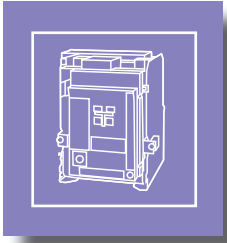


Air Circuit Breakers BT2 Series





Air Circuit Breakers

BT2 Series 1600 to 6300A

Contents

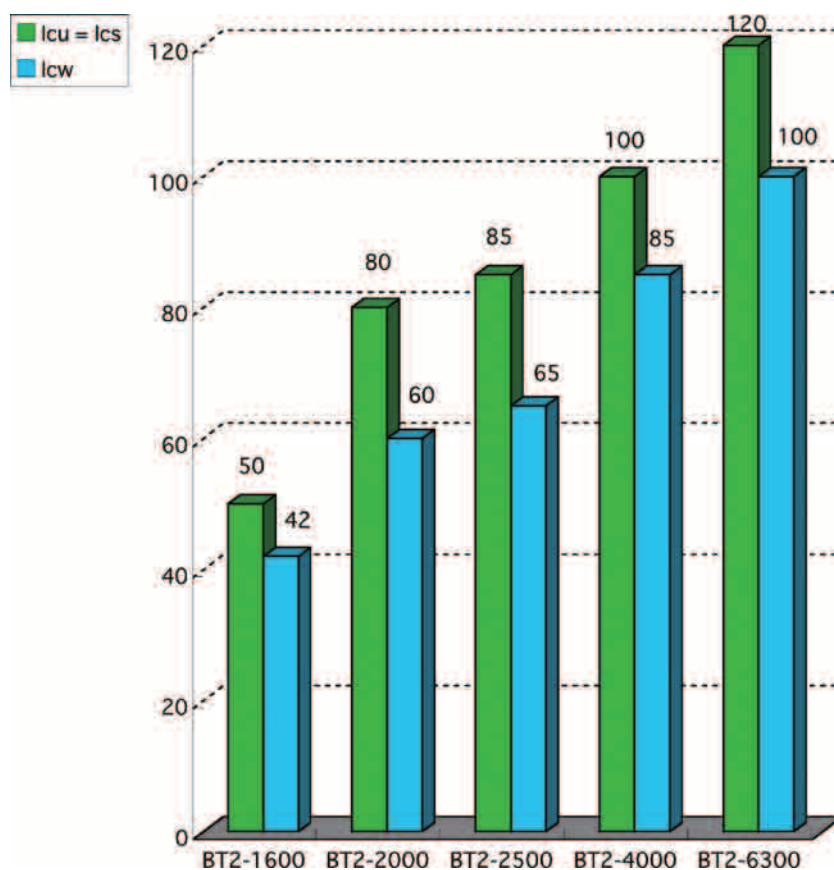
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■ Selection guide

Series		BT2 series
		
Frame size		1600, 2000, 2500, 4000, 6300
No. of poles		3, 4
Installation	Fixed	Available
	Draw-out	Available
Closing Mechanism		Manual spring or motor spring
Tripping Mechanism		Shunt trip, Under-voltage trip
Protection function		Long time delay, Short time delay, Instantaneous, Ground fault, etc.

■ Breaking Capacity

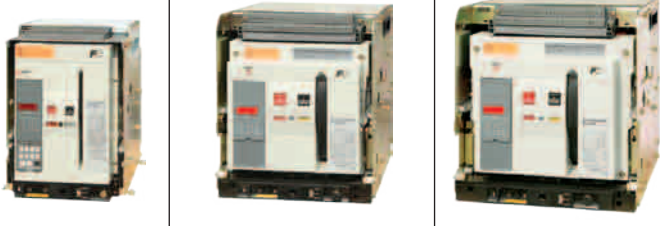
Icu is equal to Ics up to 120kA at maximum and Icw is up to 100kA at maximum under 400VAC distribution.



Air Circuit Breakers
BT2 series
Features

■ Compact size

BT2 series, Air Circuit Breakers, have five framesize and four physical dimension sizes.

Ampere frame	1600	2000	2500	4000	6300
Appearance					
Width	248mm	347mm		401mm	767mm

■ Installation

The bus bar terminal of the BT2 series, Air Circuit Breakers, can be simply installed as follows:

- Horizontal connection
- Vertical connection
- Composite connection

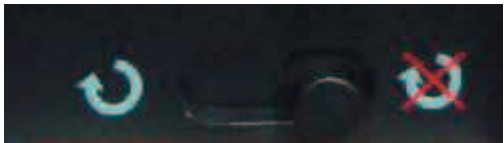


■ Safety performance

BT2 series, Air Circuit Breakers, are reliable by the following aspects:

- Reliable assurance of the three positions:
Connected
Test
Separated

by the locked and automatically unlocked mechanism at the draw-out socket.



Clear indication of ready-for-switching-on to ensure safe manipulation and reliable operation.



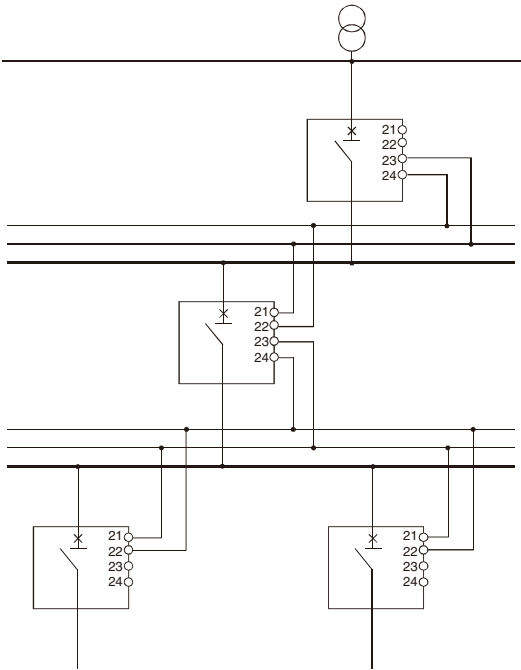
Indication of ready-for-switching-on:"ok"

More reliable safety protection with secondary terminals of protection grade IP30



■ Protection and selection

BT2 Series, Air Circuit Breakers, can implement selective interlock of ZSI Region to ensure comprehensive selection of various protection and reduce the copper bar's bearing of thermodynamic.



■ Intelligent controller (OCR)

Selecting OCR's, it can be classified into six types

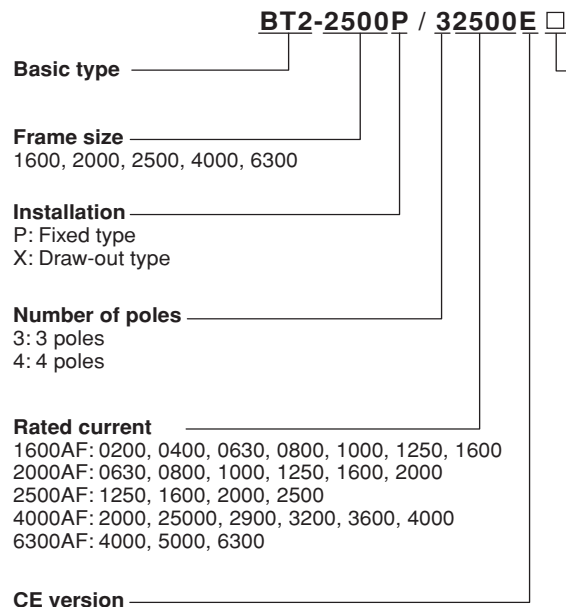
Type	L25 Option	M25 Standard	M26 Option	H26 Option	P25 Option	P26 Option
Pic						
Display/setting	Light columnar indication Dial setting by knob	LED digital indication Consecutive parameter setting	LED digital indication Consecutive parameter setting	LED digital indication Consecutive parameter setting	LCD indication Consecutive parameter setting	LCD indication Consecutive parameter setting
Protection/ function						

Air Circuit Breakers

BT2 series

Type number nomenclature

■ Type number nomenclature



OCR type or Additional accessories

• OCR type (note: M25 is standard), See page 9

Type	Code	Remarks
L25	L5A	
M25	– (None)	
H26	H6A	
P25	P5A	
	P5B	w harmonic analysis function
	P5C	w communication function
	P5D	w alarm of current-imbalance
P26	P6A	
	P6B	w harmonic analysis function
	P6C	w communication function
	P6D	w alarm of current-imbalance

• Accessories

Type	Code	Remarks
LED indicator of Voltage	C1	
Load-monitoring function	C2	
ZSI function (Zone selective interlock function)	C3	
Under voltage release	R1	Instantaneous
	R2	Time delay
Switching OFF lock device	Q1	One lock and one key
	Q2	Two lock and one key
	Q3	Three lock and two key
Mechanical interlock device (Two sets of ACB's)	MW1	Steel lock interlock
	MB1	Link rod interlock (0,6m)
Mechanical interlock device (Three sets of ACB's)	MW2	Cable type interlock
	MB2	Pattern one of rod interlock
	MB3	Pattern two of rod interlock
	MB4	Pattern three of rod interlock
Current transformer for neutral line N connected externally	N1	1600AF L · M · H Controller
	N1	1600AF P Controller
	N2	2000AF
	N3	2500AF
	N4	4000AF
	N6	6300AF
Electrical mechanism for the indication of draw out socket's position	D1	
Separator plate between phases	B3	3P
	B4	4P
Electrical module for indication of ready-for-switching-on	RFS	
"Button" Locking device	L	
Counter	CM	
Communication function choice of accessories	S1	Components of draw-out socket communication module
	S2	Ready-for-switching-on signal
	S3	Under-voltage signal
	S4	Fault-trip signal
DC power supply module	PD1	24VDC
	PD2	110VDC
	PD3	220VDC
AC power supply module	PA1	230VAC
	PA2	400VAC
Automatic transfer switch (ATS) (included automatic controller, connector and 1.8m cable)	AS1	R type
	AS2	S type
	AS3	F type

Air Circuit Breakers

BT2 series

Specifications

■ Specifications

Frame size			1600A		2000A		2500A		4000A		6300A	
Basic type			BT2-1600 □		BT2-2000 □		BT2-2500 □		BT2-4000 □		BT2-6300 □	
No. of poles			3	4	3	4	3	4	3	4	3	4
Rated current (A)			200, 400, 630, 800, 1000, 1250, 1600		630, 800, 1000, 1250, 1600, 2000		1250, 1600, 2000, 2500		2000, 2500, 2900, 3200, 3600, 4000		4000, 5000, 6300	
Rated current of the neutral pole (IN)			100% In		100% In		100% In		100% In		100% In	
Rated insulation voltage (Ui)			1000		1000		1000		1000		1000	
Rated operational volage (Ue)			690		690		690		690		690	
Rated ultimate short-circuit breaking capacity (Icu kA, sym)	690VAC *1	40			50		50		75		85	
	400VAC	50			80		85		100		120	
Rated service short-circuit breaking capacity (Ics kA, sym)	690VAC *1	25			50		50		75		85	
	400VAC	50			80		85		100		120	
Rated making current (kA, peak)	690VAC *1	84			105		105		165		187	
	400VAC	105			176		187		220		264	
Rated short time withstand current (Icw) (kA, rms)	690VAC *1	25 (0.5s)			40 (1s)		50 (1s)		75 (1s)		85 (1s)	
	400VAC	42 (0.5s)			60 (1s)		65 (1s)		85 (1s)		100 (1s)	
Rated impulse withstand voltage (Uimp) (kV)			12		12		12		12		12	
Installations												
	Fixed	P	●	●	●	●	●	●	●	●	●	●
	Draw-out	X	●	●	●	●	●	●	●	●	●	●
Main circuit terminal connection												
	Fixed	Horizontal	●	●	●	●	●	●	●	●	●	●
		Vertical	●	●	●	●	—	—	●	●	●	●
	Draw-out	Horizontal	●	●	●	●	●	●	●	●	●	●
		Vertical	●	●	●	●	●	●	●	●	●	●
Dimensions												
	Fixed	W	254	324	362	457	362	457	414	527	782	1008
		H	320	320	395	395	395	395	395	395	395	395
		D	197	197	290	290	290	290	290	290	290	290
	Draw-out	W	248	318	347	442	347	442	401	514	767	993
		H	351.5	351.5	438	438	438	438	438	438	475.5	475.5
		D	297	297	390	390	390	390	395	395	395	395

Note: *1 Cannot be used for an IT distribution system.

● Available

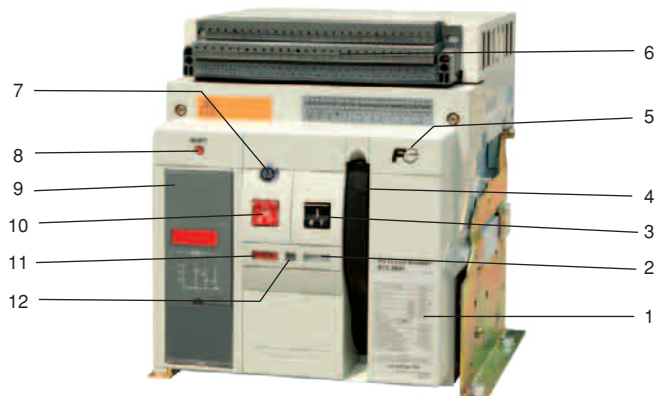
Air Circuit Breakers

BT2 series

Appearance

■ Appearance

• Fixed

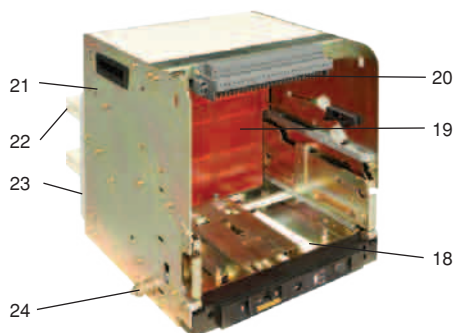


<Common>

- 1: Name plate
- 2: Indications of energy-storage and energy-release
- 3: ON button
- 4: Manual energy-storage handle
- 5: Brand
- 6: Terminals of secondary circuit (fixed)
- 7: Off lock mechanism
- 8: Release indication and resetting button
- 9: Intelligent controller (OCR)
- 10: OFF button
- 11: Indications of "ON" and "OFF"
- 12: Indication of ready-for-switching-on ("OK")

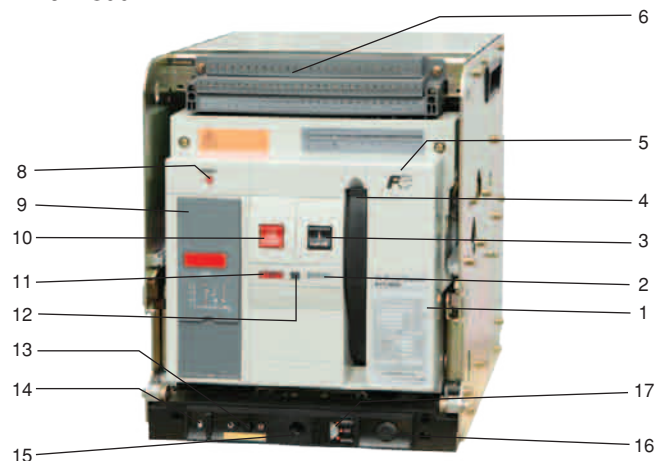
• Draw-out cradle

The cradle has the back plate for isolating the copper bar of the main circuit, which take the role of safety protection when the ACB is drawn out.



- 18: Installation hole
- 19: Safety back plate
- 20: Wiring terminals of secondary circuit
- 21: Side plate
- 22: Copper bar of the main circuit
- 23: Draw-out socket
- 24: Earthing point at draw-out socket

• Draw-out



<For Draw-out>

- 13: "Unlock button" of the three positions ("Separated", "test" and "connected") *1,2
- 14: Safety padlock mechanism
- 15: Racking shaft operating hole
- 16: Racking shaft storage hole
- 17: Indications of the three position ("Separated", "test" and "connected")

Note: *1 "Separated": Indicates that main circuit and secondary circuit are both in isolation. "Test": Indicates that main circuit is in isolation and secondary circuit is in connection. "Connected": Indicates that main circuit and secondary circuit are both in connection.

*2 The ACB can be automatically locked (racking shaft can not be turned at the point) when its main part is at the position of "separated", "test" or "connected" by turning the racking shaft, and can be unlocked by pushing "unlock button" to the left side.

■ Intelligent controller (OCR)

Selecting OCR's, it can be classified into six types

Type	L25	M25	M26	H26	P25	P26
	Option	Standard	Option	Option	Option	Option
Overcurrent protection (Long-time, Short-time, instantaneous)	●	●	●	●	●	●
Ground-fault protection	—	—	●	●	—	●
Load monitor function	—	○	○	○	○	○
Indication	Light Columnar	LED	LED	LED	LCD	LCD
Power, electric energy, power-factor, frequency indication	—	○	○	●	—	—
Alarm function (pre-trip alarm, overload alarm)	—	—	—	—	●	●
Test function	●	—	—	—	—	—
Contact Welding indication	●	●	●	●	●	●
Self-diagnosis function	—	●	●	●	●	●
MCR function	—	●	●	●	●	●
Fault-memory function	—	●	●	●	●	●
Current-imbalance indication	●	●	●	●	●	●
Thermo-analogue function	—	●	●	●	●	●
Harmonic analysis function	—	—	—	—	○	○
ZSI function	—	○	○	○	○	○
Communication function	—	—	—	●	○	○

Note: ● Represents fundamental functions, ○ Represents selective functions, — Represent no such functions

■ Function

Over-current protection

- The over-current protection is composed of phase and neutral line protection (Four pole breaker and three pole breaker with current transformer linking externally to neutral N) from over-current.
- The parameters of current and time of phase line over-current protection can be set by the company in terms of the requirements of users (can be set by customers themselves); the parameters of current and time of neutral line over-current protection will be set according to the setting of the phase line, all these mainly divided into the following two situations:

Three pole breaker with the neutral connected externally

- To type L25, M26, H26 intelligent controller, when ordering the goods the neutral line setting current customers should have to confirm the protecting data, it has two type of 50%I_n and 100%I_n.
- To type P25, P26 intelligent controller, the customers can setup into four types from menu: turn off, 50%I_n, 100%I_n, 200%I_n. When 200%I_n neutral line protecting (if it has a high triple frequency harmonic), the neutral line cross section should be double leg of a circuit cross section in the electrical power distribution system. But to BT2-6300 three circuit breaker, there is no neutral line protecting.

Four pole breaker

- To type L25, M25, M26, H26 intelligent controller, the customers should have to confirm the protecting data, it has two types of 50%I_n and 100%I_n.
- To type P25, P26 intelligent controller, the customers can setup into three types from menu: turn off, 50%I_n, 100%I_n.

Overload protection

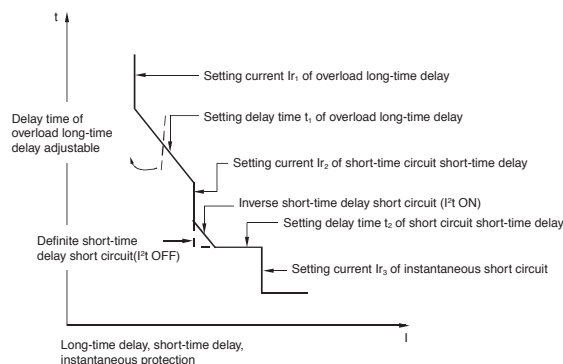
- Inverse long-time delay overload protection, and its setting current I_{r1} can be adjusted.
- The delay time t₁ of overload long-time delay can be adjusted.
- The long-time delay overload characteristic of the type P25, P26, the curves can be adjusted. There have common type (I_{2t}), uncommon inverse-time type (I_t), high-voltage fuse concert type (I_{4t}) can be adjusted, which can matching higher-up and lower-lever's overload protection'needs. The long-time delay overload characteristic of the type L25, M25, M26, H26, its running according to the common type (I_{2t}) curves, current I_{r1}, time t₁ can be adjusted.

Short-time short circuit protection (can be OFF)

- Inverse short-time delay short circuit protection (I_{2t} ON), and its setting current I_{r2} can be adjusted.
- Definite short-time delay short circuit protection (I_{2t} OFF), and its setting current I_{r2} can be adjusted.
- The delay time t₂ of short circuit short-time delay can be adjusted.

Instantaneous short circuit protection

- The setting current I_{r3} of instantaneous short circuit (can be OFF) can be adjusted.



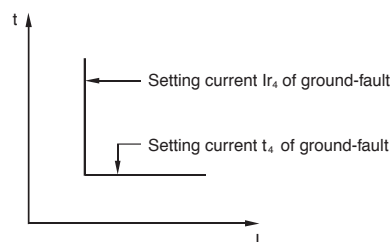
Air Circuit Breakers

BT2 series

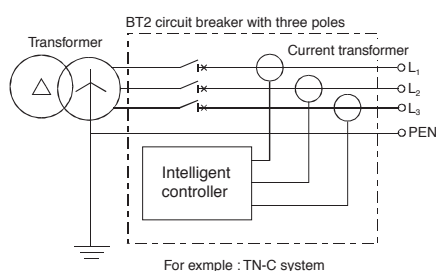
Intelligent controller

Ground-fault protection

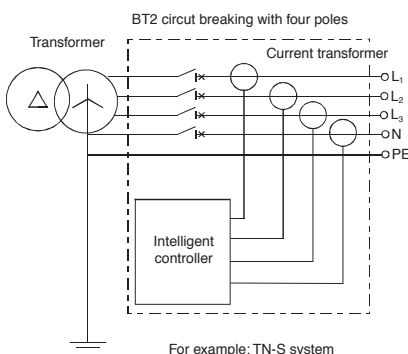
- Definite ground-fault protection, and its setting current I_{r4} can be adjusted
- Delay time t_4 can be adjusted
- Alarm but not break after being off



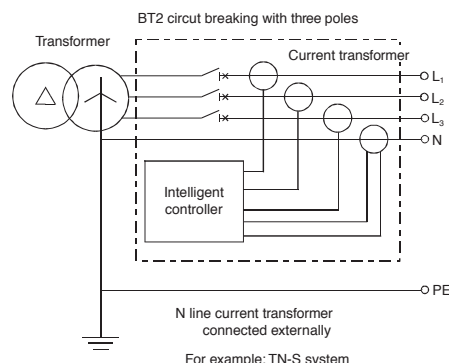
• TN-C, TN-C-S, or TN-S, power distribution system without additional current transformer of neutral



• TN-S, power distribution system, 4 poles

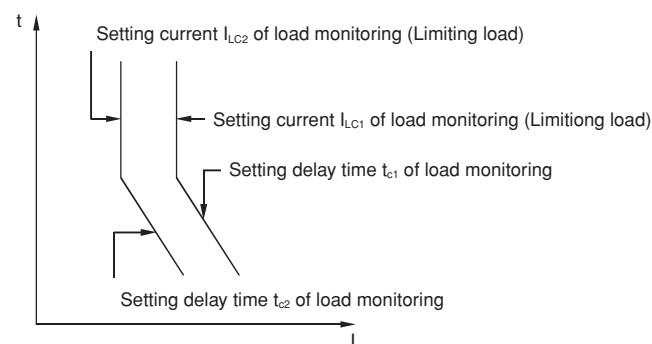


• TN-S, power distribution system, 3 poles

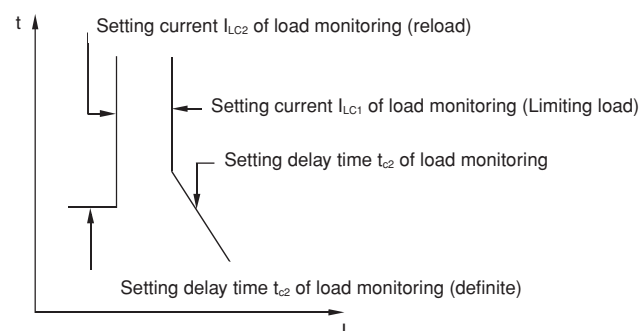


Load monitoring function

- To monitor the down stream load so as to ensure power supply of main system
- There are two patterns of load monitoring from which users can choose one. The setting value of load-monitoring current are I_{LC1} and I_{LC2} , normally I_{LC1} is larger than or equal to I_{LC2}
- Inverse characteristic of load-monitoring is the same of inverse long-time delay overload characteristic.



Acting characteristic of two kinds of ultimate setting load



Acting characteristic of ultimate setting value of load and reload

- Pattern 1: Two circuits of down stream load can be controlled. When the operating current of the main circuit rises over the setting value of I_{LC1} and I_{LC2} , contact signal will be sent out after time durations of t_{C1} and t_{C2} respectively. Then this two circuits with monitored load are broken off by receiving the instructions from the intelligent controller.

- Pattern 2: Only one circuit with down stream load can be controlled. When the operating current of the main circuit rises over the setting value of I_{LC1} , contact signal will be sent out after time duration of t_{C1} , and this circuit is broken off by receiving the instructions from the intelligent controller. If the operating current of the main circuit decreases lower than the setting value of I_{LC2} after this circuit is broken off, the signal will be sent out again after time duration of t_{C2} for the open loading circuit to be closed (reloaded) and so the power supply of this circuit is restored.

- Load monitoring signals "(1)" and "(2)" corresponding to I_{LC1} and I_{LC2} respectively are transmitted into contact signals via the wiring terminals 13, 14 and 15, 16 of the secondary circuit. There will be LED indication at the time when signals are transmitted. (The load monitoring signals from the intelligent controller will be cut off in half second after the signal of contact closing is transmitted, and the capacity of contact is AC230V 5A)

■ Indication and measurement function

• For L25, M25, M26 and H26

Item	Type of OCR's	Display	Content	Indication and measurement range	Accuracy
Current	L25	Light columnar Indication	I_1, I_2, I_3, I_N	(0.1In to 2In) A	± 5%
	M25	LED	$I_1, I_2, I_3, I_N, I_{max}$		
	M26, H26		$I_1, I_2, I_3, I_N, I_G, I_{max}$		
Voltage	M25, M26 as optional H26 as standard	LED	$U_{12}, U_{23}, U_{31}, U_{min}$	30V to 690V	± 3%

• For P25 and P26

Item	Display	Content	Indication and measurement range	Accuracy
Current	LCD	I_1, I_2, I_3, I_N	(0.1In to 2In) A	± 1.5%
		I_G	0.1In to 2000A	± 2.5%
Voltage		Line Voltage: U_{12}, U_{23}, U_{31} Phase Voltage: U_{1N}, U_{2N}, U_{3N}	30V to 690V	± 0.5%
Power		Three-phase active power Three-phase reactive power Three-phase apparent power	-120MW to +120MW -120Mvar to +120Mvar -120MVA to +120MVA	± 2.5%
Power-factor		Power-factor	-1.00 to +1.00	± 2.5%
Electric energy		Three-phase active electric energy Three-phase reactive electric energy Three-phase apparent electric energy	-10 ¹⁰ GWh to +10 ¹⁰ GWh -10 ¹⁰ Gvarh to +10 ¹⁰ Gvarh -10 ¹⁰ GVAh to +10 ¹⁰ GVAh	± 2.5%
Frequency		f	45 to 65Hz	± 0.1Hz
Fundamental current		$I_{1-1}, I_{2-1}, I_{3-1}, I_{N-1}$	(0.1In to 2In) A	± 1.5%
Fundamental line voltage		$U_{12-1}, U_{23-1}, U_{31-1}$	30V to 690V	± 0.5%
Fundamental phase voltage		$U_{1N-1}, U_{2N-1}, U_{3N-1}$		
Fundamental power		P1 Q1 S1	-120MW to +120MW -120Mvar to +120Mvar -120MVA to +120MVA	± 2.5%
Harmonic ratio		Current Voltage	0 to 1000%	± 5%
Total harmonic distortion (THD)		Current Voltage		

■ Alarm and fault functions

Over-current alarm	Type L25	Corresponding LED on the panel will be "ON"	Alarm and release indication lights will be on after the circuit breaker's being overloaded or released (yellow or red)
	Type M25		After the circuit breaker's being released by long-time delay overload, short-time delay short circuit and instantaneous short circuit, indication lights of corresponding alarm will be on.
	Type M26, H26		After the circuit breaker's being released by long-time delay overload, short-time delay short circuit, instantaneous short circuit and ground-fault, indication lights of corresponding alarm will be on.
	Type P25, P26		After the circuit breaker's being released by long-time delay overload, short-time delay short circuit and instantaneous short circuit, indication lights of corresponding alarm will be on.
Fault indication	Type L25	Corresponding LED ON the panel will be "ON"	After the circuit breaker's being released by long-time delay overload, short-time short circuit and instantaneous short circuit, indication lights of corresponding fault type will be on.
	Type M25		After the circuit breaker's being released by long-time delay overload, short-time short circuit and instantaneous short circuit, indication lights of corresponding fault type will be on.
	Type M26, H26		After the circuit breaker's being released by long-time delay overload, short-time delay short circuit, instantaneous short circuit, instantaneous short circuit and ground-fault, indication lights of corresponding fault type will be on.
	Type P25, P26		After the circuit breaker's being released by long-time delay overload, short-time delay short circuit and instantaneous short circuit, indication lights of corresponding alarm will be on.
Indication of fault phase, current and time	Type M25, M26, H26	Indication	Indication of faulty phase, breaking value of fault current and breaking time
	Type P25, P26	Indication	It can indicate the latest ten times fault categories and occurrence time, faulty phase, breaking value of fault current and breaking time.

Air Circuit Breakers

BT2 series

Intelligent controller

■ Test functions

Panel button	Type L25, M25, M26, H26, P25, P26	Release	Inspection of T-I characteristic of the OCR and the conditions of operating mechanism
	Type M25, M26, H26, P25, P26	Non-release	Inspection of T-I characteristic of the OCR

• Contact wearing indication (for M25, M26, H26, P25 and P26)

The intelligent controller has the function of contact wearing indication. Accordingly, the percentage of the equivalent to wearing times of main contact to electrical life-span times of the circuit breaker can be indicated by pushing the button of "wearing indication".

• Self-diagnosis function (for M25, M26, H26, P25 and P26)

When the microprocessor of the intelligent controller breaks down or the ambient temperature of the microprocessor rises over 80°C±5, alarm signals can be sent out immediately.

• MCR function

When the circuit breaker is on or the controller is initially electrified, the circuit breaker would trip instantly if short-time short circuit fault occurred.

• Fault-memory function (for M25, M26, H26, P25 and P26)

The types and phases of fault, value of faulty current and breaking time would be indicated on the intelligent controller if the circuit breaker broke off as a result of faults.

• Current disequilibrium display (selective function for P25 and P26)

The intelligent controller can sent out and display, when the three phases current disequilibrium level reached the setting value (20%-80%).

Note: the three phases current disequilibrium = $\frac{I_{\max} - I_{\min}}{I_{\max}} \times 100\%$

• Harmonic analysis function (for P25 and P26)

P25 or P26 intelligent controller with harmonic analysis function can measure fundamental current, fundamental line voltage, fundamental phase voltage, fundamental power, odd harmonic current ratio (HRI_h) from the third to thirty-first, harmonic voltage ratio (HRU_h), total harmonic distortion of current (THDi, thdi) and total harmonic distortion of voltage (THDu, thdu).

• Harmonic ratio (HR)

The ratio of RMS of hth harmonic component in the periodical alternating quantum to RMS of fundamental component (express by percent).

• Harmonic current ratio of hth expresses HRI_h.

$$HRI_h = \frac{I_h}{I_{1-1}} \times 100\%$$

Note: I_h-harmonic current of hth of phase A (RMS)

• Harmonic voltage ratio of hth expresses HRU_h.

$$HRU_h = \frac{U_h}{U_{12-1}} \times 100\%$$

Note: U_h -harmonic line voltage of hth between phase A and B.

• Total harmonic distortion (THD)

• The ratio of harmonic content in the periodical alternating quantum to RMS of fundamental component (THD)(express by percent).

$$THD_i = \frac{\sqrt{\sum_{h=2}^{\infty} I_h^2}}{I_{1-1}} \times 100\%$$

$$THD_u = \frac{\sqrt{\sum_{h=2}^{\infty} U_h^2}}{U_{12-1}} \times 100\%$$

Note: I_h-harmonic current of hth of phase A (RMS)

U_h-harmonic line voltage of hth between phase A and B (RMS)

• The ratio of harmonic component in the periodical alternating quantum to RMS of periodical alternating quantum(thd) (express by percent).

$$thd_i = \frac{\sqrt{\sum_{h=2}^{\infty} I_h^2}}{I_{1-1}} \times 100\%$$

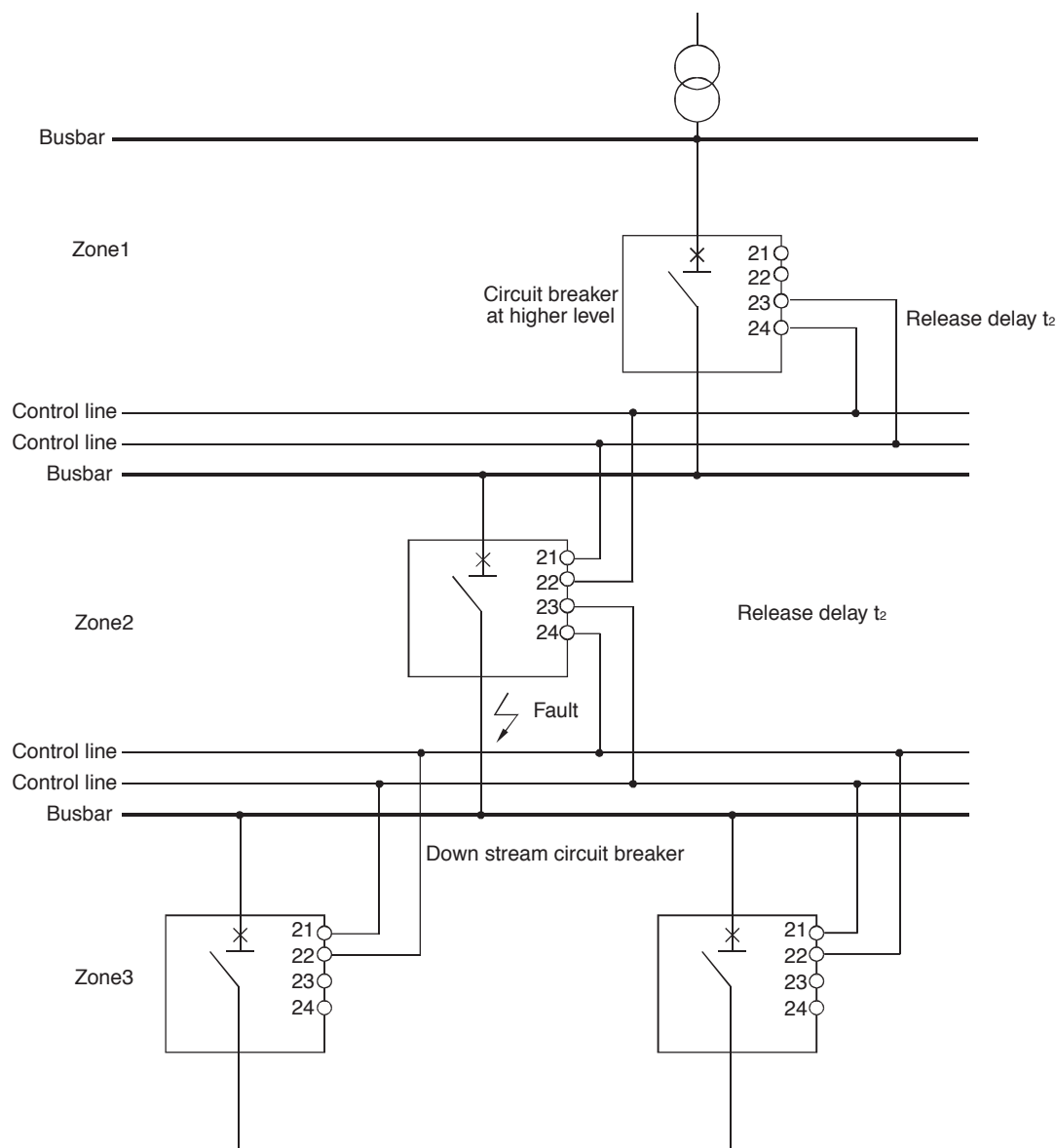
$$thd_u = \frac{\sqrt{\sum_{h=2}^{\infty} U_h^2}}{U_{12-1}} \times 100\%$$

Note: I_h-harmonic current of hth of phase A (RMS)

U_h-harmonic line voltage of hth between phase A and B (RMS)

■ Zone selective interlock

Zone selective interlock (ZSI function) (for M25, M26, H26, P25 and P26, optional)



Note: 21,22,23,24 serve as the wiring terminals of secondary circuit.

When pieces of circuit breakers are linked together up and down, zone selective interlock (ZSI) can ensure fully-selective protection of circuit breakers at higher or lower level so as to reduce the range of action by fault and the breaking time of circuit breakers. This function serves for short-time delay short circuit (I^2t OFF) and ground-fault protection of circuit breakers.

As the sketch shown above, control lines can interlock with pieces of circuit breakers.

After detecting the fault, the intelligent controller (zone 2) will send out a signal to circuit breakers (zone1) at higher level and check whether the signal of circuit breakers (zone 3) at lower level arrives. If circuit breakers at lower level send out a signal, the circuit breaker will be on at the time duration of release delay; if circuit breakers at lower level don't send out a signal, the circuit breaker will break off instantly no matter whether the release has the protection of delay.

Note: The end 23 and 24 should be shortcircuited.

Air Circuit Breakers

BT2 series

Communication

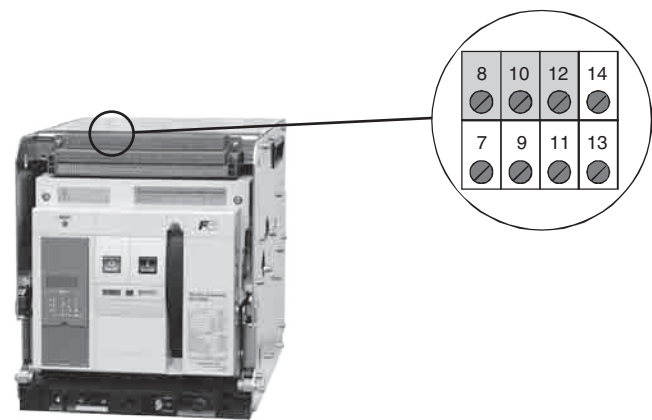
■ Communicative

To achieve the function of "four kinds of remote operation" at long distance by communication interface of the circuit breaker, namely, remote control, remote communication, remote adjustment and remote detection.

- Communication protocol : The application of Modbus-RTU mode
- Communication interface
- Standard interface: RS-485.
- Baud rate: 19200bps (in favour of 1200, 2400, 4800, 9600, 38400bps)
- Communication address:1-119.
- Byte format: First bit as start bit, eighth bit as data bit, second bit as stop bit, even check (in favour of non-check, odd check .)
- Network characteristic
- Twisted-pair shielded cables serve as communication lines.
- One line can link up 32 pieces of communicative circuit breakers at the same time (16 pieces of circuit breakers with components of draw-out socket communication module).
- Wiring distance is 1200m at maximum but the distance of communication can be extended by equipping with repeaters additionally.

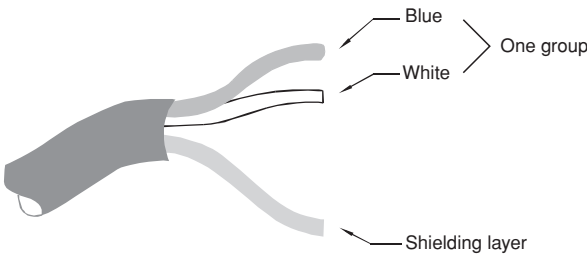
■ Communication data

- Real-time current, voltage fundamental current, fundamental voltage, power, power factor, electric energy, harmonic current or voltage ratio and total distortion of current or voltage.
- State data of circuit breakers such as alarm, fault, energy-storage, under-voltage, ready-for-switching-on, and the positions of switching-on and switching-off etc.
- The position of main body of the circuit breaker (components of communication module of draw-out socket for BT2 need to be purchased).
- The fetching and modification of the setting values of circuit breakers.
- Recorded data of fault last time.
- Outline data such as serial numbers and the type etc of circuit breakers.
- Long-distance operation if switching-on and switching-off.
- Circuit breakers can be switched on or off in the long-distance.
- Wiring terminals for communication.



Terminal	Signal	Function
8	DATA+(A+)	Receive/transmit data
10	DATA-(B-)	Receive/transmit data
12	SH	In connection with shielded layer of communication line

■ Communication cable



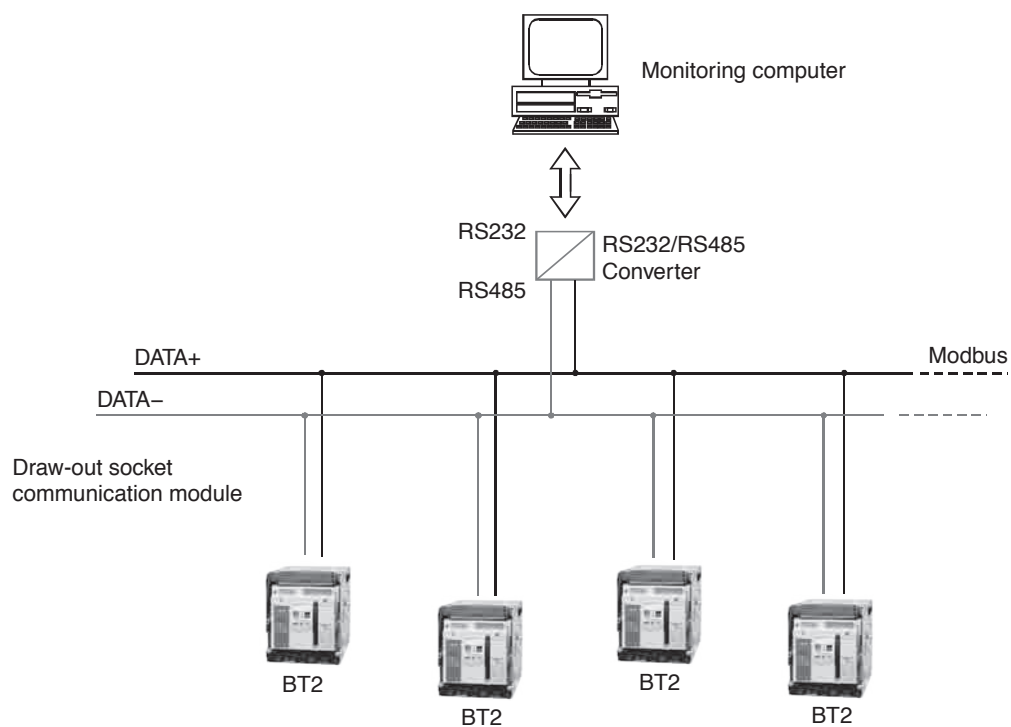
Standard twisted-pair shielded cable

Note: please use the type of communication cable with the shielding layer and approach to circuits with strong electricity should be avoided as far as possible when wiring in the cabinet.

Colour	Signal	Funation
Blue	DATA+	Receive/transmit data
White	DATA-	Receive/transmit data
Shielding layer	GND	Grounding

As the above diagram shows, a group of twisted-pair lines in the standard communication cable is employed as the communication line of 485 and the sheilding layer is grounded. The actual practice should be possibly different such as the application of the colour of the twisted-pair line. Users could define the ways of cable's usage by themselves but the definition of the signal of each line in the cable should be made clear in advance.

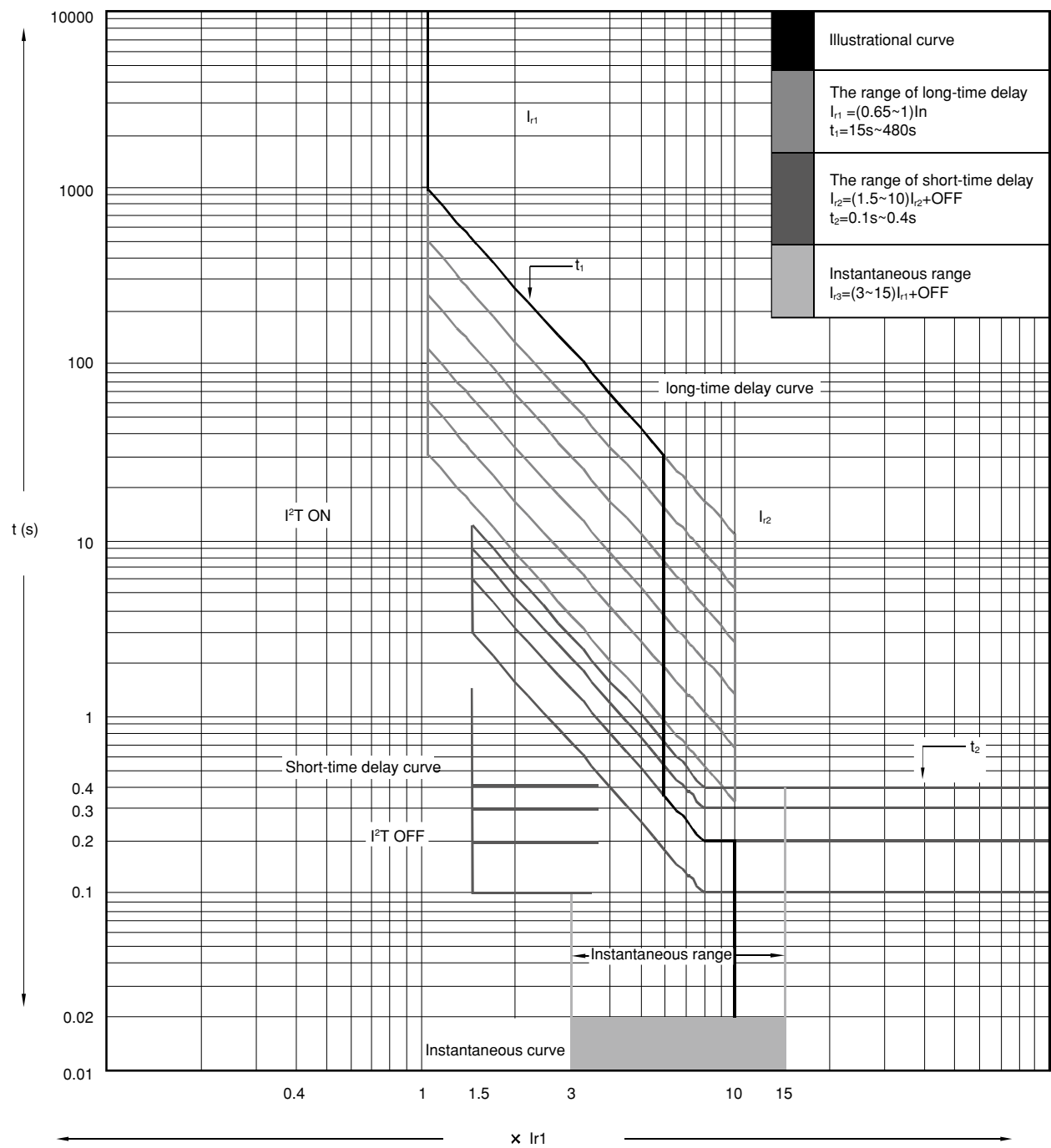
■ Linking diagram of communication system



Note: As the accessory of selective purchase, the draw-out socket communication module should be selected into use when users need read the location of main body in the long distance by the choice of draw-out circuit breakers.

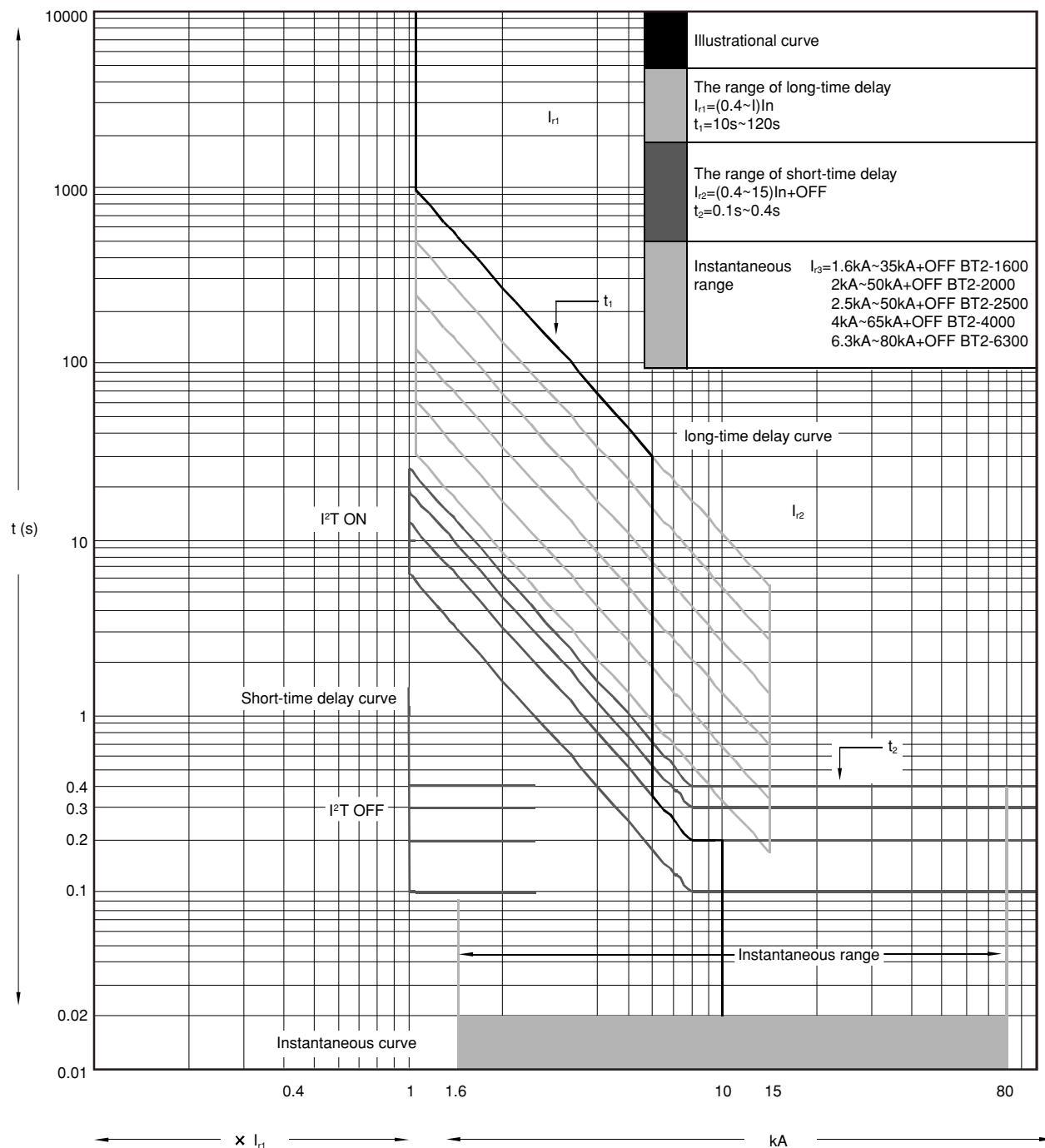
Air Circuit Breakers
BT2 series
Characteristic curve

■ Characteristic curve of general I^2t
• BT2-1600~BT2-6300
T/I (time / current) curve of type L25 intelligent controllers (OCR)



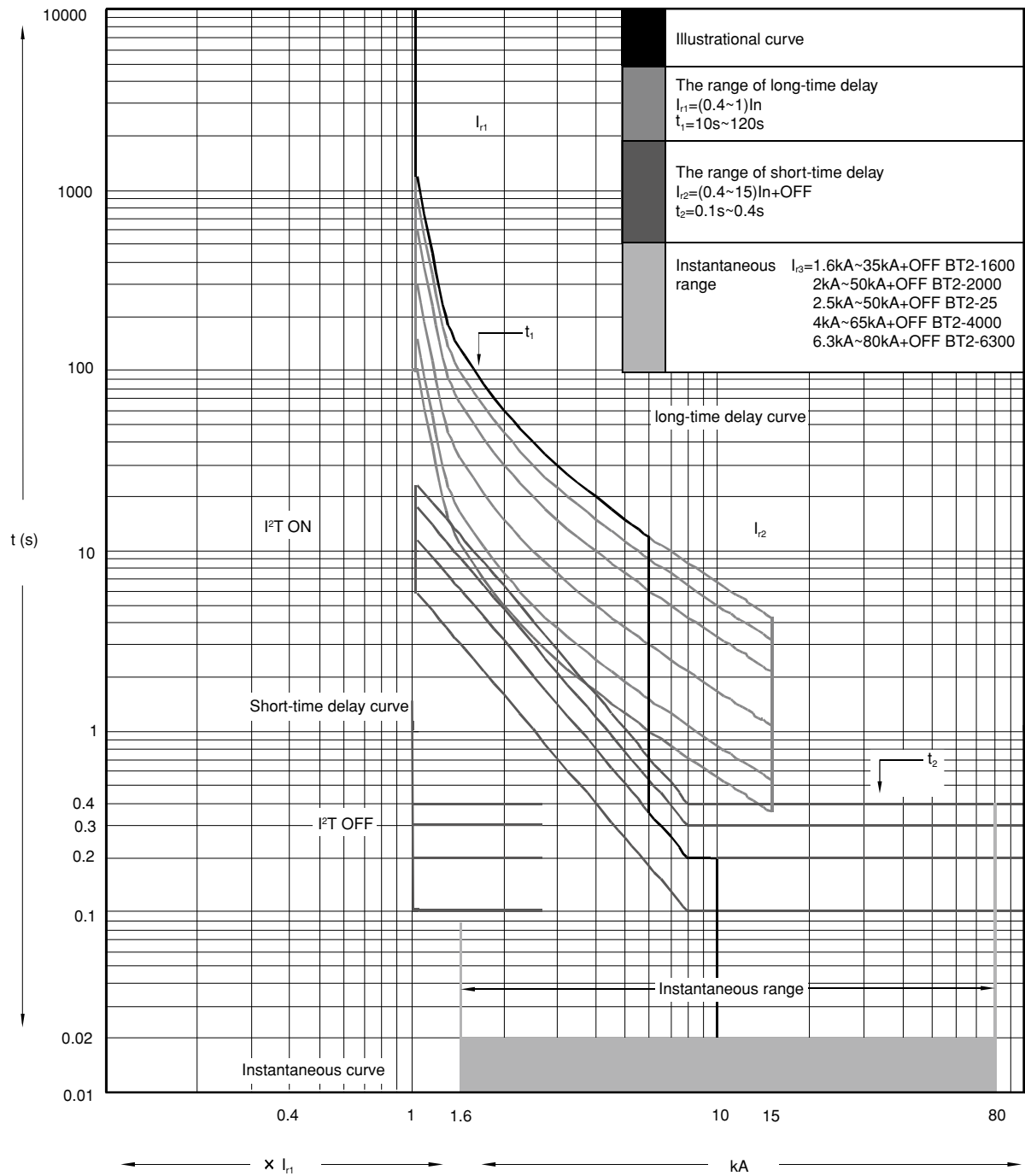
Air Circuit Breakers BT2 series Characteristic curve

• T/I (time / current) curve of type M25, M26, H26, P25 and P26 intelligent controllers (OCR)



Air Circuit Breakers
BT2 series
Characteristic curve

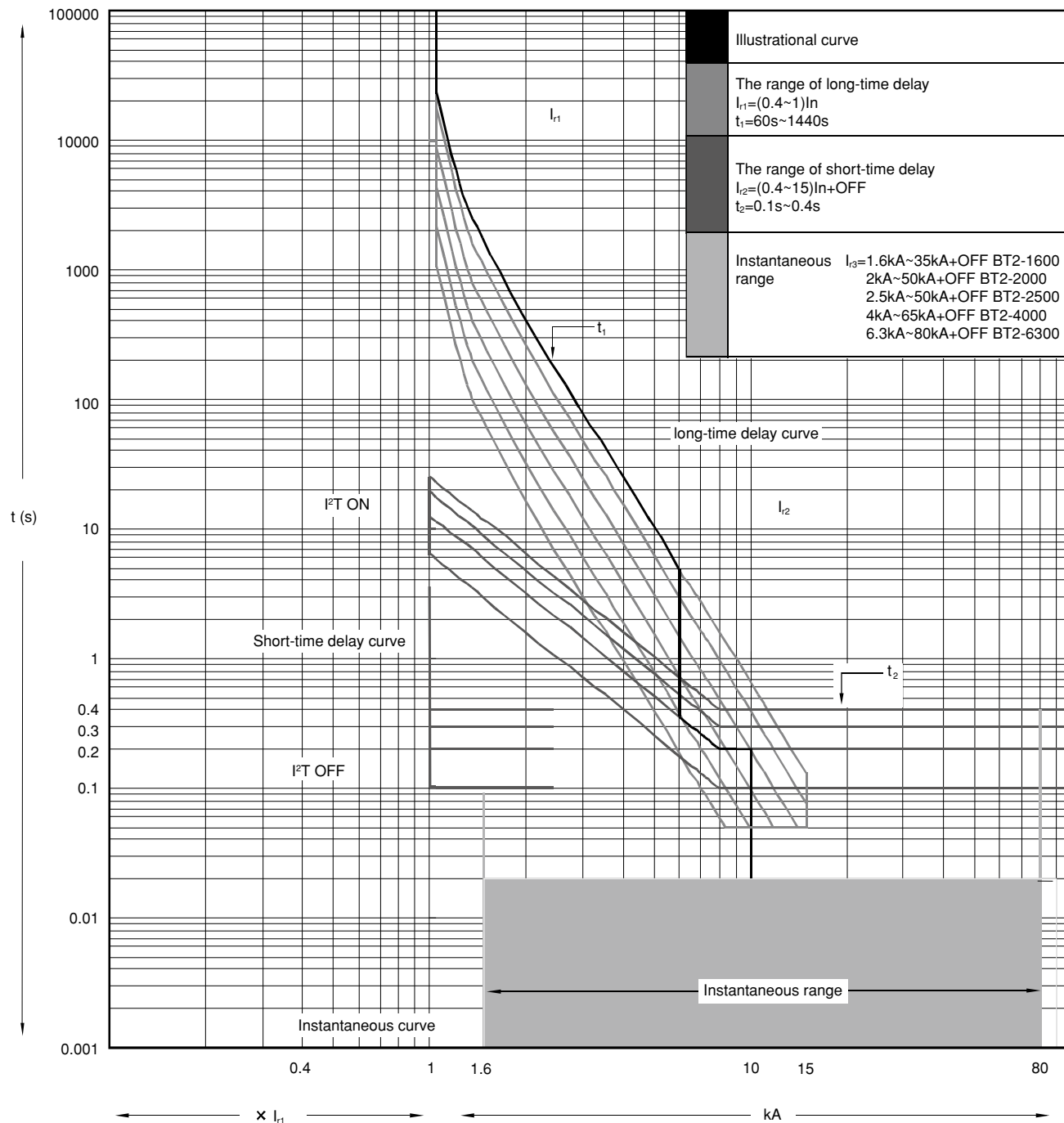
■ Characteristic curve of inverse time delay special It
• T/I (time / current) curve of type 25 and 26 intelligent controllers (OCR)



Air Circuit Breakers BT2 series Characteristic curve

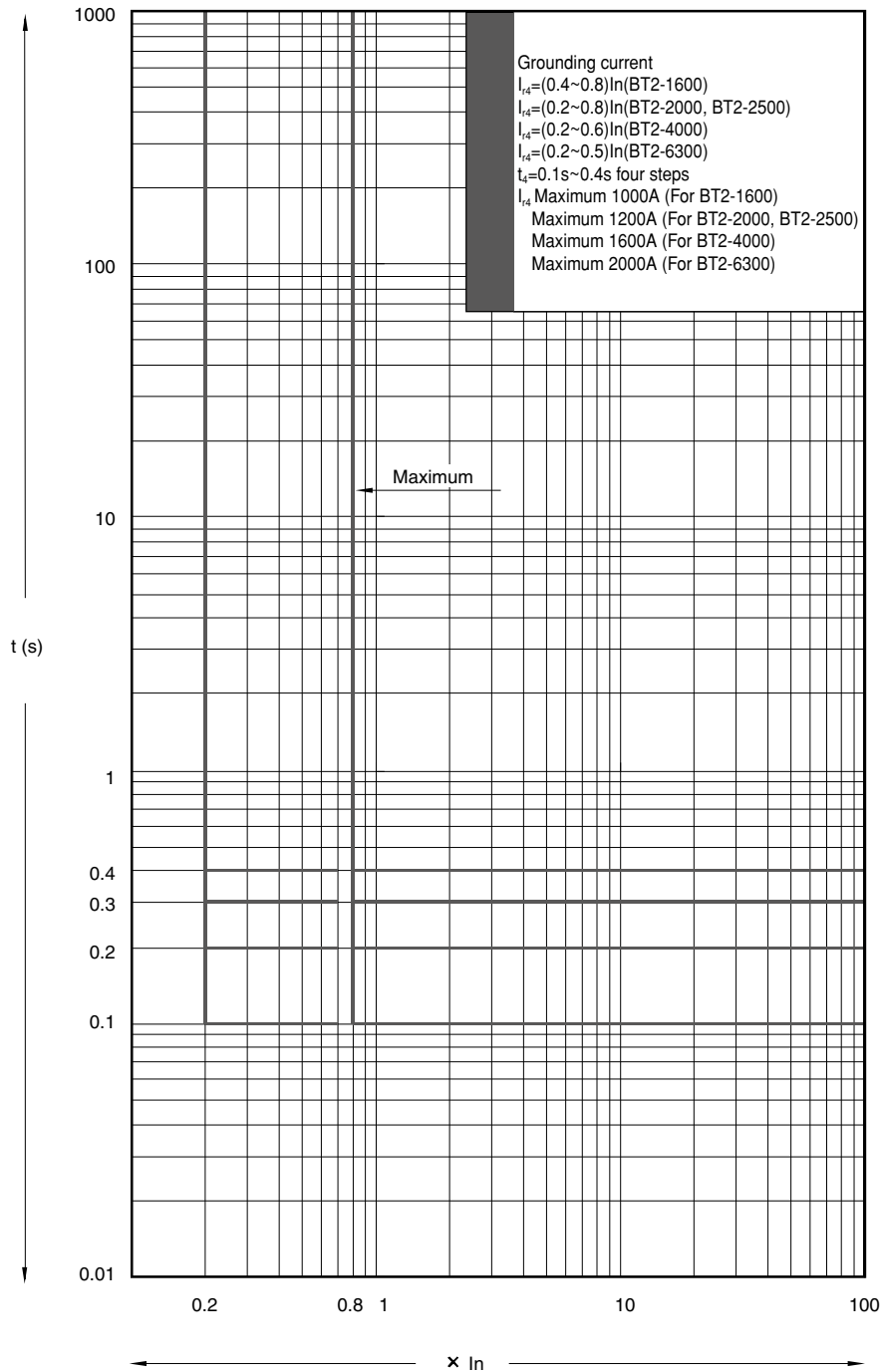
■ Characteristic curve of high-voltage fuse I^4t

• T/I (time / current) curve of type 25 and 26 intelligent controllers (OCR)



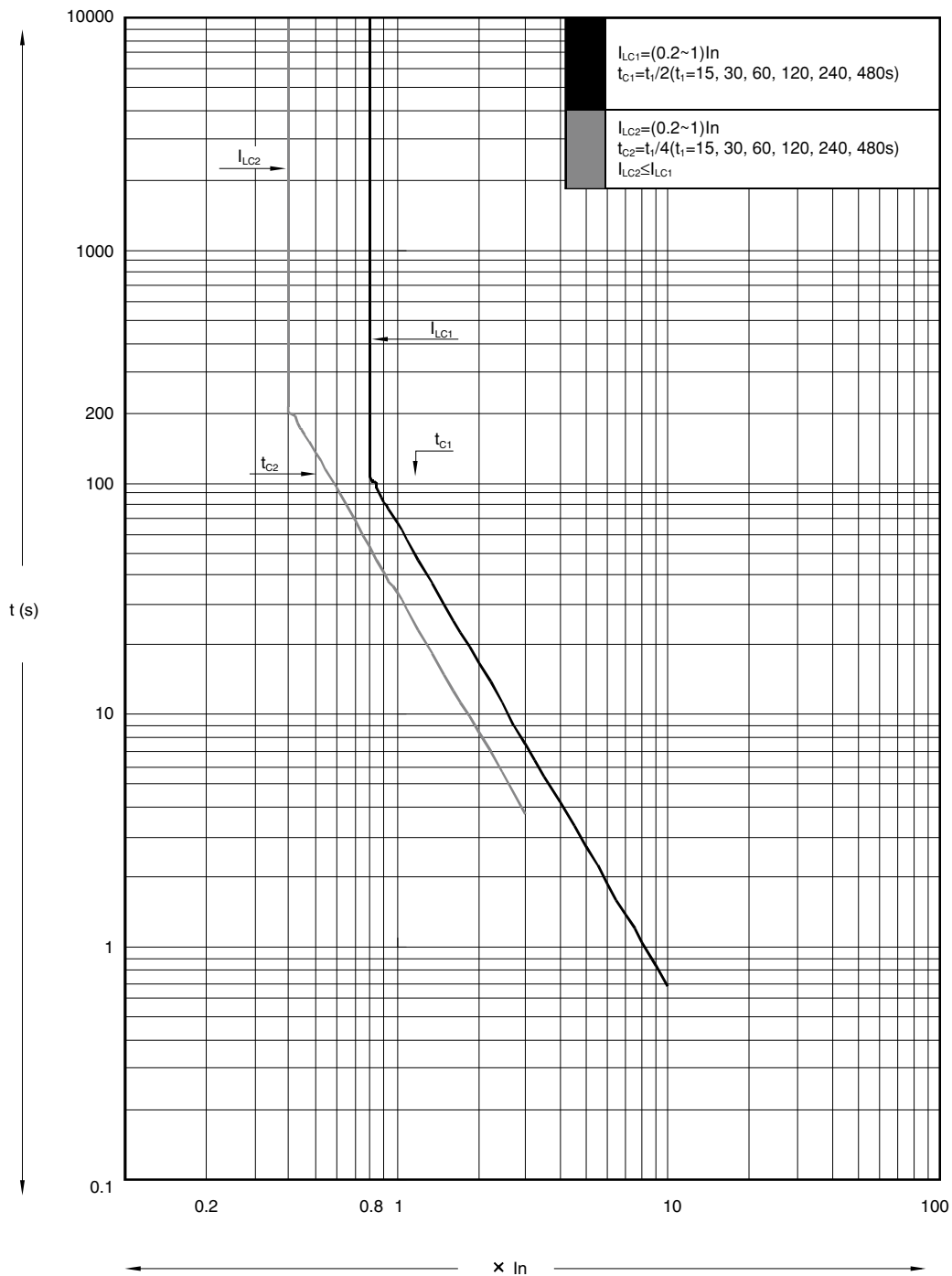
Air Circuit Breakers
BT2 series
Characteristic curve

• T/I (time / current) curve of type M26, H26 and P26 intelligent controllers (OCR) for ground-fault protection



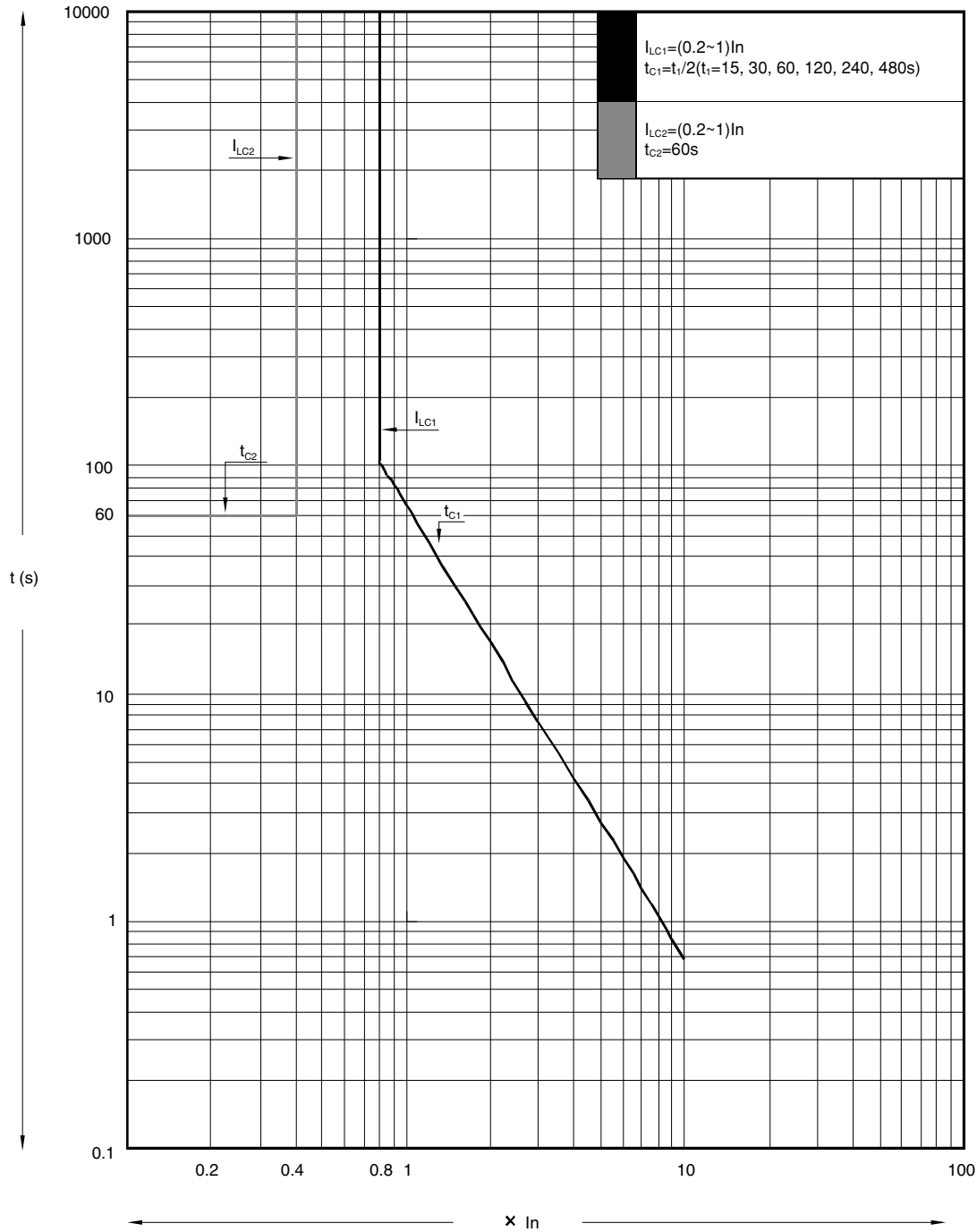
Air Circuit Breakers BT2 series Characteristic curve

- T/I (time / current) curve of type M25, M26, H26, P25 and P26 intelligent controllers (OCR) for load-monitoring pattern one.



Air Circuit Breakers
BT2 series
Characteristic curve

• T/I (time / current) curve of type M25, M26, H26, P25 and P26 intelligent controllers (OCR) for load-monitoring pattern two.



■ Accessories

● Supplied accessories

Following accessories are come with each ACB's as standard supplied.

• Shunt trip device

To break the ACB by remote control.

Rated voltage of control power supply	400VAC	230VAC	220VDC	110VDC
Operating voltage (V)	(0.7 to 1.1) Us			
Instantaneous current (A)	0.7	1.3	1.3	2.4
Breaking time (ms)	No more than 30			



• Charge Coil

After the ACB's ends up its energy storage, the closing electromagnet will make the energy storing spring to release its energy instantly, then to close the count ACB quickly.

Rated voltage of control power supply	400VAC	230VAC	220VDC	110VDC
Operating voltage (V)	(0.85 to 1.1) Us			
Instantaneous current (A)	0.7	1.3	1.3	2.4
Switching-on time (ms)	No more than 70			



• Drive unit

ACB has the functions of drive energy storage and automatic energy-restoring.

The energy storage can also be done manually.

Rated voltage of control power supply	400VAC	230VAC	220VDC	110VDC
Operating voltage (V)	(0.85 to 1.1) Us			
Power consumption	192VA		192W	
Energy storage time (s)	No more than 5			



• Auxiliary Switches

Rated voltage (V)	Conventional thermal current (A)	Rated capacity
AC 230	6	300VA
400		
DC 220		60W
110		

Note: Note: For the standard type of auxiliary switch, there are four groups of changeover contacts; for the special type of auxiliary switch, there are four pieces of normally-opened contacts (NO) and four pieces of normally-close contacts (NC), or 6 pieces of NO and 2 pieces of NC, or 2 pieces of NO and 6 pieces of NC.



• Safety padlock mechanism at the position of “separated”

When the draw-out circuit breaker indicates the position of “separated”, the locking stick can be locked with padlock after being pulled out so that the rocker of the circuit breaker can not be turned to the position of “test” or “connected”.

Padlock should be provided by users themselves.



Safety padlock mechanism

Air Circuit Breakers

BT2 series

Accessories

● Optional accessories

• Special power module

When the power voltage of BT2-1600 circuit breaker's intelligent control is AC230 or AC400V, it can be transformed into DC24V by this power module for power supply of the OCR.

Note: The input of voltage to 1 and 2 terminals of the secondary circuit must be DC24V.

This module is installed by getting stuck into the standard slideway with 35mm in width inside the switchgear cabinet.



• DC24V power module

When the power voltage of BT2-1600 circuit breaker's intelligent control is DC24V, it can be transformed into DC24V by this power module for power supply of the OCR.

This module is installed by getting stuck into the standard slideway with 35mm in width inside the switchgear cabinet.



• DC power supply module

When power supply of the secondary circuit is DC220V, 110V, it should be transformed into DC24V by this module for power supply of the OCR.

• Under-voltage release

The under-voltage release consists of release coil and control unit.

The under-voltage release works in two ways: operating instantaneously and operating in time delay.

There are four specifications of time delay for the under-voltage time delay release: 0.5s, 1s, 2s and 3s. Users should consult with the manufacturer in the light of their order about special time-delay specifications as from 3s and above up to 9s. The time delay accuracy is $\pm 10\%$.

The Under-voltage release of BT2-1600 must be combined with the time-delay module which is installed by getting stuck into the standard slideway with 35mm in width. The module input terminals connect with main circuit, the output terminals connect with terminal 31, 32 of the breaker.



● Choice of communicate accessories

- Components of draw-out socket communication module
- The components of draw-out socket communication module consists of the draw-out socket communication module outside of the circuit breaker and the draw-out socket communication parts inside of the circuit breaker. The draw-out socket communication parts are installed inside of the draw-out socket to provide the status signals of such three positions as "separated", "test" and "connected" of the main body of the draw-out circuit breaker and the draw-out socket. The draw-out socket communication module, which can provide the function of reading the address of the circuit breaker and display the status indication of the main body and three positions of the draw-out socket etc, is installed by getting stuck into the standard slideway with 35mm in width inside the switchgear cabinet. The two parts of the draw-out socket communication module are connected with soft conducting lines.

• Ready-for-switching-on signal

You can achieve the information through the uplever device that the circuit breaker is ready for switching-on.

• Under-voltage signal

You can achieve the information through the upper device that the circuit breaker is tripping operation under-voltage.

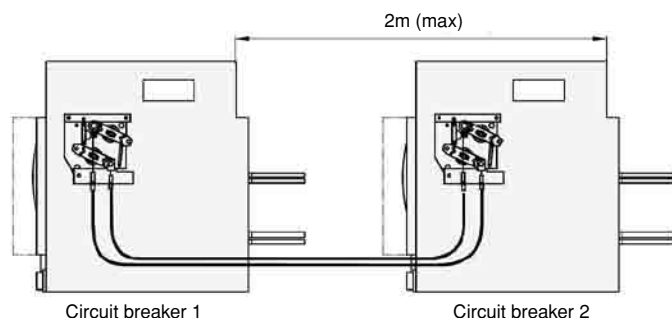
• Fault-trip signal

You can achieve the information through the upper device that the circuit breaker is tripping operation because of over loading short circuit or earth protection of the connection and devices.

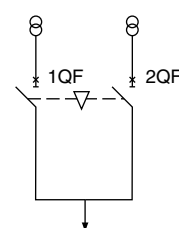


● Choice of mechanical interlock accessories

- Two sets of circuit breakers put horizontally and interlocked with steel cable or stacked and interlocked with connecting rods (the style of interlock between two sets of circuit breakers with connecting rods and aperture dimensions of their bases see the counterpart of three sets of circuit breakers)



Wiring diagram

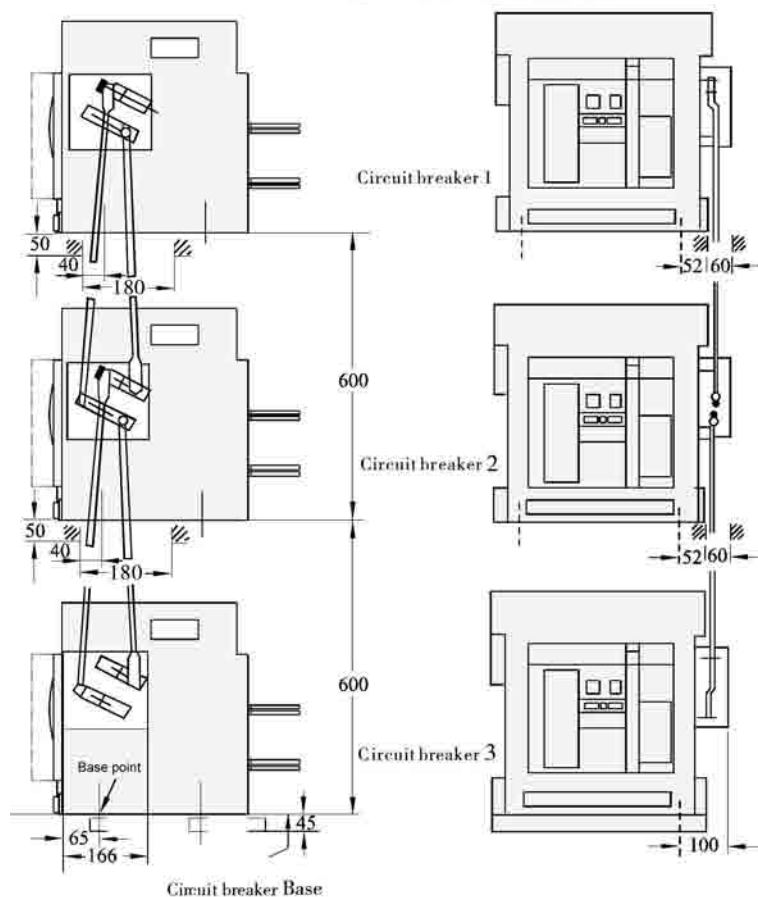


Possible operation pattern

1QF	2QF
0	0
0	1
1	0

- Three sets of circuit breakers stacked and interlocked with connecting rods or three sets of circuit breakers put horizontally and interlocked with steel cable (without BT2-1600).

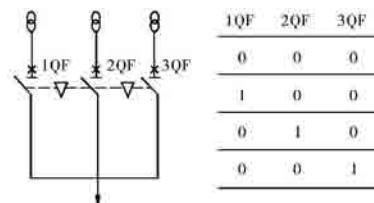
• Stacked and interlocked



Wiring diagram

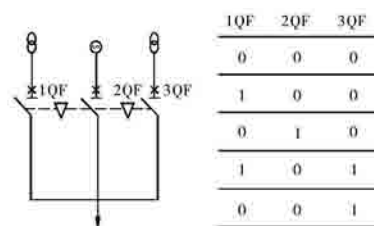
Possible operation Pattern

Pattern one: three sets of power supply can only close one sets of circuit breaker



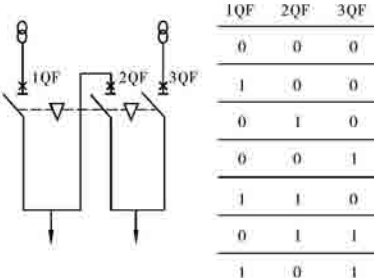
1QF	2QF	3QF
0	0	0
1	0	0
0	1	0
0	0	1

Pattern two: two sets of common power supply plus one sets of standby power supply



1QF	2QF	3QF
0	0	0
1	0	0
0	1	0
1	0	1
0	0	1

Pattern three: two sets of power supply plus a piece of coupling busbar



1QF	2QF	3QF
0	0	0
1	0	0
0	1	0
0	0	1
1	1	0
0	1	1
1	0	1

Air Circuit Breakers

BT2 series

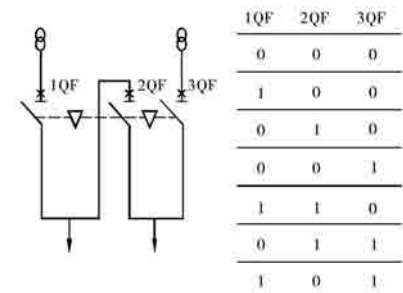
Accessories

• Steel cable interlocked

The style of interlock of three circuit breakers see the style of interlock between two sets of circuit breakers. The maximal distance of two circuit breakers is 2m.

Wiring diagram Possible operation pattern

Pattern three:Two sets of power supply plus a piece of coupling busbar



BT2-2000 and above

● Current transformer with neutral line N connected externally

- This current transformer, which is used together with circuit breakers with three poles in the power distribution system of TN-S, installed in the neutral line N with 2m at maximum far from the installation point.

• Characteristics

Rated working voltage	Ue (V)	AC400	AC230
Acting voltage	(V)	(0.35~0.7) Us	
Reliable switching voltage	(V)	(0.85~1.1) Us	
Reliable switching resistant voltage	(V)	≤0.35Us	
Power consumption		12VA	

Note: In the electrified networks where thunder and rain often happens or whose power supply is not stable, under-voltage release with time delay is highly recommended to protect the circuit breaker from releasing due to transient voltage-lowering. Generally, delay time, which is selective by users , is 0.5s, 1s, 2s and 3s.



● Electrical mechanism for the indication of draw-out socket's position

- When the main body of the draw-out circuit breaker and the draw-out socket are at the position of “separated”, “test” and “connected” respectively, three electrical mechanisms for the indication of draw-out socket's location can output the electrical signals corresponding with three positions above respectively. These mechanisms are installed inside the draw-out socket.

• Characteristics

Rated working voltage	Ue (V)	230
Conventional thermal current	Ith (A)	10
Rated working current	Ie (A)	1.5

● Electrical module for indication of ready-for-switching-on

- This electrical module indicates that the circuit breaker is ready for switching-on.

• Characteristics

Rated working voltage	Ue (V)	230
Conventional thermal current	Ith (A)	10
Rated working current	Ie (A)	1.5

Air Circuit Breakers

BT2 series

Accessories



"Break"lock mechanism

- "Break"lock mechanism
- "Break"lock mechanism can lock the "OFF" button of the circuit breaker on the pressed position. As a result, the circuit breaker can not be switched on.
- After this lock mechanism was chosen by users, the manufacturer would provide lock and key.
- One set of circuit breaker is outfitted with one lock and one key.
- Two sets of circuit breakers are outfitted with two same locks and one key.
- Three sets of circuit breakers are outfitted with three same locks and two keys.



- "Button"locking device
- When installed "Button"locking device, it can prevented somebody from operating button of switching-on or switching off by mistake.
- Padlock should be provided by users themselves.



- Counter
- The counter can count mechanical operation times accumulatively, which makes users be clear at a glance.



- Separator plate between phases
- Separator plates between phases which strengthen insulation between bus-bars are optional and will be equipped as needed by users.

Air Circuit Breakers

BT2 series

Technical data

■ Power consumption and derating coefficient

- Power consumption (Environment temperature +40°C)
Power consumption is the overall consumption measured under with the circuit breaker is electrified with current below frame current.

Type	Three poles/four poles (W)	
	Fixed type	Draw-out type
BT2-1600	152	408
BT2-2000	203.6	382.8
BT2-2500	356.8	823.4
BT2-4000	648.96	897.6
BT2-6300	1050.1	1200.2

- Derating coefficient
The following table shows continual current-loading capacity of circuit breakers at different ambient environment temperature and under the conditions of the satisfaction of conventional heating in IEC60947-2

Ambient Environment temperature		+40°C	+45°C	+50°C	+55°C	+60°C
Continual current-loading capacity	Inm=1600A	1Inm	0.99Inm	0.96Inm	0.90Inm	0.87Inm
	Inm=2000A	1Inm	0.97Inm	0.91Inm	0.87Inm	0.82Inm
	Inm=2500A	1Inm	0.96Inm	0.90Inm	0.86Inm	0.80Inm
	Inm=4000A	1Inm	0.95Inm	0.89Inm	0.85Inm	0.78Inm
	Inm=6300A	1Inm	0.93Inm	0.87Inm	0.82Inm	0.75Inm

■ Derating for high-elevation

If elevation exceeds work environment 2000m, electric property of circuit breaker can correct according to following table:

elevation (m)	2000	3000	4000	5000
Power-frequency withstand voltage (V)	3500	3150	2500	2000
Correction factor of operational current	1	0.93	0.88	0.82
Correction factor of short-circuit breaking capacity	1	0.83	0.71	0.63

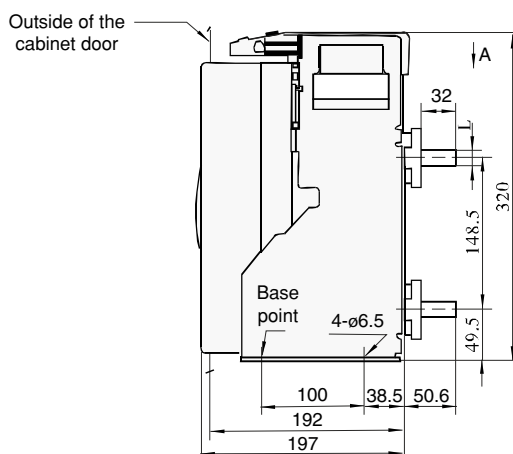
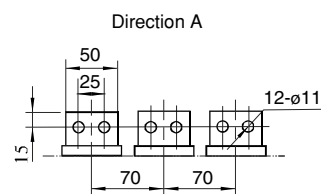
■ Reference table of main circuit wiring copper bar for draw-out circuit breakers

Rated frame current (A)	Rated current (A)	Specifications of copper bars	
		Number	Size (mm×mm)
1600	200	1	20×5
	400	1	50×5
	630	2	40×5
	800	2	50×5
	1000	3	40×5
	1250	4	40×5
	1600	2	50×10
2000	630	2	50×5
	800	2	60×5
	1000	2	60×5
	1250	3	60×5
	1600	2	60×10
	2000	3	60×10
2500	1250	3	60×5
	1600	2	60×10
	2000	3	60×10
	2500	4	60×10
4000	2000	3	100×5
	2500	4	100×5
	2900	3	100×10
	3200	4	100×10
	3600	4	100×10
	4000	5	100×10
6300	4000	5	100×10
	5000	6	100×10
	6300	8	100×10

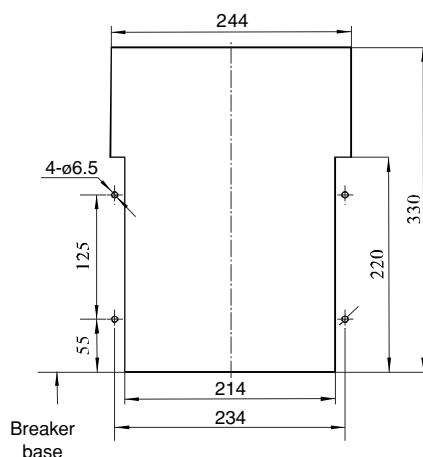
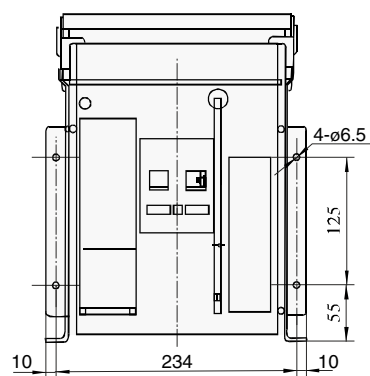
The specifications of copper bars in the above table are introduced under which the circuit breakers by open installation are at maximum ambient environment temperature of 40°C and satisfy conventional heating in IEC60947-2.

■ Dimensions and mounting, mm
● BT2-1600 Air Circuit Breaker with three poles (fixed type)

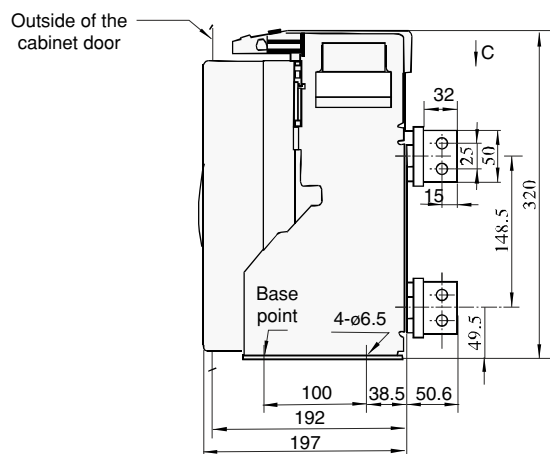
Current specifications	L (mm)
800A, 1000A, 1250A, 1600A	15
200A, 400A, 630A	10



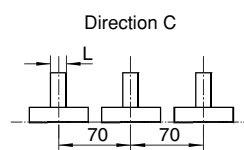
Horizontal (Rear connection)



Aperture dimensions of the back plate
at the time of hanging type installation



Vertical (Rear connection)



Air Circuit Breakers

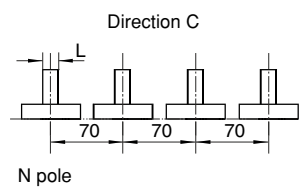
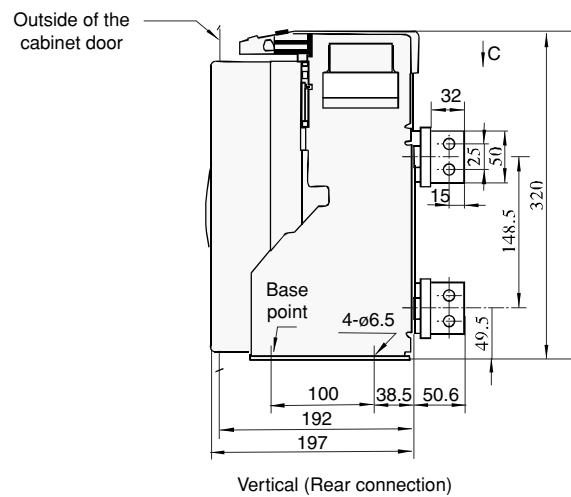
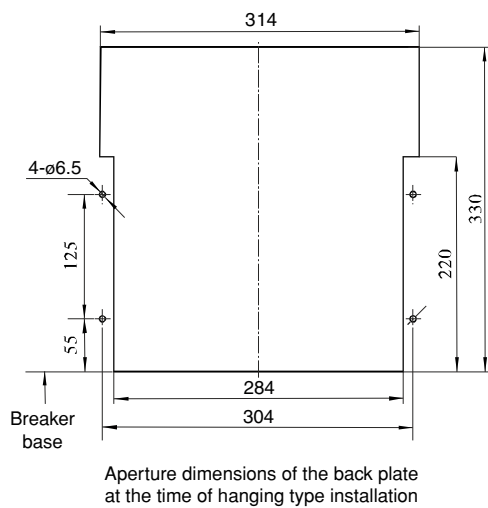
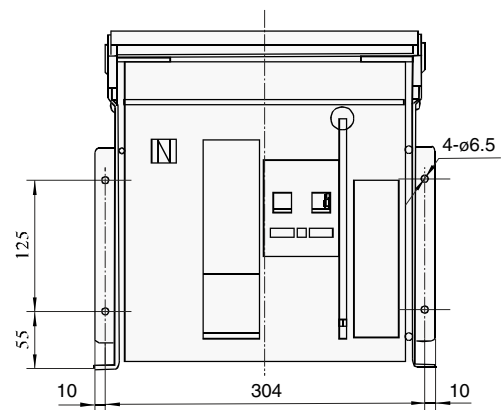
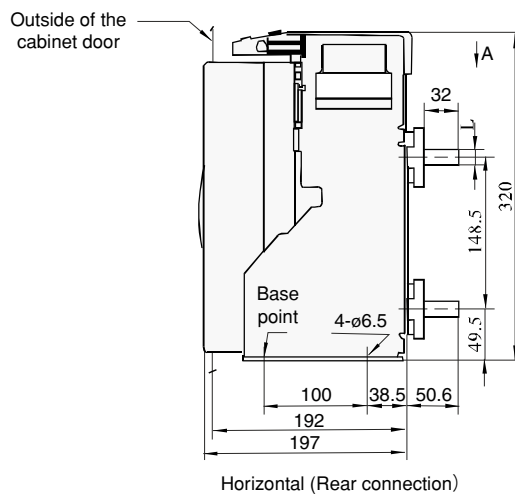
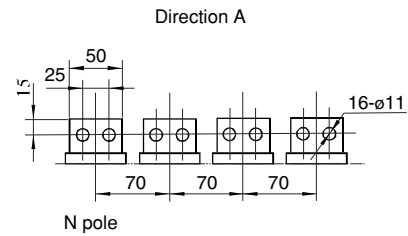
BT2 series

Dimensions and mounting

■ Dimensions and mounting, mm

● BT2-1600 Air Circuit Breaker with four poles (fixed type)

Current specifications	L (mm)
800A, 1000A, 1250A, 1600A	15
200A, 400A, 630A	10



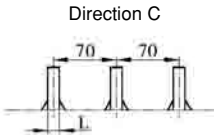
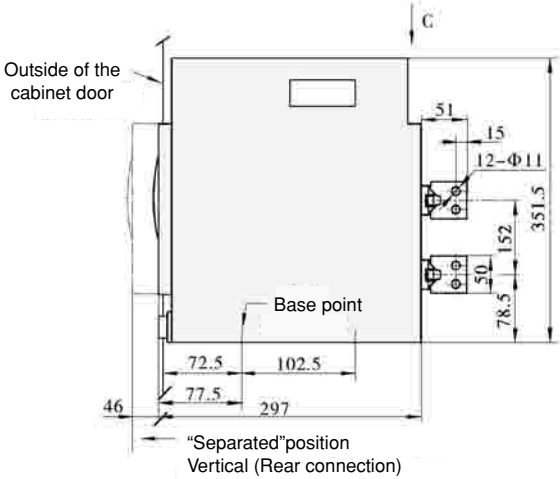
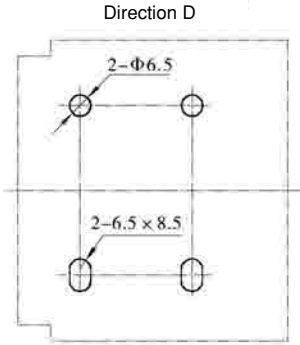
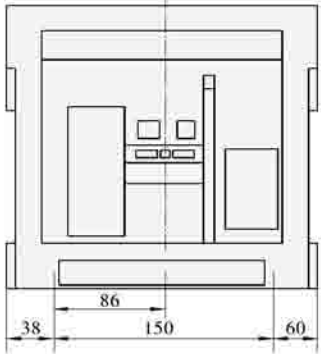
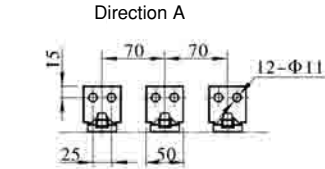
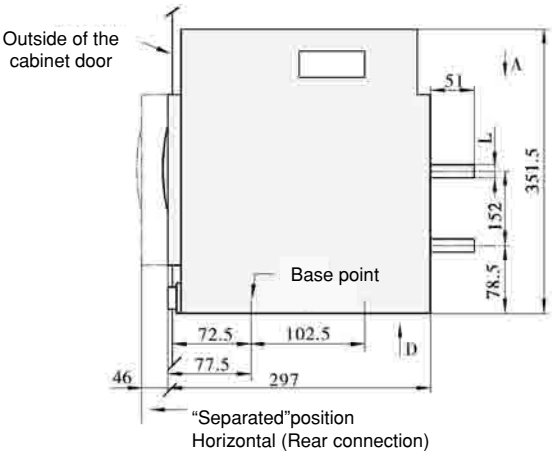
Air Circuit Breakers

BT2 series

Dimensions and mounting

- Dimensions and mounting, mm
- BT2-1600 Air Circuit Breaker with three poles (draw-out type)

Current specifications	L (mm)
800A, 1000A, 1250A, 1600A	15
200A, 400A, 630A	10



Air Circuit Breakers

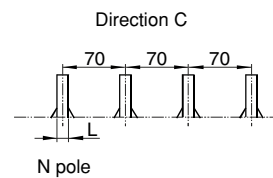
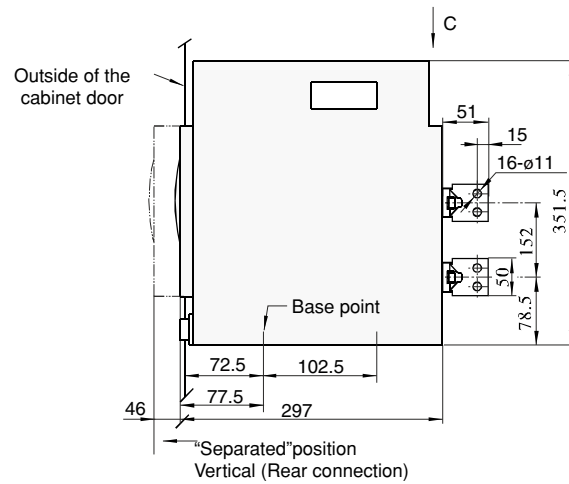
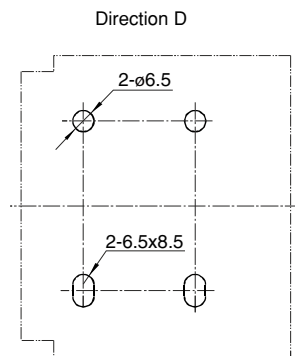
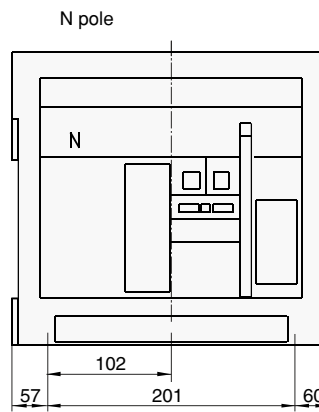
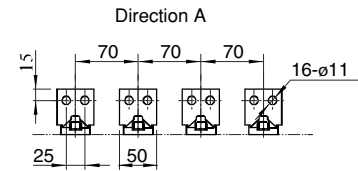
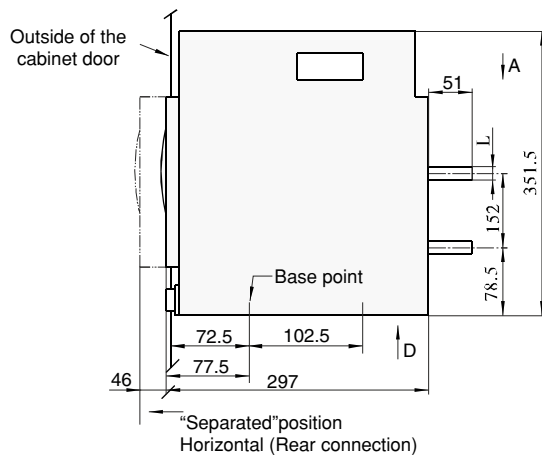
BT2 series

Dimensions and mounting

■ Dimensions and mounting, mm

● BT2-1600 Air Circuit Breaker with four poles (draw-out type)

Current specifications	L (mm)
800A, 1000A, 1250A, 1600A	15
200A, 400A, 630A	10



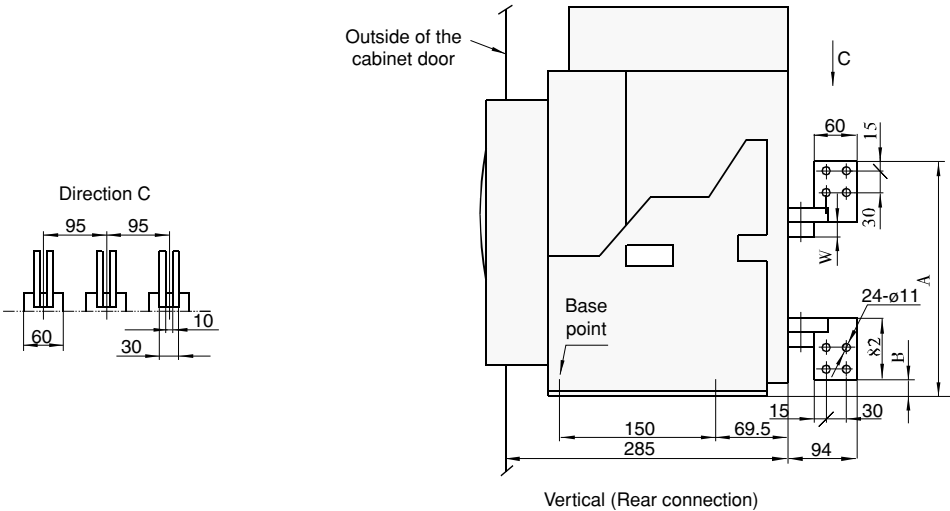
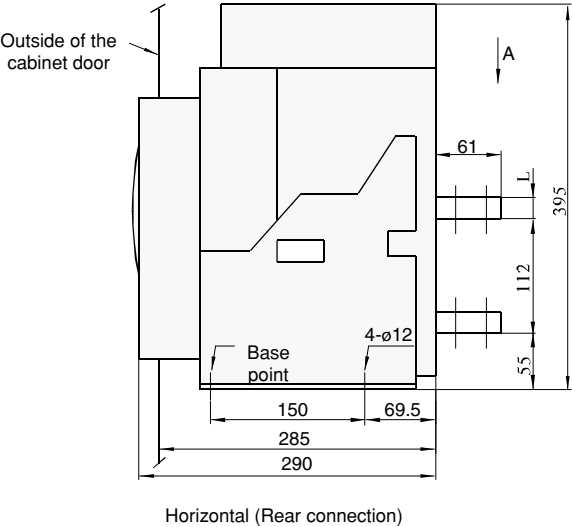
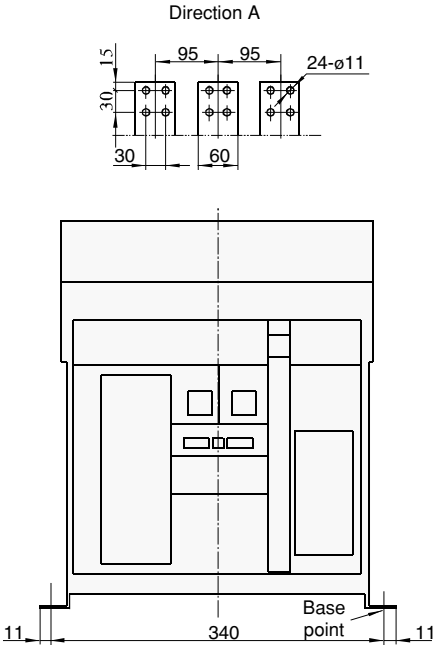
Air Circuit Breakers

BT2 series

Dimensions and mounting

- Dimensions and mounting, mm
- BT2-2000 Air Circuit Breaker with three poles (fixed type)

Current specifications	L (mm)	A (mm)	W (mm)	B (mm)
2000A	20	269	20	13
630A, 800A, 1000A, 1250A, 1600A	15	264	15	3



Air Circuit Breakers

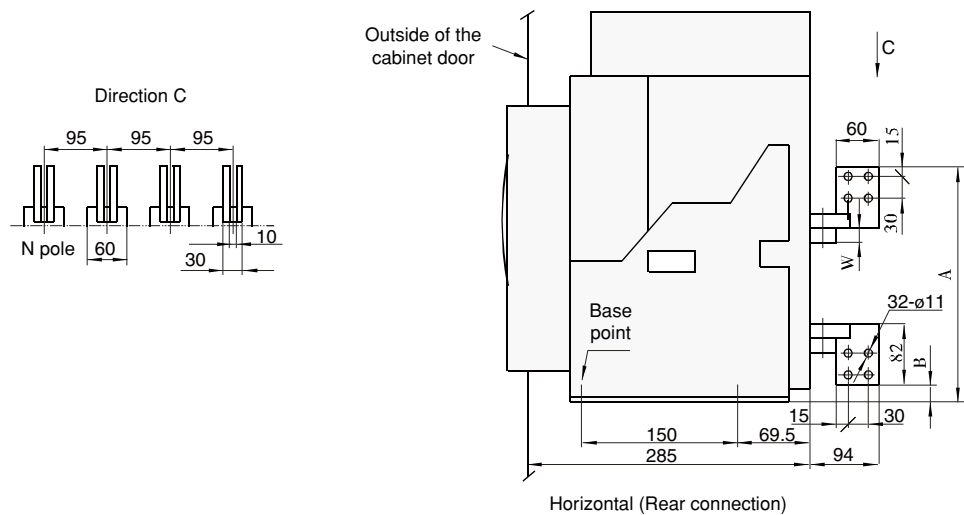
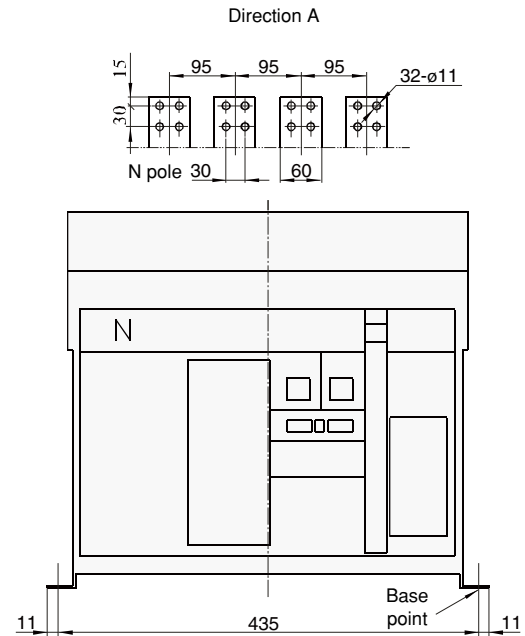
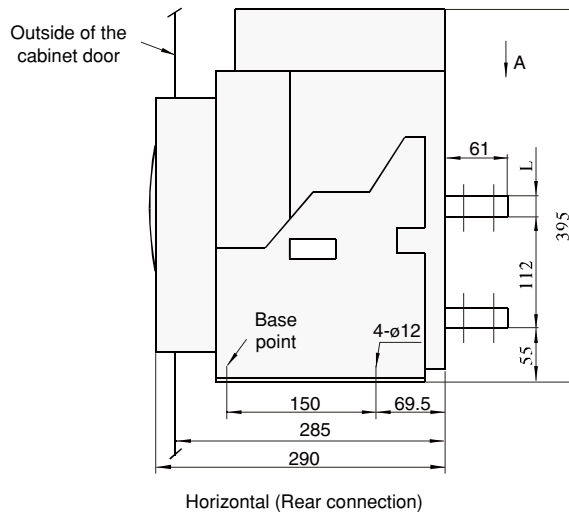
BT2 series

Dimensions and mounting

■ Dimensions and mounting, mm

● BT2-2000 Air Circuit Breaker with four poles (fixed type)

Current specifications	L (mm)	A (mm)	W (mm)	B (mm)
2000A	20	269	20	13
630A, 800A, 1000A, 1250A, 1600A	15	264	15	3



Air Circuit Breakers

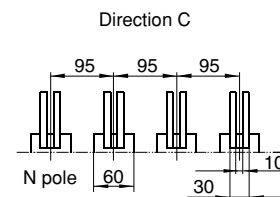
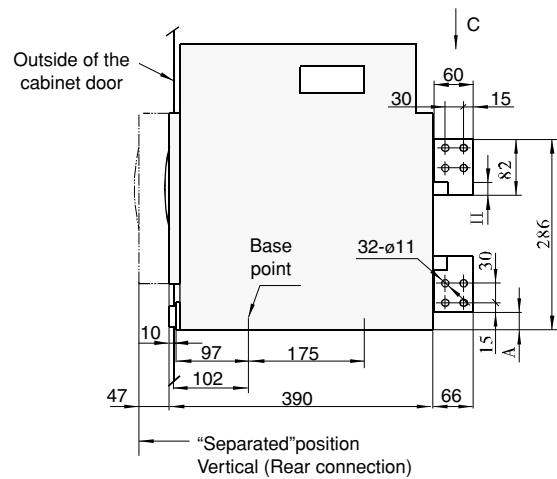
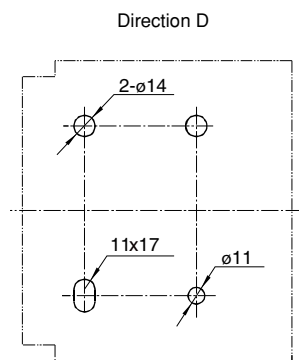
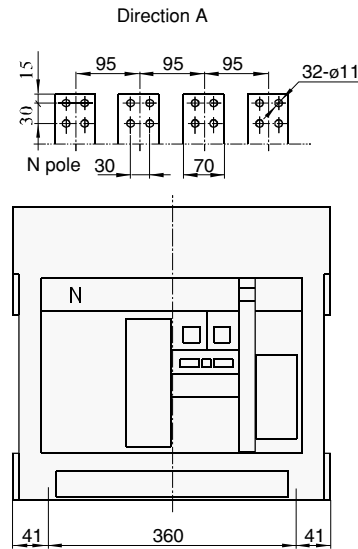
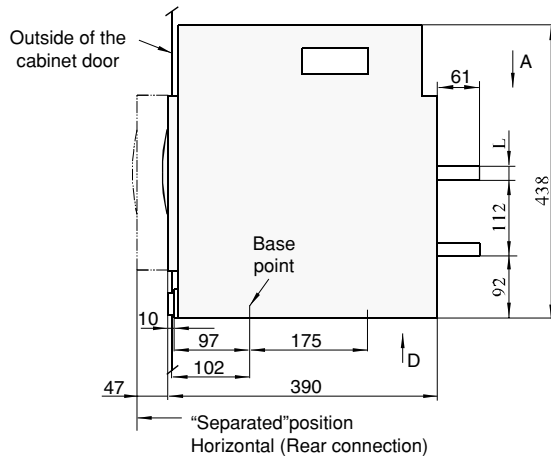
BT2 series

Dimensions and mounting

■ Dimensions and mounting, mm

● BT2-2000 Air Circuit Breaker with four poles (draw-out type)

Current specifications	L (mm)	H (mm)	A (mm)
2000A	20	20	30
630A, 800A, 1000A, 1250A, 1600A	15	15	25



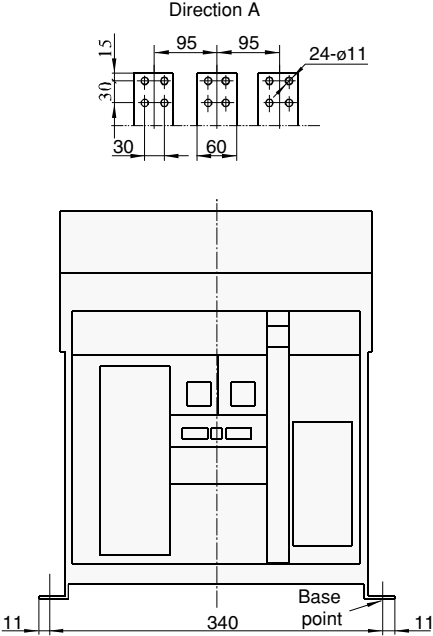
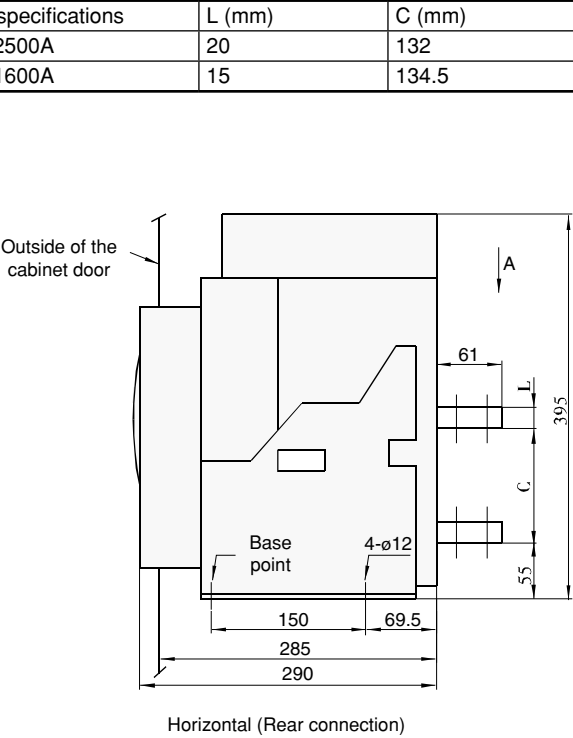
Air Circuit Breakers

BT2 series

Dimensions and mounting

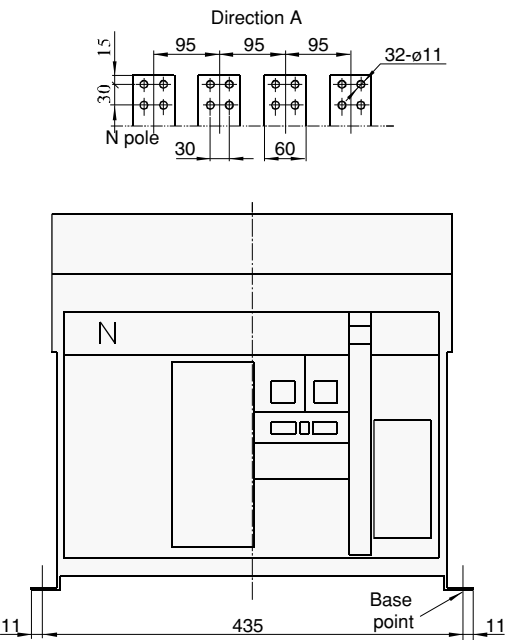
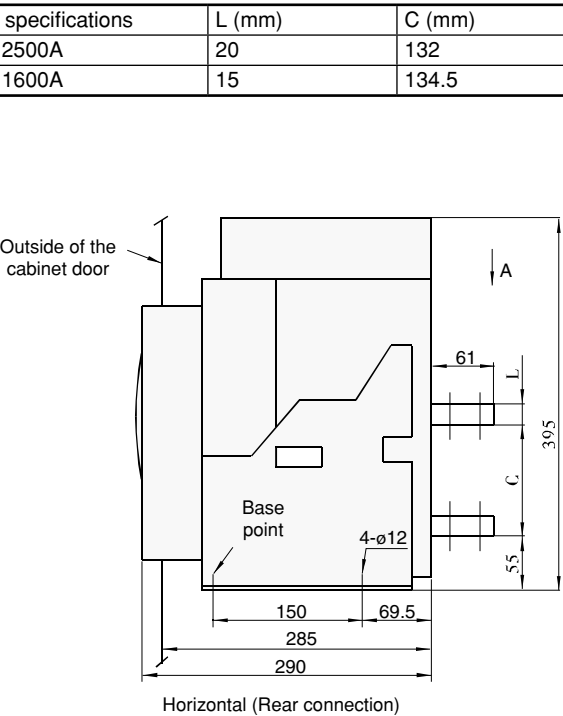
- Dimensions and mounting, mm
- BT2-2500 Air Circuit Breaker with three poles (fixed type)

Current specifications	L (mm)	C (mm)
2000A, 2500A	20	132
1250A, 1600A	15	134.5



- BT2-2500 Air Circuit Breaker with four poles (fixed type)

Current specifications	L (mm)	C (mm)
2000A, 2500A	20	132
1250A, 1600A	15	134.5



Air Circuit Breakers

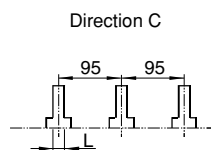
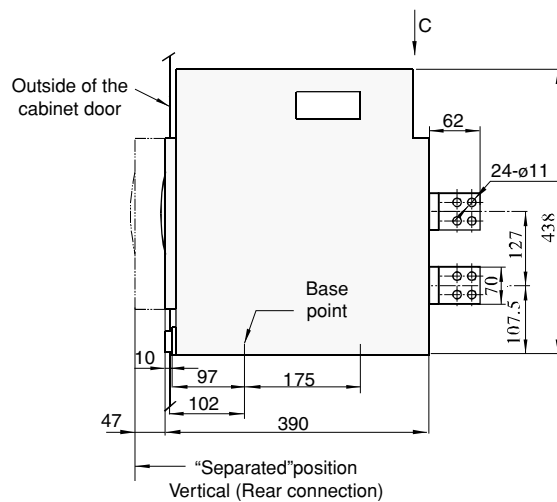
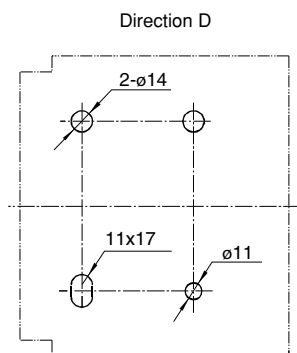
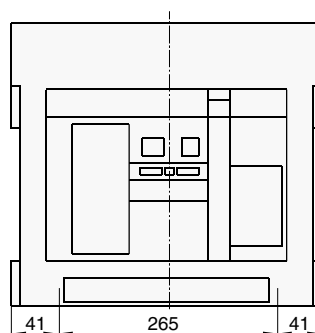
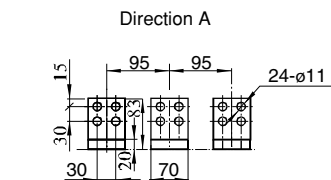
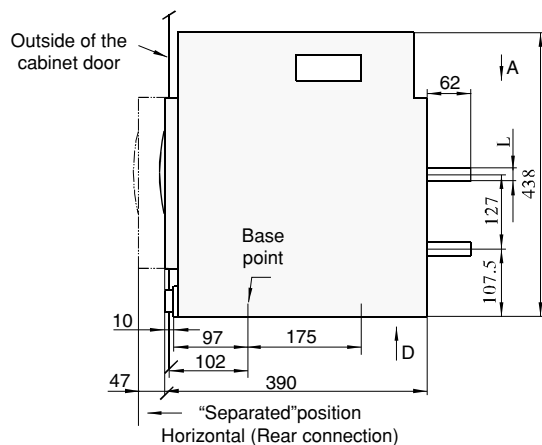
BT2 series

Dimensions and mounting

■ Dimensions and mounting, mm

● BT2-2500 Air Circuit Breaker with three poles (draw-out type)

Current specifications	L (mm)
2000A, 2500A	20
1250A, 1600A	15



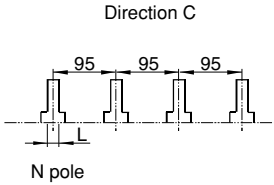
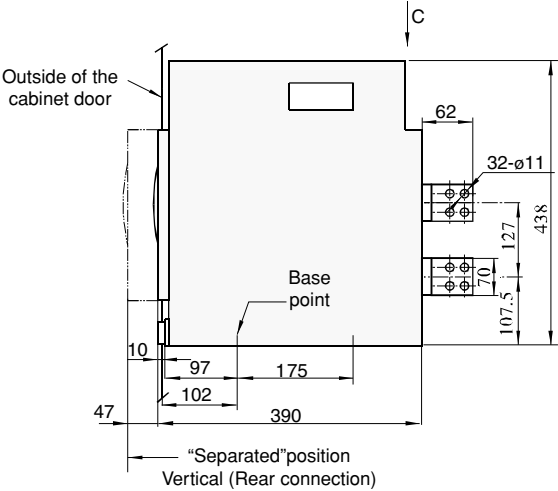
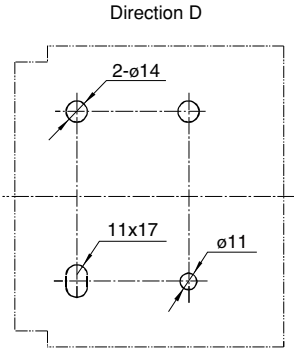
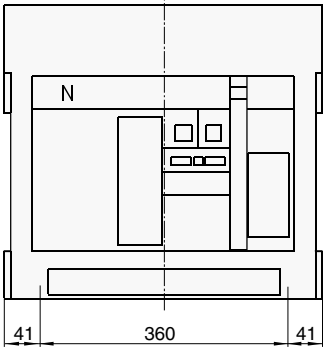
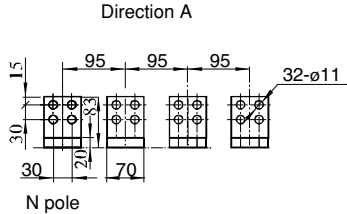
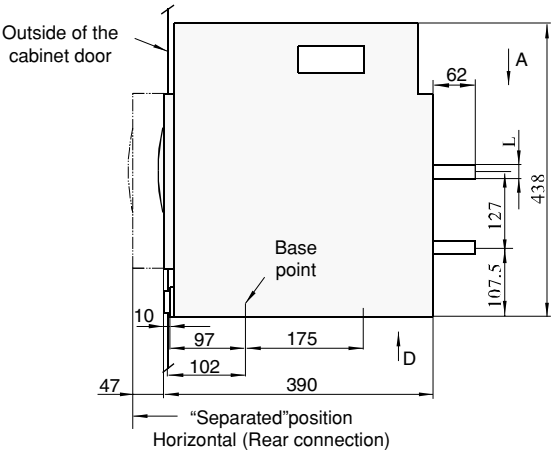
Air Circuit Breakers

BT2 series

Dimensions and mounting

- Dimensions and mounting, mm
- BT2-2500 Air Circuit Breaker with four poles (draw-out type)

Current specifications	L (mm)
2000A, 2500A	20
1250A, 1600A	15



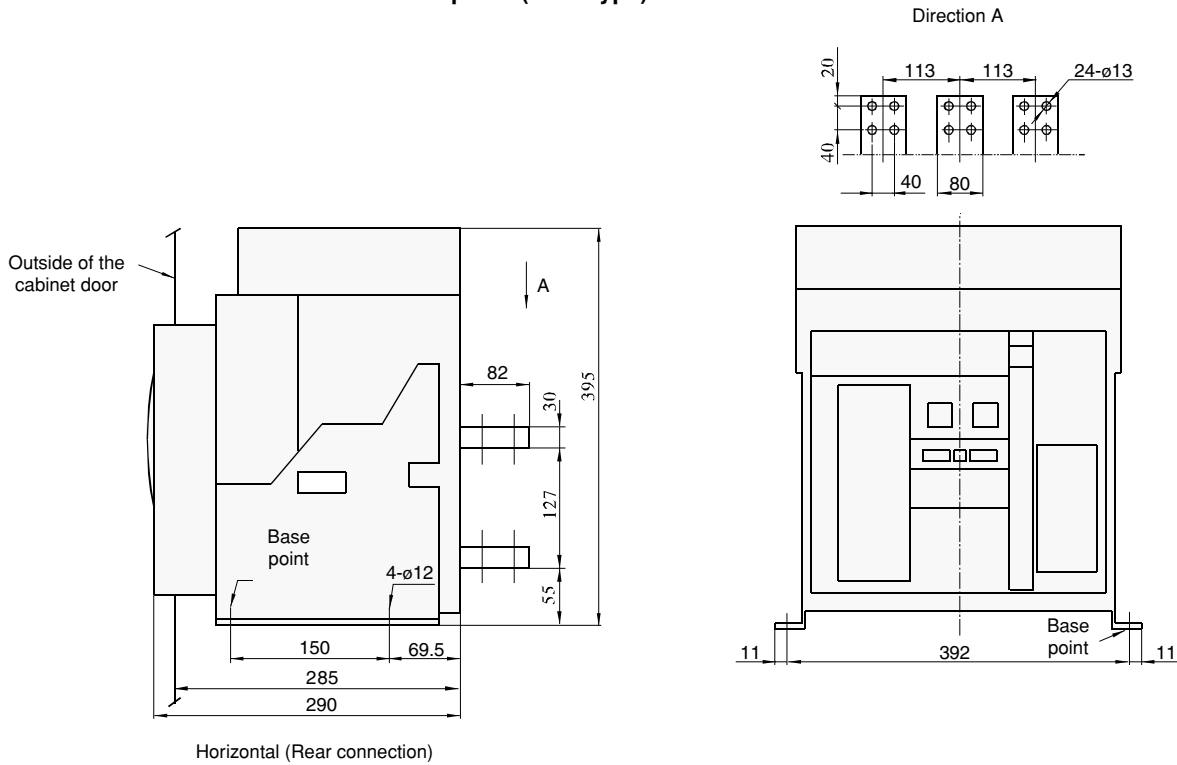
Air Circuit Breakers

BT2 series

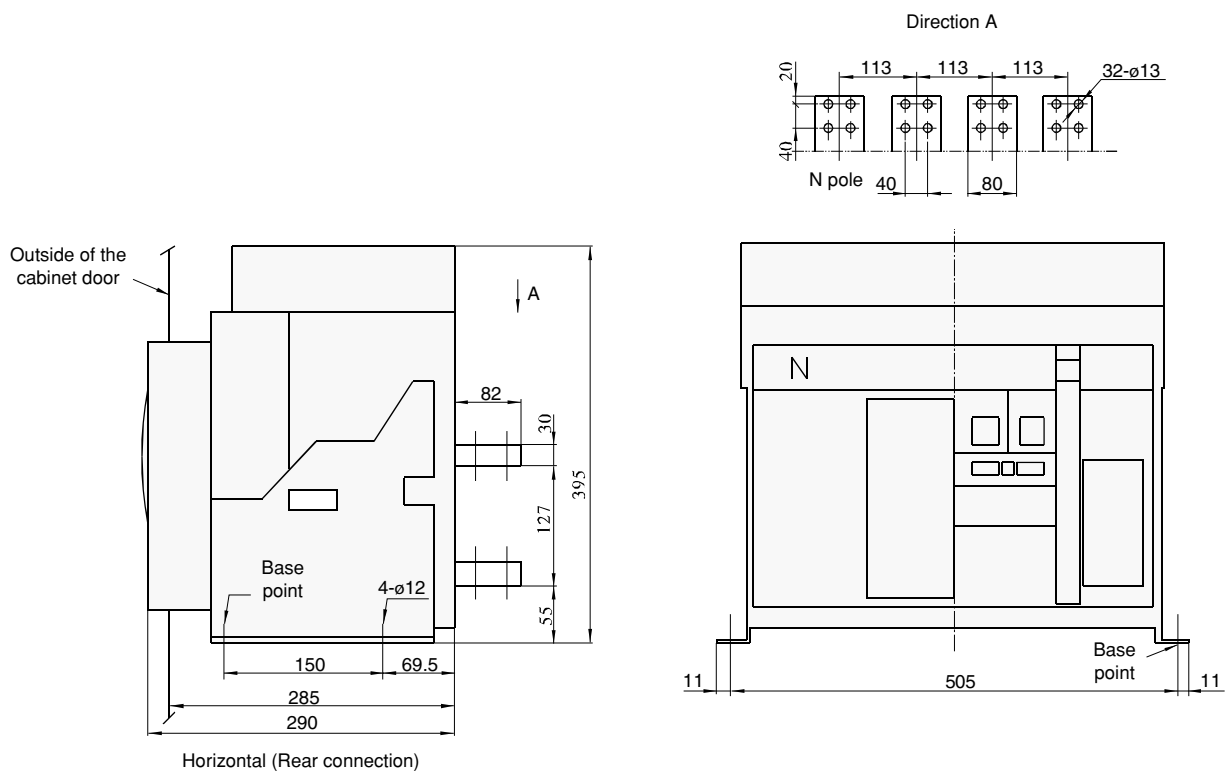
Dimensions and mounting

■ Dimensions and mounting, mm

● BT2-4000 Air Circuit Breaker with three poles (fixed type)



● BT2-4000 Air Circuit Breaker with four poles (fixed type)



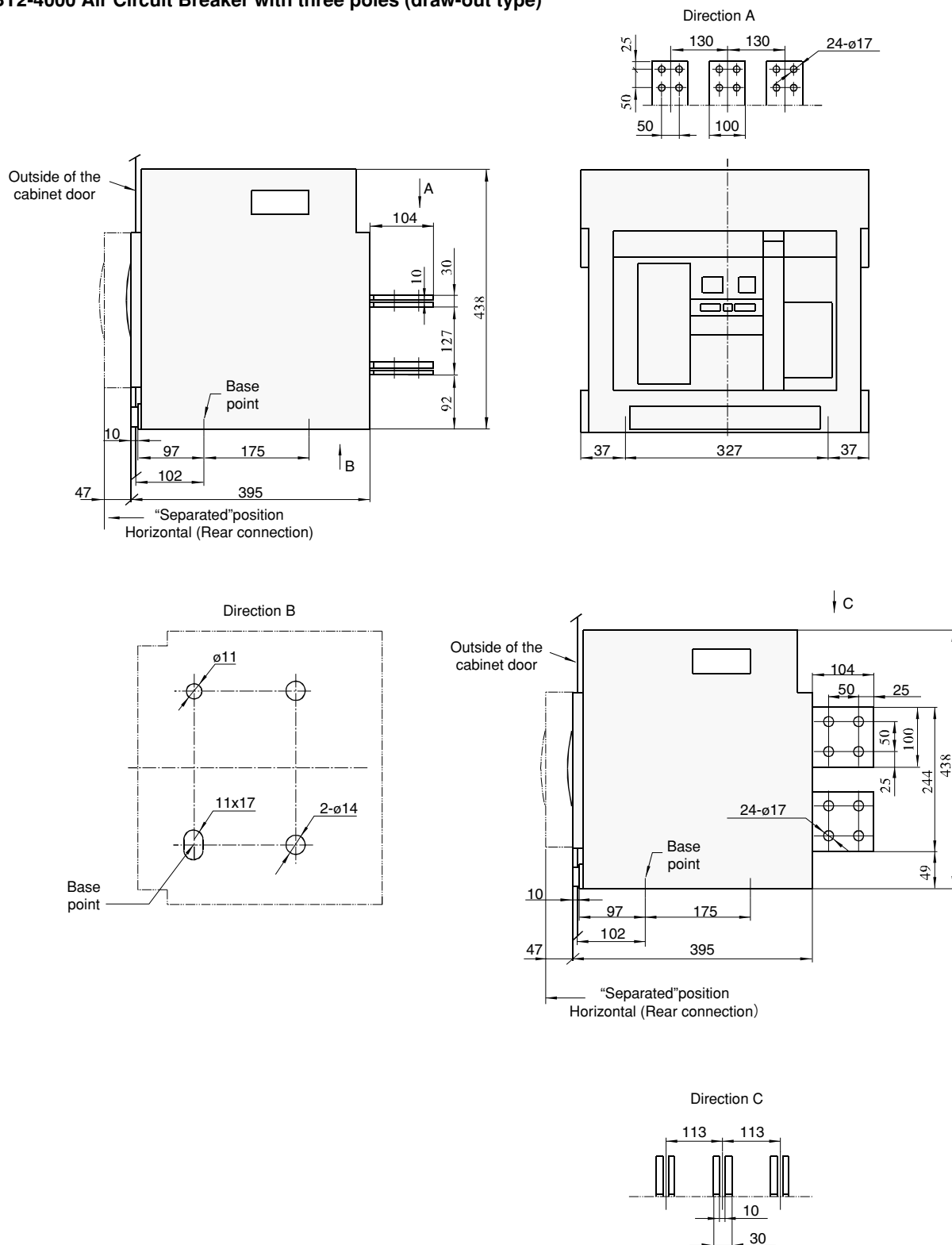
Air Circuit Breakers

BT2 series

Dimensions and mounting

■ Dimensions and mounting, mm

● BT2-4000 Air Circuit Breaker with three poles (draw-out type)



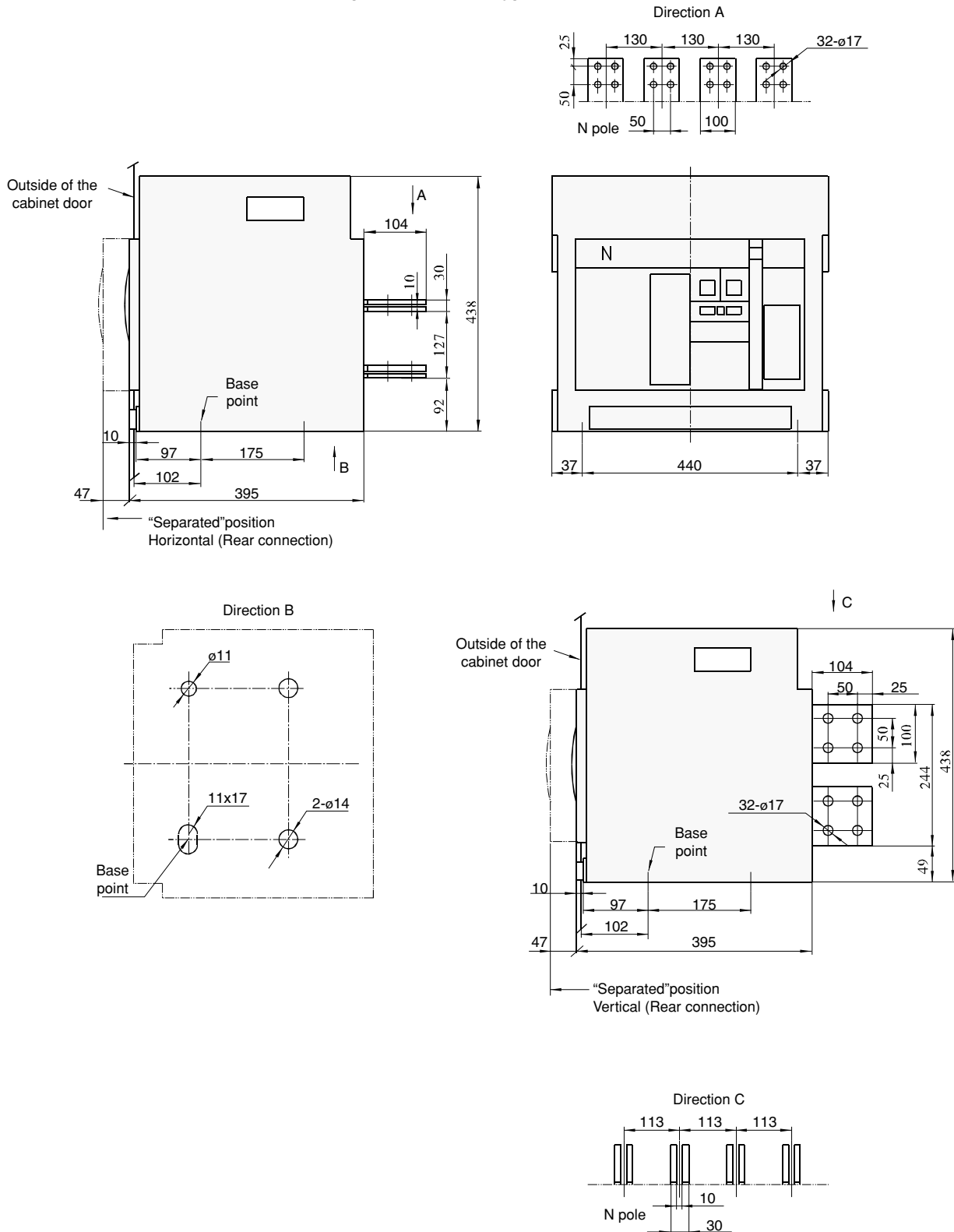
Air Circuit Breakers

BT2 series

Dimensions and mounting

■ Dimensions and mounting, mm

● BT2-4000 Air Circuit Breaker with four poles (draw-out type)

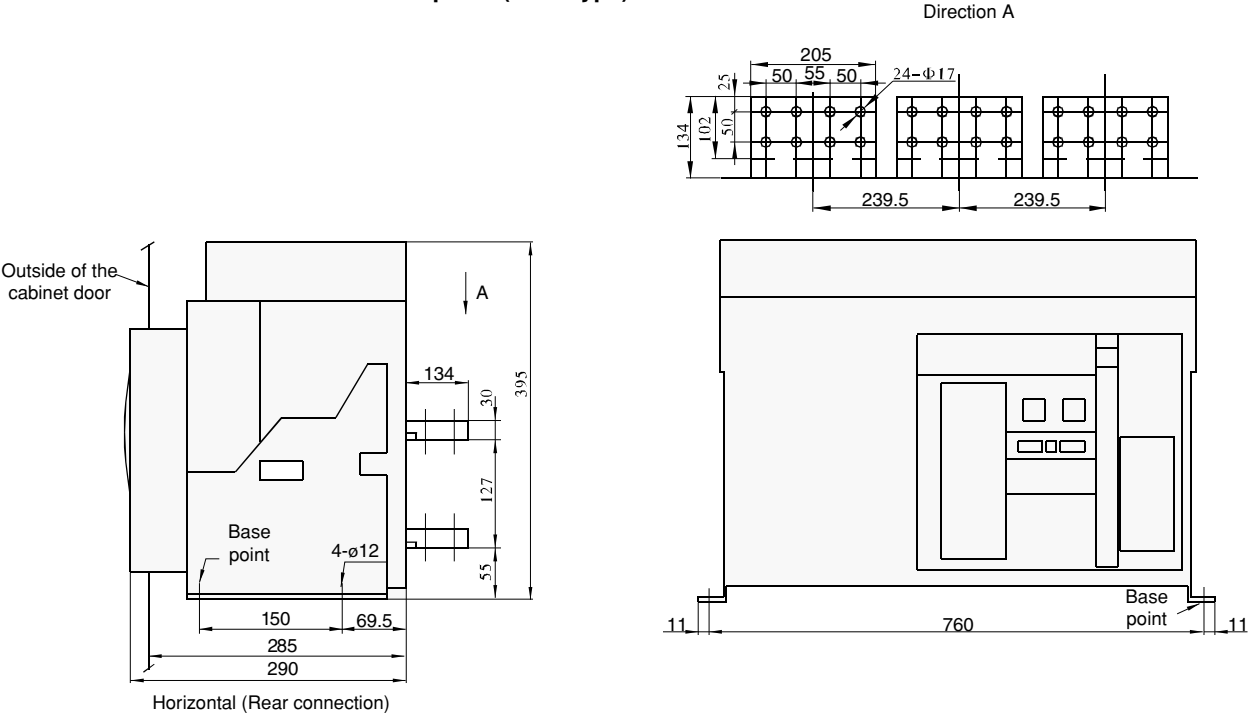


Air Circuit Breakers

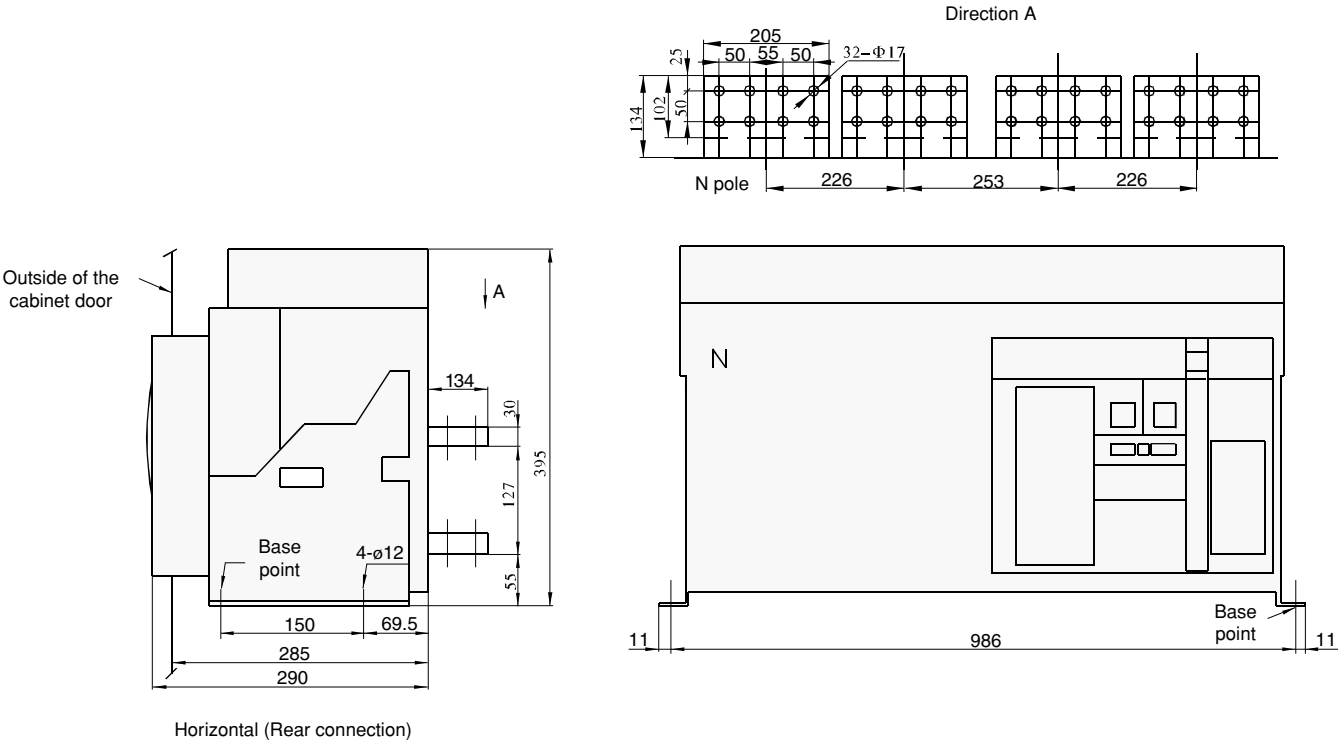
BT2 series

Dimensions and mounting

- Dimensions and mounting, mm
- BT2-6300 Air Circuit Breaker with three poles (fixed type)



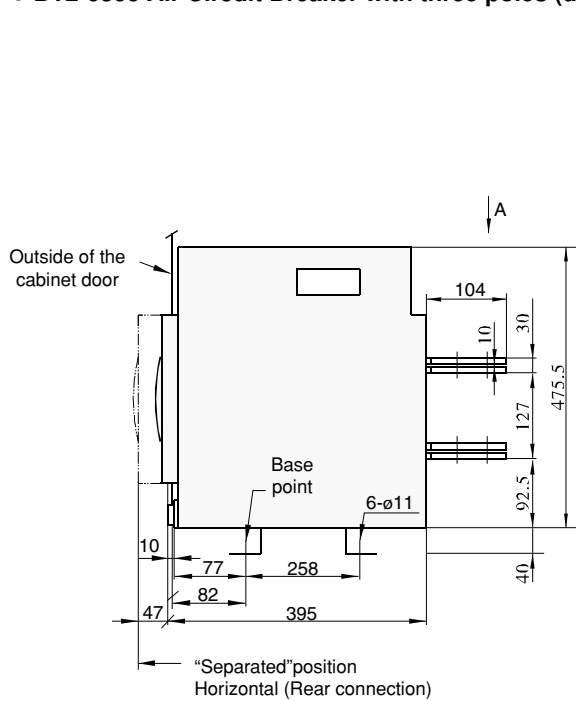
- BT2-6300 Air Circuit Breaker with four poles (fixed type)



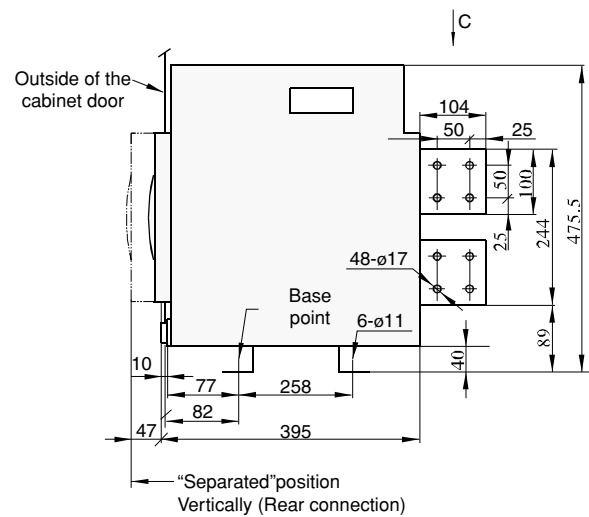
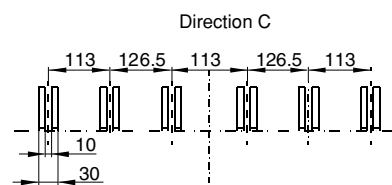
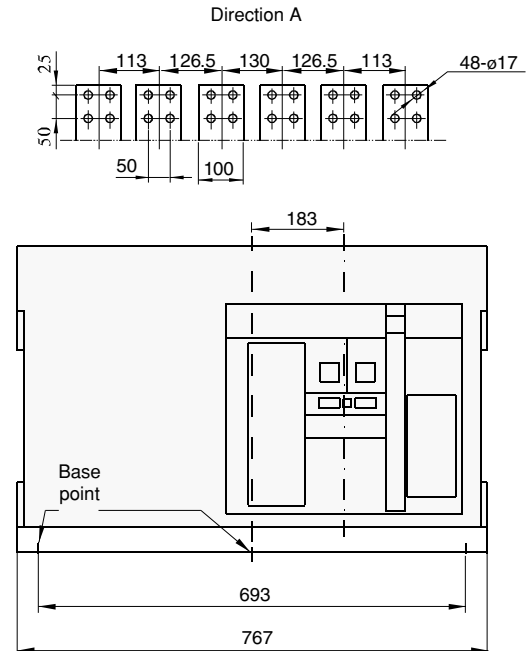
Air Circuit Breakers BT2 series Dimensions and mounting

■ Dimensions and mounting, mm

● BT2-6300 Air Circuit Breaker with three poles (draw-out type)



Current specifications:
In=4000A, 5000A



Current specifications:
In=4000A, 5000A, 6300A

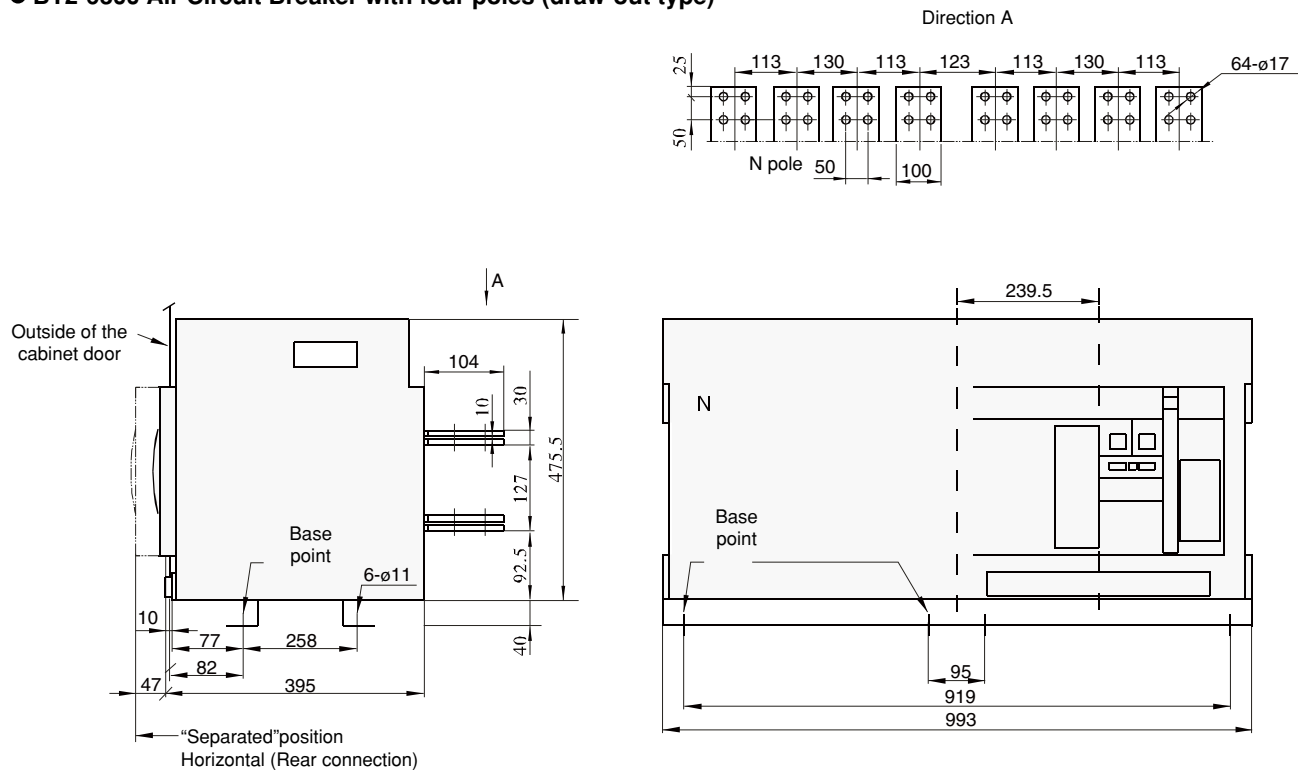
Air Circuit Breakers

BT2 series

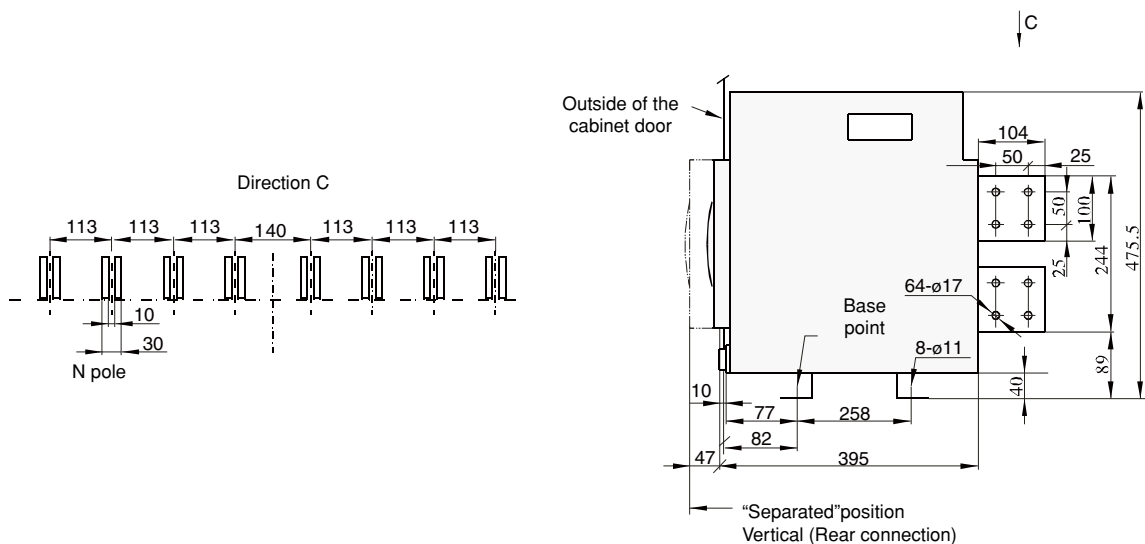
Dimensions and mounting

■ Dimensions and mounting, mm

● BT2-6300 Air Circuit Breaker with four poles (draw-out type)



Current specifications:
In=4000A, 5000A



Current specifications:
In=4000A, 5000A, 6300A

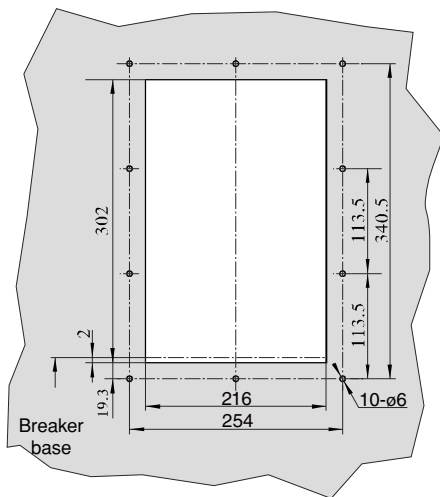
Air Circuit Breakers BT2 series Dimensions and mounting

■ Door frame dimensions, mm

● BT2-1600 door frame

BT2-1600 Air Circuit Breakers with three poles (fixed type)
The drawing of aperture dimensions for mounting cover of door frame

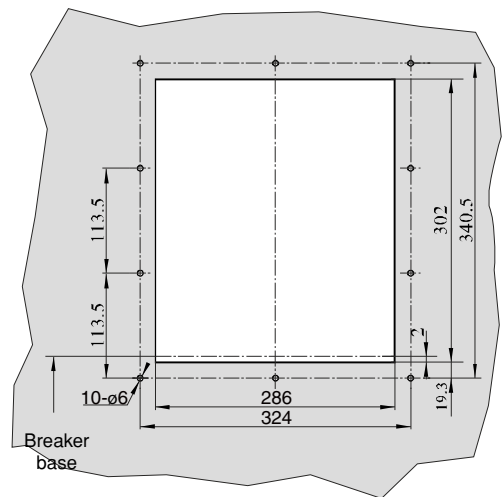
Distance from the panel center of the circuit breaker to the right hinge of cabinet door should be at least 227mm



BT2-1600 Air Circuit Breakers with four poles (fixed type)

The drawing of aperture dimensions for mounting front cover of door frame

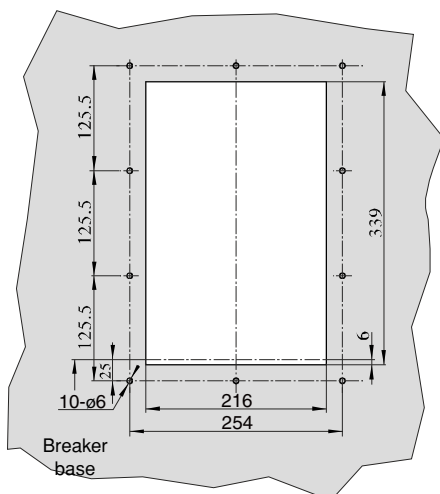
Distance from the panel center of the Circuit Breaker to the right hinge of cabinet door should be at least 262mm



BT2-1600 Air Circuit Breakers with three poles (draw-out)

The drawing of aperture dimensions for mounting cover of door frame

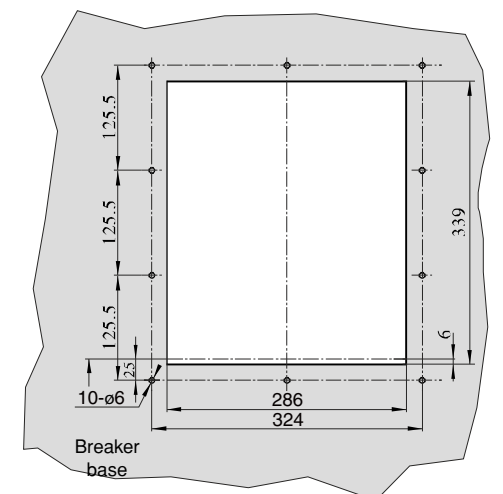
Distance from the panel center of the circuit breaker to the right hinge of cabinet door should be at least 227mm



BT2-1600 Air Circuit Breakers with four poles (draw-out)

The drawing of aperture dimensions for mounting front cover of door frame

Distance from the panel center of the Circuit Breaker to the right hinge of cabinet door should be at least 262mm



Air Circuit Breakers

BT2 series

Dimensions and mounting

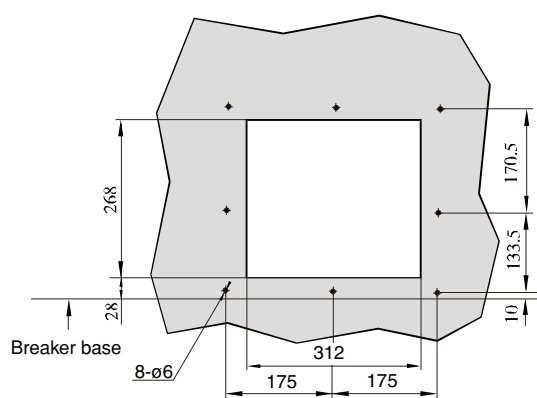
■ Door frame dimensions, mm

● Aperture Dimension of BT2-2000 door frame

BT2-2000 Air Circuit Breakers with three poles (fixed)

The drawing of Aperture Dimensions for mounting front cover of cabinet door

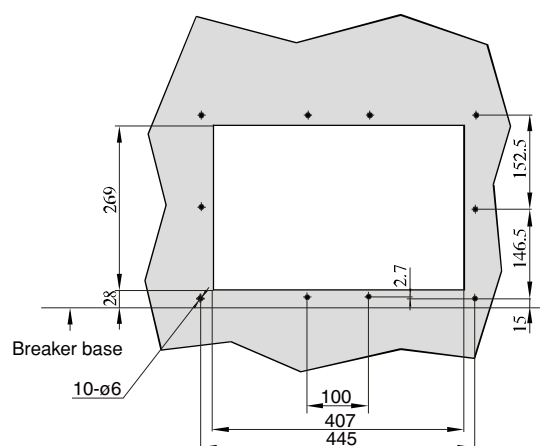
Distance from the panel center of the circuit breaker to the right hinge of cabinet door should be at least 256mm



BT2-2000 Air Circuit Breakers with four poles (fixed)

The drawing of Aperture Dimensions for mounting front cover of cabinet door

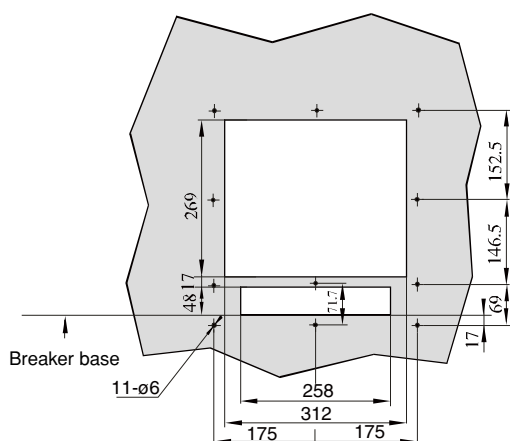
Distance from the panel center of the circuit breaker to the right hinge of cabinet door should be at least 303.5mm



BT2-2000 Air Circuit Breakers with three poles (draw-out)

The drawing of Aperture Dimensions for mounting front cover of cabinet door

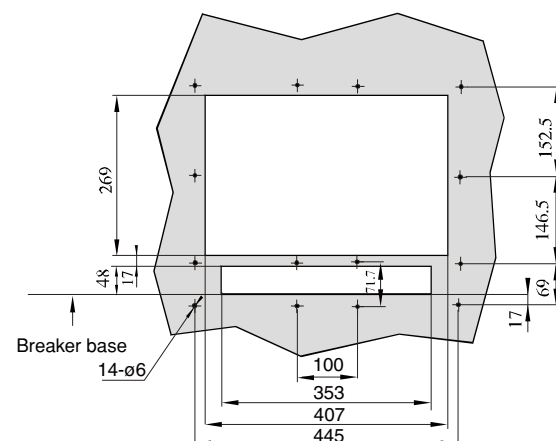
Distance from the panel center of the circuit breaker to the right hinge of cabinet door should be at least 256mm



BT2-2000 Air Circuit Breakers with four poles (draw-out)

The drawing of Aperture Dimensions for mounting front cover of cabinet door

Distance from the panel center of the circuit breaker to the right hinge of cabinet door should be at least 303.5mm



Air Circuit Breakers BT2 series Dimensions and mounting

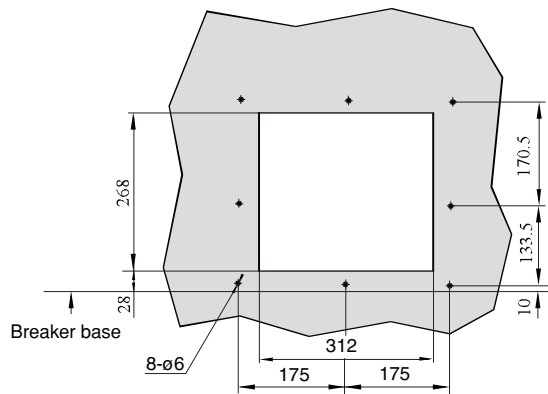
■ Door frame dimensions, mm

● Aperture Dimension of BT2-2500 door frame

BT2-2500 Air Circuit Breakers with three poles (fixed)

The drawing of Aperture Dimensions for mounting cover of door frame

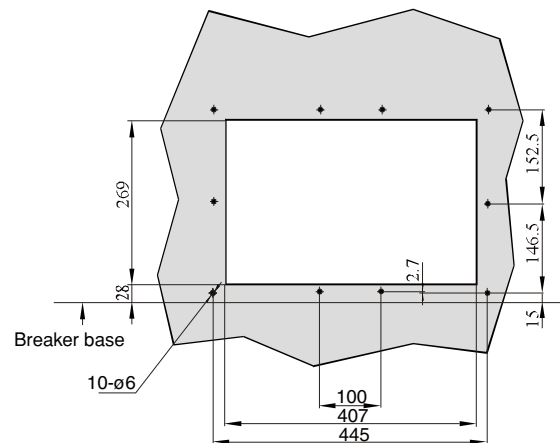
Distance from the panel center of the circuit breaker to the right hinge of cabinet door should be at least 256mm



BT2-2500 Air Circuit Breakers with four poles (fixed)

The drawing of Aperture Dimensions for mounting cover of door frame

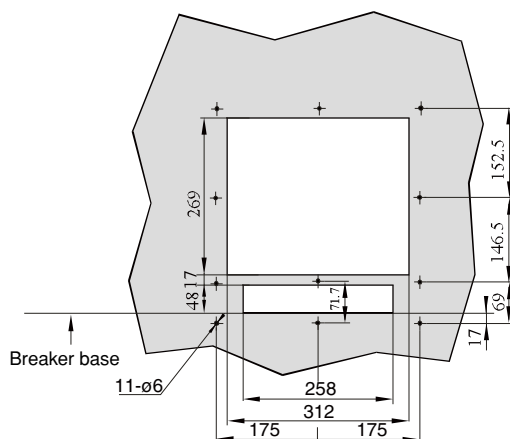
Distance from the panel center of the circuit breaker to the right hinge of cabinet door should be at least 303.5mm



BT2-2500 Air Circuit Breakers with three poles (draw-out)

The drawing of Aperture Dimensions for mounting cover of door frame

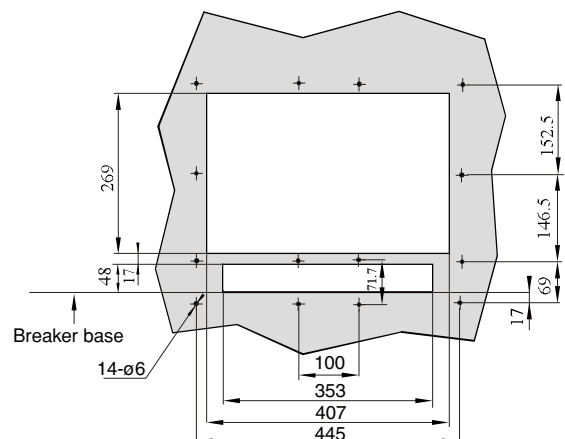
Distance from the panel center of the circuit breaker to the right hinge of cabinet door should be at least 256mm



BT2-2500 Air Circuit Breakers with four poles (draw-out)

The drawing of Aperture Dimensions for mounting cover of door frame

Distance from the panel center of the circuit breaker to the right hinge of cabinet door should be at least 303.5mm



Dimensions and mounting

Air Circuit Breakers BT2 series Dimensions and mounting

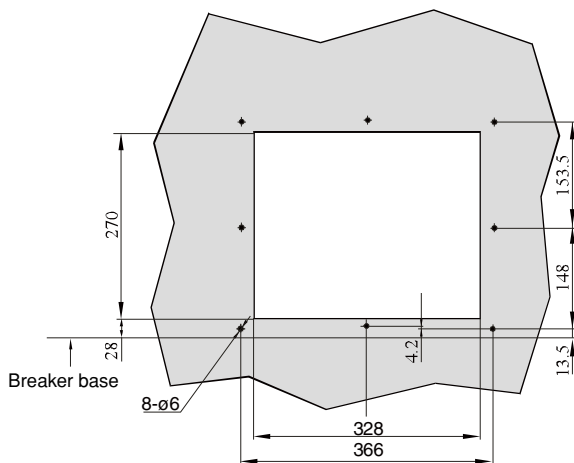
■ Door frame dimensions, mm

● Aperture Dimension of BT2-6300 door frame

BT2-6300 Air Circuit Breakers with three poles (fixed)

The drawing of Aperture Dimensions for mounting cover of door frame

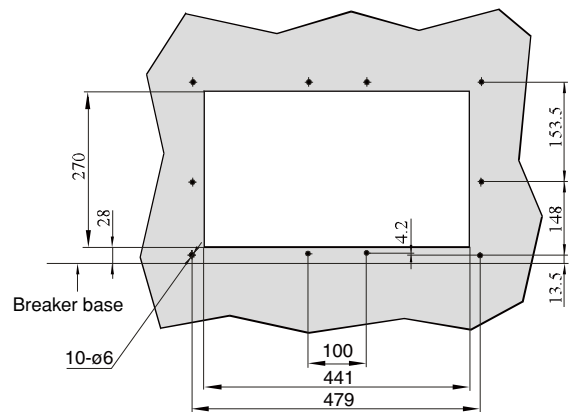
Distance from the panel center of the circuit breaker to the right hinge of cabinet door should be at least 264mm



BT2-6300 Air Circuit Breakers with four poles (fixed)

The drawing of Aperture Dimensions for mounting cover of door frame

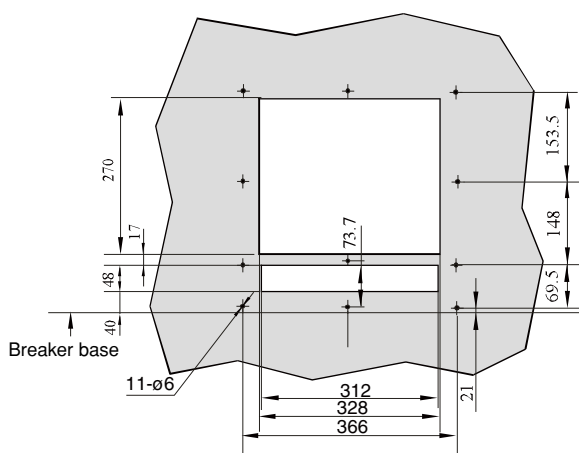
Distance from the panel center of the circuit breaker to the right hinge of cabinet door should be at least 320.5mm



BT2-6300 Air Circuit Breakers with three poles (draw-out)

The drawing of Aperture Dimensions for mounting cover of door frame

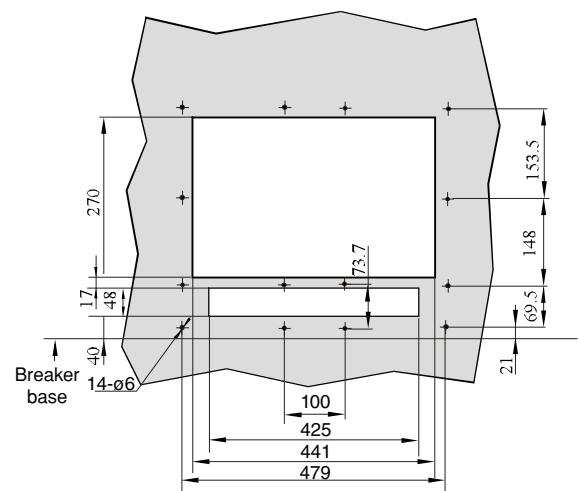
Distance from the panel center of the circuit breaker to the right hinge of cabinet door should be at least 264mm



BT2-6300 Air Circuit Breakers with four poles (draw-out)

The drawing of Aperture Dimensions for mounting cover of door frame

Distance from the panel center of the circuit breaker to the right hinge of cabinet door should be at least 320.5mm

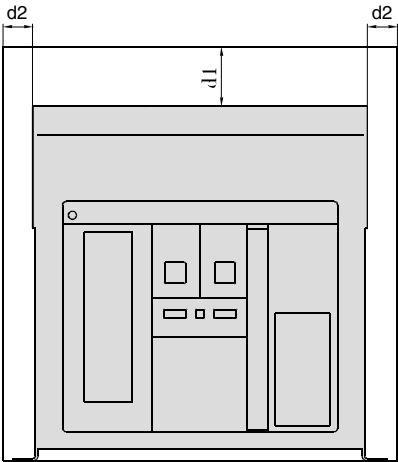
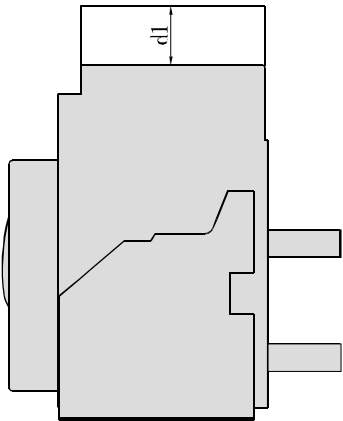


Air Circuit Breakers

BT2 series

Dimensions and mounting

- Mounting safety clearance
- Fixed breaker

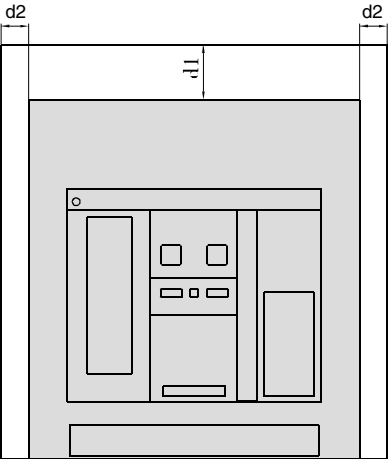
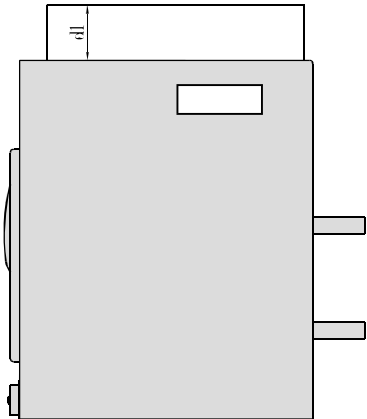


Minimum distance between breaker with switchboard wall or live part.

	Switchboard wall	Live part
d1 (note) (mm)	0	60
d2 (mm)	0	60

Note:secondary circuit wiring must be considered for safety clearance.

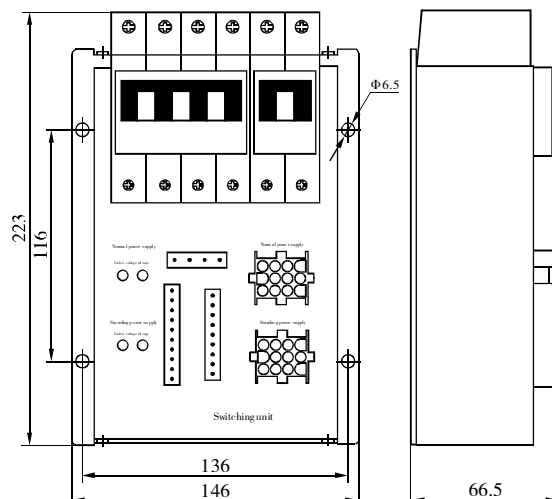
- Draw-out breaker



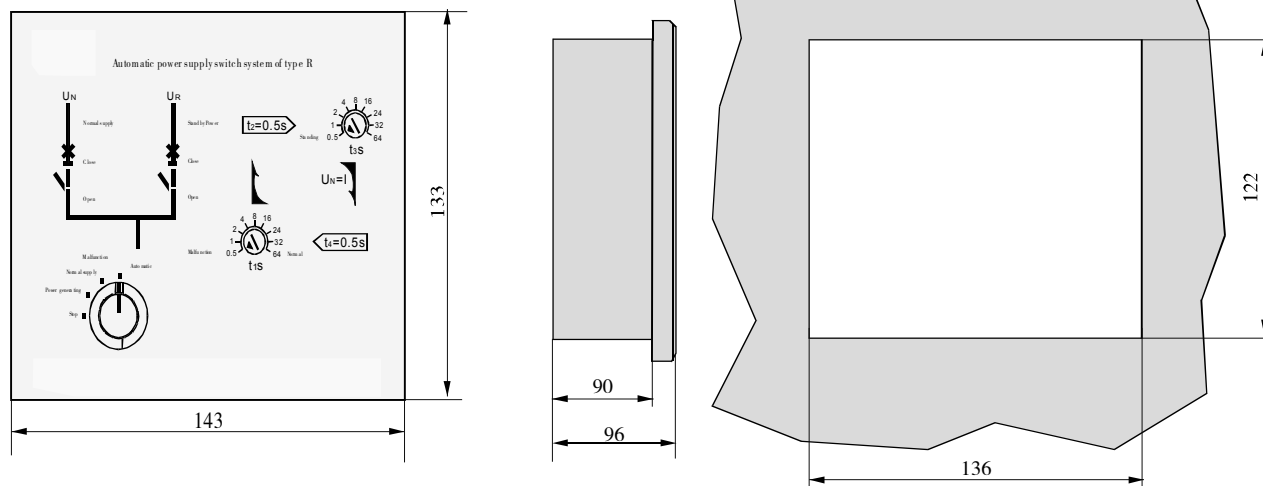
Minimum distance between breaker with switchboard wall or live part.

	Switchboard wall	Live part
d1 (note) (mm)	0	60
d2 (mm)	0	60

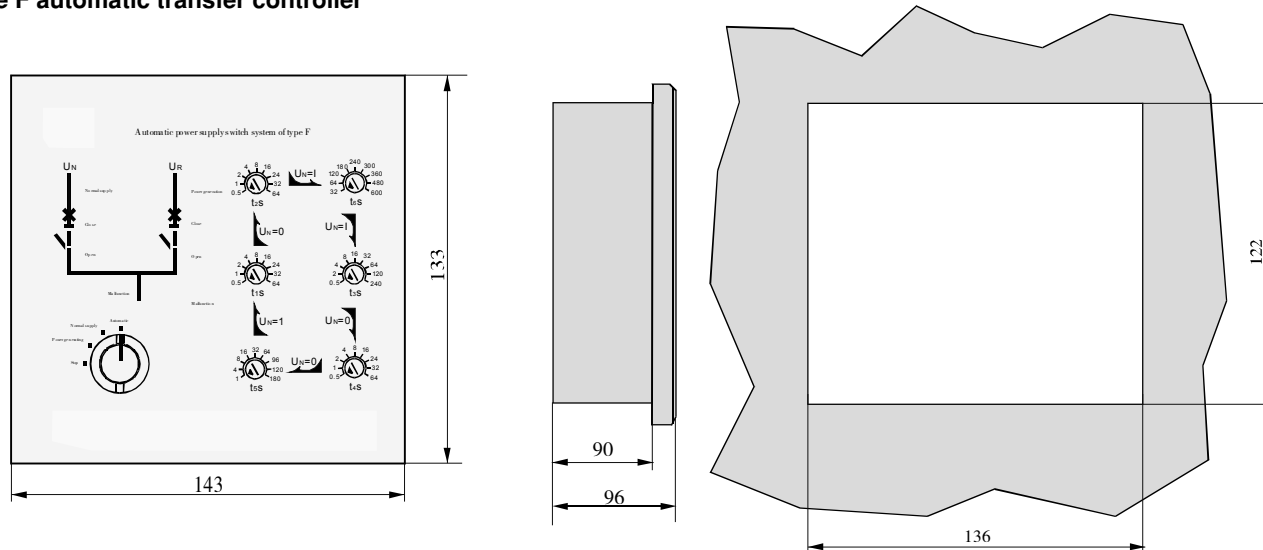
- Dimensions and mounting of Automatic transfer switch (ATS), mm
- The switching unit



- Type R and S Automatic transfer controller



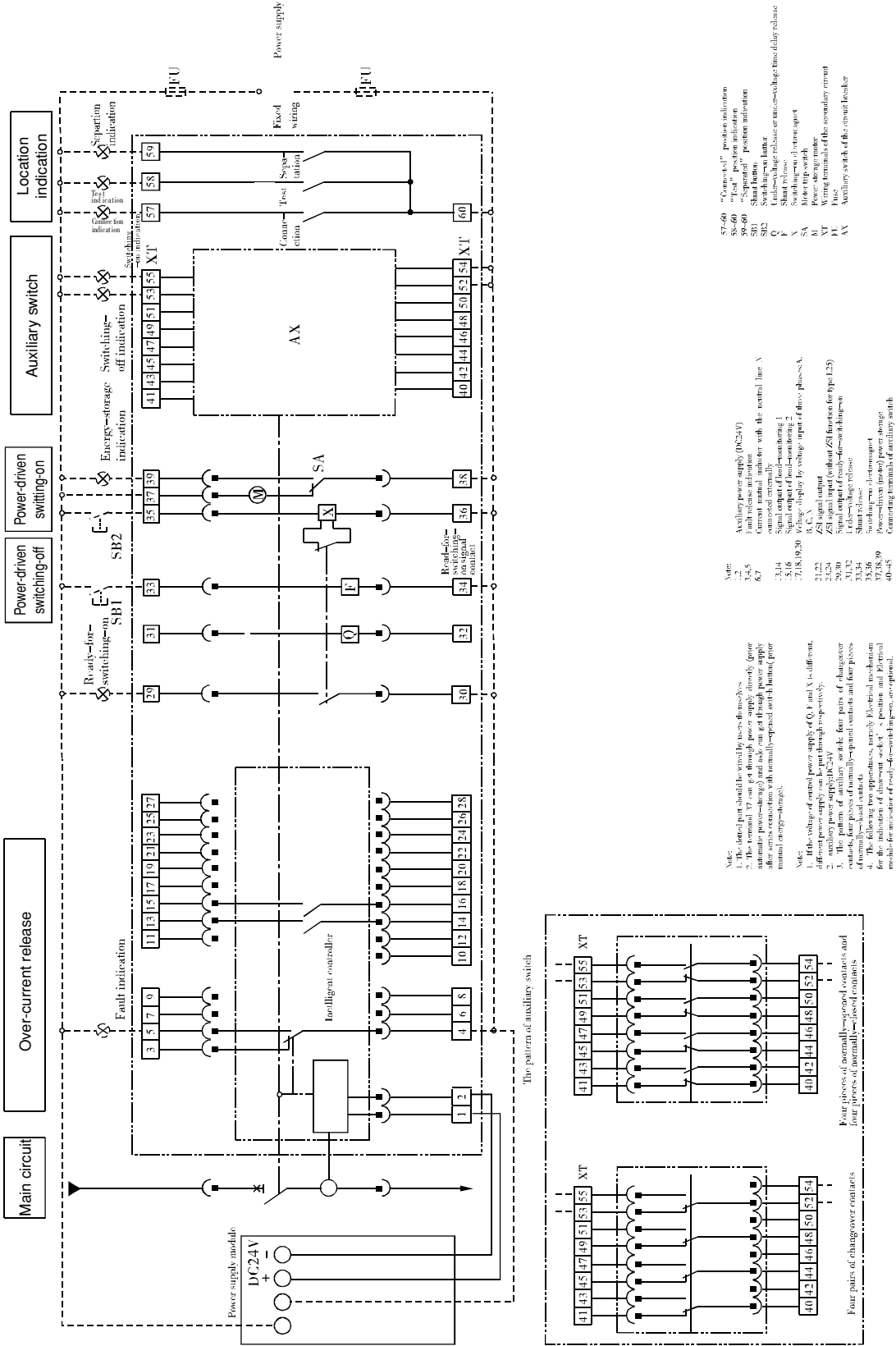
- Type F automatic transfer controller



Wiring diagram of the secondary circuit of BT2-1600 circuit breakers equipped with type L25, M25, M26, P25 and P26 intelligent controllers (OCR)

Air Circuit Breakers
BT2 series
Wiring diagram

■ Wiring diagram of secondary circuit



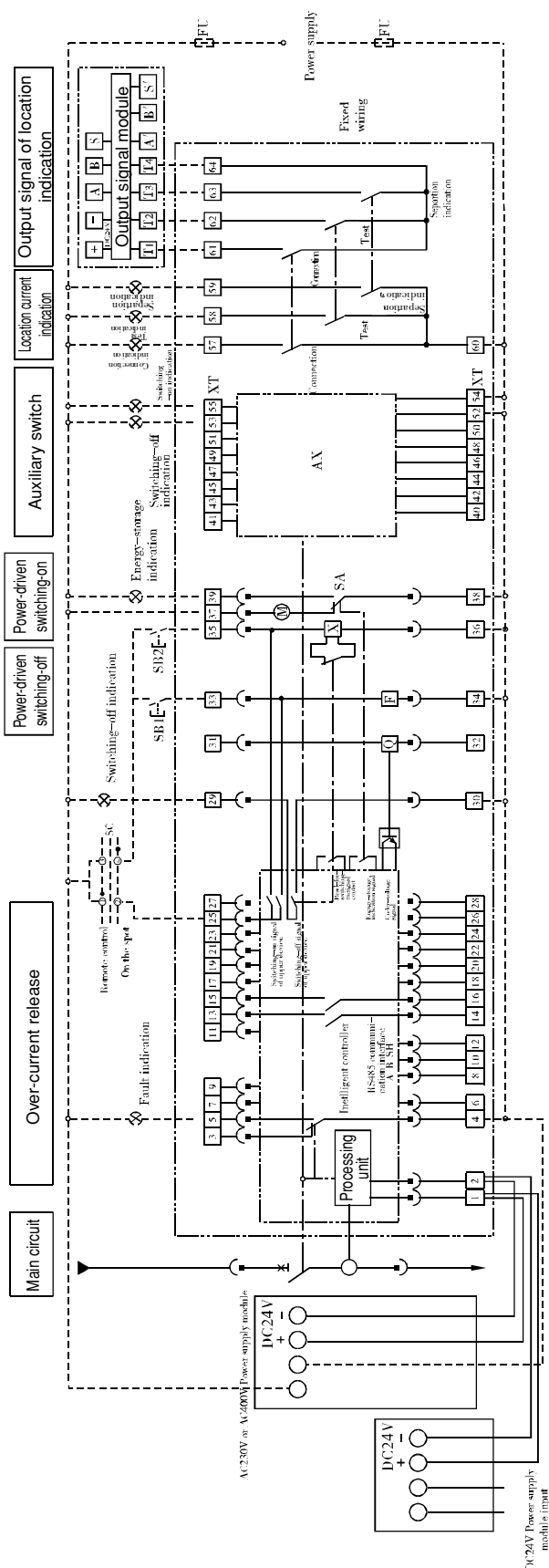
Special Note: When the voltage of auxiliary power supply is AC230V or AC400V, power supply module of BT2-1600 intelligent should be transformed into DC24V in connection with terminals of 1 and 2.
When the voltage of power supply is DC110V or DC220V, DC power supply module should be transformed into DC24V in connection with terminals of 1 and 2.
When the voltage of auxiliary power supply is DC24V, DC24V power supply module should be transformed into DC24V in connection with terminals 1 and 2.

Air Circuit Breakers

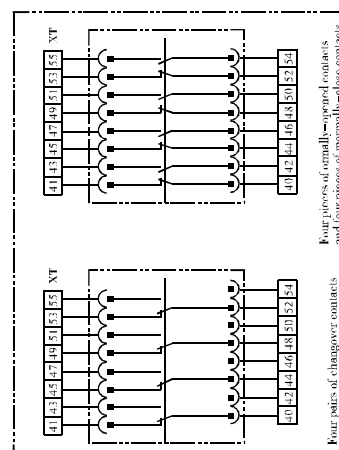
BT2 series

Wiring diagram

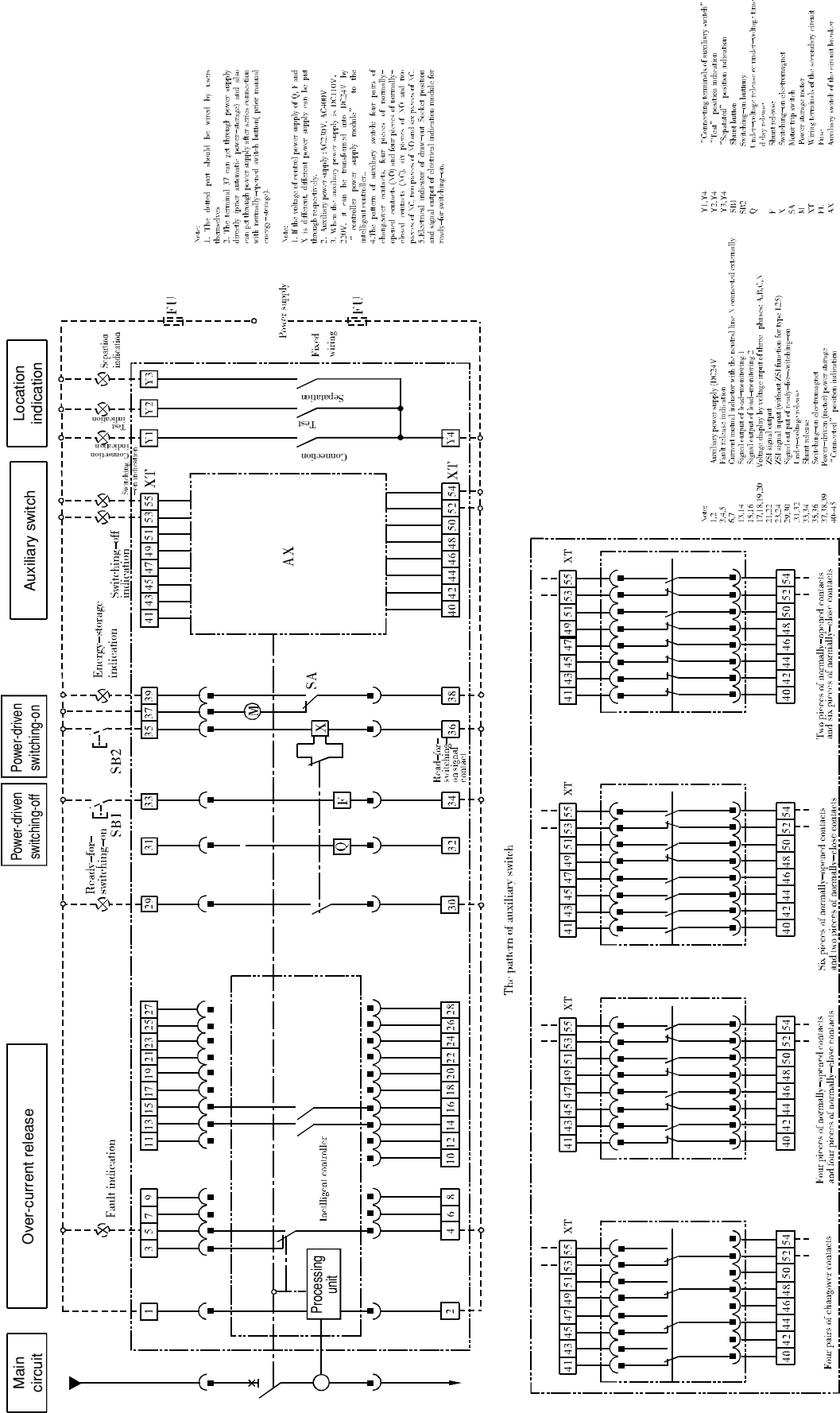
Wiring diagram of the secondary circuit of BT2-1600 intelligent breakers equipped with type H26, P25 and P26 communicate intelligent controllers (OCR)



The pattern of auxiliary switch



Air Circuit Breakers
BT2 series
Wiring diagram

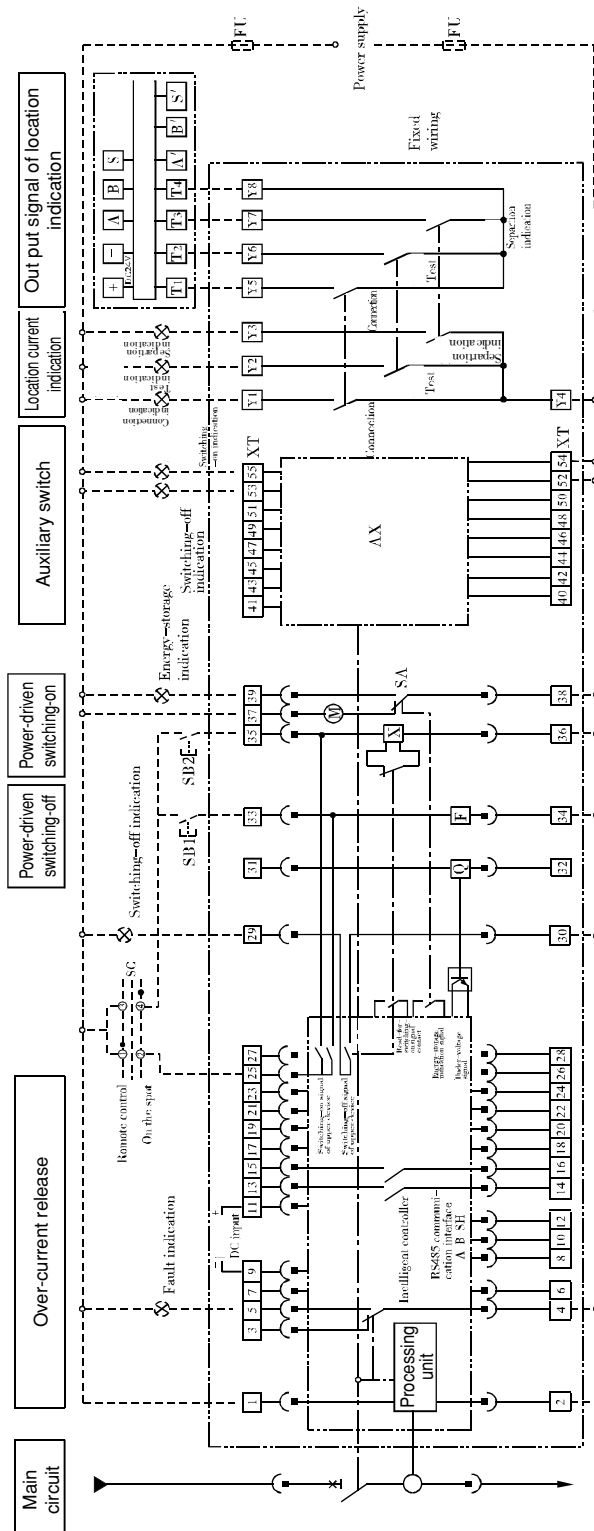


Air Circuit Breakers

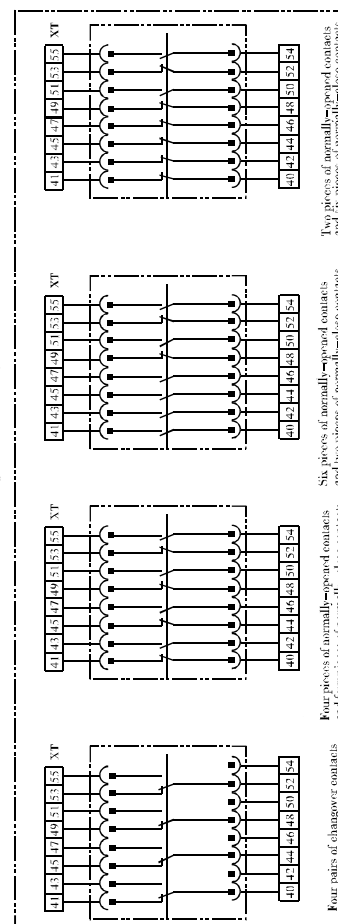
BT2 series

Wiring diagram

Wiring diagram of the secondary circuit of BT2-2000~6300 circuit breakers equipped with type H26, P25, and P26 communicate intelligent controllers (OCR)



The pattern of auxiliary switch

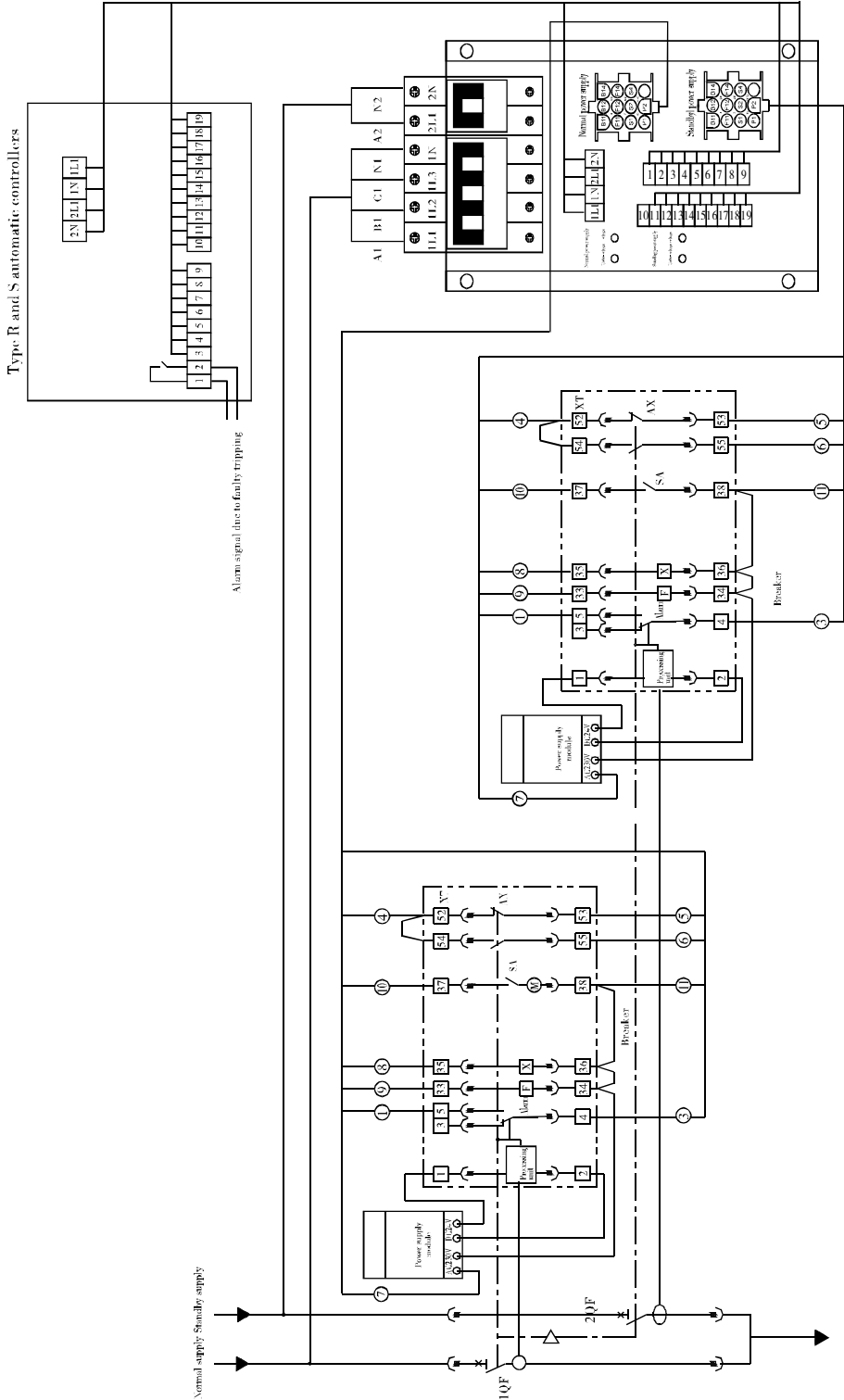


- Note:
1. The control part should be wired by users.
 2. The terminal 37 can get through power supply directly (power automatic power-storage) and also can get through power supply after series connection with normally-closed switch button (power manual energy-storage).
 3. When the auxiliary power supply is DC110V, it can be connected to the DC110V contacts with the terminal 1 of the control part. It indicates the negative pole with the wrong terminal.
 4. The pattern of auxiliary switch: four pairs of changeover contacts (41-42, 43-44, 45-46, 47-48, 49-50, 51-52, 53-54, 55-56, 57-58, 59-60, 61-62, 63-64, 65-66, 67-68, 69-70, 71-72, 73-74, 75-76, 77-78, 79-80, 81-82, 83-84, 85-86, 87-88, 89-90, 91-92, 93-94, 95-96, 97-98, 99-100) and four pairs of normally-closed contacts (41-42, 43-44, 45-46, 47-48, 49-50, 51-52, 53-54, 55-56, 57-58, 59-60, 61-62, 63-64, 65-66, 67-68, 69-70, 71-72, 73-74, 75-76, 77-78, 79-80, 81-82, 83-84, 85-86, 87-88, 89-90, 91-92, 93-94, 95-96, 97-98, 99-100). The signal output of electrical indication module for ready-for switching-on.
- Note:
1. If the voltage of control power supply of Q, F and SA is AC220V, the control power supply can be put through respectively.
 2. Auxiliary power supply AC220V, AC400V.
 3. When the auxiliary power supply is DC110V, it can be connected to the DC110V contacts with the terminal 1 of the control part. It indicates the negative pole with the wrong terminal.
 4. The pattern of auxiliary switch: four pairs of changeover contacts (41-42, 43-44, 45-46, 47-48, 49-50, 51-52, 53-54, 55-56, 57-58, 59-60, 61-62, 63-64, 65-66, 67-68, 69-70, 71-72, 73-74, 75-76, 77-78, 79-80, 81-82, 83-84, 85-86, 87-88, 89-90, 91-92, 93-94, 95-96, 97-98, 99-100) and four pairs of normally-closed contacts (41-42, 43-44, 45-46, 47-48, 49-50, 51-52, 53-54, 55-56, 57-58, 59-60, 61-62, 63-64, 65-66, 67-68, 69-70, 71-72, 73-74, 75-76, 77-78, 79-80, 81-82, 83-84, 85-86, 87-88, 89-90, 91-92, 93-94, 95-96, 97-98, 99-100). The signal output of electrical indication module for ready-for switching-on.

- Note:
1. Auxiliary power supply
 2. Signal output of ready-for switching-on
 3. Signal output of ready-for switching-on
 4. Signal output of ready-for switching-on
 5. Signal output of ready-for switching-on
 6. Signal output of ready-for switching-on
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 93. Signal output of ready-for switching-on
 94. Signal output of ready-for switching-on
 95. Signal output of ready-for switching-on
 96. Signal output of ready-for switching-on
 97. Signal output of ready-for switching-on
 98. Signal output of ready-for switching-on
 99. Signal output of ready-for switching-on
 100. Signal output of ready-for switching-on

Wiring diagram of the automatic transfer switch (ATS) for normal supply to standby supply system
BT2-1600 circuit breakers and the auxiliary switch has four pairs of change-over contacts

Air Circuit Breakers
BT2 series
Wiring diagram

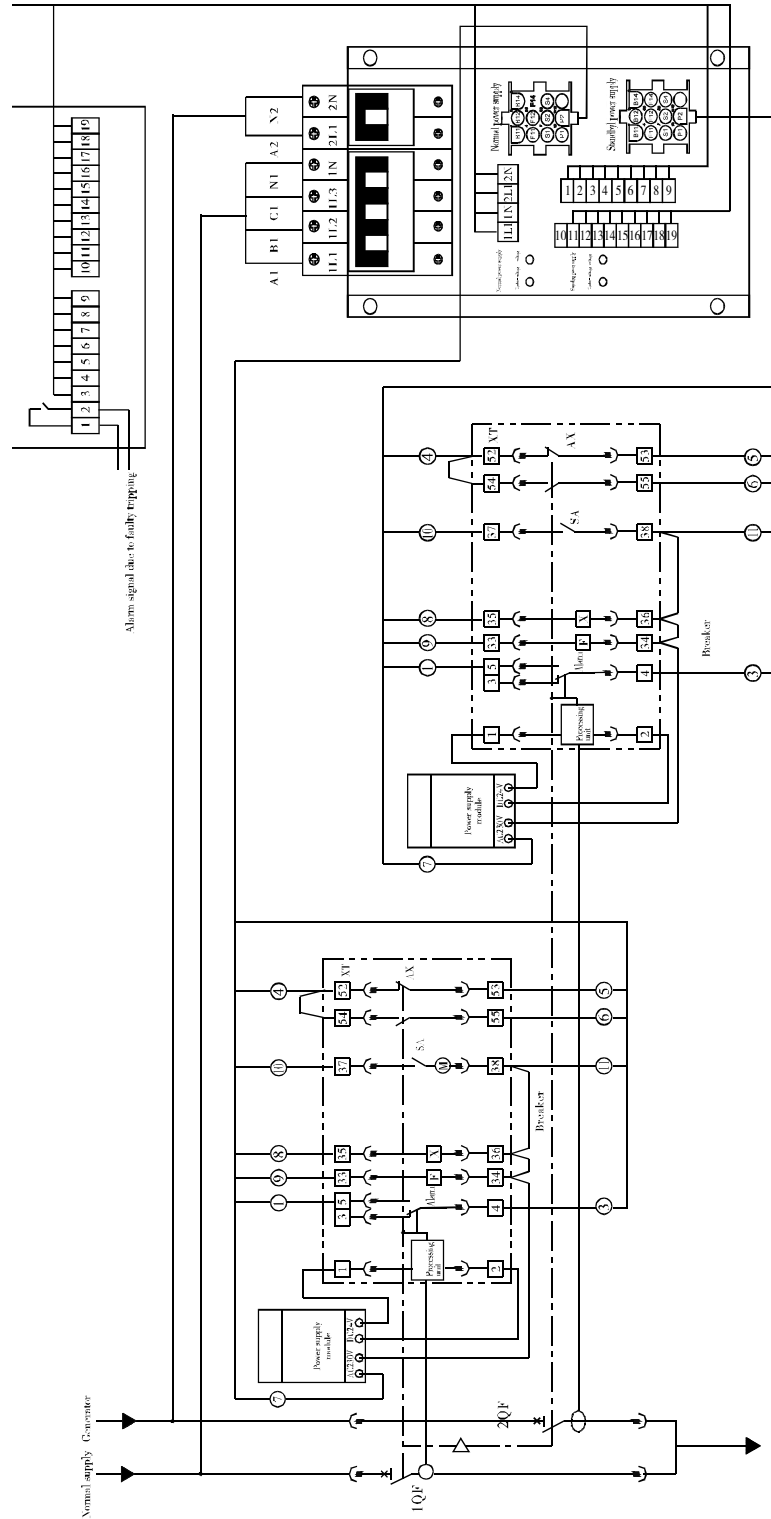


Note: 1. As shown in the above diagram the breaker is open and connecting, it has been charged and there is no current in the loop.
2. When ATS is used 100V AC voltage for intelligent controller, 240V AC voltage for shunt release, closing magnet and automatic operation mechanism.

- AX-Auxiliary switch
- F-Shunt release
- X-The electro-magnet to close the breaker
- M-Charging motor
- SA-Overtravel-limit switch for the charging motor of the breaker
- XT-Terminals for the secondary circuit of the breaker

Air Circuit Breakers BT2 series Wiring diagram

Wiring diagram of the automatic transfer switch (ATS) for normal supply to power generating supply system
BT2-1600 circuit breakers and the auxiliary switch has four pairs of contacts

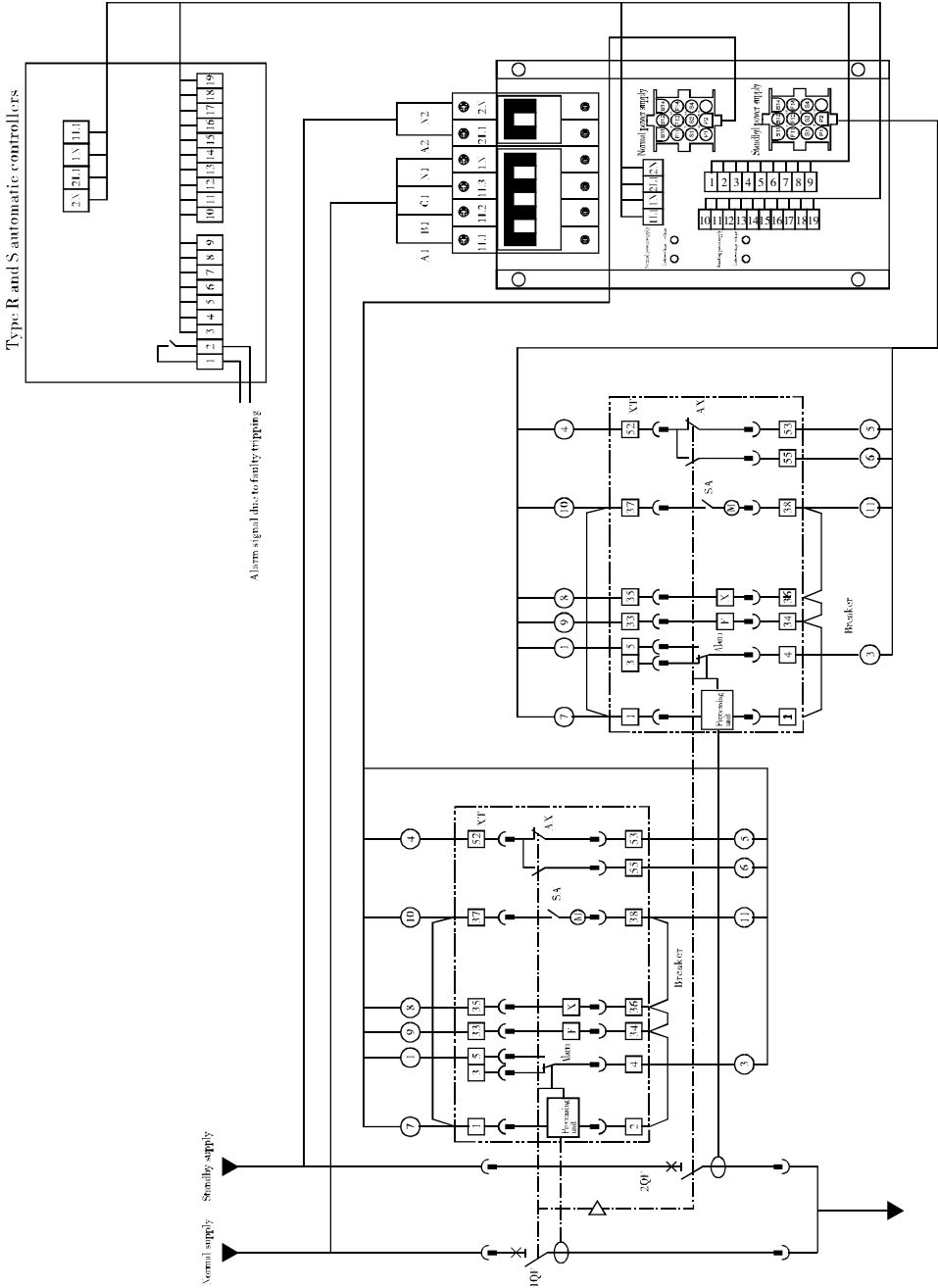


Note: 1. As shown in the above diagram the breaker is open and connecting it has been charged and there is no current in the loop.
2. When ATS is used 110C24V voltage for intelligent controller, AC230V voltage for shunt release, closing magnet and automatic operation mechanism.

AX—Auxiliary switch
F—Shunt release
X—The electro-magnet to close the breaker
M—Charging motor
SA—Overtravel—limit switch for the charging motor of the breaker
XT—Terminals for the secondary circuit of the breaker

Wiring diagram of the automatic transfer switch (ATS) for normal supply to standby supply system
BT2-2000~6300 circuit breakers and the auxiliary switch has four pairs of changeover contacts

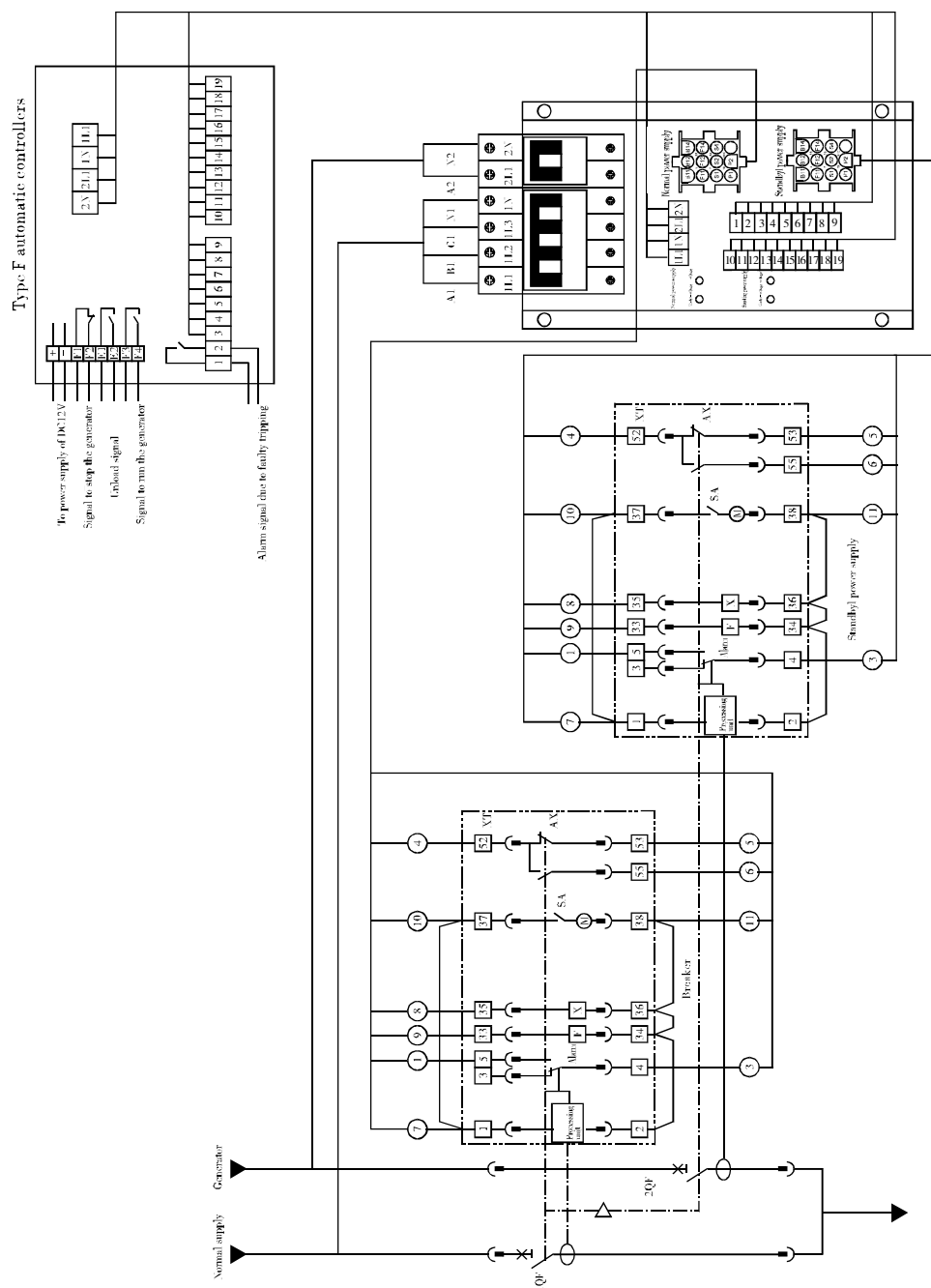
Air Circuit Breakers
BT2 series
Wiring diagram



Note: 1. As shown in the above diagram the breaker is open and connecting it has been charged and there is no current in the loop.
2. When ATS is used all voltage ratings are AC230V for intelligent controller, shunt release, closing magnet and automatic operation mechanism.

- AX-Auxiliary switch
- F-Shunt release
- X-The electro-magnet to close the breaker
- M-Charging motor
- SA-Overtravel-limit switch for the charging motor of the breaker
- XT-Terminals for the secondary circuit of the breaker

Wiring diagram of the automatic transfer switch (ATS) for normal supply to power generating supply system
BT2-2000~6300 circuit breakers and the auxiliary switch has four pairs of contacts



Note: LAs shown in the above diagram the breaker is open and connecting, it has been charged and there is no current in the loop.
2.W hen ATS is used all voltage ratings are AC230V for intelligent controller, shunt release, closing magnet and automatic operation mechanism.

Air Circuit Breakers

BT2 series

Ordering form

■ Ordering form

1. Users should make sure of their detailed acquaintance of the products' technological materials and make order by the "ordering form" in terms of future applicable situations of the circuit breakers.

2. The company would configure by "Factory's setting values of the intelligent release" if users had no requirements of protection parameters when making order.

Ordering form

(Please fill numbers in or mark ☒ in ☐)

Customer name			Order quantity			Date			
Type	BT2- / E		Rated voltage		☐ AC400V ☐ AC690V				
Use	☐ Standard ☐ Humid tropical (TH)		Rated current		In= A				
Connection	Fixed ☐ Horizontal (Rear connection) ☐ Vertical (Rear connection)								
	Draw-out ☐ Horizontal (Rear connection) ☐ Vertical (Rear connection)								
Intelligent controller (OCR)	Type selection	☐ Type L25 ☐ Type M25 ☐ Type M26 ☐ Type H26 ☐ Type P26 ☐ Type P25							
	Basic function	Current indication	LED current indication		LED current indication and communication function		LCD current indication and wattmeter function		
		Long-time delay overload protection		Short-time delay short circuit protection		Instantaneous short circuit protection			
		Ir ₁ t ₁		Ir ₂ t ₂		Ir ₃			
				Ground-fault protection		Ir ₄ t ₄			
		Long-time delay overload protection				Long-time delay overload protection			
		General inverse time delay (I ² t)				☐ General inverse time delay (I ² t) ☐ Special inverse time delay (I ^t) ☐ High-voltage fuse type (I ⁴ t)			
	☐ 50%In ☐ 100%In (Select setting current of N line)				☐ OFF ☐ 50%In ☐ 100%In ☐ 200%In (200% In for three-pole breaker + neutral line transformer BT2-6300 except)				
	Selective function	Test function	MCR function		Thermo-analogue function		Alarm and fault indication		
			Contact wearing indication		Fault memory		Self-diagnosis		
		☐ Indication of voltage							
		☐ ZSI function ☐ Load-monitoring function:		☐ Pattern one ☐ Pattern two					
Voltage of the intelligent controller	BT2-2000 and above	☐ AC230V ☐ AC400V				☐ DC220V ☐ DC110V			
	BT2-1600	☐ DC24V Need be selectively equipped with DC24V power supply module		☐ AC230V ☐ AC400V Need be selectively equipped power supply module		Need to use with DC power supply module			
Standard accessories	Shunt release	☐ AC230V ☐ AC400V ☐ DC110V ☐ DC220V							
	Closing coil	☐ AC230V ☐ AC400V ☐ DC110V ☐ DC220V							
	Power-driven operation mechanism	☐ AC230V ☐ AC400V ☐ DC110V ☐ DC220V							
	Auxiliary switch	Standard pattern ☐ 4 changeover contacts Special pattern ☐ 4NO + 4NC ☐ 6NO + 2NC ☐ 2NO + 6NC							
Choice of accessories	☐ Under-voltage release	☐ AC230V ☐ AC400V							
		☐ Under-voltage instantaneous release		☐ Under-voltage time delay release ☐ 0.5s ☐ 1s ☐ 2s ☐ 3s					
	☐ Lock in "OFF" mechanism	One set of circuit breaker		☐ One lock and one key					
		Two sets of circuit breakers		☐ Two locks and one key					
		Three sets of circuit breakers		☐ Three locks and two keys					
	☐ Mechanical interlock	Two sets of circuit breakers ☐ Cable type interlock		☐ Rod type interlock					
		Three sets of circuit breakers ☐ Cable type interlock ☐ Pattern one of Rod type interlock ☐ Pattern two of Rod type interlock ☐ Pattern three of Rod type interlock							
	☐ Connection of external CT for neutral		☐ Draw out position indication			☐ Interphase barrier			
	☐ Ready to close indication		☐ Push button locking device			☐ Counter			
	Communication accessories	☐ Components of draw-out socket communication module		☐ Signal of ready-for-switching on ☐ Signal of under-voltage ☐ Signal of fault release					
☐ Signal of ready-for-switching on									
☐ AC power supply module ☐ AC230V ☐ AC400V		☐ DC power supply module ☐ DC24V ☐ DC110V ☐ DC220V							
☐ Automatic transfer switch (ATS)		Automatic transfer switch (ATS)		☐ R type ☐ S type ☐ F type					

■ **Ordering notice**

Factory's setting values of intelligent controller

Overload long-time delay	Setting values of current I_{r1}	I_n			
	Setting values of delay time t_1	480s			
	Overload long-time delay of P25 and P26	I^2t			
Short circuit short-time delay	Setting values of current I_{r2}	$6I_{r1}$			
	Setting values of delay time t_2	0.2s			
Setting values of short circuit instantaneous current I_{r3}		$15I_n$ (for $I_n \leq 1000A$) $12I_n$ (for $I_n = 1250A, 1600A$) $10I_n$ (for $I_n \geq 2000A$)			
Ground-fault (Not for L25, M25, P25)	Setting values of current I_{r4}	BT2-1600	BT2-2000 BT2-2500	BT2-4000	BT2-6300
		0.8 I_n or 1000A To select the minimum	0.8 I_n or 1200A To select the minimum	0.8 I_n or 1600A To select the minimum	2000A
	Setting values of delay time t_4	0.4s			
Load-monitoring (Not for type L25, optional for type M25, M26, H26, P25 and P26)	Monitoring current I_{LC1}	I_n			
	Monitoring current I_{LC2}	I_n			

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- For safe operation, before using the product read the instruction manual or user manual that comes with the product carefully or consult the Fuji sales representative from which you purchased the product.
- Products introduced in this catalog have not been designed or manufactured for such applications in a system or equipment that will affect human bodies or lives.
- Customers, who want to use the products introduced in this catalog for special systems or devices such as for atomic-energy control, aerospace use, medical use, passenger vehicle, and traffic control, are requested to consult with Fuji Electric FA.
- Customers are requested to prepare safety measures when they apply the products introduced in this catalog to such systems or facilities that will affect human lives or cause severe damage to property if the products become faulty.
- For safe operation, wiring should be conducted only by qualified engineers who have sufficient technical knowledge about electrical work or wiring.
- Follow the regulations of industrial wastes when the product is to be discarded.
- For further questions, please contact your Fuji sales representative or Fuji Electric FA.

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URL: <http://www.fujielectric.co.jp/fcs/eng>

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