Ordering Code

1,2	3,4		5		6		7,8,9,10,11,12				13,14,15					
							CODE				TRIP RELAY					
TYPE	ACB/CT RATING		No.of POLES		Manual / Electrical - FIXED/DRAW OUT		MOTOR	CC	SHT	VOLTAGE RATING	TYPE		Communication & Protection		CONTROL VOLTAGE & FREQUENCY	
	630A	06	3-POLE	3	MANUAL/ELECTRICAL FIXED	F	M0	D0	D0	NIL	WITHOUT TRIP RELAY (CODE:- 000)					
	800A	08	4-POLE	4			M1	D1	D1	AC/DC 100-130V						
BN/ AN	1000A	10			MANUAL DRAW OUT	C	M2	D2	D2	AC/DC 200-250V	NORMAL	N	Without Communication + L/S/I/G	G	SELF POWERED,50HZ	0
	1250A	12			ELECTRICAL DRAW OUT	D	M3	D3	D3	DC 125V					SELF POWERED,60HZ	5
	1600A	16					M4	D4	D4	DC 24-30V						
BN	2000A	20					M5	D5	D5	DC 48-60V	AMMETER	A	Without Communication	G	SELF POWERED,50HZ	0
	2500A	25					M6	D6	D6	AC 380-415V			Without Communication + Earth Leakage	Z	AC/DC 100-250V, 50 HZ	1
	3200A	32					M7	D7	D7	AC 48V			Without Communication + Earth Leakage	E	DC 24-60V, 50HZ	2
BS/ AS	2000A	20					M8			AC 440-480V			Communication	C	SELF POWERED,60HZ	5
	2500A	25											Communication + Earth Leakage	K	AC/DC 100-250V, 60 HZ	6
	3200A	32											Communication + Earth Leakage	X	DC 24-60V, 60HZ	7
	4000A	40														
	5000A	50									POWER METER	P	Communication	C	AC/DC 100-250V, 50 HZ	1
	6300A	63											Communication + Earth Leakage	K	DC 24-60V, 50HZ	2
													Communication + Earth Leakage	X	AC/DC 100-250V, 60 HZ	6
													Communication + Pre-Trip Alarm	A	DC 24-60V, 60HZ	7

"NORMAL" type Release
* L/S/I/G configuration supplied as standard
  - With LED Indicators
  - Without output contacts
* Ground fault system is by vector sum

"AMMETER" type Release
* L/S/I/G configuration supplied as standard
* Ground fault system is by vector sum(G,C)
* Earth Leakage system
  -Z,K: External CT- HPL ZCT to be used for fault current 0.5- 30A, 1600AF
  -E,X: External CT- Customer has to use on his own for fault current > 30A
* Communication and output contacts DO NOT work under self power condition

"POWER METER" type Release
* L/S/I/G configuration supplied as standard
* Ground fault system is by vector sum(G,C)
*Earth Leakage system
  -K: External CT- HPL ZCT to be used for fault current 0.5- 30A, 1600AF
  -X: External CT- Customer has to use on his own for fault current > 30A
* Applicable for generator protection purpose

HPL ACB Cat. 05/20

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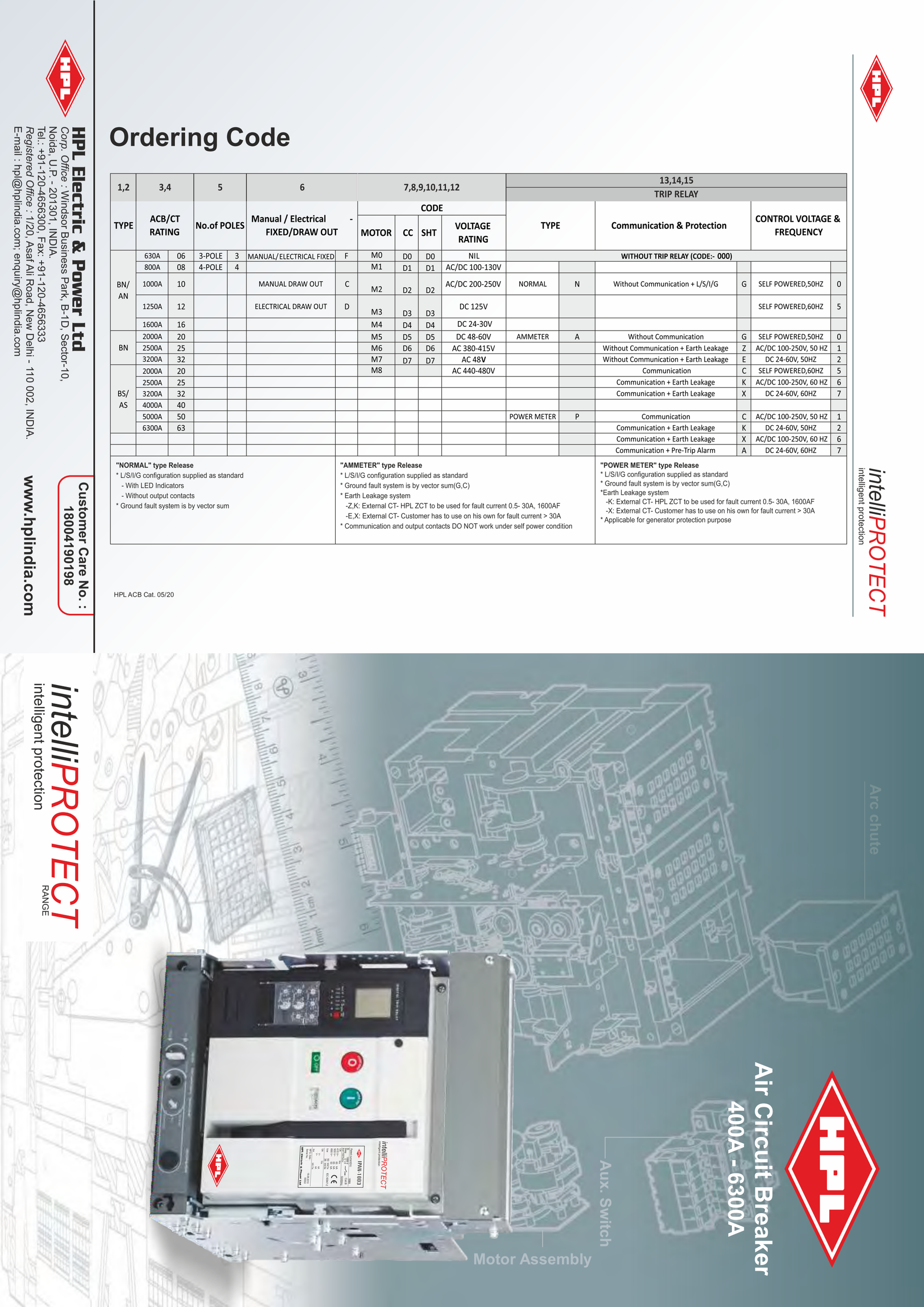
Customer Care No. : 18004190198

intelliPROTECT
intelligent protection



intelliPROTECT RANGE
intelligent protection

Air Circuit Breaker

*intelli*PROTECT RANGE

intelligent protection

Corporate Information

HPL's vision of creating a niche, as a major player in India Electrical Industry with commitment to state-of-the-art technology & world class products.

HPL Group possess 7 State-of-the-art Manufacturing Facilities, ISO 9001 : 2000; ISO 14001; OHSAS 18001 certified located at Gurgaon, Kundli, Panipat, Jabli Himachal Pradesh and Guwahati having 5,00,000 sq. feet covered area to manufacture products confirming to International and India standards.

HPL Products Profile has the following Strategic Business Units :

- LV Switchgears
- LV Protection Devices
- Metering and Energy Management Systems
- Lighting
- Luminaires
- Wires & Cables
- Solar Solutions
- Electrical Wiring Accessories

HPL Products are tested at CPRI, ERDA, ERTL, NPL etc. according to Indian Standards, whereas MCB's Rewireable Switches & Electronic Energy Meters carry ISI marking. Further HPL products have approvals from CPWD state PWD's, MES, BSNL & many more Institutional users.

HPL Group with Head Office at Noida (U.P.) has extensive Sales & Marketing Network of 90 Branch offices & Representative Offices, over 2000+ Authorised Dealers and 27000+ Retailers across country, who are committed to provide solutions and services to customer's delight. HPL is also exporting its products to Middle East, SAARC and European Countries.

HPL range of ACBs are in technical collaboration with LS Industrial Systems Co. Ltd, Korea, a US$ 25 billion group. LS Industrial Systems is a leader in LV, MV & HV Switchgear, Circuit Breakers, Automation, Large scale systems, GIS and Green technologies solutions.

Air Circuit Breaker

intelliPROTECT

intelligent protection

Range of HPL Air Circuit Breaker meets your demands for high breaking capacity and optimized panel size. Wide range of accessories and connection methods offerings meet the various installation needs & simplified switch board design.

It provides total solutions with an advanced trip relay for measurement, diagnosis, analysis and communication as well as protective functions for absolute protective coordination and electric power monitoring system.

HPL range of ACBs are in technical collaboration with LSIS Co. Ltd, Korea, a US$ 25 billion group. LSIS is a leader in LV, MV & HV Switchgear, Circuit Breakers, Automation, Large scale systems, GIS and Green technologies solutions.

Overview

Product Introduction

Background Information on Development of intelliprotect series of ACB

It is developed to meet high breaking capacity required for elevated electricity demand, to satisfy compact distribution panel size demanded in markets, to achieve 100% N phase current conducting capacity on single phase load (3Ø4w line), and to increase users convenience by providing various accessories and connecting methods. Moreover, providing total solutions for customers by developing a relay, to achieve absolute protective coordination, and to correspond with IT system.

Product Offer :

Ics = 100%Icu at 500Vac

1600 AF	3200 AF	5000 AF	6300 AF
65kA	70kA / 85kA	85kA / 100kA	120kA

• Also, ACB with 50kA (Ics = Icu) available upto 3200A.

Characteristics

- Modularity & Compactness
- Various Accessories Possession.
- Comply with IEC / IS
- Acquire multi-rating (690Vac, 500Vac) standard for all models.
- Impulse Withstand Voltage (Uimp) : 12kV.
- Ics = 100%Icu.
- Icw Ratings :
  - 50kA (for 1 Sec.) to 100kA (for 1 sec.)
  - Also, Icw for 2sec. & 3 sec. available
- Enhanced Life
- Multiple terminal connection choice
- N phase current conducting capacity : 100%
- Suitable for installations with IT system
- Possess various customer oriented digital trips (N, A & P Type)
- The wide spectrum of protection functions with a flexibility of thresholds & trip times make it suitable to meet any type of installation need.
- Advanced measurement function, communication function & additional protection function over and above traditional made it a true choice for any application.

External Configuration

Fixed type ACB

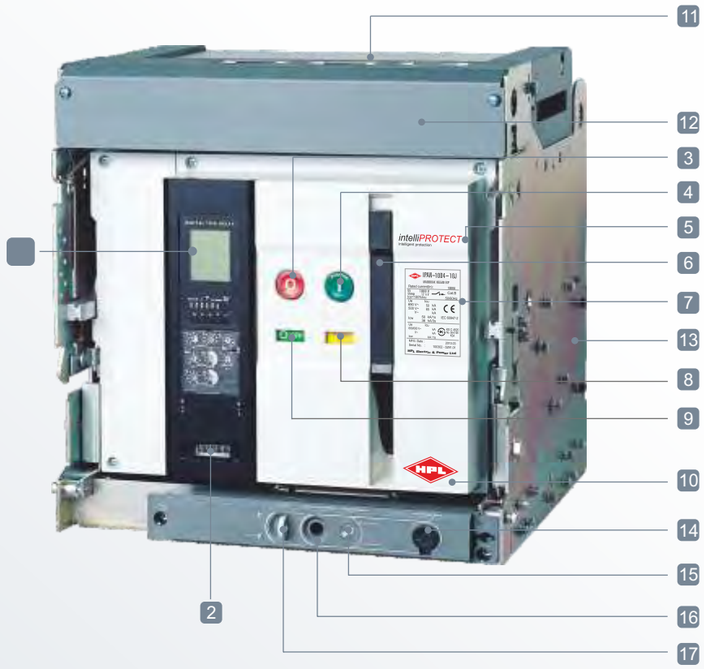
Terms

1. Trip relay
2. Counter
3. OFF button
4. ON button
5. Series name
6. Charge handle
7. Rated name plate
8. Charge / Discharge indicator
9. ON / OFF indicator
10. Company Logo
11. Arc cover
12. Terminal cover
13. Cradle
14. Handle storage space
15. Position indicator
16. Draw-out handle
17. Pad lock button
18. Arc chute
19. Control cover

Available in Fixed and Draw out - Three pole & Four pole - manual & Electrical draw-out version through out the range.

Offers all the functions & characte-ristics of a power circuit breaker in a very compact volume.

Also standardization & optimisation of switchboard is simplified - result of innovative integration of components and performance. The uniform height & depth made it a perfect choice of switchboard Manufactures.



Draw-out ACB

Overview

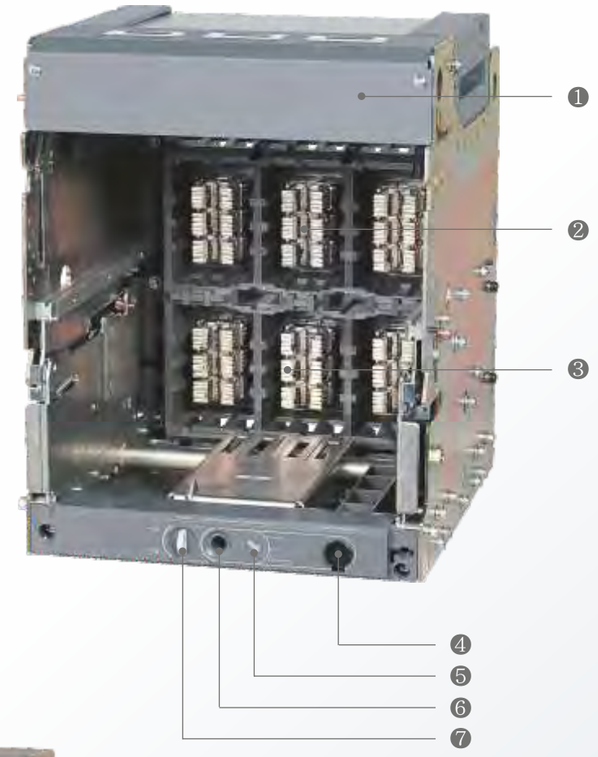
ACBs are built with very strong robust metal structure - can withstand very high level of thermal / dynamic stresses extending there by reliability and dependability along with safety for each installations.

The fixed part of drawout ACB have safety shutters & racking interlock features to extend safety when ACB is withdrawn.

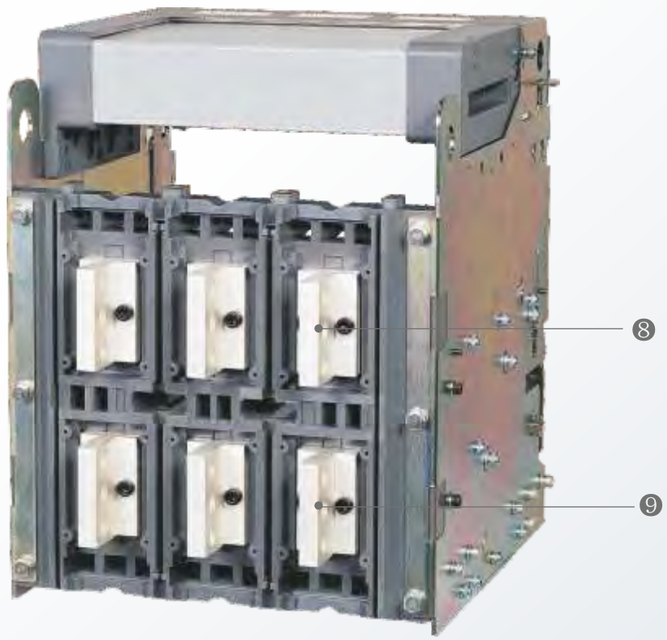
Terms

1. Terminal cover of control circuit
2. Cradle finger (Line side)
3. Cradle finger (IOAD SIDE)
4. Draw-out handle
5. Position indicator
6. Handle storage space
7. Pad lock button
8. Connecting conductor (Line side)
9. Connecting conductor (Load side)

Cradle (Internal)



Cradle (Rear)



Provision for multiple connection options meets various installation needs and offers ease of termination while fabricating the switch board and during installation.

Ratings

D - Frame

Type				AN06	AN08	AN10	AN12	AN16
Ampere frame	(AF)			630	800	1000	1250	1600
Rated current(A)	(In max)	at 40℃		400 630	630 800	1000	1250	1600
Setting current (A) *	Control trip relay (... × In max)			(0.4 ~ 1.0) × In max				
Rated current of neutral pole (A)				400 630	630 800	1000	1250	1600
Rated insulation voltage(V)	(Ui)			1000				
Rated operating voltage(V)	(Ue)			690				
Rated impulse withstand voltage (kV)	(Uimp)			12				
Frequency (Hz)				50/60				
Number of poles (P)				3/4				
Rated breaking capacity (kA sym) AC 50/60Hz	(Icu)	IEC 60947-2 KS C 4620	220V/230V/380V/415V	65				
			460V/480V/500V	65				
			550V/600V/690V	50				
Rated service breaking capacity (kA)	(Ics)		... % × Icu	100%				
Rated making capacity (kA peak) AC 50/60Hz	(Icm)	IEC 60947-2 KS C 4620	220V/230V/380V/415V	143				
			460V/480V/500V	143				
			550V/600V/690V	105				
Rated short-time withstand current (kA)	(Icw)		1 sec	50				
			2 sec	42				
			3 sec	36				
Operating time (ms)			Maximum total breaking time	40				
			Maximum closing time	80				
Life cycle (time)		Mechanical	Without maintenance	20,000				
			With maintenance	30,000				
		Electrical	Without maintenance	5,000				
			With maintenance	10,000				
Connections **		Draw-out / Fixed	Horizontal connection	○				
			Vertical connection	○				
			Front connection	○				
			Mixed connection	●				
Weight (kg) (3P/4P)	Draw-out type	Main body (With cradle)	Motor charging type	63/74				
			Manual charging type	61/72				
		Cradle only		29/32				
	Fixed type		Motor charging type	34/44				
			Manual charging type	32/42				
External dimensions (mm) (H × W × D)		Draw-out type	3P	430 x 334 x 375				
			4P	430 x 419 x 375				
		Fixed type	3P	300 x 300 x 295				
			4P	300 x 385 x 295				
Trip relay				N, A, P type				

* Refer to trip relay specification. ** ● : Standard : Line=Vertical & Load=Horizontal | ○ : Option

E - Frame

F - Frame

G - Frame

Type				AS20	AS25	AS32	AS40	AS50		AS40	AS50	AS63
Ampere frame	(AF)			2000	2500	3200	4000	4000	5000	4000	5000	6300
Rated current(A)	(In max)	at 40℃		2000	2500	3200	4000	4000	5000	4000	5000	6300
Setting current (A) *	Control trip relay (... × In max)			(0.4 ~ 1.0) × In max				(0.4 ~ 1.0) × In max		(0.4 ~ 1.0) × In max		
Rated current of neutral pole (A)				2000	2500	3200	4000	4000	5000	4000	5000	6300
Rated insulation voltage(V)	(Ui)			1,000				1000		1,000		
Rated operating voltage(V)	(Ue)			690				690		690		
Rated impulse withstand voltage (kV)	(Uimp)			12				12		12		
Frequency (Hz)				50/60				50/60		50/60		
Number of poles (P)				3/4				3/4		3/4		
Rated breaking capacity (kA sym) AC 50/60Hz	(Icu)	IEC 60947-2 KS C 4620	220V/230V/380V/415V	85				100		120		
			460V/480V/500V	85				100		120		
			550V/600V/690V	85				85		100		
Rated service breaking capacity (kA)	(Ics)		... % × Icu	100%				100%		100%		
Rated making capacity (kA peak) AC 50/60Hz	(Icm)	IEC 60947-2 KS C 4620	220V/230V/380V/415V	187				220		264		
			460V/480V/500V	187				220		264		
			550V/600V/690V	187				187		220		
Rated short-time withstand current (kA)	(Icw)		1 sec	85				85		100		
			2 sec	75				75		90		
			3 sec	65				65		85		
Operating time (ms)			Maximum total breaking time	40				40		40		
			Maximum closing time	80				80		80		
Life cycle (time)		Mechanical	Without maintenance	15,000				10,000		10,000		
			With maintenance	20,000				15,000		15,000		
		Electrical	Without maintenance	5,000				2,000		2,000		
			With maintenance	10,000				5,000		5,000		
Connections **		Draw-out / Fixed	Horizontal connection	○		○		○		○		
			Vertical connection	○		○		○		○		
			Front connection	○		-		-		-		
			Mixed connection	●		●		●		●		
Weight (kg) (3P/4P)	Draw-out type	Main body (With cradle)	Motor charging type	87/103		104/147		107/139		181/223		186/230
			Manual charging type	85/101		102/145		102/145		179/221		184/228
		Cradle only		44/50		58/70		65/85		97/117		102/124
	Fixed type		Motor charging type	44/55		63/100		61/81		98/123		103/130
			Manual charging type	42/53		61/98		60/80		96/121		101/128
External dimensions (mm) (H × W × D)		Draw-out type	3P	430 × 412 × 375				460 × 629 × 375		460 × 785 × 375		
			4P	430 × 527 × 375				460 × 799 × 375		460 × 1015 × 375		
		Fixed type	3P	300 × 378 × 295				300 × 597 × 295		300 × 751 × 295		
			4P	300 × 493 × 295				300 × 767 × 295		300 × 981 × 295		
Trip relay				N, A, P type				N, A, P type		N, A, P type		

Ratings

D - Frame

E - Frame

F - Frame

G - Frame

Type			D Frame BN16	E Frame BN32	E Frame BS40	F Frame BS50		G Frame BS40	G Frame BS50	G Frame BS63
Ampere frame	(AF)		BN04~BN16	BN20~BN32	BS20~B40	4000	5000	4000	5000	6300
Rated current(A)	(In max)	at 40℃	400, 630, 800, 1000, 1250, 1600	2000 2500 3200	2000, 2500, 3200, 4000	4000	5000	4000	5000	6300
Setting current (A) *	Control trip relay (... × In max)		(0.4 ~ 1.0) × In max	(0.4 ~ 1.0) × In max		(0.4 ~ 1.0) × In max		(0.4 ~ 1.0) × In max		
Rated current of neutral pole (A)			400, 630, 800, 1000, 1250, 1600	2000, 2500, 3200	2000, 2500, 3200, 4000	4000	5000	4000	5000	6300
Rated insulation voltage(V)	(Ui)		1000	1,000		1000		1,000		
Rated operating voltage(V)	(Ue)		690	690		690		690		
Rated impulse withstand voltage (kV)	(Uimp)		12	12		12		12		
Frequency (Hz)			50/60	50/60		50/60		50/60		
Number of poles (P)			3/4	3/4		3/4		3/4		
Rated breaking capacity (kA sym) AC 50/60Hz	(Icu)	IEC 60947-2 KS C 4620 220V/230V/380V/415V	-	70		85		120		
		IEC 60947-2 KS C 4620 460V/480V/500V	50	50	70	85		120		
		IEC 60947-2 KS C 4620 550V/600V/690V	-	70		85		100		
Rated service breaking capacity (kA)	(Ics)		... % × Icu	100%		100%		100%		
Rated making capacity (kA peak) AC 50/60Hz	(Icm)	IEC 60947-2 KS C 4620 220V/230V/380V/415V	-	154		187		264		
		IEC 60947-2 KS C 4620 460V/480V/500V	105	105	154	187		264		
		IEC 60947-2 KS C 4620 550V/600V/690V	-	154		187		220		
Rated short-time withstand current (kA)	(Icw)	1 sec	50	50	70	85		100		
Operating time (ms)		Maximum total breaking time	40	40		40		40		
		Maximum closing time	80	80		80		80		
Life cycle (time)	Mechanical	Without maintenance	20,000	15,000		10,000		10,000		
	Mechanical	With maintenance	30,000	20,000		15,000		15,000		
	Electrical	Without maintenance	5,000	5,000		2,000		2,000		
	Electrical	With maintenance	10,000	10,000		5,000		5,000		
Connections **	Draw-out / Fixed	Horizontal connection	○	○		○		○		
		Vertical connection	○	○		○		○		
		Front connection	○	○		-		-		
		Mixed connection	●	●		●		●		
External dimensions (mm) (H × W × D)	Draw-out type	3P	430 x 334 x 375	430 × 412 × 375		460 × 629 × 375		460 × 785 × 375		
	Draw-out type	4P	430 x 419 x 375	430 × 527 × 375		460 × 799 × 375		460 × 1015 × 375		
	Fixed type	3P	300 x 300 x 295	300 × 378 × 295		300 × 597 × 295		300 × 751 × 295		
	Fixed type	4P	300 x 385 x 295	300 × 493 × 295		300 × 767 × 295		300 × 981 × 295		
Trip relay			N, A, P type	N, A, P type		N, A, P type		N, A, P type		

* Refer to trip relay specification. ** ● : Standard : Line=Vertical & Load=Horizontal | ○ : Option

* Icw for 2 sec & 3 sec - available on request.

Trip relay (OCR)

The trip relay of Intelliprotect provides the additional protection functions for voltage, frequency, unbalance, and other in addition to main protection functions for over current, short-circuit, ground fault. It supports the advanced measurement functions for voltage, current, power, electric energy, harmonics, communication function, and others.

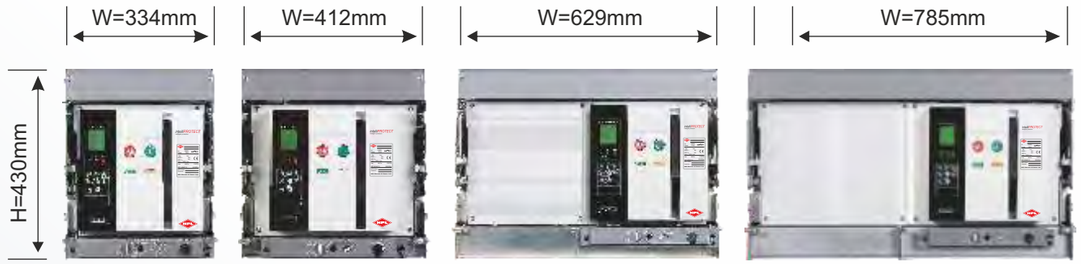
Zone selective interlocking function makes the protective coordination more simple and thermal memory can be applied to various loads.

Trip relay types

	N Type	A Type	P Type
Externals			
Current protection	• L / S / I / G	• L /S/I/G • ZSI (Protective coordination)	• L/S/I/G (Continuous) • ZSI (Protective coordination)
Other protection		• Earth Leakage (Option)	• Earth leakage (Option) • Over / Under current • Over / Under frequency • Unbalance (Voltage/Current) • Reverse power
Measurement Function		• Current (R / Y / B / N)	• 3 Phase voltage / Current RMS / Vector • Power (P, Q, S), PF (3-phase) • Energy (Positive / Negative) • Frequency, Demand
Fine Adjustment			• Fine adjustment for long/short time delay / instantaneous / ground
Pre Trip Alarm			• Overload protection relays : DO (Alarm) (Ground fault is not available when using Pre trip alarm)
Digital Output		• 3 DO (Fixed) • L, S/I, G Alarm	• 3 DO (Programmable) • Trip, Alarm, General
IDMTL setting			• Compliance with IEC60255-3 SIT, VIT, EIT, DT
Communication		• Modbus / RS - 485 • Profibus - DP	• Modbus / RS-485 • Profibus-DP
Power supply	• Self Power - Power source works over 20% of load current	• Self Power - Power source works over 20% of load current. - External power source are required for comm. • AC / DC 100~250V	• AC/DC 100~250V Basic protection function (L/S/I/G) is still under normal operation without control power.
RTC timer	• Available	• Available	• Available
LED for Trip Info.	• Long time delay • Short time delay / Instantaneous • Ground fault	• N type	• N type
Fault Recording		• 10 records (Fault / Current / Date and Time)	• 256 records (Fault/Current/Date and Time)
Event Record			• 256 records (Content, Status, Date)
Operating Button	• Reset button	• Reset, Menu Up / Down, Left / Right, Enter	• A Type

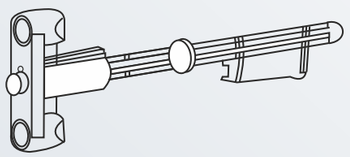
intelliprotect - intelligent enough
yet simple & user friendly

Modularity & Compactness



Suitability for copper & Aluminium termination

With optimised Volume & Flexibility in busbar terminations for different environmental condition made the switch board design, simple & effective.



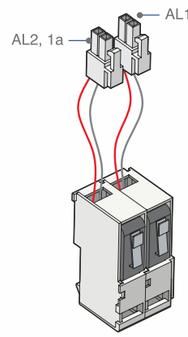
Manual Reset Button (MRB)

It is a function which resets the circuit breaker when a circuit breaker is tripped by OCR.

Ready to Close Switch (RCS)

It indicates that safety parameters are full filled & circuit Breaker is ready to do closing operation.

Under voltage trip device.



Trip Alarm Contact

Counter

Pad Lock / Position Lock

Vertical / Horizontal type connection

Various other designers friendly site fittable accessories.

- Shunt coil, double shunt coil – continuously rated.
- Under voltage trip device.
- Charge switch.
- Remote reset switch.
- Counter
- Vertical & Horizontal type terminals (can be rotated 90°).

Also availability of various accessories ensures complete safety / Reliability and very high performance level. Some of them are :

- Pad lock / position lock
- Key interlocks set, ON OFF button lock, mechanical interlock
- Temperature Alarm :
  It shows the temperature (Inside of ACB) through a sensor.
  The output can be connected to control terminal block.
- Mechanical Operated cell switch :
  It indicates ON / OFF condition of ACB. It operates only when breaker is in 'connected' position.
- Cell switch :
  It indicates the present position of ACB (Connected / Test / Disconnect)
- Miss Insertion prevent device :
  When the main body of ACB is inserted to the cradle, if the rating of ACB does not match with cradle, it mechanically prevents the insertion.

To summarize - availability of high performance connection accessories, accessories related to efficient, flexible, safe & better coordinated functioning of circuit breaker coupled with various indications & communication functions made Intelli protect an ideal choice for any application /installation.

Moreover, for change in power levels, installation change etc lead to extension of switchboard/upgradation of switchboard Intelliprotect is designed to adapt the conditions.

A detailed Installation Manual is also available which provides informations required not only for Installation but also for periodic / routine maintenance.

Please contact our nearest sales office for any further clarification / Information

Accessories