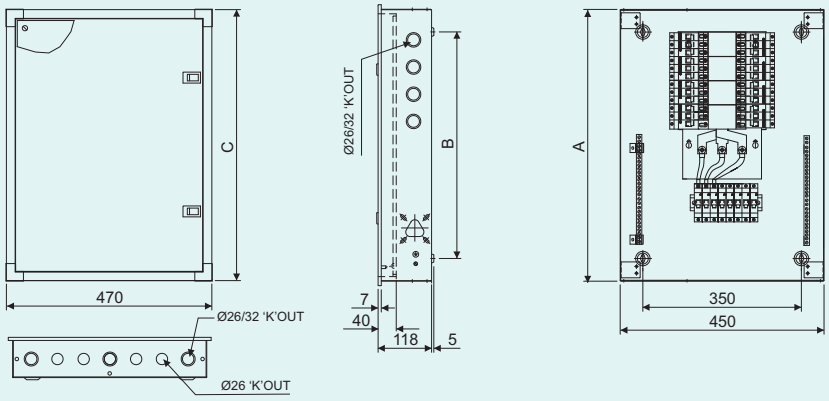
• As per IS 8623 • Available in 4,6,8 & 12-way • Ready-to-use DB complete with colour-coded wire set, neutral bar/s with shroud/s, earth bar/s, cement-spill protector, cable ties, blanking plates and circuit identification label • Provision for FP MCB / Isolator / RCCB / RCBO as incomer and SP / TP MCBs as outgoings

Ordering Info.

Description	Modules		IP43 Double Door
	Incomer	Outgoing	
4-way	8	4+4+4	PHV304DDB
6-way	8	6+6+6	PHV306DDB
8-way	8	8+8+8	PHV308DDB
12-way	8	12+12+12	PHV312DDB

Dimensions

IP43 Double Door – Metal Door



					Top/Bottom	Top/Bottom	Side 'K'OUT
Way	I/C	A	B	C	Ø26	Ø26/32	Ø26/32
4	8P	500	400	520	8 Nos.	6 Nos.	4 Nos.
6	8P	550	450	570	8 Nos.	6 Nos.	6 Nos.
8	8P	600	500	620	8 Nos.	6 Nos.	8 Nos.
12	8P	700	600	720	8 Nos.	6 Nos.	12 Nos.

All dimensions are in mm

VTPN DBs with MCCB Incomer

Metal DBs with vertical busbar for Three-Phase and Neutral (TPN) supply distribution with MCCB as incomer

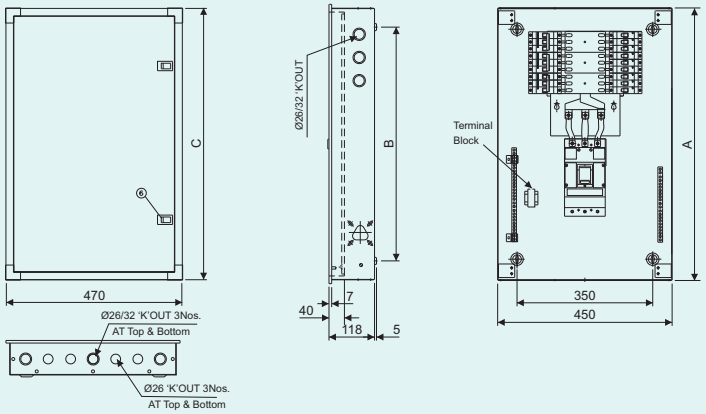
• As per IS 8623 • Available in 4,6,8,12-way • Ready-to-use DB complete with colour-coded wire set, neutral bar/s with shroud/s, earth bar/s, cement-spill protector, cable ties, blanking plates and circuit identification label • Provision for MCCB as incomer and SP / TP MCBs as outgoings • Suitable for 3-Pole & 4-Pole MCCB as incomer. Up to 125A – DY125U

Ordering Info.

Description	Modules		IP43 Double Door
	Incomer	Outgoing	
4-way	MCCB	4+4+4	PHV304DYM
6-way	MCCB	6+6+6	PHV306DYM
8-way	MCCB	8+8+8	PHV308DYM
12-way	MCCB	12+12+12	PHV312DYM

Dimensions

IP43 Double Door – Metal Door



					Top/Bottom	Top/Bottom	Side 'K'OUT
Way	I/C	A	B	C	Ø26	Ø26/32	Ø26/32
4	MCCB	653	553	673	8 Nos.	6 Nos.	4 Nos.
6	MCCB	700	600	720	8 Nos.	6 Nos.	6 Nos.
8	MCCB	757	657	777	8 Nos.	6 Nos.	8 Nos.
12	MCCB	864	764	884	8 Nos.	6 Nos.	12 Nos.

All dimensions are in mm

Enclosures

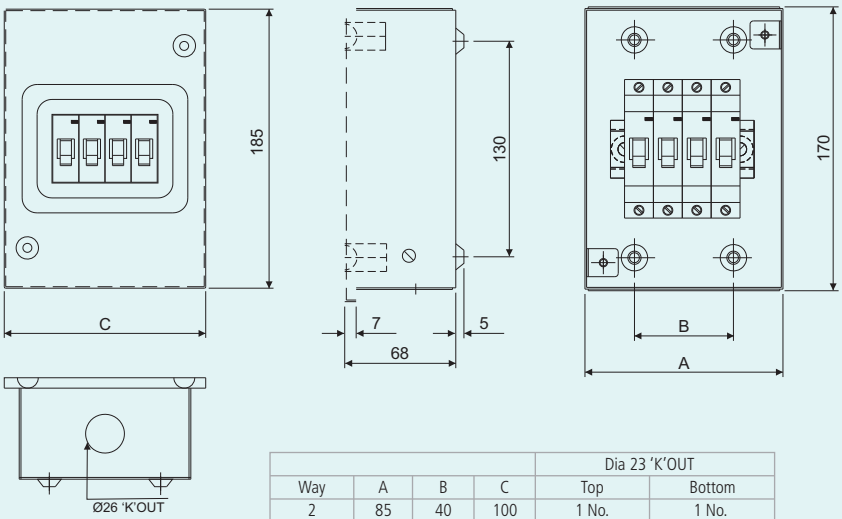
Metal enclosures for flush and surface mounting

• As per IS 8623 • Available in 2,3, 4 & 6-way • Provision to mount MCB / Isolator / RCCB / RCBO and other modular devices.

Ordering Info.

Description	Modules	IP30 Single Door
2-way	2	PHE02DB
3-way	3	PHE03DB
4-way	4	PHE04DB
6-way	6	PHE06DB

Dimensions



				Dia 23 'K'OUT	
Way	A	B	C	Top	Bottom
2	85	40	100	1 No.	1 No.
3	120	60	135	1 No.	1 No.
4	120	60	135	1 No.	1 No.
6	155	95	170	2 Nos.	2 Nos.

All dimensions are in mm

Plug & Socket DBs

Metal-clad plug & socket outlets for supplying loads

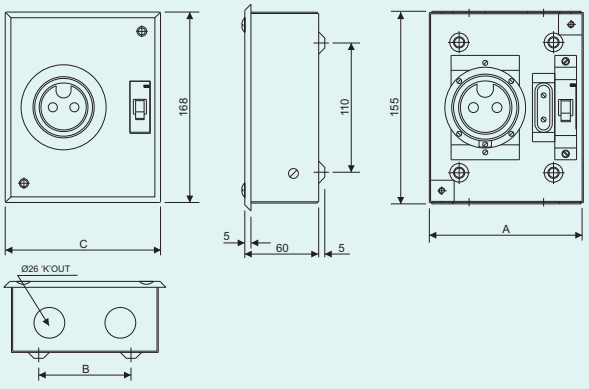
• As per IS 8623 • SPN - 10A & 20A; TPN - 32A • Ready-to-use DBs, complete with colour-coded wire set, neutral bar/s with shroud/s in 1 and 3 modules • Provision to mount MCBs / RCCBs

Ordering Info.

Description	Modules	IP30 Single Door
10A, 2 Pin+SC	1	PMP110DB
20A, 2 Pin+SC	1	PMP120DB
20A, 2 Pin+SC	2	PMP220DB
32A, 3 Pin+SC	3	PMP332DB

Dimensions

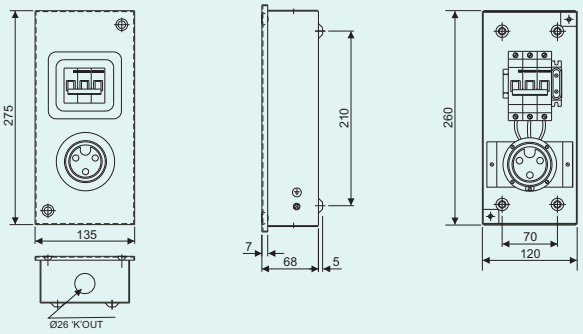
P&S SP DP



				Dia 23 'K'OUT	
Modules	A	B	C	Top	Bottom
1	124	78	137	2 Nos.	2 Nos.
1	124	78	137	2 Nos.	2 Nos.
2	124	78	137	2 Nos.	2 Nos.

Metal P&S

PMP332DB



All dimensions are in mm

Tripbox

- As per IS 8623 • Suitable for surface and flush mounting • Material: CRCA sheet steel, RAL 9010 - glossy finish
- Ready-to-use DB complete with colour-coded wire set, 100A CU busbar, neutral bar, earth bar and DIN channel

Ordering Info.

	Description	Modules	IP30 Single Door	IP43 Double Door
SPN	4-way	4	BH104SDB	BH104DDB
	6-way	6	BH106SDB	BH106DDB
	8-way	8	BH108SDB	BH108DDB
	12-way	12	BH112SDB	BH112DDB
	16-way	16	BH116SDB	BH116DDB

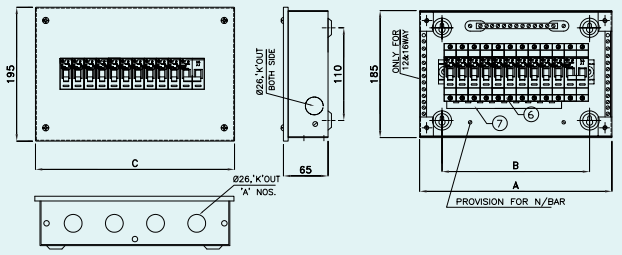
	Description	Modules		IP30 Single Door	IP43 Double Door
		Incomer	Outgoing		
TPN	4-way	8	4+4+4	BH304SDB	BH304DDB
	6-way	8	6+6+6	BH306SDB	BH306DDB
	8-way	8	8+8+8	BH308SDB	BH308DDB
	12-way	8	12+12+12	BH312SDB	BH312DDB

	Description	Modules		IP43 Double Door
		Incomer	Outgoing	
Phase Selector*	4-way	8	4+4+4	BHC04DDB
	6-way	8	6+6+6	BHC06DDB

*With 40A selector switches.

Dimensions

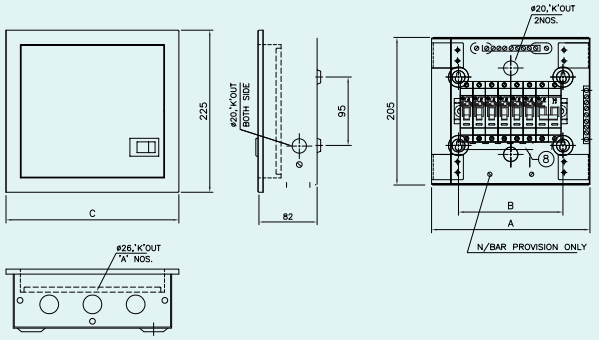
SPN Single-Door



				26 'K'OUT 'A'nos.	
Cat No.	A	B	C	Top	Bottom
BH104SDB	137	74	147	2 Nos.	2 Nos.
BH106SDB	173	110	183	2 Nos.	2 Nos.
BH108SDB	209	132	219	3 Nos.	3 Nos.
BH112SDB	280	203	290	4 Nos.	4 Nos.
BH116SDB	355	278	365	5 Nos.	5 Nos.

All dimensions are in mm

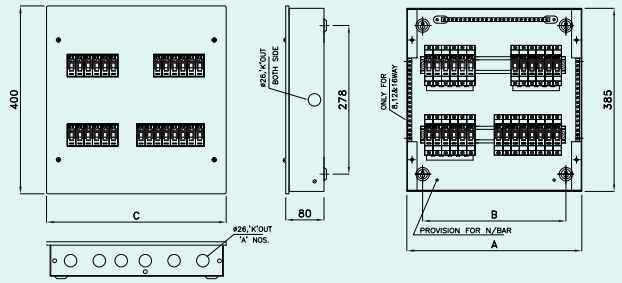
SPN Double-Door



				26 'K'OUT 'A'	
Cat No.	A	B	C	Top	Bottom
BH104DDB	145	70	165	2 Nos.	2 Nos.
BH106DDB	180	105	200	2 Nos.	2 Nos.
BH108DDB	220	145	240	3 Nos.	3 Nos.
BH112DDB	295	220	315	4 Nos.	4 Nos.
BH116DDB	365	290	385	5 Nos.	5 Nos.
BH118DDB	410	335	430	6 Nos.	6 Nos.

All dimensions are in mm

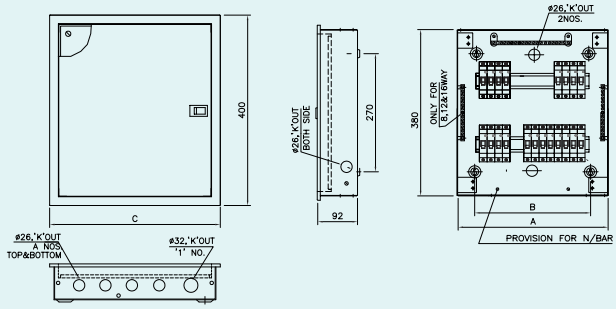
TPN Single-Door



				Ø26, 'K'OUT 'A'	
Cat No.	A	B	C	Top	Bottom
BH304SDB	305	220	320	4 Nos.	4 Nos.
BH306SDB	360	275	385	5 Nos.	5 Nos.
BH308SDB	397	311	412	6 Nos.	6 Nos.
BH312SDB	550	464	565	8 Nos.	8 Nos.

All dimensions are in mm

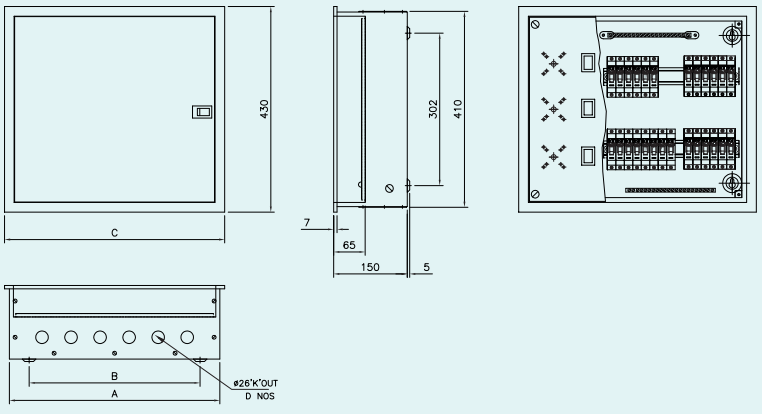
TPN Double-Door



				26, 'K'OUT 'A'	
Cat No.	A	B	C	Top & Bottom	BX. Door
BH304DDB	330	250	350	4 Nos.	S. Door
BH306DDB	370	290	390	4 Nos.	S. Door
BH308DDB	425	345	445	5 Nos.	S. Door
BH312DDB	565	485	58	8 Nos.	D. Door

All dimensions are in mm

Phase Selector



Cat No.	Way	I/C	A	B	C	Ø26, 'K'OUT 'D'	
						Top	Bottom
BHCO4DDB	4	12	430	360	450	6 Nos.	6 Nos.
BHCO6DDB	6	18	465	395	485	7 Nos.	7 Nos.

All dimensions are in mm

Trip Taper®
Modular Devices

The Range that Spells Value

Safety you can trust

True Contact Indication

The Tripper range enhances safety through true contact indication even from a distance, regardless of its knob position. Red and Green indication flag provided below the knob positively identify the electrical ON/OFF status.

World-class Safety Standards

Tripper products conform to relevant global standards, viz., IEC, EN and IS. They also have CE / ISI marking and KEMA certification.

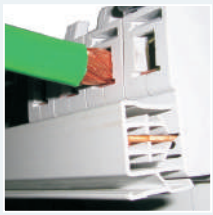
Safety Redefined

Finger-proof terminals eliminate the chances of accidental contact with live parts. You can install, operate and maintain Tripper with total confidence.

Non-welding Contacts

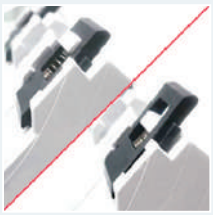
Silver graphite contact tips ensure longer life and maximum safety against contact welding due to their superior anti-welding properties.

Easier installation, longer-lasting



Large Terminal Size and Dual Termination

Tripper can easily accommodate cables of up to 35 sq. mm. The terminals are designed to facilitate termination of cable or busbar or both at incomer side. Tripper terminals offer simple termination flexibly.

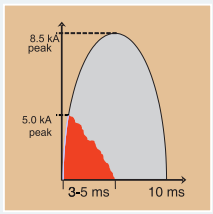


Two-position DIN rail clip

Installation on a DIN rail is further simplified with a two-position DIN rail clip as a standard feature. The Tripper range makes mounting on a standard DIN rail more convenient than others.

Combihead Screw

The Tripper range of products, provided with combihead screws, allows you to use standard as well as Philips screw drivers. The Tripper range addresses all your unidentified needs.

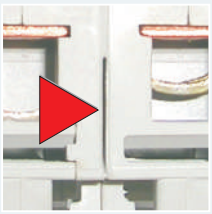


Energy-limiting Class - 3

If a fault occurs, the Rapid Arc Quenching mechanism in Tripper extinguishes the arc quickly (within 3-5 msec), ensuring the lowest possible energy flow through the circuit. This minimises the risk of fire and maximises the life of your equipment.

Safety meets Superior Aesthetics

Ergonomically designed, profiled for superior cooling, and manufactured with fire-retardant material, Tripper offers you safety combined with elegance.



Innovatively profiled Breathing Channels

When two or more poles are placed adjacent to each other, the breathing channels are so profiled that the air circulates around individual pole, resulting in cooler operation, year after year.

MCBs (Miniature Circuit Breakers)

Highlights

• ISI -marked, CE -marked • Conforms to IS / IEC 60898 • Longer life because of heavy-duty contacts • Cooling operation due to breathing space between two poles • Energy saving, i.e. low watt loss (50%) as compared to standards • Manufactured by using high-quality fire-retardant material • True contact indication for enhanced safety • No line-load bias

Technical Specifications

Tripping Characteristics	B & C curve
Rated Operational Voltage	240/415 V AC
Rated Breaking Capacity	6 kA as per EN/IEC 60898-1
Rated Frequency	50/60 Hz
Electrical Life (Operating Cycles)	10,000 cycles
Mechanical Life (Operating Cycles)	1,00,000 cycles
Rated Insulation Voltage	500 V AC
Terminal Capacity	35 sq. mm (rigid)
	25 sq. mm (flexible)

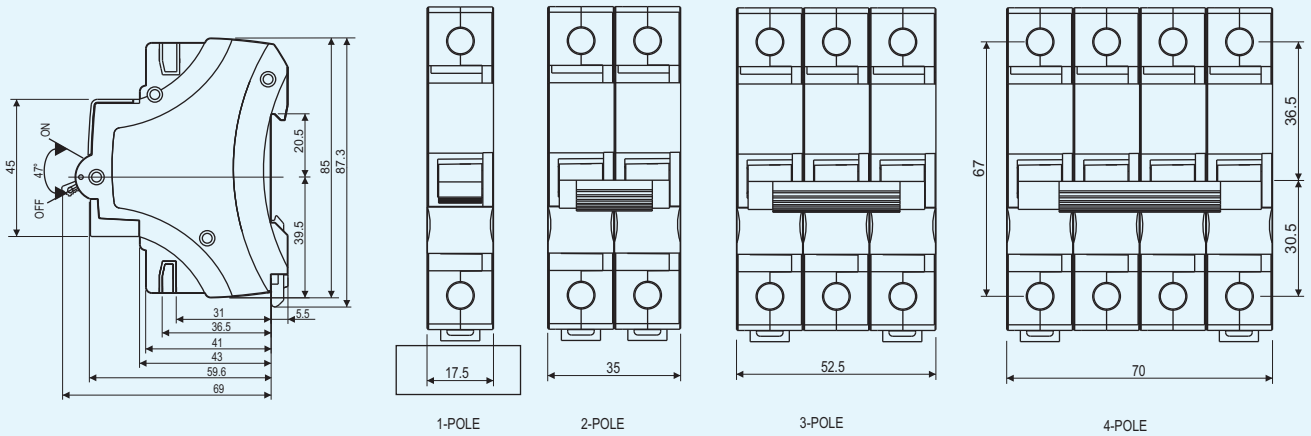
Miniature Circuit Breakers (MCBs) - B Curve

Rating	Single-Pole Cat. Nos.	Double-Pole Cat. Nos.
6A	BA10060B	BA20060B
10A	BA10100B	BA20100B
16A	BA10160B	BA20160B
20A	BA10200B	BA20200B
25A	BA10250B	BA20250B
32A	BA10320B	BA20320B
40A	BA10400B	BA20400B

Miniature Circuit Breakers (MCBs) – C Curve

Rating	Single-Pole Cat. Nos.	Double-Pole Cat. Nos.	Three-Pole Cat. Nos.	Four-Pole Cat. Nos.
6A	BA10060C	BA20060C	BA30060C	BA40060C
10A	BA10100C	BA20100C	BA30100C	BA40100C
16A	BA10160C	BA20160C	BA30160C	BA40160C
20A	BA10200C	BA20200C	BA30200C	BA40200C
25A	BA10250C	BA20250C	BA30250C	BA40250C
32A	BA10320C	BA20320C	BA30320C	BA40320C
40A	BA10400C	BA20400C	BA30400C	BA40400C
63A	BA10630C	BA20630C	BA30630C	BA40630C

Dimensions



All dimensions are in mm

Isolators

Highlights

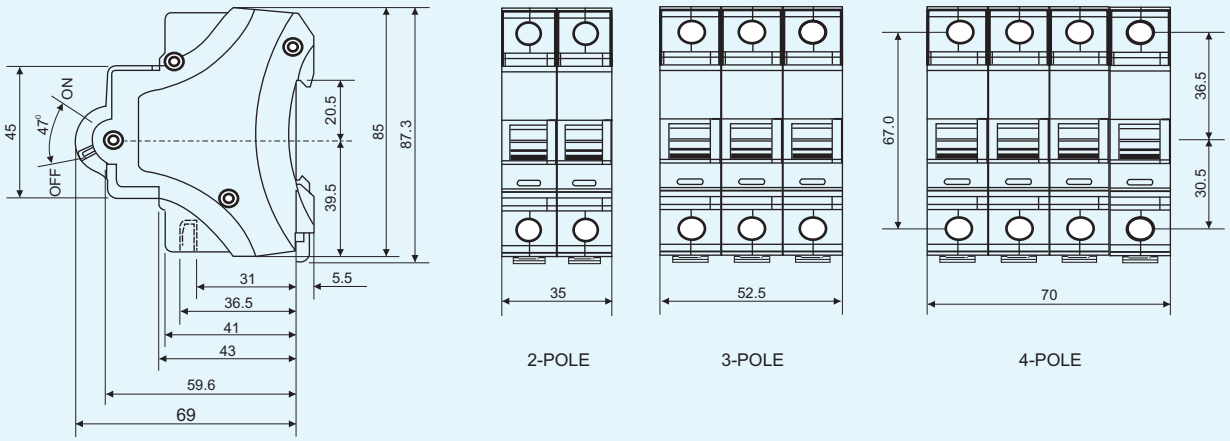
•CE-marked • Conforms to IEC 60947-3 • Longer life because of heavy-duty contacts • Cooler operation due to breathing space between two poles • Energy saving, i.e. low watt loss (50%) as compared to standards • Manufactured by using high-quality fire-retardant material • True contact indication for enhanced safety

Technical Specifications

Rated Operational Voltage	240/415 V AC
Rated Insulated Voltage	500 V AC
Rated Impulse Withstand Voltage	4 kV
Short Time Withstand, Icw	12In, 1 sec
Short Circuit Making Capacity, Icm	3 kA
Rated Frequency	50/60 Hz
Electrical Life (Operating Cycles)	10,000 cycles
Mechanical Life (Operating Cycles)	1,00,000 cycles
Utilization Category	AC-22A
Terminal Capacity	35 sq. mm (rigid) / 25 sq. mm (flexible)

Rating	Double-Pole Cat. Nos.	Three-Pole Cat. Nos.	Four-Pole Cat. Nos.
40A	BE204000	BE304000	BE404000
63A	BE206300	BE306300	BE406300
80A	BE208000	BE308000	BE408000
100A	BE210000	BE310000	BE410000

Dimensions



All dimensions are in mm

RCCBs / ELCBs (Residual Current / Earth Leakage Circuit Breakers)

Highlights

- Conforms to IS 12640-1 • Dual Termination • Available in SPN & TPN with 30mA, 100mA and 300mA sensitivity
- Operates on Core Balance Current Transformer • Finger-proof terminal

Technical Specifications

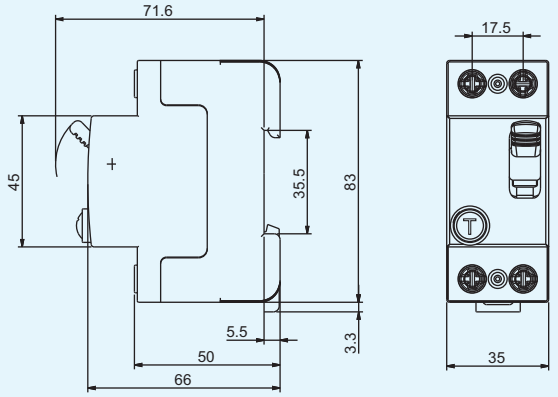
Rated Operational Voltage	240/415 V AC
Rated Conditional SC current	6 kA
Rated Impluse withstand Voltage	4 kV
Rated Insulation Voltage	500 V AC
Rated Frequency	50/60 Hz
Electrical Life (Operating Cycles)	10,000 cycles
Mechanical Life (Operating Cycles)	20,000 cycles
Terminal Capacity	50 sq. mm (rigid) / 35 sq. mm (flexible)

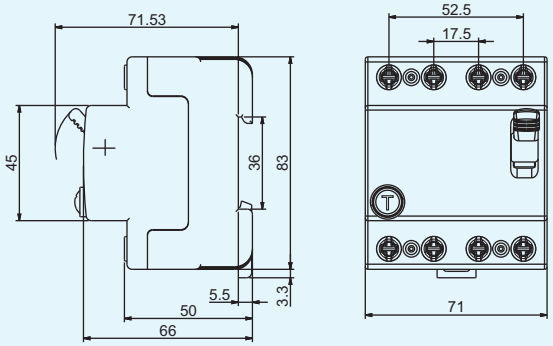
Double-Pole Four-Pole

Double-Pole	
Description	Cat. Nos.
2-Pole 25A 30mA	BC202503
2-Pole 25A 100mA	BC202510
2-Pole 25A 300mA	BC202530
2-Pole 40A 30mA	BC204003
2-Pole 40A 100mA	BC204010
2-Pole 40A 300mA	BC204030
2-Pole 63A 30mA	BC206303
2-Pole 63A 100mA	BC206310
2-Pole 63A 300mA	BC206330

Four-Pole	
Description	Cat. Nos.
4-Pole 25A 30mA	BC402503
4-Pole 25A 100mA	BC402510
4-Pole 25A 300mA	BC402530
4-Pole 40A 30mA	BC404003
4-Pole 40A 100mA	BC404010
4-Pole 40A 300mA	BC404030
4-Pole 63A 30mA	BC406303
4-Pole 63A 100mA	BC406310
4-Pole 63A 300mA	BC406330

Dimensions





All dimensions are in mm

EL+MCBs/ RCBOs (Residual Current Circuit Breakers with Overcurrent Protection)

Highlights

• Combination of ELCB & MCB (EL+MCB) offers 3-in-1 protection against overload, short circuit and earth leakage • Saves human life from electric shock and protects buildings from fire • Quality assured by a test certificate provided with each EL+MCB • Easy fault identification – both knobs come down for earth leakage tripping and only MCB knob comes down for overload tripping

EL+MCBs (RCBO) – 2-Pole

Double-Pole

Description	Cat. Nos. (30mA)	Cat. Nos. (100mA)	Cat. Nos. (300mA)
6A 2P ELCB+MCB	CB90001OOTO	CB90003OOTO	CB90005OOTO
10A 2P ELCB+MCB	CB90001OOVO	CB90003OOVO	CB90005OOVO
16A 2P ELCB+MCB	CB90001OOBO	CB90003OOBO	CB90005OOBO
20A 2P ELCB+MCB	CB90001OOCO	CB90003OOCO	CB90005OOCO
25A 2P ELCB+MCB	CB90001OODO	CB90003OODO	CB90005OODO
32A 2P ELCB+MCB	CB90001OOEO	CB90003OOEO	CB90005OOEO
40A 2P ELCB+MCB	CB90001OOFO	CB90003OOFO	CB90005OOFO
63A 2P ELCB+MCB	CB90001OOHO	CB90003OOHO	CB90005OOHO

EL+MCBs (RCBO) – 4-Pole

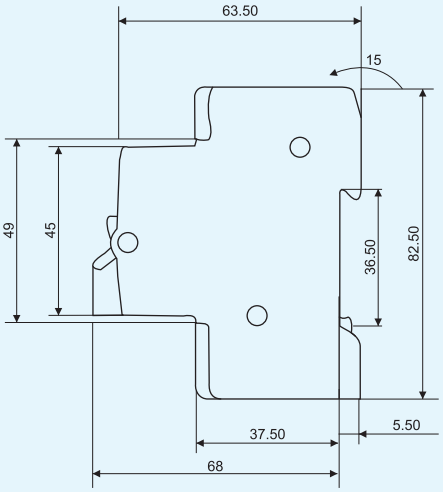
Four-Pole

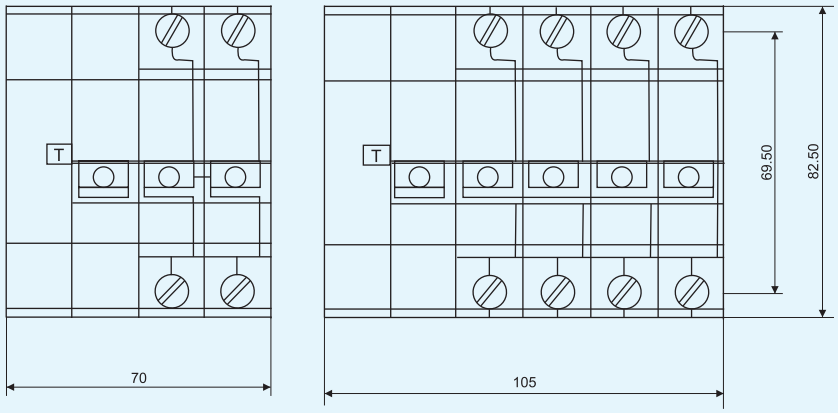
Description	Cat. Nos. (30mA)	Cat. Nos. (100mA)	Cat. Nos. (300mA)
6A 4P ELCB+MCB	CB90002OOTO	CB90004OOTO	CB90006OOTO
10A 4P ELCB+MCB	CB90002OOVO	CB90004OOVO	CB90006OOVO
16A 4P ELCB+MCB	CB90002OOBO	CB90004OOBO	CB90006OOBO
20A 4P ELCB+MCB	CB90002OOCO	CB90004OOCO	CB90006OOCO
25A 4P ELCB+MCB	CB90002OODO	CB90004OODO	CB90006OODO
32A 4P ELCB+MCB	CB90002OOEO	CB90004OOEO	CB90006OOEO
40A 4P ELCB+MCB	CB90002OOFO	CB90004OOFO	CB90006OOFO
63A 4P ELCB+MCB	CB90002OOHO	CB90004OOHO	CB90006OOHO

Technical Specifications

Tripping Characteristics	C curve : 6 A to 63 A
Rated Operational Voltage	240/415 V AC
Rated Breaking Capacity	6 kA as per IEC 61009-1
Rated Impulse withstand Voltage	4 kV
Rated Insulation Voltage	500 V AC
Rated Frequency	50/60 Hz
Electrical Life (Operating Cycles)	10,000 cycles
Mechanical Life (Operating Cycles)	20,000 cycles
Terminal Capacity	25 sq. mm

Dimensions





2-POLE

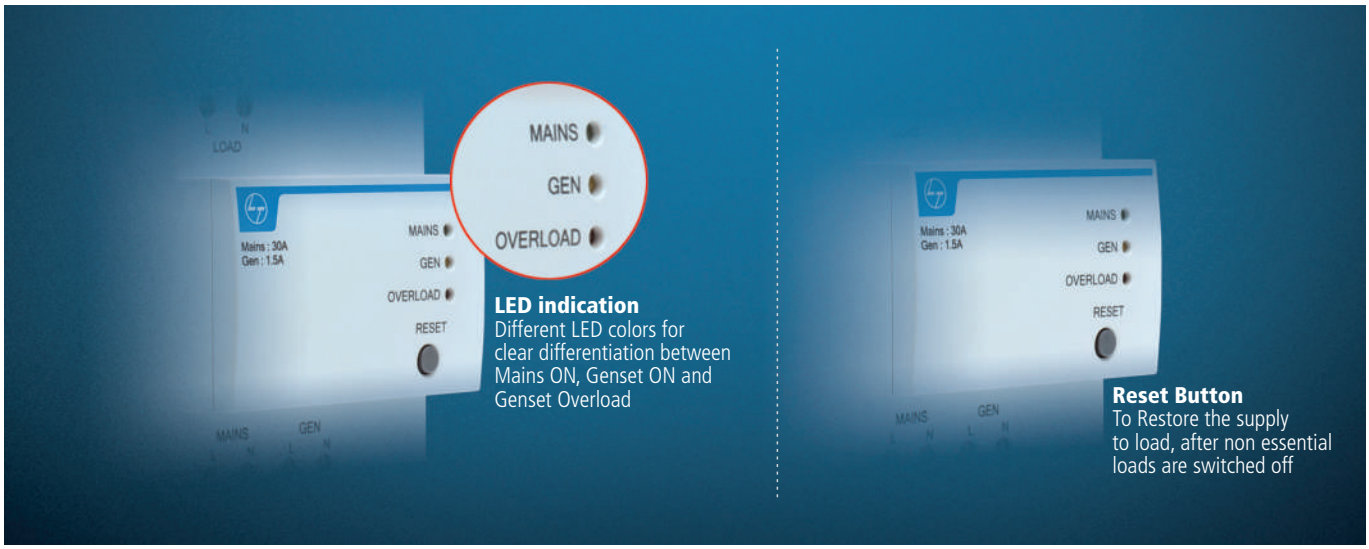
4-POLE

All dimensions are in mm

ACCL (Automatic changeover with current limiter)

Highlights

• Conforms to IEC 60947-6, IEC 60947-3 • Wide Range of Current Ratings: (Generator side) – 1.5A to 30A, (Electricity Boards side) – 30A • No. of Poles 1P+N • Protection Degree - IP20 • Reliable microcontroller based design for sensing & control • Lower power consumption • RoHS compliant

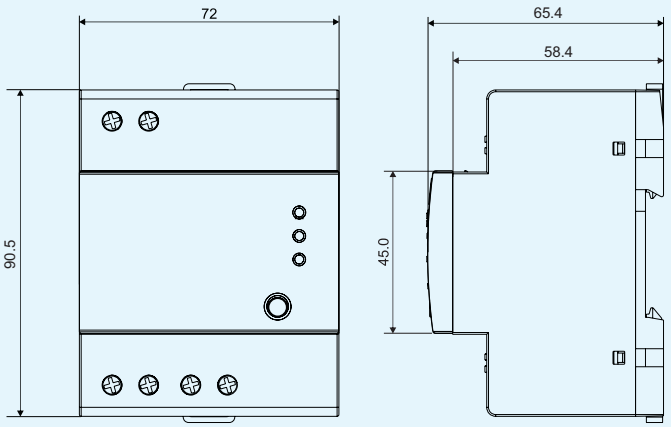


Technical Specifications

Rated Operational Voltage	230V
Rated Insulation Voltage	500V
Rated Impulse Voltage	2.5kV
Rated Frequency	50Hz
Electrical Life (Operating Cycles)	6000
Utilization Category	AC 31B (IEC 60947-6) /
	AC 21A (IEC 60947-3)
Conditional short-circuit current	3kA
Dielectric strength	2kV
Changeover time (Mains to DG)	~ 11 sec.
Terminal Capacity	6 mm2 (flexible)
	10 mm2 (rigid)
Operating Temperature	-5°C to 50°C

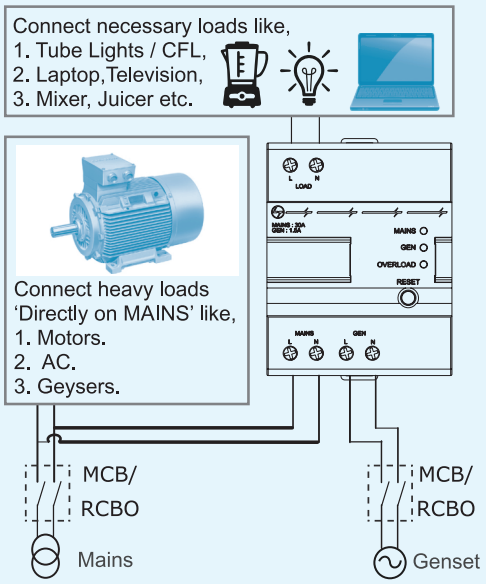
Single Phase ACCL	Modules	Cat. Nos.
30A/1.5A	4	BCL010301E5
30A/2.5A	4	BCL010302E5
30A/3A	4	BCL01030003
30A/4A	4	BCL01030004
30A/5A	4	BCL01030005
30A/6A	4	BCL01030006
30A/8A	4	BCL01030008
30A/10A	4	BCL01030010
30A/12A	4	BCL01030012
30A/15A	4	BCL01030015
30A/20A	4	BCL01030020
30A/30A	4	BCL01030030

Dimensions



All dimensions are in mm

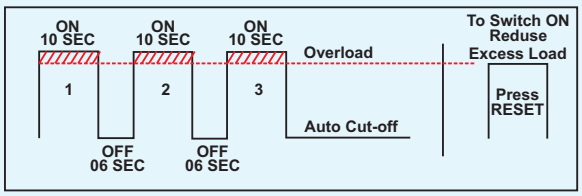
Connection Diagram



Recommended Backup MCB Ratings

ACCL Ratings		MCB Ratings		ACCL Cat. Nos.
Mains	Genset	On Mains Side	On Genset Side	
30A	1.5A	32A	2A	BCL010301E5
	2.5A		3A	BCL010302E5
	3A		3A	BCL01030003
	4A		4A	BCL01030004
	5A		5A	BCL01030005
	6A		6A	BCL01030006
	8A		10A	BCL01030008
	10A		10A	BCL01030010
	12A		16A	BCL01030012
	15A		16A	BCL01030015
	20A		20A	BCL01030020
	30A		32A	BCL01030030

Timing Diagram



Protect yourself against electric shock

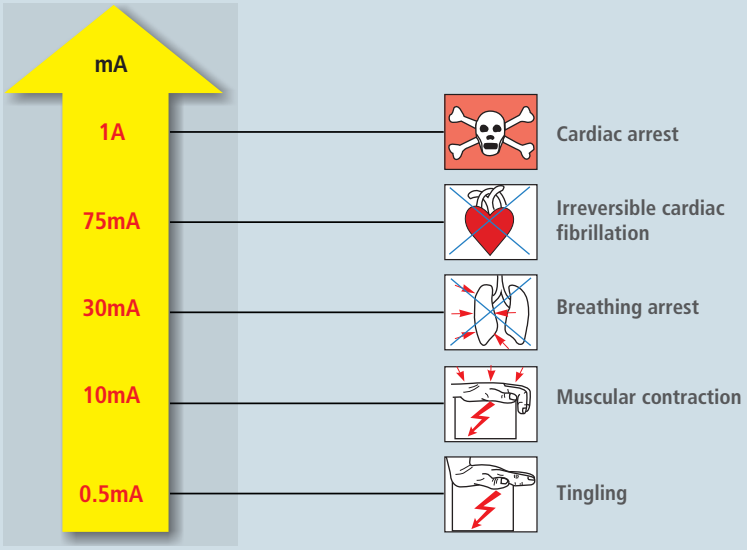
'Short-circuit' is the term commonly used to describe various electrical faults. A short-circuit is caused by 2 or 3 phases getting shorted or shorting between phase to neutral. During this phenomenon, the system experiences an abnormally high flow of current which can damage the equipment / installations and even cause a fire. Electrical devices like HRC fuses, circuit breakers (MCBs, MCCBs, etc.) are commonly used for protection against such short-circuit faults.

Circuit Breakers like MCBs, MCCBs and HRC fuses do not detect 'leakage currents' which are dangerous to humans and livestock. Leakage current can also lead to a fire. Therefore we need a protection device which detects such leakage currents and disconnects the circuit if they occur.

An RCCB – Residual Current Circuit Breaker – is the device which does precisely this function. It is also called an Earth Leakage Circuit Breaker (ELCB).

Effects of Leakage Current on the Human Body

The effects of various current levels on the human body are shown below:



The gravity of an electric shock depends on:
• Current value • Time for which current remains in the human body • Path that current takes through the human body
• Resistance of the human body

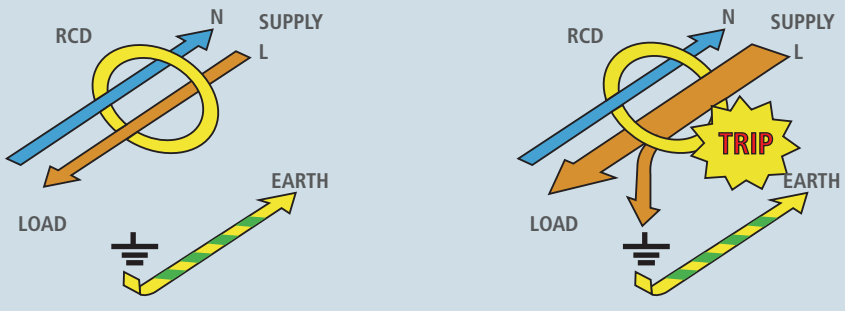
When a current in excess of 30mA flows through the human body, the person runs the risk of being harmed if this current is not interrupted in a relatively short time.

Working Principal of an RCCB

An RCCB or Residual Current Device (RCD) offers leakage protection by constantly monitoring the current flowing in the live and neutral wires supplying a circuit or individual equipment. Under normal circumstances, the current flowing in the two wires is equal.

Earth leakage current will flow in the circuit due to:
1. Poor insulation of wire/equipment, and
2. Accidental human contact with live/faulty equipment/circuit.

A correctly selected RCCB will detect current leakage due to these conditions – and trip.



EL+MCB is also part of the RCD family offering 3-in-1 protection against short-circuit, overload and earth leakage.

Different sensitivities in RCCBs

Sensitivity in mA is one of the technical parameters of an RCCB. It indicates the tripping threshold of the product. Accordingly, RCCB with 30mA sensitivity will not trip below 50% of rated sensitivity value (15mA in this case) and will definitely trip beyond 15mA and up to 30mA. RCCBs are typically offered in 30mA, 100mA and 300mA sensitivities. Typical applications of RCCBs with these sensitivities can be as below:

Sensitivity	Typical Application
30mA	Human Protection – Kitchens, bathrooms, laboratories, schools and workshops, etc.
100mA	Protection against indirect contact, limited personal protection
300mA	Cable/fire protection in an industrial environment

Precautions for installing an RCCB

1. Wiring should be done as per the wiring diagram, by a trained and qualified electrician.
2. All wiring necessary for operation shall be passed through the RCCB.
3. All equipment must be properly earthed.
4. To ensure correct functioning, care must be taken that the neutral conductor on the load side of the RCCB must not be connected to earth, otherwise nuisance tripping may occur or tripping may be impaired.
5. In case individual RCCBs are used as sub-incomers in R, Y and B phases, outgoing neutrals of these RCCBs should not be looped together, separating all three phases/circuits electrically.
6. An overcurrent protection device such as an MCB or HRC fuse shall be used for protection of the circuit under installation.

Test Button Facility in RCCBs

As RCCBs provide protection against leakage current, one needs to be certain that these products are always ready to act whenever current leaks. To obtain this assurance, there is the provision of a 'Test Button' in RCCBs. While the RCCB is energized (given necessary power supply), one can press the test button, which will activate the mechanism inside and make the RCCB trip. It shows that the RCCB is in good condition and is ready to provide leakage current protection.

Why an RCCB should not be bypassed

If the sensitivity selection of an RCCB is not done properly, it might trip when not required. And one of the reasons for bypassing RCCBs is unwanted tripping.

For example, the circuit demands that an 100mA RCCB be installed; the RCCB will not trip up to 50mA and will trip in the band beyond 50mA and up to 100mA. Now, on account of incorrect selection, if a 30mA RCCB is installed in this circuit, it might trip needlessly.

If the RCCB is bypassed, there will not be any leakage protection device in the system, leading to electric shock and a fire. Therefore, it is important to select an RCCB with right sensitivity and not bypass it in the system.

NOTES

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L&T SWITCHGEAR
SAFE & SURE

L&T Electrical & Automation

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