
Magnetic Starters

PAK·RSK series



Togami Electric Mfg.Co.,Ltd.



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PAK·RSK series



TOGAMI MAGNETIC STARTERS HAVE BEEN REGULARLY USED THROUGHOUT INDUSTRIES FOR THE EXCELLENCE AND RELIABILITY FOR OVER A HALF CENTURY.

THE J-SERIES (6AF ~ 35AF) AND H-SERISE (50AF ~ 800AF) MAGNETIC CONTACTORS & STARTERS AND NEW TJ-SERIES THERMAL OVERLOAD RELAYS SUCCEEDED SUCH A TIME-HONORED TRADITION ARE ASSURED MAXIMUM SATISFACTION TO CUSTOMERS IN THE WORLD.

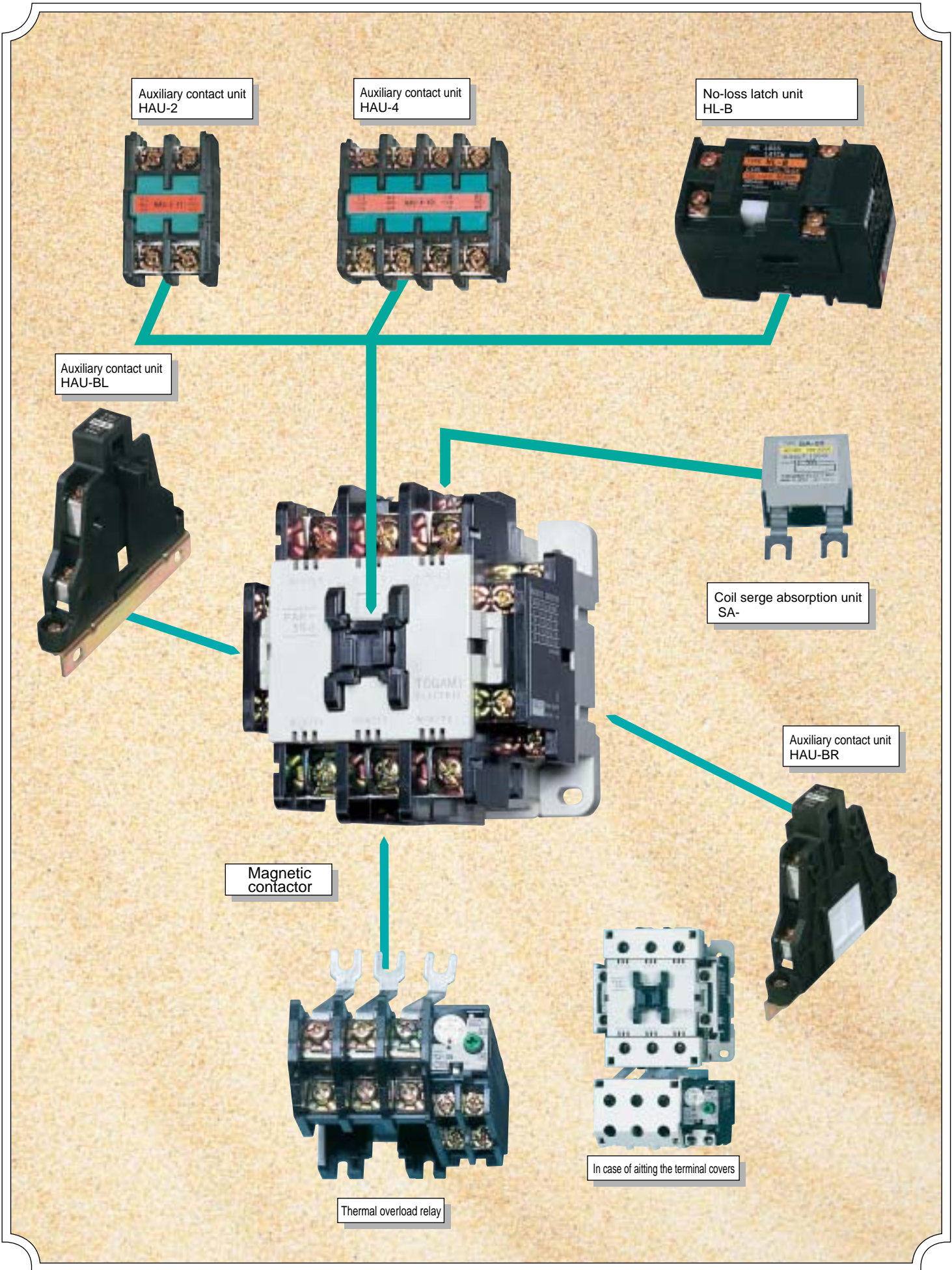
SAFETY PRECAUTION

FOR YOUR SAFETY, PLEASE BE SURE TO READ THE CAUSE 5 “ HANDLING ” IN THIS CATALOGUE AND PERTINENT HANDLING MANUALS ATTACHED TO PRODUCTS BEFORE USING.

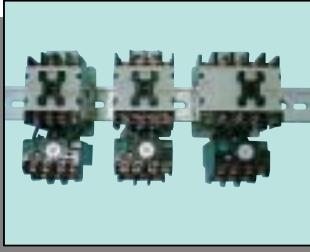
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Features and options



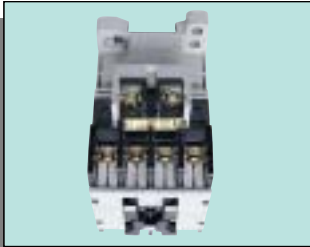
Standardized rail mounting



One-touch mounting on 35mm rails, complying with IEC and DIN standards.

(6JC ~ 35J)

Easy-read coil ratings



Coil ratings can be checked quickly and easily even after installation.

(6JC ~ 35J)

Fast, simple coil replacement



Screwless construction and cassette-type coils make swapping easier than ever.

(11J ~ 21J)

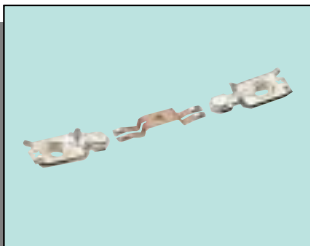
Simple contact inspection and maintenance



Pop open the cover for simple contact inspection.

(11J ~ 800H)

Improved auxiliary contact reliability



Through DC24V 10mA with a twin-contact design.

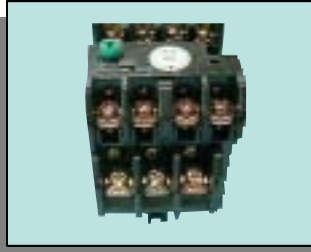
(6JC ~ 12J, 21J ~ 800H)

Adopting nonflammable resins

All molded parts are recognized by UL94 as V-0 class

(12J ~ 35J)

Output contact of thermal overload relay is 1NO1NC

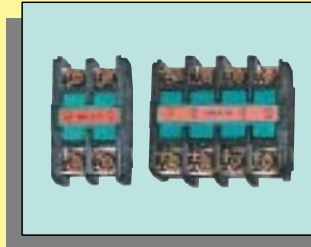


Output contact of 1NO1NC is electrically insulated each other.

(TJ-18 ~ T-600)

OPTIONS

Auxiliary contact unit (head on)



Twin-contact design auxiliary contact units can be snapped on and off with one-touch.

(11J ~ 80H)

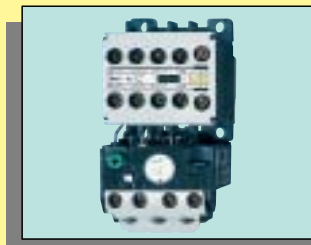
Auxiliary contact units (side on)



Quick mounting of twin-contact design auxiliary contact units.

(100H ~ 220H)

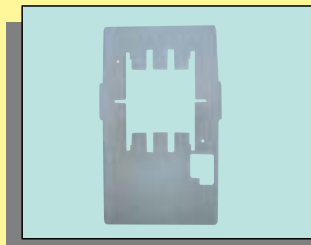
Terminal cover



Prevents terminal exposure, improves safety (compliant with VDE0106 Teil100).

(6JC ~ 35J)

Terminal protection cover



Prevents terminal exposure, improves safety.

(50H ~ 800H)

Coil surge absorption unit



In order to protect the electronic circuit the surge voltage generated from a coil is suppressed.

(11J ~ 220H)

PAK-300 ~ 800H incorporate the Surge absorption function.

LINE-UP, RATING AND SELECTION TABLE

Series			J Series								
Frame		6JC	11J	12J	20J	21J	26J	35J			
Model type	Magnetic contactor (open type)	Non-reversing	PAK-6JC	PAK-11J	PAK-12J	PAK-20J	PAK-21J	PAK-26J	PAK-35J		
		Reversing	-	RSK-11J	RSK-12J	RSK-20J	RSK-21J	RSK-26J	RSK-35J		
	Magnetic starter, standard type	Open type	Non-reversing	PAK-6JTC	PAK-11JTC	PAK-12JTC	PAK-20JTC	PAK-21JTC	PAK-26JTC	PAK-35JTC	
			Reversing	-	RSK-11JTC	RSK-12JTC	RSK-20JTC	RSK-21JTC	RSK-26JTC	RSK-35JTC	
		Enclosed type	Non-reversing	PAK-6JMC	PAK-11JMC	PAK-12JMC	PAK-20JMC	PAK-21JMC	PAK-26JMC	PAK-35JMC	
			Reversing	-	RSK-11JMC	RSK-12JMC	RSK-20JMC	RSK-21JMC	RSK-26JMC	RSK-35JMC	
	with 2-element thermal overload relay	Thermal relay	Non-reversing	TJ-18JA	TJ-18	TJ-18	TJ-18	TJ-18	TJ-35	TJ-35	
			Reversing	-	-	-	-	-	-	-	
	Magnetic starter	Open type	Non-reversing	PAK-6JGTC	PAK-11JGTC	PAK-12JGTC	PAK-20JGTC	PAK-21JGTC	PAK-26JGTC	PAK-35JGTC	
			Reversing	-	RSK-11JGTC	RSK-12JGTC	RSK-20JGTC	RSK-21JGTC	RSK-26JGTC	RSK-35JGTC	
	with open-phase thermal overload relay	Enclosed type	Non-reversing	PAK-6JGMC	PAK-11JGMC	PAK-12JGMC	PAK-20JGMC	PAK-21JGMC	PAK-26JGMC	PAK-35JGMC	
			Reversing	-	RSK-11JGMC	RSK-12JGMC	RSK-20JGMC	RSK-21JGMC	RSK-26JGMC	RSK-35JGMC	
	Thermal relay	Non-reversing	GTJ-18JA	GTJ-18	GTJ-18	GTJ-18	GTJ-18	GTJ-35	GTJ-35		
		Reversing	-	-	-	-	-	-	-		
Magnetic starter	Open type	Non-reversing	PAK-6JT-3C	PAK-11JT-3C	PAK-12JT-3C	PAK-20JT-3C	PAK-21JT-3C	PAK-26JT-3C	PAK-35JT-3C		
		Reversing	-	RSK-11JT-3C	RSK-12JT-3C	RSK-20JT-3C	RSK-21JT-3C	RSK-26JT-3C	RSK-35JT-3C		
with 3-element thermal overload relay	Enclosed type	Non-reversing	PAK-6JM-3C	PAK-11JM-3C	PAK-12JM-3C	PAK-20JM-3C	PAK-21JM-3C	PAK-26JM-3C	PAK-35JM-3C		
		Reversing	-	RSK-11JM-3C	RSK-12JM-3C	RSK-20JM-3C	RSK-21JM-3C	RSK-26JM-3C	RSK-35JM-3C		
	Thermal relay	Non-reversing	TJ-18JA-3	TJ-18-3	TJ-18-3	TJ-18-3	TJ-18-3	TJ-35-3	TJ-35-3		
		Reversing	-	-	-	-	-	-	-		
Ratings	AC3: 3-phase squirrel-cage induction motor	200-220V	2.2kW/8.7A	3.7kW/13.5A	4kW/15A	7.5kW/27A	7.5kW/27A	10kW/35A	15kW/52A		
		380-440V	4kW/7.9A	4.5kW/9.5A	5.5kW/11.5A	11kW/22A	11kW/22A	20kW/35A	26kW/45A		
		500-550V	4kW/6.3A	4.5kW/7.6A	5.5kW/9.2A	11kW/18A	11kW/18A	20kW/28A	26kW/36A		
	AC3: Single-phase motor	100-110V	0.4kW/7.2A	0.75kW/13.5A	0.9kW/17A	1.5kW/27A	1.5kW/27A	2kW/35A	3kW/52A		
		200-220V	0.75kW/6.8A	1.5kW/13.5A	1.8kW/17A	3kW/27A	3kW/27A	4kW/35A	6kW/52A		
	AC1: Resistive load (500,000 ops)	200-220V	15A	20A	26A	32A	32A	50A	60A		
		380-440V	15A	20A	26A	32A	32A	50A	60A		
	AC4: Inching/plugging (30,000 ops)	200-220V	1.1kW	2.2kW	3.7kW	4kW	5.5kW	7.5kW	10kW		
		380-440V	1.5kW	3.7kW	4.5kW	5.5kW	7.5kW	11kW	20kW		
		500-550V	1.5kW	3.7kW	4.5kW	5.5kW	7.5kW	11kW	20kW		
Rated thermal current(A)		15A	20A	26A	32A	32A	50A	60A			
Performance	IEC 60947-4-1		AC-3	AC-3	AC-3	AC-3	AC-3	AC-3	AC-3		
	Mechanical life(x 10 ⁶ ops)		2.5	5	5	5	5	5	5		
	Electrical life(x 10 ⁶ ops)		0.5	1	1	1	1	1	1		
	Switching freq.(ops/hour)		1200	1200	1200	1200	1200	1200	1200		
Auxiliary contacts	Contact configuration	Standard	1NO(1NC)	1NO(1NC)	1NO(1NC)	1NO(1NC)	1NO1NC (2NO, 2NC)	2NO2NC	2NO2NC		
		Option maximum config.	Non-reversing	-	1NC x 2	1NO1NC x 2	1NO1NC x 2	1NO2NC x 2	2NO3NC x 2	2NO3NC x 2	
			Reversing	-	3NO2NC	3NO2NC	3NO2NC	3NO3NC	4NO4NC	4NO4NC	
	Rated operational current (A) AC15	100-110V	4	10	10	28	10	10	10		
		200-220V	3	6	6	20	6	6	6		
Rated thermal current(A)		10	10	10	32	10	10	10			
Thermal overload relays	Rated current (3-point set current scale) ②		0.28 - 0.35 - 0.42 0.4 - 0.5 - 0.6 0.56 - 0.7 - 0.84 0.8 - 1 - 1.2 1 - 1.2 - 1.4 1.4 - 1.8 - 2.2 1.8 - 2.3 - 2.8 2.4 - 3 - 3.6 2.9 - 3.6 - 4.3			3.7 - 4.6 - 5.5 4 - 5 - 6 5.4 - 6.7 - 8 6 - 7.5 - 9 7.4 - 9.2 - 11 8.8 - 11 - 13 11 - 13 - 15 12 - 15 - 18 15 - 18 - 20 18 - 22 - 25			7.4 - 9.2 - 11 8.8 - 11 - 13 12 - 15 - 18 15 - 18 - 20 18 - 22 - 25 24 - 30 - 36 28 - 34 - 42 34 - 42 - 45 40 - 48 - 52		
	Heater elements(STANDARD)		2	2	2	2	2	2	2		
	Reset type		Manual/Auto	Manual/Auto	Manual/Auto	Manual/Auto	Manual/Auto	Manual/Auto	Manual/Auto		
	Manual trip										
	Output contact configuration		1 NO1 NC	1 NO1 NC	1 NO1 NC	1 NO1 NC	1 NO1 NC	1 NO1 NC	1 NO1 NC		
	DIN rail mounting										
	Auxiliary twin contacts					-					
Options	Auxiliary contact unit 2P		-	HAU-2	HAU-2	HAU-2	HAU-2	HAU-2	HAU-2		
	Auxiliary contact unit 4P		-	HAU-4	HAU-4	HAU-4	HAU-4	HAU-4	HAU-4		
	Terminal(protective) cover		C-21/TC-22③	C-11/TC-22③	C-11/TC-22③	C-12/TC-22③	C-13/TC-22③	C-14/TC-25③	C-14/TC-25③		
	Coil surge absorption unit⑤		-	SZ-22/24				SA-32/34			
	DIN rail mounting adapter⑨		-	-	-	-	-	-	-		

- Notes. ①In case of addition HAU-4-22 (2NO + 2NC) to the magnetic contactor.
 ②The rated current of thermal overload relay, must be selected less than rated operational current (AC3)of magnetic contactor.
 ③Type name of left side shows for magnetic contactor, and right side for thermal overload relay.
 (Reversing type please refer to P78.)
 ④Type name of left side shows for magnetic contactor, and right side for magnetic starter.
 ⑤The Type name of coil surge absorption unit changes with the rated values of operation voltage.
 Please refer to P83. Moreover, PAK-300 800H incorporate the surge absorption function.

H Series												
50H	65H	80H	100H	125H	150H	220H	300H ^⑩	400H ^⑩	600H ^⑩	800H ^⑪		
PAK-50H	PAK-65H	PAK-80H	PAK-100H	PAK-125H	PAK-150H	PAK-220H	PAK-300H	PAK-400H	PAK-600H	PAK-800H		
RSK-50H	RSK-65H	RSK-80H	RSK-100H	RSK-125H	RSK-150H	RSK-220H	RSK-300H	RSK-400H	-	-		
PAK-50HTC	PAK-65HTC	PAK-80HTC	PAK-100HTC	PAK-125HTC	PAK-150HTC	PAK-220HTC	PAK-300HT	PAK-400HT	PAK-600HT	-		
RSK-50HTC	RSK-65HTC	RSK-80HTC	RSK-100HTC	RSK-125HTC	RSK-150HTC	RSK-220HTC	RSK-300HT	RSK-400HT	-	-		
PAK-50HMC	PAK-65HMC	PAK-80HMC	PAK-100HMC	PAK-125HMC	PAK-150HMC	PAK-220HMC	PAK-300HM	PAK-400HM	PAK-600HM	-		
RSK-50HMC	RSK-65HMC	RSK-80HMC	RSK-100HMC	RSK-125HMC	RSK-150HMC	RSK-220HMC	-	-	-	-		
TJ-50	TJ-50	TJ-50	TJ-125	TJ-125	TJ-125	T J-220 ^⑦	T-400 ^⑧	T-400 ^⑧	T-600 ^⑧	-		
PAK-50HGTC	PAK-65HGTC	PAK-80HGTC	PAK-100HGTC	PAK-125HGTC	PAK-150HGTC	PAK-220HGTC	PAK-300HGT	PAK-400HGT	PAK-600HGT	-		
RSK-50HGTC	RSK-65HGTC	RSK-80HGTC	RSK-100HGTC	RSK-125HGTC	RSK-150HGTC	RSK-220HGTC	RSK-300HGT	RSK-400HGT	-	-		
PAK-50HGMC	PAK-65HGMC	PAK-80HGMC	PAK-100HGMC	PAK-125HGMC	PAK-150HGMC	PAK-220HGMC	PAK-300HGM	PAK-400HGM	PAK-600HGM	-		
RSK-50HGMC	RSK-65HGMC	RSK-80HGMC	RSK-100HGMC	RSK-125HGMC	RSK-150HGMC	RSK-220HGMC	-	-	-	-		
GTJ-50	GTJ-50	GTJ-50	GTJ-125	GTJ-125	GTJ-125	GTJ-220 ^⑦	GT-400 ^⑧	GT-400 ^⑧	GT-600 ^⑧	-		
PAK-50HT-3C	PAK-65HT-3C	PAK-80HT-3C	PAK-100HT-3C	PAK-125HT-3C	PAK-150HT-3C	PAK-220HT-3C	-	-	-	-		
RSK-50HT-3C	RSK-65HT-3C	RSK-80HT-3C	RSK-100HT-3C	RSK-125HT-3C	RSK-150HT-3C	RSK-220HT-3C	-	-	-	-		
PAK-50HM-3C	PAK-65HM-3C	PAK-80HM-3C	PAK-100HM-3C	PAK-125HM-3C	PAK-150HM-3C	PAK-220HM-3C	-	-	-	-		
RSK-50HM-3C	RSK-65HM-3C	RSK-80HM-3C	RSK-100HM-3C	RSK-125HM-3C	RSK-150HM-3C	RSK-220HM-3C	-	-	-	-		
TJ-50-3	TJ-50-3	TJ-50-3	TJ-125-3	TJ-125-3	TJ-125-3	TJ-220-3 ^⑦	-	-	-	-		
15kW/65A	19kW/80A	22kW/90A	30kW/125A	37kW/150A	55kW/200A	75kW/275A	90kW/300A	115kW/400A	160kW/600A	(AC2) 200kW/800A		
30kW/62A	37kW/75A	45kW/90A	55kW/110A	60kW/125A	75kW/150A	95kW/180A	150kW/300A	200kW/400A	300kW/600A	(AC2) 400kW/800A		
26kW/45A	37kW/60A	45kW/72A	55kW/90A	70kW/110A	75kW/120A	95kW/150A	160kW/250A	200kW/350A	300kW/500A	-		
-	-	-	-	-	-	-	-	-	-	-		
-	-	-	-	-	-	-	-	-	-	-		
75A	90A	110A	150A	170A	220A	275A	350A	420A	600A	800A		
75A	90A	110A	150A	170A	220A	275A	350A	420A	600A	800A		
75A	90A	110A	150A	170A	220A	275A	-	-	-	-		
7.5kW	11kW	15kW	19kW	25kW	30kW	45kW	55kW	75kW	90kW	-		
15kW	22kW	30kW	37kW	45kW	55kW	75kW	95kW	110kW	150kW	-		
15kW	22kW	30kW	37kW	45kW	55kW	75kW	-	-	-	-		
75A	90A	110A	150A	170A	220A	275A	350A	420A	600A	800A		
AC-3	AC-3	AC-3	AC-3	AC-3	AC-3	AC-3	AC-3	AC-3	AC-3	AC-2		
5	5	5	5	5	5	5	5	5	5	1		
1	1	1	1	1	1	1	0.5	0.5	0.5	0.1		
1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200		
2NO2NC	2NO2NC	2NO2NC	2NO2NC	2NO2NC	2NO2NC	2NO2NC	3NO3NC	3NO3NC	4NO4NC	4NO4NC		
2NO2NC x 2	2NO2NC x 2	2NO2NC x 2	2NO2NC x 2	2NO2NC x 2	2NO2NC x 2	2NO2NC x 2	3NO3NC x 2	3NO3NC x 2	-	-		
4NO4NC	4NO4NC	4NO4NC	4NO4NC	4NO4NC	4NO4NC	4NO4NC	-	-	-	-		
4NO4NC x 2	4NO4NC x 2	4NO4NC x 2	-	-	-	-	-	-	-	-		
10	10	10	10	10	10	10	2	2	2	2		
6	6	6	6	6	6	6	2	2	2	2		
3	3	3	3	3	3	3	1	1	1	1		
10	10	10	10	10	10	10	10	10	10	10		
	12 - 15 - 18 18 - 22 - 26 24 - 30 - 36 28 - 34 - 42 34 - 42 - 48 40 - 48 - 58 46 - 56 - 64 56 - 68 - 80 68 - 80 - 94 76 - 90 - 100			34 - 42 - 48 40 - 48 - 58 46 - 56 - 64 56 - 68 - 80 68 - 80 - 94 76 - 90 - 100 85 - 105 - 125 110 - 130 - 150 130 - 160 - 190		65 - 80 - 95 85 - 105 - 125 105 - 130 - 150 130 - 160 - 190 150 - 190 - 230	OPEN-PHASE MODEL STANDARD MODEL	110 - 140 - 180 170 - 240 - 290 280 - 380 - 410 400 - 500 - 600	110 - 140 - 170 140 - 180 - 220 200 - 240 - 280 240 - 300 - 360 300 - 380 - 450	110 - 140 - 180 170 - 240 - 290 280 - 380 - 410 400 - 500 - 600	-	
2	2	2	2	2	2	2	2	2	2	-		
Manual/Auto	Manual/Auto	Manual/Auto	Manual/Auto	Manual/Auto	Manual/Auto	Manual/Auto	Manual/Auto	Manual/Auto	Manual/Auto	-		
1 NO1 NC	1 NO1 NC	1 NO1 NC	1 NO1 NC	1 NO1 NC	1 NO1 NC	1 NO1 NC	1 NO1 NC	1 NO1 NC	1 NO1 NC	-		
Adapters are necessary			-	-	-	-	-	-	-	-		
HAU-2	HAU-2	HAU-2	HAU-BL+HAU-BR ^⑥							-	-	-
HAU-4	HAU-4	HAU-4	HAU-BL+HAU-BR ^⑥							-	-	-
C-4/TC-4 ^④	C-4/TC-4 ^④	C-4/TC-4 ^④	C-5/TC-5 ^④	C-5/TC-5 ^④	C-6/TC-6 ^④	C-6/TC-7 ^④	C-8/TC-8 ^④		C-9/TC-9 ^④	C-9/ - ④		
SA-42/44												
D - 5 A			-							-		-

⑥HAU-BL is designed for installation on left side of contactor, and HAU-BR on right.

⑦TJ-220 is the combination of TJ-35C and CT contained in molded case.

⑧T-400 and T-600 are the combination of T-21 and CT.

⑨PAK-6JC through 35J are not required any adapters.

⑩For 300H to 600H, upper column indicates for 2-element type and lower column for open-phase protection type.

⑪Magnetic starter, PAK-800H, is not manufactured.

⑫Electric durability of AC-1 rating for PAK-800H is 100,000 operations.

PRODUCTION RANGE AND MODEL NUMBERS

Manufactured models

Series name		J Series							H Series											
Frame		6JC	11J	12J	20J	21J	26J	35J	50H	65H	80H	100H	125H	150H	220H	300H	400H	600H	800H	
3-phase squirrel-cage induction motor(AC3 class) 3-phase wound rotor induction motor(AC2 class) (kW)	220V	2.2	3.7	4	7.5	7.5	10	15	15	19	22	30	37	55	75	90	115	160	AC2 200	
	440V	4	4.5	5.5	11	11	20	26	30	37	45	55	60	75	95	150	200	300	AC2 400	
	550V	4	4.5	5.5	11	11	20	26	26	37	45	55	70	75	95	160	200	300	-	
Contact configuration		Main contact			3NO			3NO			3NO				3NO			3NO		
() indicates data to be specified		Auxiliary contact			1NO(1NC)			1NO1NC 2NO-2NC			2NO2NC				3NO3NC			4NO4NC		
Magnetic starters	Open type	Non-reversing model	PAK- TC																	
		Reversing model	RSK- TC																	
		With 3-element thermal overload relay	PAK- T-3C																	
		With open-phase thermal overload relay	PAK- GTC																	
		DIN rail mount model	PAK- T-DNC																	
		With slow-trip thermal overload relay	PAK- T-SL2																	
	Enclosed type	With fast-trip thermal overload relay	PAK- T-FC																	
		Non-reversing model	PAK- MC																	
		Reversing model	RSK- MC																	
		With 3-element thermal overload relay	PAK- M-3C																	
		With open-phase thermal overload relay	PAK- GMC																	
		With ammeter	PAK- M-AC																	
Magnetic contactors	Open type	With push button	PAK- M-DC																	
		With slow-trip thermal overload relay	PAK- M-SL2																	
		With fast-trip thermal overload relay	PAK- M-FC																	
	Enclosed type	Non-reversing model	PAK-																	
		Reversing model	RSK-																	
		DC-operated model	PAK- DCC																	
Open type	DIN rail mount model	PAK- -DN																		
	Mechanical latch model	PAK- L																		
	Non-reversing model	PAK- B																		
Enclosed type	Reversing model	RSK- B																		

Notes. ① Can be DIN-mounted with rail adapter.
② Slow-trip thermal overload relay is combined with T-type thermal overload relay.

Symbols used (1) Standard models, with AC100-110V or AC200-220V coil.
(2) Semi-standard models (ask for delivery schedule)
(3) Models manufactured to order (ask for delivery schedule)
(4) - Not manufactured.

Model identification

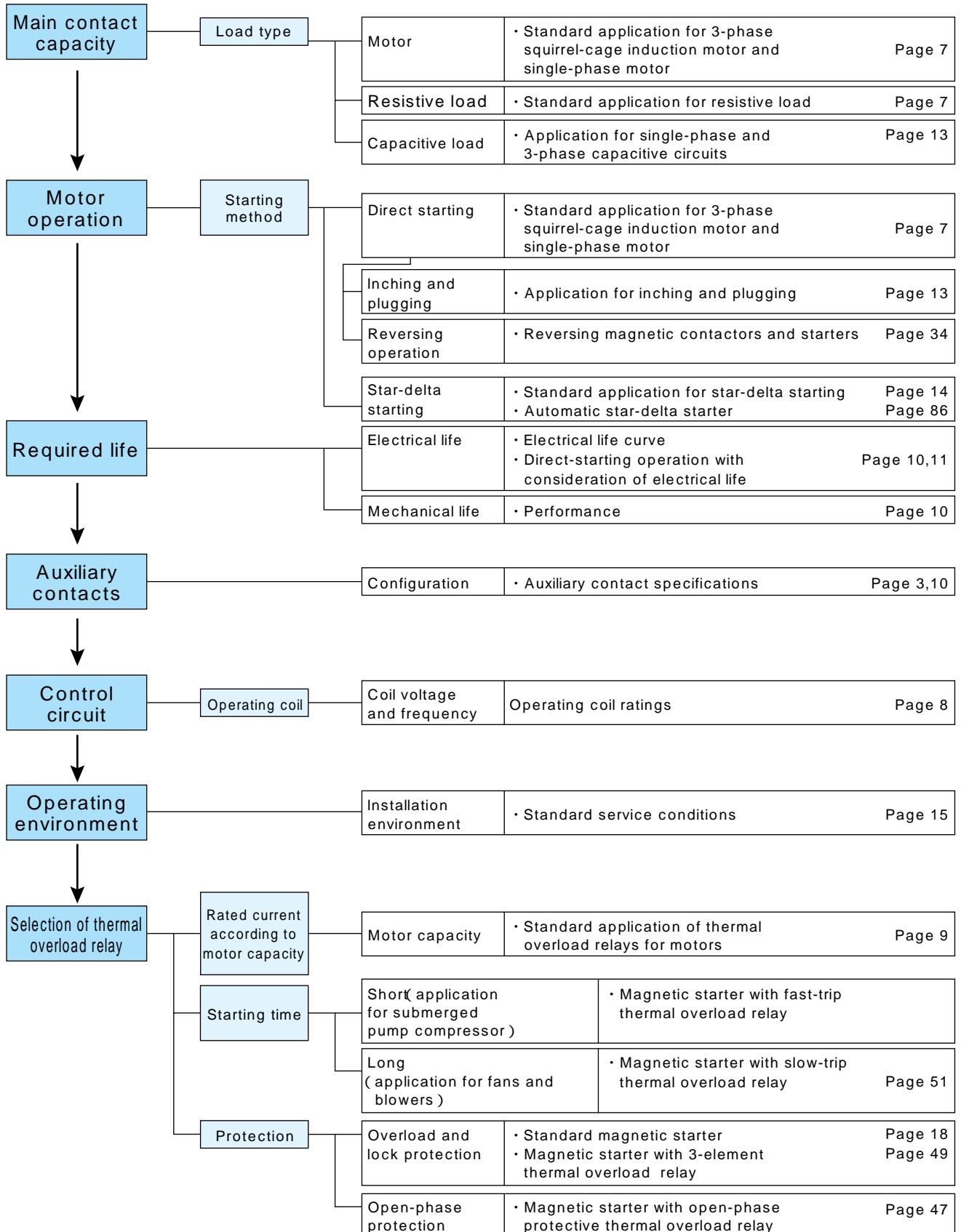
PAK — 20 JT 20 — 3 C

Type	Model		Specifications		Auxiliary contact configuration	Options	Career mark
PAK ...Standard model RSK ...Reversing model	PAK - RSK -		PAK - J		PAK-6J, 11J 12J, 20J Blank.....1NO 31.....1NC PAK-21J Blank.....1NO1NC 20.....2NO 02.....2NC PAK-26J ~ 220H Blank.....2NO2NC PAK-300~400H Blank.....3NO3NC PAK-600~800H Blank.....4NO4NC	3 ... Thermal overload relay with 3 elements A ... Ammeter D ... Pushbutton R ... External reset button DN ... DIN rail mount model With slow-trip thermal overload relay SL2 ... With fast-trip thermal overload relay F ...	Only for magnetic starters. However, except SL2 models.
	J	H	J Magnetic contactor ^{①②} JT Magnetic starter ^② JM Magnetic starter ^③ JB Magnetic contactor ^③ JGT Magnetic starter with open phase thermal overload relay ^② JGM Magnetic starter with open phase thermal overload relay ^③ JDCC DC-operated magnetic contactor ^② JL Mechanical latch magnetic contactor ^②	H Magnetic contactor ^② HT Magnetic starter ^② HM Magnetic starter ^③ HB Magnetic contactor ^③ HGT Magnetic starter with open phase thermal overload relay ^② HGM Magnetic starter with open phase thermal overload relay ^③ HUL UL-certified magnetic contactor ^②			
	6	50 300					
	11	65 400					
	12	80 600					
	20	100 800					
	21	125					
	26	150					
	35	220					
	Reversing models available for 11J to 400H.						

Notes. ① Only PAK-6J accompanyes C 'at the end of model name.
② Open type
③ Enclosed type

SELECTION

Magnetic starter selection process



SELECTION

Main contact ratings

Use for Frame	3-phase squirrel-cage induction motor (AC-3)			3-phase wound inductor motor (AC-2)			Single-phase motor (AC-3)				Resistive (AC-1)		Rated thermal current [A]
	Rated capacity [kW]			Rated operational current [A]			Rated capacity [kW]		Rated operational current [A]		Rated operational current [A]		
	200 ~ 220V	380 ~ 440V	500 ~ 550V	200 ~ 220V	380 ~ 440V	500 ~ 550V	100 ~ 110V	200 ~ 220V	100 ~ 110V	200 ~ 220V	200 ~ 220V	380 ~ 440V	
6JC	2.2	4	4	8.7	7.9	6.3	0.4	0.75	7.2	6.8	15	15	15
11J	3.7	4.5	4.5	13.5	9.5	7.6	0.75	1.5	13.5	13.5	20	20	20
12J	4	5.5	5.5	15	11.5	9.2	0.9	1.8	17	17	26	26	26
20J	7.5	11	11	27	22	18	1.5	3	27	27	32	32	32
21J	7.5	11	11	27	22	18	1.5	3	27	27	32	32	32
26J	10	20	20	35	35	28	2	4	35	35	50	50	50
35J	15	26	26	52	45	36	3	6	52	52	60	60	60
50H	15	30	26	65	62	45	—	—	—	—	75	75	75
65H	19	37	37	80	75	60	—	—	—	—	90	90	90
80H	22	45	45	90	90	72	—	—	—	—	110	110	110
100H	30	55	55	125	110	90	—	—	—	—	150	150	150
125H	37	60	70	150	125	110	—	—	—	—	170	170	170
150H	55	75	75	200	150	120	—	—	—	—	220	220	220
220H	75	95	95	275	180	150	—	—	—	—	275	275	275
300H	90	150	160	300	300	250	—	—	—	—	350	350	350
400H	115	200	200	400	400	350	—	—	—	—	420	420	420
600H	160	300	300	600	600	500	—	—	—	—	600	600	600
800H	200 (AC-2)	400 (AC-2)	-	800 (AC-2)	800 (AC-2)	-	—	—	—	—	800	800	800

Notes . ① AC3-class electrical life is 2 million ops for 12J to 35J, 1.5 million ops for 11J, 1.0 million ops for 6JC and 50H to 220H, and 0.5 million ops for 300H to 600H.

② AC-2-class electrical life is 0.1 million ops for 800H.




③ Electrical life for AC-1-class is 0.5 million operations.

Auxiliary contact ratings

Frame	Rated thermal current [A]	Rated operational current (A)						Minimum operating voltage/current
		AC			DC			
		Rated operational voltage (V)	AC-15 (coil load)	AC-12 (resistive load)	Rated operational voltage (V)	DC-13 (coil load)	DC-12 (resistive load)	
6JC	10	110	4	5	24	4	10	12V 10mA
		220	3	4	48	0.7	10	
		440	2	3	110	0.5	7	
		550	1.8	2.7	220	0.2	0.8	
11J ~ 12J 21J ~ 220H	10	110	10	10	24	10	10	24V 10mA
		220	6	6	48	2	10	
		440	3	4	110	1	10	
		550	3	3	220	0.25	1.2	
20J	32	110	28	32	24	12	20	48V 0.1A
		220	20	32	48	3	15	
		440	14	29	110	1	12	
		550	12	25	220	0.3	2	
300H ~ 800H	10	110	2	10	24	-	2	24V 10mA
		220	2	10	48	-	2	
		440	1	10	110	-	2	
		550	0.75	-	220	-	2	

SELECTION

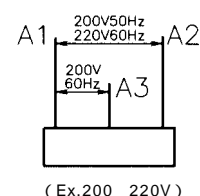
Operating coil ratings

Specification	Nominal coil voltage ^①	Rated coil voltage ^②	single rating ^③	Model			Coil nameplate color
				6JC ~ 80H 150H~220H	100H 125H	300H ~ 800H	
Standard	AC100V	100V 50Hz 100-110V 60Hz (100-120V 50/60Hz) ^④	110V 60Hz	Coil with 2-terminals	Coil with ^⑤ 3-terminals	Coil with 2-terminals	Blue
	AC200V	200V 50Hz 200-220V 60Hz (200-240V 50/60Hz) ^④	220V 60Hz	"	"	"	Yellow
Semi-standard	AC 24V	24V 50Hz 24V 60Hz	-	"	"	-	Green
	AC 50V	48-50V 50Hz 48-55V 60Hz	-	"	"	-	White
	AC110V	105-110V 50Hz 110-120V 60Hz	110V 50Hz 120V 60Hz	"	"	-	"
	AC120V	110-120V 50Hz 120-130V 60Hz	-	"	"	-	"
	AC127V	120-127V 50Hz 127-140V 60Hz	127V 60Hz	"	"	-	"
	AC220V	208-220V 50Hz 220-240V 60Hz	220V 50Hz 240V 60Hz	"	"	-	"
	AC240V	220-240V 50Hz 240-260V 60Hz	260V 60Hz	"	"	-	"
	AC260V	250-260V 50Hz 260-280V 60Hz	-	"	"	-	"
	AC380V	346-380V 50Hz 380-400V 60Hz	400V 60Hz	"	"	-	"
	AC400V	380-400V 50Hz 400-440V 60Hz (380-440V 50/60Hz) ^④	380V 50Hz 440V 60Hz	"	"	Coil with 2-terminals	Pink
	AC440V ^⑥	415-440V 50Hz 440-480V 60Hz	-	"	"	-	White
	AC500V ^⑥	480-500V 50Hz 500-550V 60Hz	-	"	"	-	"
Coil Terminal symble							

- Notes. ^①Nominal coil voltage is designed to simplify specification in ordering. Please use nominal coil voltage when ordering.
^②Rated coil voltage indicates the rated operating voltage and frequency marked on the coil.
^③The single rating may be used for ordering (e.g., 110V60Hz), but the products are marked with the rated coil voltage.
 Single rating can be selected by several coil votages, however being concluded to one of above nominal coil voltage.
^④Values in parethesis indicates the rated voltage for 300H to 800H.
^⑤3-terminal coil.
^⑥PAK-6JC (only type AC400 and AC600, ^⑥) are not manufacture.



(Connection is made
to terminals A₁ and
A₂ at delivery)



SELECTION

Application of thermal overload relays for motors

Motor output capacity (kW)	220V 3-phase motor (4-pole)			440V 3-phase motor (4-pole)		
	Magnetic starter	Thermal overload relay		Magnetic starter	Thermal overload relay	
		Model	Rated current (A)		Model	Rated current (A)
0.1	6JC	TJ-18JA TJ-18JA-3 GTJ-18JA	0.7	6JC	TJ-18JA TJ-18JA-3 GTJ-18JA	0.35
0.2			1.2			0.7
0.4			2.3			1.2
0.75			3.6			1.8
1.1			5			2.3
1.5	11J	TJ-18	6.7	11J	TJ-18	3.6
2.2			9.2			4.6
2.5	12J	TJ-18-3 GTJ-18	11	11J	TJ-18	5
2.7			11			5
3.7	20J	TJ-18-3 GTJ-18	15	12J	TJ-18-3	7.5
4	21J		18			7.5
5.5	26J	TJ-35	22	20J	GTJ-18	11
7.5	35J	TJ-35-3 GTJ-35	30	21J		15
11	50H	TJ-50	42	26J	TJ-35	22
15	65H	TJ-50-3	56	35J	TJ-35-3 GTJ-35	30
19	80H	GTJ-50	68	50H	TJ-50	34
22	100H	TJ-125	80			TJ-50-3
30	125H		TJ-125-3	105	65H	GTJ-50
37	150H	GTJ-125	130	80H		
40			130	100H	TJ-125	68
45	220H	TJ-220	160			TJ-125-3
55		190	GTJ-220	125H	GTJ-125	105
75	300H	T-400 GT-400	240(240) ^③	150H	TJ-220 TJ-220-3 GTJ-220	130
90	400H		380(300) ^③	220H		160
110		380(380) ^③	300H	500(500) ^③	400H	T-400
132	600H	GT-600				
150			240(300) ^③			
200	-	-	-	600H	T-600	380(300) ^③
220						380(380) ^③
250						-
300						500(500) ^③
						500(500) ^③

Note. ①Load current will be different for 3-phase motors with other than four poles, and for non-standard motors. Selected the rated current appropriate for each motor in this case.

②If the same rated current is not available, select the closest current and use the adjusting dial to match it to the rated motor current.

③Rated current in parentheses indicates for GT-400 and GT-600 models.

SELECTION

Performance

Model	Rated operating voltage (V)	Rated operating current (A)	Making & breaking current (A)		Switching frequency (ops/hour)	Life (× 10 ⁶ ops)		Category
			Making	Breaking		Mechanical	Electrical	
PAK - 6JC	220	8.7	87	69.6	1,200	2.5	0.5	AC-3
	440	7.9	79	63.2				
PAK - 11J	220	13.5	135	108	1,200	5	1	AC-3
	440	9.5	95	76				
PAK - 12J	220	15	150	120	1,200	5	1	
	440	11.5	115	92				
PAK - 20J	220	27	270	216	1,200	5	1	
	440	22	220	176				
PAK - 21J	220	27	270	216	1,200	5	1	
	440	22	220	176				
PAK - 26J	220	35	350	280	1,200	5	1	
	440	35	350	280				
PAK - 35J	220	52	520	416	1,200	5	1	
	440	45	450	360				
PAK - 50H	220	65	650	520	1,200	5	1	AC-3
	440	62	620	496				
PAK - 65H	220	80	800	640	1,200	5	1	
	440	75	750	600				
PAK - 80H	220	90	900	720	1,200	5	1	
	440	90	900	720				
PAK - 100H	220	125	1,250	1,000	1,200	5	1	
	440	110	1,100	880				
PAK - 125H	220	150	1,500	1,200	1,200	5	1	
	440	125	1,250	1,000				
PAK - 150H	220	200	2,000	1,600	1,200	5	1	
	440	150	1,500	1,200				
PAK - 220H	220	275	2,750	2,200	1,200	5	1	
	440	180	1,800	1,440				
PAK - 300H	220	300	3,000	2,400	1,200	5	0.5	AC-3
	440	300	3,000	2,400				
PAK - 400H	220	400	4,000	3,200	1,200	5	0.5	
	440	400	4,000	3,200				
PAK - 600H	220	600	6,000	4,800	1,200	5	0.5	
	440	600	6,000	4,800				
PAK - 800H	220	800	3,200	3,200	1,200	1	0.1	AC-2
	440	800	3,200	3,200				

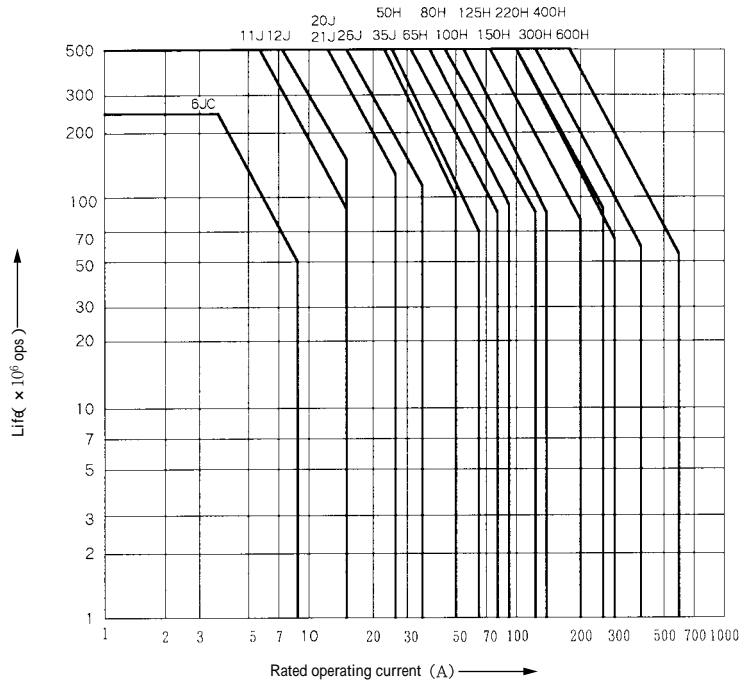
Making and breaking current

The number of operations for making is 50 times, and for breaking 50 times.

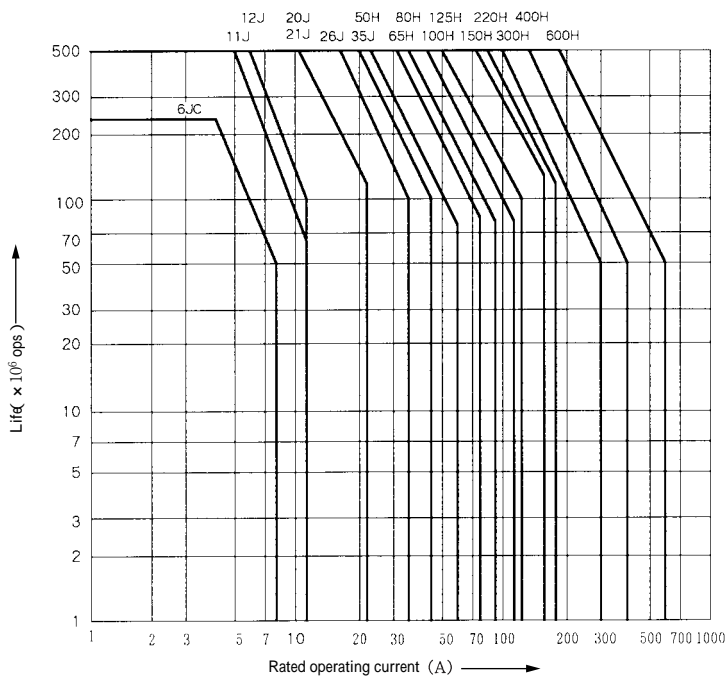
SELECTION

Electrical life characteristics

AC220V 3-phase AC-3-class



AC440V 3-phase AC-3-class



SELECTION

Electromagnet characteristics

Item Model	Coil ratings		Operating voltage (V)		Coil consumption (VA)		Inrush current (A)	Exciting current (mA)	Loss (W)
	Voltage (V)	Frequency (Hz)	Pick-up (max)	Drop-out (max)	Inrush (max)	Sealed (max)			
PAK-6JC	200	50	146	140	22	6.4	0.07 ~ 0.11	19 ~ 32	2.1 ~ 3.5
	200-220	60	155	140	24	6.9	0.07 ~ 0.11	18 ~ 31	2.3 ~ 3.7
PAK-11J	200	50	145	140	64	11.0	0.26 ~ 0.32	33 ~ 55	2.2 ~ 3.7
PAK-12J	200-220	60	155	140	73	11.0	0.26 ~ 0.33	31 ~ 51	2.2 ~ 3.7
PAK-20J	200	50	145	140	64	11.0	0.26 ~ 0.32	33 ~ 55	2.2 ~ 3.7
	200-220	60	155	140	73	11.0	0.26 ~ 0.33	31 ~ 51	2.2 ~ 3.7
PAK-21J	200	50	145	140	64	11.0	0.26 ~ 0.32	33 ~ 55	2.2 ~ 3.7
	200-220	60	155	140	73	11.0	0.26 ~ 0.33	31 ~ 51	2.2 ~ 3.7
PAK-26J	200	50	153	140	112	17.2	0.48 ~ 0.53	51 ~ 86	3.9 ~ 6.7
PAK-35J	200-220	60	160	140	117	17.9	0.48 ~ 0.53	48 ~ 81	4.2 ~ 7.0
PAK-50H	200	50	163	130	186	27	0.54 ~ 0.93	77 ~ 132	4.7 ~ 8.5
	200-220	60	163	130	196	27	0.53 ~ 0.89	70 ~ 120	5 ~ 9.0
PAK-65H	200	50	163	125	242	30	0.89 ~ 1.21	92 ~ 142	6.4 ~ 9.1
PAK-80H	200-220	60	163	125	262	29	0.88 ~ 1.19	84 ~ 130	7.0 ~ 10.0
PAK-100H	200	50	165	130	470	43	1.61 ~ 2.35	148 ~ 215	10 ~ 16.5
PAK-125H	220	60	173	143	490	44	1.53 ~ 2.23	136 ~ 200	11 ~ 18.5
PAK-150H	200	50	159	120	682	64	2.93 ~ 3.41	190 ~ 320	9.5 ~ 17.5
	200-220	60	159	120	726	61	2.58 ~ 3.30	140 ~ 277	8.1 ~ 19
PAK-220H	200	50	159	120	682	64	2.93 ~ 3.41	190 ~ 320	9.5 ~ 17.5
	200-220	60	159	120	726	61	2.58 ~ 3.30	140 ~ 277	8.1 ~ 19
PAK-300H	200	50	150	140	1012	8.3	4.14 ~ 5.06	24.8 ~ 41.5	4.5 ~ 7.5
PAK-400H	200-220	60	150	140	1265	10.1	4.14 ~ 5.70	24.8 ~ 45.9	4.5 ~ 9.2
PAK-600H	200	50	150	140	1034	11.5	4.23 ~ 5.17	33.8 ~ 57.5	6.1 ~ 10.3
PAK-800H	200-220	60	150	140	1199	13.9	4.23 ~ 5.45	33.8 ~ 63.2	6.1 ~ 12.4

Item Model	Coil ratings		Power factor Sealed	Main contact operating time (ms)			Auxiliary NO operating time (ms)		Auxiliary NC operating time (ms)	
	Voltage (V)	Frequency (Hz)		Closing	Opening	Closing	Opening	Opening	Closing	
PAK-6JC	200	50	0.56	5 ~ 32	4 ~ 33	5 ~ 23	4 ~ 33	4 ~ 22	5 ~ 33	
	200-220	60	0.58	6 ~ 25	4 ~ 33	6 ~ 25	4 ~ 33	4 ~ 22	5 ~ 33	
PAK-11J	200	50	0.33	6 ~ 25	4 ~ 33	6 ~ 25	4 ~ 33	4 ~ 22	5 ~ 33	
PAK-12J	200-220	60	0.34	6 ~ 25	4 ~ 33	6 ~ 25	4 ~ 33	4 ~ 22	5 ~ 33	
PAK-20J	200	50	0.33	6 ~ 25	4 ~ 33	6 ~ 25	4 ~ 33	4 ~ 22	5 ~ 33	
	200-220	60	0.34	6 ~ 25	4 ~ 33	6 ~ 25	4 ~ 33	4 ~ 22	5 ~ 33	
PAK-21J	200	50	0.33	6 ~ 25	4 ~ 33	10 ~ 26	4 ~ 33	8 ~ 25	5 ~ 33	
	200-220	60	0.34	6 ~ 25	4 ~ 33	11 ~ 28	4 ~ 33	8 ~ 25	5 ~ 33	
PAK-26J	200	50	0.38	10 ~ 26	4 ~ 33	8 ~ 30	2 ~ 33	5 ~ 20	8 ~ 33	
PAK-35J	200-220	60	0.39	11 ~ 28	4 ~ 33	8 ~ 30	2 ~ 33	5 ~ 20	8 ~ 33	
PAK-50H	200	50	0.32	8 ~ 30	4 ~ 33	8 ~ 30	2 ~ 33	5 ~ 20	8 ~ 33	
	200-220	60	0.33	8 ~ 30	4 ~ 33	8 ~ 30	2 ~ 33	5 ~ 20	8 ~ 33	
PAK-65H	200	50	0.33	5 ~ 30	4 ~ 33	6 ~ 25	4 ~ 33	4 ~ 22	8 ~ 33	
PAK-80H	200-220	60	0.40	5 ~ 30	4 ~ 33	6 ~ 25	4 ~ 33	4 ~ 22	8 ~ 33	
PAK-100H	200	50	0.37	12 ~ 34	8 ~ 33	12 ~ 34	8 ~ 33	10 ~ 30	10 ~ 33	
PAK-125H	220	60	0.40	12 ~ 34	8 ~ 33	12 ~ 34	8 ~ 33	10 ~ 30	10 ~ 33	
PAK-150H	200	50	0.25	16 ~ 31	9 ~ 33	16 ~ 31	9 ~ 33	11 ~ 22	13 ~ 33	
	200-220	60	0.28	16 ~ 35	9 ~ 33	16 ~ 35	9 ~ 33	11 ~ 25	13 ~ 33	
PAK-220H	200	50	0.25	16 ~ 31	9 ~ 33	16 ~ 31	9 ~ 33	11 ~ 22	13 ~ 33	
	200-220	60	0.28	16 ~ 35	9 ~ 33	16 ~ 35	9 ~ 33	11 ~ 25	13 ~ 33	
PAK-300H	200	50	0.91	35 ~ 60	120 ~ 150	35 ~ 60	120 ~ 150	25 ~ 50	130 ~ 160	
PAK-400H	200-220	60	0.91	35 ~ 60	120 ~ 150	35 ~ 60	120 ~ 150	25 ~ 50	130 ~ 160	
PAK-600H	200	50	0.89	40 ~ 70	150 ~ 250	40 ~ 70	150 ~ 250	30 ~ 60	160 ~ 260	
PAK-800H	200-220	60	0.89	40 ~ 70	150 ~ 250	40 ~ 70	150 ~ 250	30 ~ 60	160 ~ 260	

- Notes. ① IEC 947-4-1 stipulate that 85% of rated voltage be applied to coil for switching operation, with satisfactory performance.
 ② Pick-up voltages indicate 20 operations with zero failures.
 ③ 60Hz is used for 220V input, in addition to operating voltage.
 ④ Values measured at 20 ± 15 ambient temperature.
 ⑤ Select operating transformers with capacities of at least a third of the electromagnet inrush capacity.

SELECTION

Application for capacitive load

Application for individual-use capacitors

Frame	3-phase capacity						Single-phase capacity			
	200 V		400 V		500 V		200 V		400 V	
	kVA	A	kVA	A	kVA	A	kVA	A	kVA	A
6JC	1.5	4.5	2.8	4	3	3.5	0.9	4.5	1.6	4
11J	2.5	8	3.5	5	4	4.5	1.6	8	2	5
12J	3	9	4.5	6.5	4.5	5	1.8	9	2.6	6.5
20J	5	15	8	12	9	10.5	3	15	4.8	12
21J	5	15	8	12	9	10.5	3	15	4.8	12
26J	6	19	11	16	12	14	3.8	19	6.4	16
35J	9	26	15	22	18	20	5.2	26	8.8	22
50H	13	40	20	30	25	30	8	40	12	30
65H	15	50	25	40	30	35	10	50	16	40
80H	20	60	38	55	38	50	12	60	22	55
100H	25	80	42	60	50	48	16	80	24	60
125H	34	100	50	75	60	60	20	100	30	75
150H	40	125	68	100	85	100	25	125	40	100
220H	60	180	80	120	100	120	36	180	48	120
300H	40	125	85	125	90	105	25	125	50	125
400H	55	170	110	170	125	145	34	170	68	170
600H	85	255	170	255	180	210	50	255	100	255

Notes . ①Applicable frequencies for above table are 50 and 60Hz.

②The peak inrush current at making is 20 times the rated capacitor current (effective).

Application for inching and plugging operation

For inching and plugging operation use the following table for selection.

The table indicates applications for approximate electrical lives of 100,000, 250,000 and 500,000 operational. Electrical life calculations are based on a motor starting current six times the full load current.

Applicable motors

Switching frequency

3-phase squirrel-cage induction motor

PAK- 6JC ~ 35J : 600 operations / hour

PAK- 50H ~ 80H : 600 "

3-phase wound rotor induction motor

PAK-100H ~ 220H) 300 "

PAK-300H ~ 600H)

Units kW

Voltage Inching factor Electrical life(ops) Frame	200 to 220V circuits						380 to 440V circuits					
	25 %			50 %			25 %			50 %		
	100,000	250,000	500,000	100,000	250,000	500,000	100,000	250,000	500,000	100,000	250,000	500,000
6JC	1.1	0.4	0.4	0.4	0.2	0.2	1.5	1.1	0.4	1.1	0.4	0.2
11J	2.2	1.5	0.75	1.5	0.75	0.4	3	1.5	1.1	2.2	1.5	0.75
12J	2.7	1.5	1.1	1.5	1.1	0.75	4	2.2	1.5	2.7	1.5	1.1
20J	3	2.2	1.1	2.2	1.5	0.75	4.5	4	2.2	4	2.2	1.5
21J	4	2.7	1.5	2.7	1.5	1.1	7.5	4.5	2.5	5.5	2.5	2.2
26J	5.5	3.7	2.2	4	2.7	1.5	11	7.5	4.5	7.5	4.5	3.7
35J	7.5	4.5	3	5.5	3	2.2	15	11	7.5	11	7.5	4.5
50H	11	7.5	4	7.5	4.5	2.5	25	15	11	15	11	7.5
65H	15	11	7.5	11	5.5	4.5	30	25	15	19	15	11
80H	19	15	11	15	11	7.5	37	30	22	22	19	15
100H	25	19	15	19	15	11	45	37	25	37	25	19
125H	30	22	19	22	19	15	55	40	30	40	30	22
150H	40	25	22	25	22	19	75	60	40	60	40	30
220H	55	37	30	37	30	25	95	75	55	75	55	37
300H	60	37	30	45	30	22	100	65	45	75	45	30
400H	85	50	37	60	40	30	120	80	60	90	60	40
600H	95	70	50	75	55	37	165	100	75	132	75	55

Note . Inching factor(%)= $\frac{\text{inching count}}{\text{inching count} + \text{normal operation (AC3) count}} \times 100 (\%)$

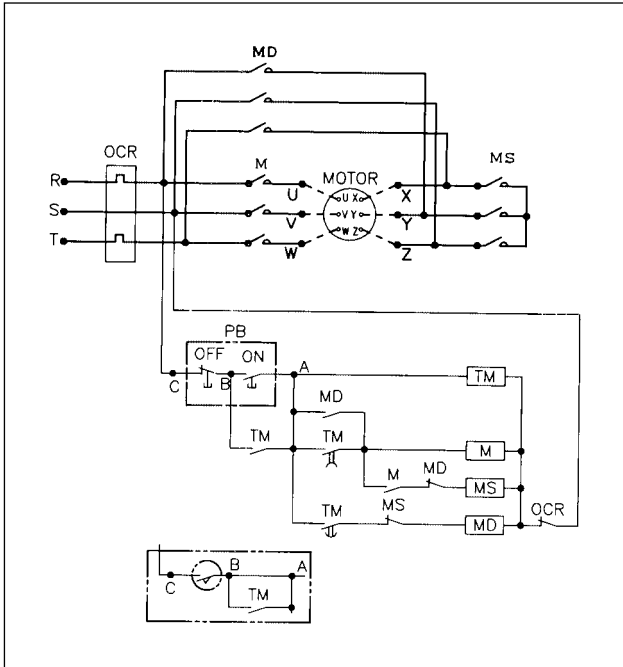
SELECTION

Application for star-delta starters

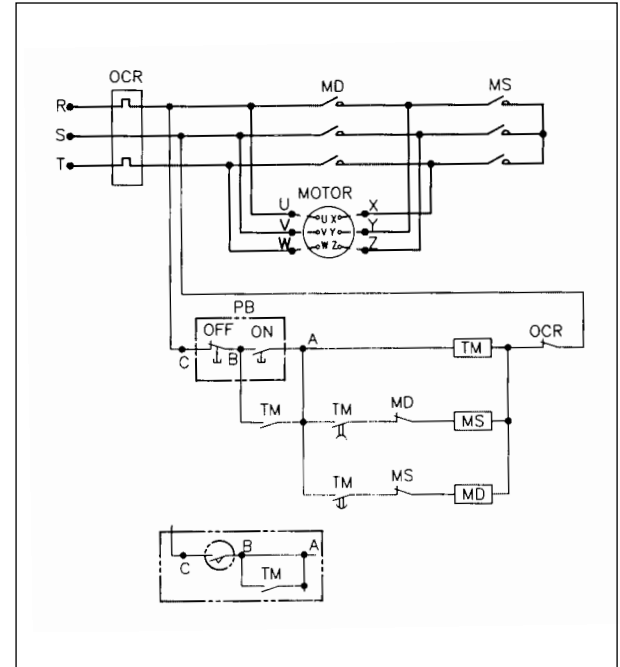
Circuits

We recommend a 3-contactor type with main magnetic contactor which isolates the motor from the power supply when operation is stopped. When using a 2-contactor type, always install a breaker on the primary side, and use it to open the circuit and shut off voltage to the motor.

3-contactor type



2-contactor type



M : Main magnetic contactor
MS : Star-side magnetic contactor
MD : Delta-side magnetic contactor

OCR : Thermal overload relay
TM : Timer (Omron H3CR-G8EL or star-delta timer)
PB : Pushbutton switch

Selection

Motor capacity (kW)	200-220V			400-440V		
	Star side (MS)	Delta side (MD)	Main side (M)	Star side (MS)	Delta side (MD)	Main side (M)
5.5	21J	21J	21J	12J31	12J31	12J
7.5	21J	26J	26J	12J31	21J	21J
11	21J	35J	35J	12J31	21J	21J
15	26J	50H	50H	21J	26J	26J
19	35J	50H	50H	21J	26J	26J
22	35J	65H	65H	21J	35J	35J
30	50H	80H	80H	26J	50H	50H
37	65H	100H	100H	26J	50H	50H
45	65H	125H	125H	35J	65H	65H
55	80H	150H	150H	50H	65H	65H
75	100H	220H	220H	50H	100H	100H
90	125H	220H	220H	65H	125H	125H
110	150H	300H	300H	80H	150H	150H
132	-	-	-	100H	220H	220H
150	-	-	-	125H	220H	220H

Notes . ① Selection criteria Start-side contactor: Rated operating current (AC3) of magnetic contactor at least 0.35 times rated motor current.
Delta-side contactor: Rated operating current (AC3) of magnetic contactor at least 0.6 times rated motor current.
② If the number of auxiliary contact points is insufficient, add an HAU auxiliary contact unit.

HANDLING INSTRUCTIONS

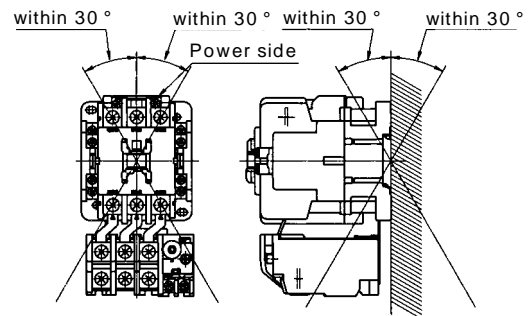
Standard service conditions

- | | |
|----------------------------------|---|
| (1) Standard ambient temperature | Enclosed model 40 (peak mean daily temperature 30)
(peak mean annual temperature 25) |
| (2) Maximum ambient temperature | Open model (to be used in control box) 55 |
| (3) Minimum ambient temperature | - 5 |
| (4) Ambient storage temperature | - 20 ~ 70 |
| (5) Relative humidity | 45% ~ 85%RH |
| (6) Altitude | 2,000m max. |
| (7) Withstand vibration | 10 ~ 55Hz 2 G |
| (8) Withstand shock | 5 G |
| (9) Atmosphere | Don't dew and freeze, and must not contain much dust, smoke, corrosive gas, flammable gas, vapor, and salt. |

Installation

Direct mounting

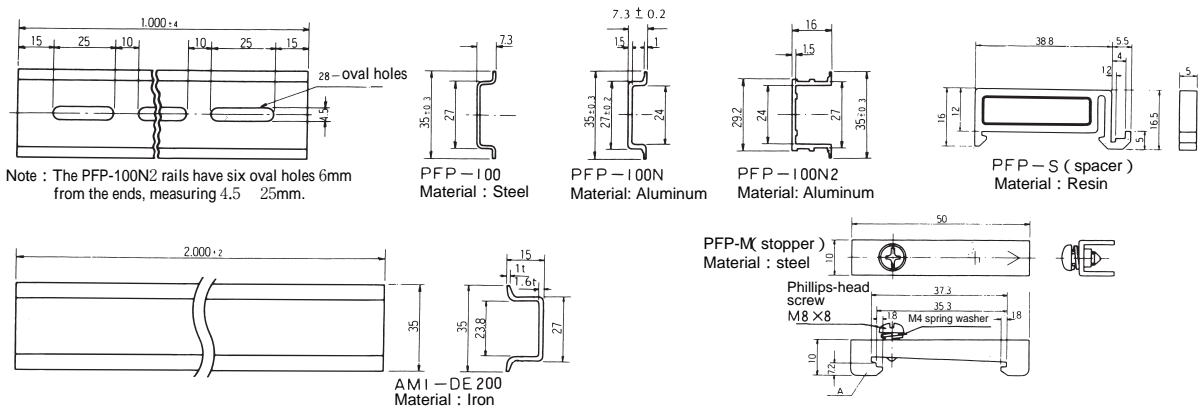
- Select a well-ventilated location free of excessive dust and vibration.
- Install vertically on a solid surface as shown. A maximum inclination of 30° is allowable. The power side of the line terminals should be on the top.



Standard Mounting Position

DIN rail mounting

- Applicable rails
Mounts on 35-mm wide rails conforming to DIN, IEC and JIS C2812. Rail shape and dimensions are as below.



Note : The PFP-100N2 rails have six oval holes 6mm from the ends, measuring 4.5 x 25mm.

PFP-100
Material : Steel

PFP-100N
Material: Aluminum

PFP-100N2
Material: Aluminum

PFP-S (spacer)
Material : Resin

AMI-DE 200
Material : Iron

PFP-M (stopper)
Material : steel

① Note : The PFP-100N2 rails have six oval holes 6mm from the ends, measuring 4.5 x 25 mm.

② Note : PFP-100 (steel) and AMI-DE200 (steel) cannot be used with the PAK-11J to 21J.

- Rail mounting screw pitch

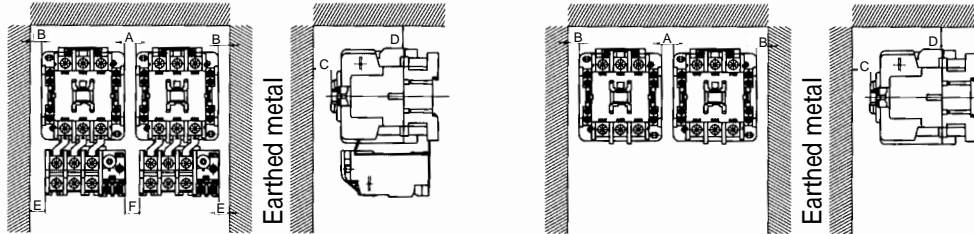
When installing the rails, use the following screw pitch to assure sufficient mechanical strength.

Frame Rail height (mm)	6JC 12J, 11J 20J, 21J, 8JS	26J 35J	50H-DN 65H-DN 80H-DN
	7.5 (7.3)	250	200
15 , 16	500	500	500

HANDLING INSTRUCTIONS

Mounting space

For mounting more than one magnetic starters in a row, make sure that the space between the units is more than the distance indicated in the table below. Also, be sure that the space between the starter and other metallic items is more than the distance indicated below.



Model	Space (mm)					
	A	B	C	D	E	F
PAK-6JTC, 6JGTC	5	5	5	10	5	5
PAK-11JTC, 12JTC, 11JGTC, 12JGTC	5	5	5	10	5	5
PAK-20JTC ~ 35JTC, 20JGTC ~ 35JGTC	5	5	5	10	5	5
PAK-50HTC ~ 80HTC	5	5	5	30	-	-
PAK-100HTC, 125HTC	5	5	5	40	-	-
PAK-150HTC	5	10	5	50	-	-
PAK-220HTC	-	-	5	50	10	15
PAK-300HT, 400HT	10	10	35	50	-	-
PAK-600HT	10	10	1	50	-	-

Notes . ①The space indicates the distance from the largest part of the product.
 ②Dimension D for PAK-150HT, to 600HT is from the edge of the main circuit terminal.
 ③Also applies to magnetic starters with 3-element thermal overload relays.

Model	Space (mm)			
	A	B	C	D
PAK-6JC	5	5	5	10
PAK-11J, 12J	5	5	5	10
PAK-20J ~ 35J	5	5	5	10
PAK-50H ~ 80H	5	5	5	30
PAK-100H, 125H	5	5	5	40
PAK-150H	5	10	5	50
PAK-220H	20	20	5	50
PAK-300H, 400H	10	10	35	50
PAK-600H, 800H	10	10	1	50

Notes . ①The space indicates the distance from the largest part of the product.
 ②Dimension D for PAK-150H to 800H is from the edge of the main circuit terminal.

Applicable wire size and tightening torque

Please follow installation instructions carefully for wiring. Incorrect installing of terminal screws will result accidents due to overheating of connecting points and disconnecting of wires. Screws should be properly installed in accordance with the specified values given in the table below.

Item	Screw size		Applicable wire			Applicable crimp-type terminals		Tightening torque N·m (kgf·cm)													
	Main circuit		Aux. circuit	Main circuit		Main circuit		Main circuit		Aux. circuit											
	Contactor	Thermal		Contactor	Thermal	Contactor	Thermal	Contactor	Thermal												
J Series	PAK-6JC	M 3.5	M 4	⑥ M3.5	1 ~ 1.6 0.5 ~ 2mm ^⑤	1.25-3.5-2-3.5	1.25-4-5.5-4	1.25-3.5	0.8-1.2	1.2-1.8	0.8 ~ 1.2 { 8 ~ 12 }										
	PAK-11J								{ 8-12 }	{ 12-18 }											
	PAK-12J	1.2 ~ 1.8 { 12 ~ 18 }																			
	PAK-20J		1.25-4 ~ 5.5-4																		
	PAK-21J																				
PAK-26J	M 5	M 5	1.6 ~ 3.2 1.25 ~ 14mm ^⑤	1.25-5 ~ 14-5	1.25-3.5	2.4 ~ 3.5 { 24 ~ 36 }															
PAK-35J	1.6 ~ 3.2 1.25 ~ 14mm ^⑤		1.25-5 ~ 14-5	2-3.5		3.9 ~ 5.9 { 40 ~ 60 }															
H Series	PAK-50H	M 6	M 6	⑤ 1 ~ 1.6 0.5 ~ 2mm ^⑤	① 2-6-38-6S	① 2-6-38-6S	1.25-3.5	2-3.5	3.9 ~ 5.9	0.8 ~ 1.2 { 8 ~ 12 }											
	PAK-65H	M 6							⑤ 2 ~ 38mm ^⑤		① 2-6-38-6S	① 2-6-38-6S	1.25-3.5	2-3.5	30.4 ~ 46.1 { 310 ~ 470 }						
	PAK-80H														M 8	⑤ 2 ~ 80mm ^⑤	② 2-8 ~ CB80-8	② 2-8 ~ CB80-8	1.25-4	2-4	9.0 ~ 13.5 { 92 ~ 138 }
	PAK-100H																				M 10
	PAK-125H	M 12							⑤ 2 ~ 200mm ^⑤		② 2-12 ~ 200-12	② 2-12 ~ 200-12	1.25-3.5	2-3.5	30.4 ~ 46.1 { 310 ~ 470 }						
	PAK-150H														M 12	⑤ 2 ~ 200mm ^⑤	② 2-12 ~ 200-12	② 2-12 ~ 200-12	1.25-3.5	2-3.5	30.4 ~ 46.1 { 310 ~ 470 }
	PAK-220H	M 16							⑤ 2 ~ 325mm ^⑤		② 2-16 ~ 325-16	② 2-16 ~ 325-16	1.25-4	2-4							75.5 ~ 114.7 { 770 ~ 1170 }
	PAK-300H																				M 12
	PAK-400H	M 12							⑤ 2 ~ 325mm ^⑤		② 2-12 ~ 200-12	② 2-12 ~ 200-12	1.25-4	2-4	75.5 ~ 114.7 { 770 ~ 1170 }						
PAK-600H	M 12		③ M 4	④ M 3.5	⑤ 2 ~ 325mm ^⑤	⑤ 2 ~ 325mm ^⑤	⑤ 2 ~ 325mm ^⑤	1.25-4		2-4					30.4 ~ 46.1 { 310 ~ 470 }						
PAK-800H		M 16							③ M 4		④ M 3.5	⑤ 2 ~ 325mm ^⑤	⑤ 2 ~ 325mm ^⑤	⑤ 2 ~ 325mm ^⑤	1.25-4	2-4	75.5 ~ 114.7 { 770 ~ 1170 }				

Notes . ① Standard 38-6 crimp-type terminal lug is too wide. Please use 38-6S (Nichifu Terminal Industries Co., Ltd.) or 38-S6 (Japan Solderless Terminal Mfg. Co., Ltd.)
 ② Standard 80-8 and 100-8 crimp-type terminal lugs are too wide. Please use CB-type terminal connectors for low-voltage switching devices (Nichifu Terminal Industries Co., Ltd.) or for molded case circuit breakers (Japan Solderless Terminal Mfg. Co., Ltd.)
 ③ Contactor side.
 ④ Thermal overload relay side.
 ⑤ Use crimp-type terminal connectors.
 ⑥ PAK-20J auxiliary circuit (magnetic contactor) same as main circuit.

HANDLING INSTRUCTIONS

Operating circuit control voltage

The voltage and frequency of the operating circuit should be the same as the rated voltage and frequency of the operating coil. If the voltage is greater than 100% of the rated voltage of the coil, this will result various deteriorations for coil insulation and for mechanical and electrical performances. At the closing, if the control voltage is less than the minimum operating voltage of contactors, it may cause the coil burning out because of small coil impedance, contact chattering or contact welding.

Handling thermal overload relays

Do not touch the inside of the thermal overload relays.

If the motor stops because of the tripping operation of thermal overload relay, gently press down the reset button for resetting only after the cause is traced and removed.

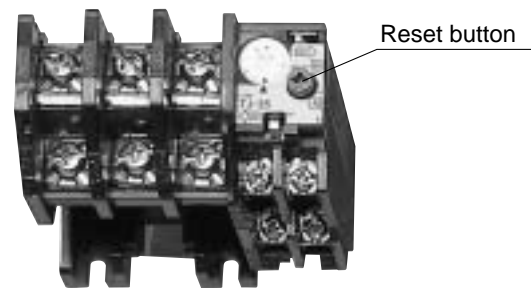
(Factory setting is manual reset.)

In case of TJ-18 ~ 220, if auto resetting is desired, press the reset button down and turn it 90 degree clockwise.

In case of T-400 and T-600, press the reset button down and turn it 90 degree anticlockwise.

by automatic resetting of the thermal overload relay .

This may result in motor burnout if care is not taken.



Protection coordination

For direct on-line starting, most magnetic starters have a switching capacity of ten times the rated current, and cannot break a short-circuit current. As a result, they are used cooperating with fuse or NFB (no-fuse breaker). If the protection coordination is not good, contact welding or heater burning out of thermal overload relays will occur at the short-circuit accident. Heaters will burn out even under the momentary short-circuit current that flows before the NFB or fuse operates. This burning out is easy to cause for 5A to 16A ratings, however ratings at 5A or less, the heater acts as a resistor reducing the short-circuit current and burning out will not always occur. The short-circuit current is reduced for heaters with smaller capacity, prolonging the breaking time and allowing the short-circuit current to flow for a longer period of time. This may cause a damage to the bimetal plate by overheating.

Application in the circuit exceeding AC380V

when using solderless terminals for the circuit exceeding AC380V, use of solderless terminals with insulation tube is recommended.

Auxiliary contact terminal(NC)

When NC auxiliary contact terminal is inserted into the magnetic contactor and the magnetic relay, be sure to push the contactor rod before in section. (When the terminal falls out, or inspection)

Maintenance

- Contact tips

The contact tips will discolor slightly and become irregular in using, but this will not affect their performance. Do not file the tips, as this will shorten their contact life. Contacts should be replaced when the thickness of the contact tips becomes half the size of new ones. All three phases should be replaced at the same time.

- Core

To minimize hum level, contact surfaces of cores are polished to a high degree of flatness and coated with a corrosion-resistant finish, as well as being matched to the shading coil, movable core and fixed core. However, in long-term storage, dirt, iron filings, and rust through humidity on the core surfaces may cause core humming. So appropriate storage conditions are highly requested.

- Do not lubricate

Abrasion of moving parts is very small. The switch is designed to operate with stable characteristics. Lubrication may cause the magnetic contactors to prevent its normal operations. Please exercise caution, especially when used in oil-operated machinery.

Cautions

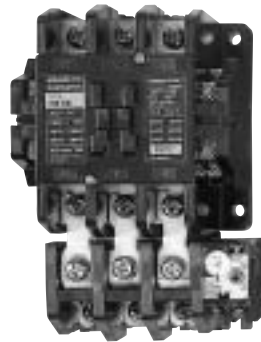
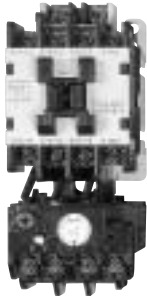
When a contact welding is occurred by causes indicated below, there will be the danger such as reckless driving of machines and abnormal heat of the heater.

Please use with the consideration for the safety supposing the failure of making and breaking operations by mechanical rocking or contact welding.

Moreover, the thermal overload relay cannot protect these phenomena.

- Making and breaking of excessive current.
- Abnormal consumption of contact-tip and the life of contact-tip.
- Secular change.
- Chattering by the control relay.
- Instantaneous voltage drop of the power supply.

STANDARD MAGNETIC STARTERS AND CONTACTORS



Model identification

PAK — 20 JT 20 — A C

Type
PAK ...Standard model

Model		
J	H	
6	50	300
11	65	400
12	80	600
20	100	800
21	125	
26	150	
35	220	

J	H	Specifications
J	H	Magnetic contactor ① (without enclosure)
JT	HT	Magnetic starter (without enclosure)
JM	HM	Magnetic starter (with enclosure)
JB	HB	Magnetic contactor (with enclosure)

注 ① Only PAK-6J accompanies "c" at the end of model name.

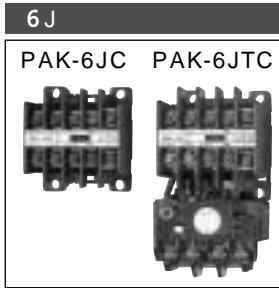
Aux. contact configuration
PAK-6JC, 11J
12J, 20J
Blank.....1NO
31.....1NC
PAK-21J
Blank.....1NO1NC
20.....2NO
02.....2NC
PAK-26J ~ 200H
Blank.....2NO2NC
PAK-300, 400H
Blank.....3NO3NC
PAK-600, 800H
Blank.....4NO4NC

Options
A...Ammeter
D...Pushbutton

Career mark
Only magnetic starter However, except 300HT ~ 600HT

Ratings, performance and specifications

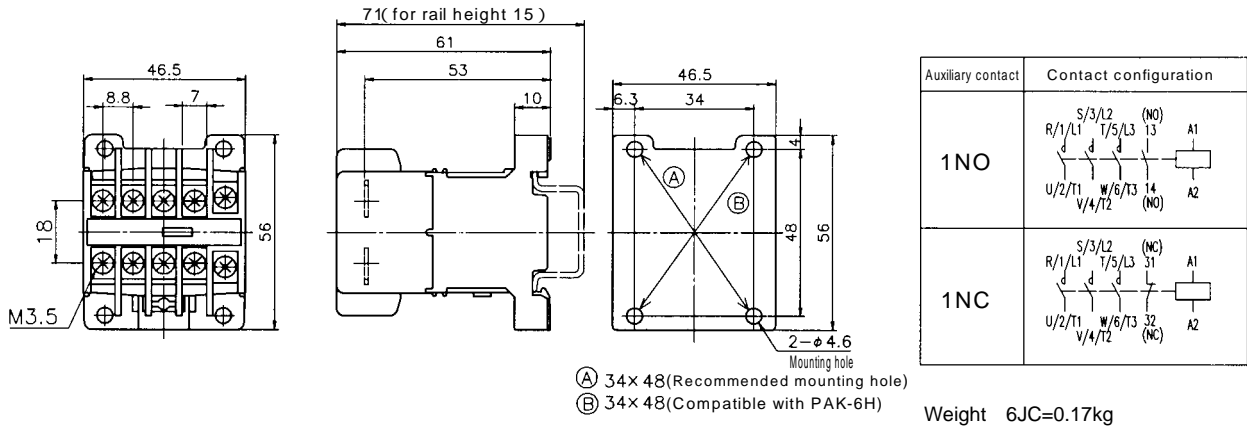
Item	Page
Rated capacity and operational current	7
Application for standard motors	9
Characteristics and performance	10 ~ 12
Auxiliary contact ratings	7
Operating coil ratings	8
Applicable wire size and tightening torque	16
Thermal overload relays	57 ~ 74



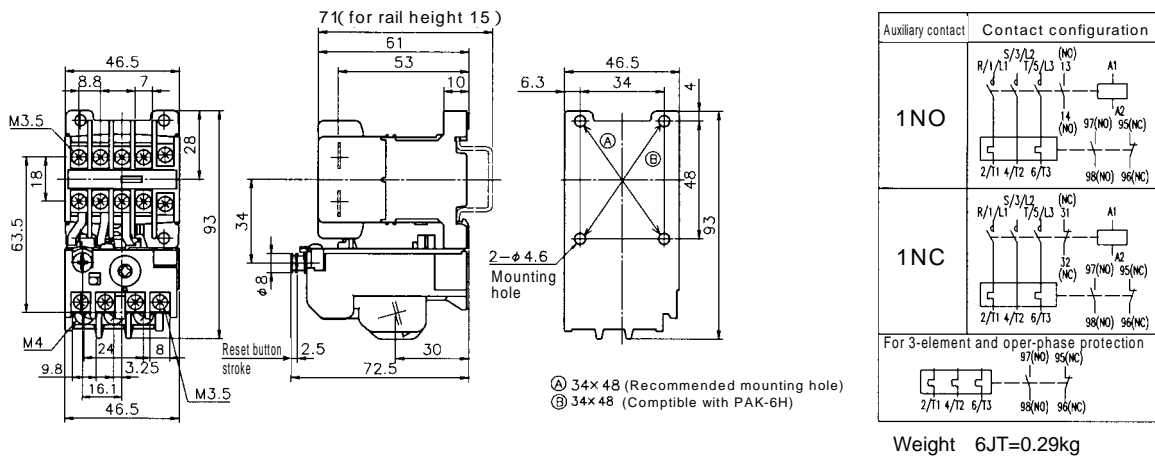
Ratings		Frame	6J
Rated capacity	AC-3 (kW)	240V	2.2
		440V	4
		550V	4
	AC-1 (A) (500,000 ops)	240V	15
		440V	15
		550V	15

Applicable wire size and tightening torque					
		Screw size	Applicable wire size	Applicable terminal connector	Tightening torque N·m(kgf·cm)
Contactor	Main circuit	M3.5	1 ~ 2	1.25 - 3.5	0.8 ~ 1.2 (8 ~ 12)
	Aux. circuit		0.5 ~ 2mm ^φ		
Thermal overload relay	Main circuit	M4	1 ~ 2	1.25 - 4	1.2 ~ 1.8 (12 ~ 18)
	Aux. circuit	M3.5	0.5 ~ 5.5mm ^φ	5.5 - 4	0.8 ~ 1.2 (8 ~ 12)

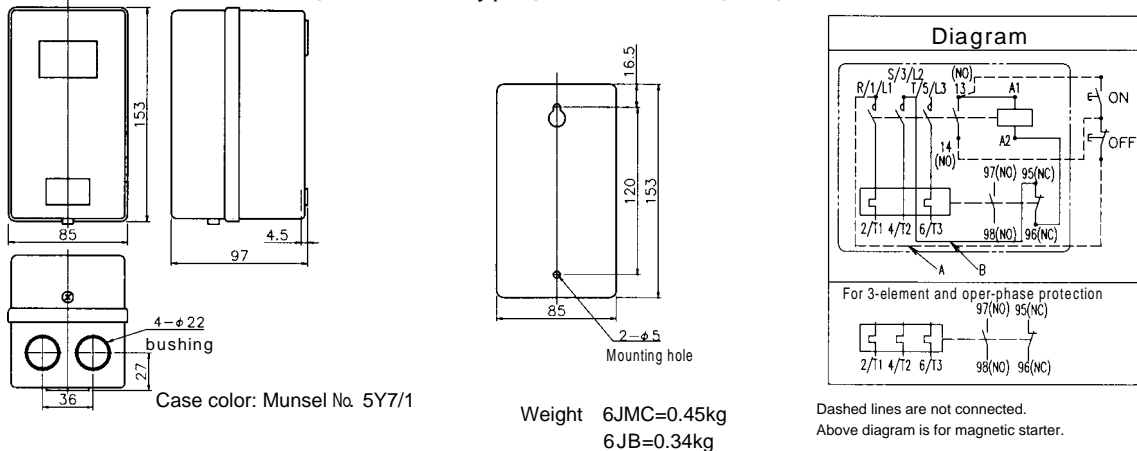
Magnetic contactor (open type) PAK-6JC



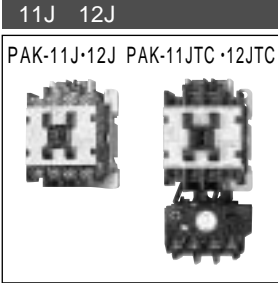
Magnetic starter (open type) PAK-6JTC



Magnetic starter · contactor (enclosed type) PAK-6JMC (JB)



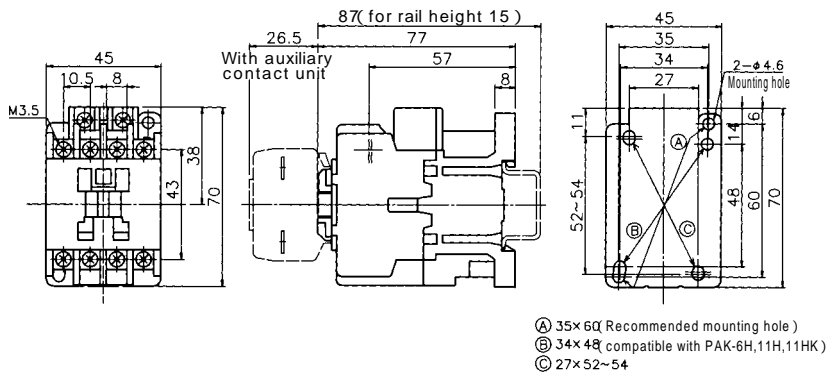
① If operating from other power source, remove " B ", and connect the supply to #95 and " A " on the pushbutton terminal.



Ratings		11J	12J	
Rated capacity	Frame	11J	12J	
		AC-3 (kW)	240V 3.7	4
		440V 4.5	5.5	
	550V 4.5	5.5		
	AC-1 (A) (500,000 ops)	240V	20	26
		440V	20	26
550V		20	26	

Applicable wire size and tightening torque					
		Screw size	Applicable wire size	Applicable terminal connector	Tightening torque N·m (kgf·cm)
Contactor	Main circuit	M3.5	1 ~ 2	1.25 - 3.5	0.8 ~ 1.2 (8 ~ 12)
	Aux. circuit		0.5 ~ 2mm ²		
Thermal overload relay	Main circuit	M4	1 ~ 2	1.25 - 4	1.2 ~ 1.8 (12 ~ 18)
	Aux. circuit		0.5 ~ 5.5mm ²		
		M3.5	1 ~ 2	1.25 - 3.5	0.8 ~ 1.2 (8 ~ 12)

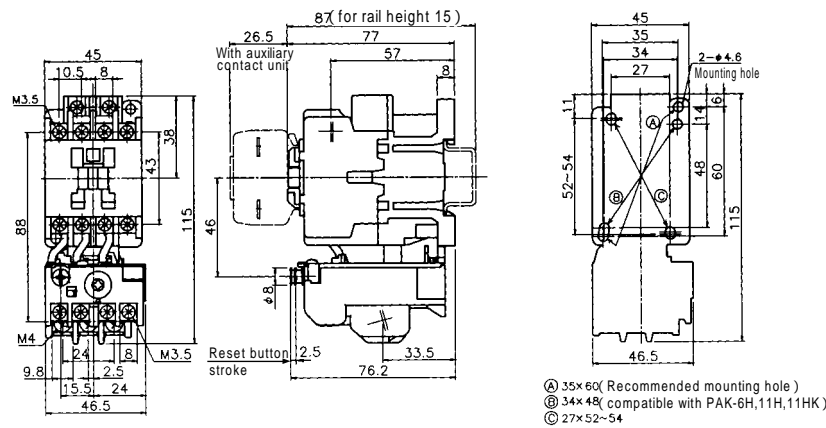
Magnetic contactor (open type) PAK-11J · 12J



Auxiliary contact	Contact configuration
1NO	<p>S/3/L2 (NO) 13 R/1/L1 1/5/L3 14 U/2/T1 W/6/T3 V/4/T2 A1 A2</p>
1NC	<p>S/3/L2 (NC) 31 R/1/L1 1/5/L3 32 U/2/T1 W/6/T3 V/4/T2 A1 A2</p>

Weight 11J · 12J=0.3kg

Magnetic starter (open type) PAK-11JTC · 12JTC



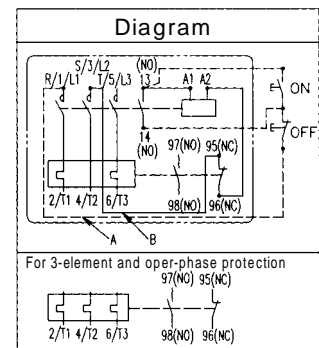
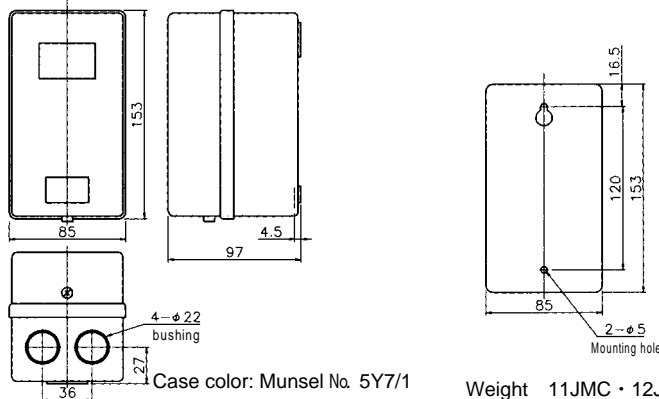
Auxiliary contact	Contact configuration
1NO	<p>S/3/L2 (NO) 13 R/1/L1 1/5/L3 14 U/2/T1 W/6/T3 V/4/T2 A1 A2 97(NO) 95(NC) 98(NO) 96(NC)</p>
1NC	<p>S/3/L2 (NC) 31 R/1/L1 1/5/L3 32 U/2/T1 W/6/T3 V/4/T2 A1 A2 97(NO) 95(NC) 98(NO) 96(NC)</p>

For 3-element and open-phase protection
 97(NO) 95(NC)

 2/T1 4/T2 6/T3 98(NO) 96(NC)

Weight 11JTC · 12JTC=0.4kg

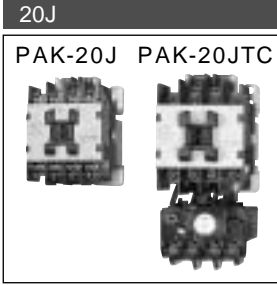
Magnetic starter · contactor (enclosed type) PAK-11JMC (JB) · 12JMC (JB)



Weight 11JMC · 12JMC=0.57kg
 11JB · 12JB=0.46kg

Dashed lines are not connected.
 Above diagram is for magnetic starter.

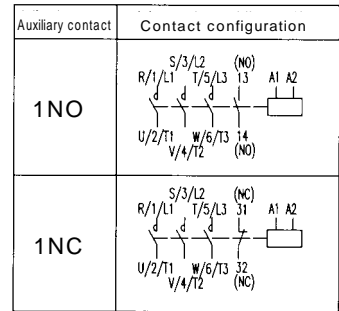
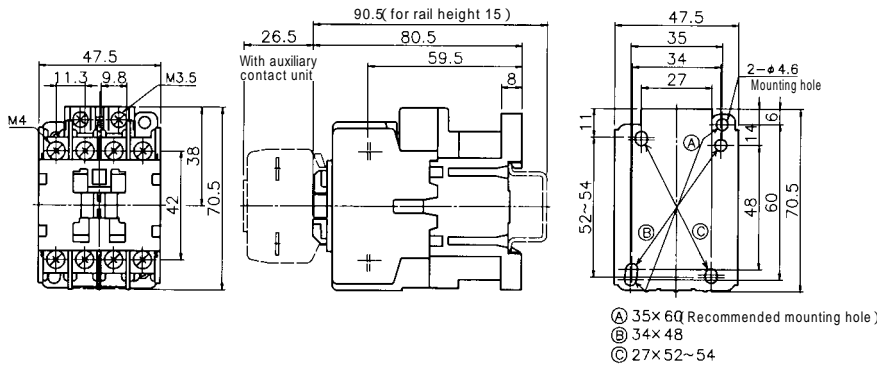
① If operating from other power source, remove " B ", and connect the supply to #95 and " A " on the pushbutton terminal.



Ratings			
Rated capacity	Frame		20J
	AC-3 (kW)	240V	7.5
		440V	11
		550V	11
	AC-1 (A) (500,000 ops)	240V	32
		440V	32
550V		32	

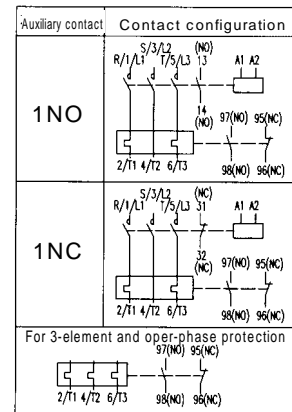
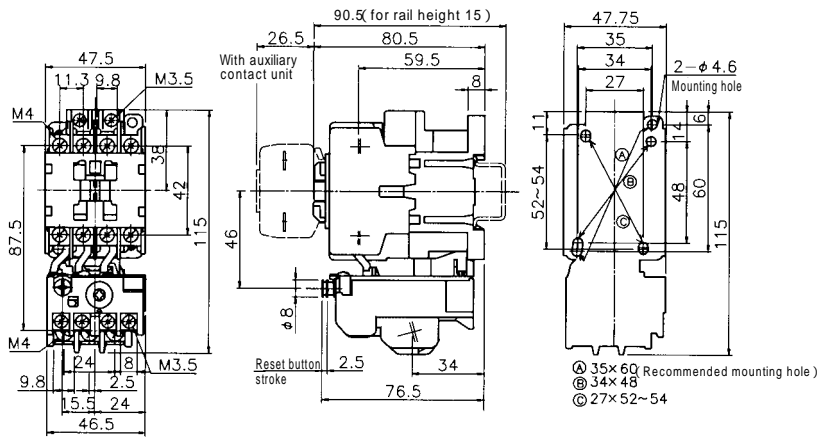
Applicable wire size and tightening torque					
		Screw size	Applicable wire size	Applicable terminal connector	Tightening torque N·m(kgf·cm)
Contactor	Main c.	M4	1-2	1.25-4	1.2-1.8
	Aux c.		0.5-3.5mm ²	5.5-4	(12-18)
Thermal overload relay	coil circuit	M3.5	1-1.6	1.25-3.5	0.8-1.2
			0.5-2mm ²	2-3.5	(8-12)
	Main circuit	M4	1-2	1.25-4	1.2-1.8
	Aux. circuit		0.5-3.5mm ²	5.5-4	(12-18)
		M3.5	1-1.6	1.25-3.5	0.8-1.2
			0.5-2mm ²	2-3.5	(8-12)

Magnetic contactor (open type) PAK-20J



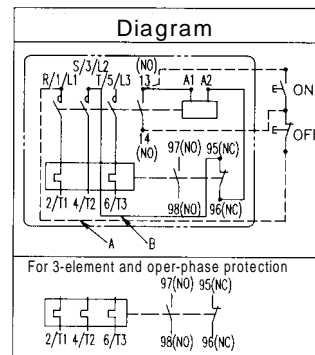
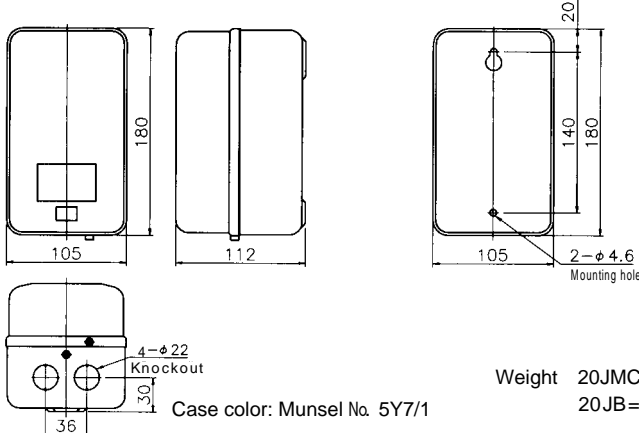
Weight 20J=0.32kg

Magnetic starter (open type) PAK-20JTC

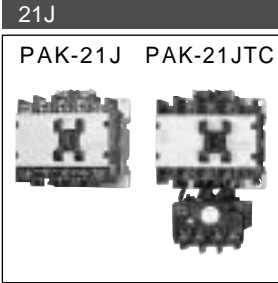


Weight 20JTC=0.42kg

Magnetic starter · contactor (enclosed type) PAK-20JMC (JB)



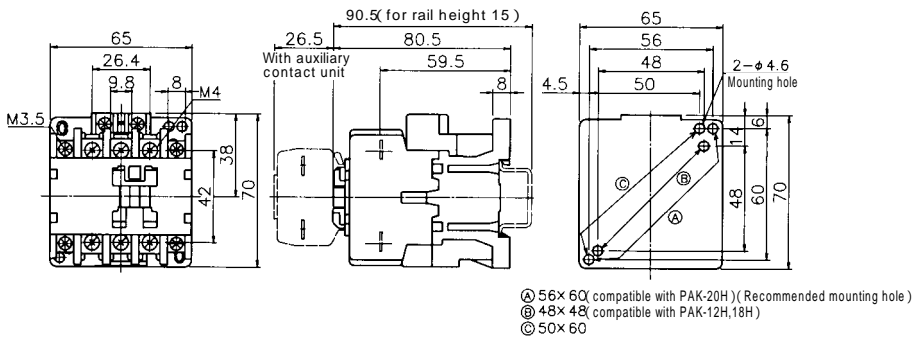
① If operating from other power source, remove " B ", and connect the supply to #95 and " A " on the pushbutton terminal.



Ratings		21J	
Rated capacity	Frame	21J	
		AC-3 (kW)	7.5
		AC-1 (A) (500,000 ops)	32
	AC-3 (kW)	240V	7.5
		440V	11
		550V	11
AC-1 (A) (500,000 ops)	240V	32	
	440V	32	
	550V	32	

Applicable wire size and tightening torque					
		Screw size	Applicable wire size	Applicable terminal connector	Tightening torque N·m (kgf·cm)
Contactor	Main circuit	M4	1 ~ 2 0.5 ~ 3.5mm ²	1.25-4 5.5-4	1.2 ~ 1.8 (12 ~ 18)
	Aux. circuit	M3.5	1 ~ 1.6 0.5 ~ 2mm ²	1.25-3.5 2-3.5	0.8 ~ 1.2 (8 ~ 12)
Thermal overload relay	Main circuit	M4	1 ~ 2 0.5 ~ 3.5mm ²	1.25-4 5.5-4	1.2 ~ 1.8 (12 ~ 18)
	Aux. circuit	M3.5	1 ~ 1.6 0.5 ~ 2mm ²	1.25-3.5 2-3.5	0.8 ~ 1.2 (8 ~ 12)

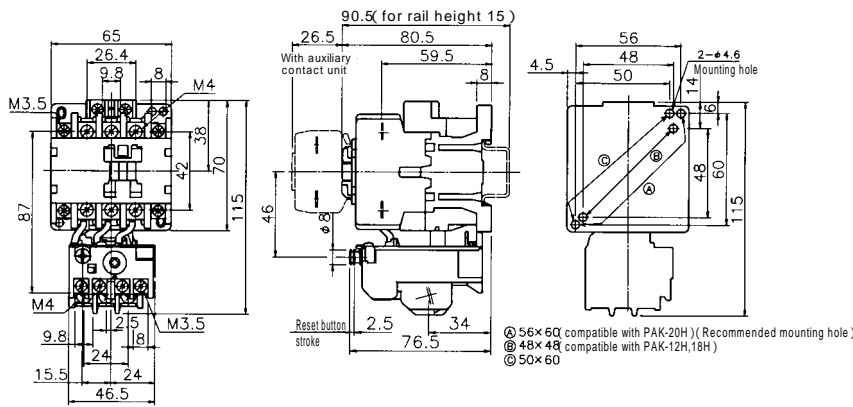
Magnetic contactor (open type) PAK-21J



Auxiliary contact	Contact configuration
1NO1NC	<p>(NO) 13 R/1/L1 S/3/L2 T/5/L3 31 (NC) A1A2 14 U/2/T1 W/6/T3 32 (NO) V/4/T2</p>
2NO	<p>(NO) 13 R/1/L1 S/3/L2 T/5/L3 23 (NO) A1A2 14 U/2/T1 W/6/T3 24 (NO) V/4/T2</p>
2NC	<p>(NC) 31 R/1/L1 S/3/L2 T/5/L3 41 (NC) A1A2 32 U/2/T1 W/6/T3 42 (NC) V/4/T2</p>

Weight 21J=0.36kg

Magnetic starter (open type) PAK-21JTC

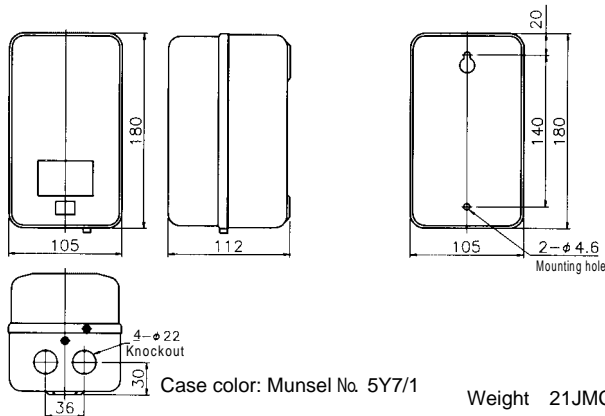


Auxiliary contact	Contact configuration
1NO1NC	<p>(NO) 13 R/1/L1 S/3/L2 T/5/L3 31 (NC) A1A2 14 U/2/T1 W/6/T3 32 (NO) V/4/T2 97(NO) 95(NC) 98(NO) 96(NC)</p>
2NO	<p>(NO) 13 R/1/L1 S/3/L2 T/5/L3 23 (NO) A1A2 14 U/2/T1 W/6/T3 24 (NO) V/4/T2 97(NO) 95(NC) 98(NO) 96(NC)</p>
2NC	<p>(NC) 31 R/1/L1 S/3/L2 T/5/L3 41 (NC) A1A2 32 U/2/T1 W/6/T3 42 (NC) V/4/T2 97(NO) 95(NC) 98(NO) 96(NC)</p>

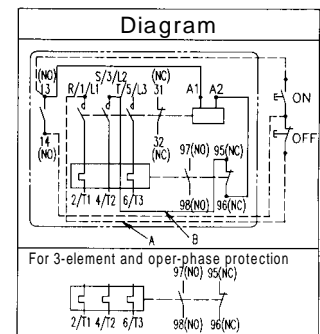
For 3-element and oper-phase protection
 97(NO)95(NC)
 2/71 4/72 6/73 98(NO)96(NC)

Weight 21JTC=0.47kg

Magnetic starter · contactor (enclosed type) PAK-21JMC (JB)

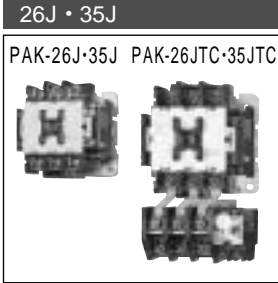


Weight 21JMC=1.05kg
 21JB=0.94kg



Dashed lines are not connected.
 Above diagram is for magnetic starter.

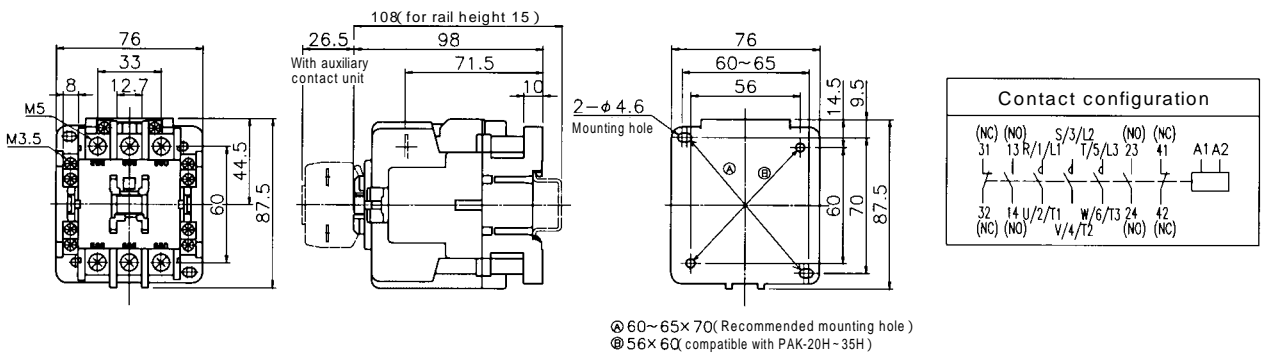
① If operating from other power source, remove " B ", and connect the supply to #95 and " A " on the pushbutton terminal.



Ratings		26J	35J
Rated capacity	AC-3 (kW)	240V	10
		440V	20
		550V	26
	AC-1 (A) (500,000 ops)	240V	50
		440V	60
		550V	60

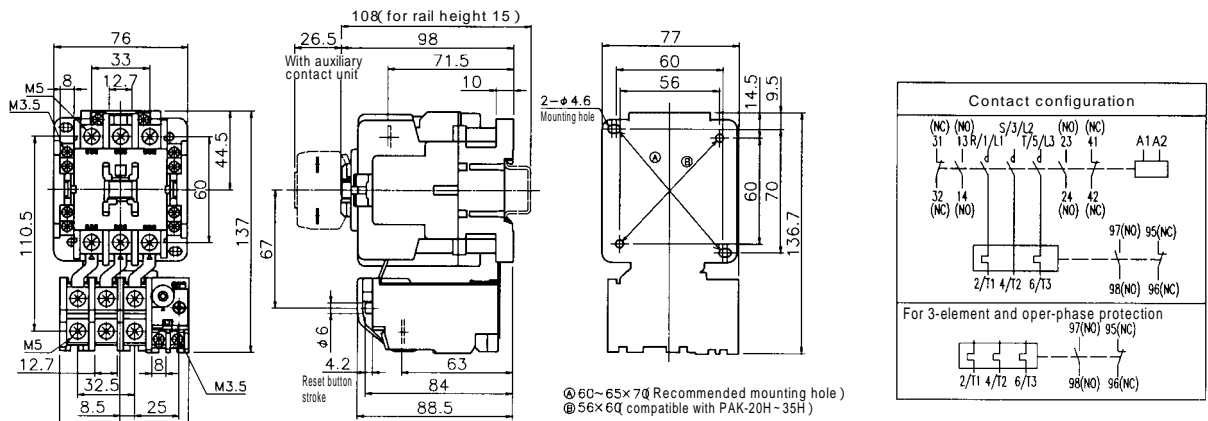
Applicable wire size and tightening torque					
		Screw size	Applicable wire size	Applicable terminal connector	Tightening torque N·m(kgf·cm)
Contactor	Main circuit	M5	1.6 ~ 3.2 1.25 ~ 14mm ²	1.25-5 14-5	2.4 ~ 3.5 (24 ~ 36)
	Aux. circuit	M3.5	1 ~ 1.6 0.5 ~ 2mm ²	1.25-3.5 2-3.5	0.8 ~ 1.2 (8 ~ 12)
Thermal overload relay	Main circuit	M5	1.6 ~ 3.2 1.25 ~ 14mm ²	1.25-5 14-5	2.4 ~ 3.5 (24 ~ 36)
	Aux. circuit	M3.5	1 ~ 1.6 0.5 ~ 2mm ²	1.25-3.5 2-3.5	0.8 ~ 1.2 (8 ~ 12)

Magnetic contactor (open type) PAK-26J · 35J



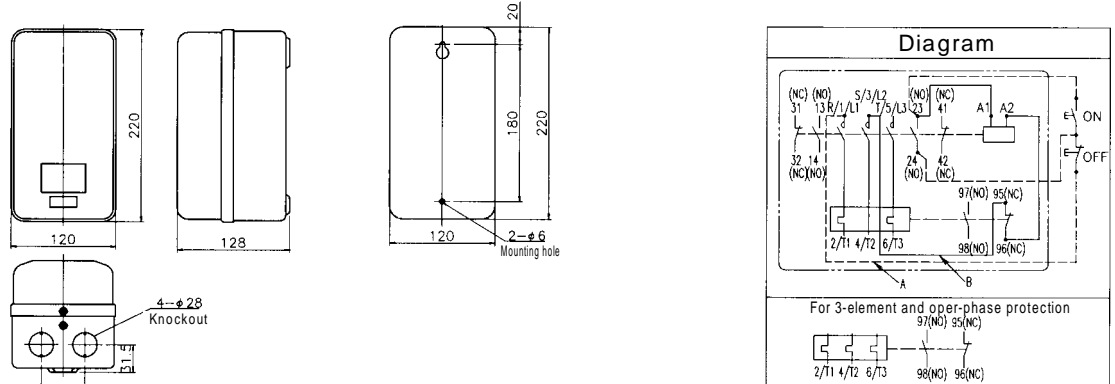
Weight 26J · 35J=0.68kg

Magnetic starter (open type) PAK-26JTC · 35JTC



Weight 26JTC · 35JTC=0.91kg

Magnetic starter · contactor (enclosed type) PAK-26JMC (JB) · 35JMC (JB)



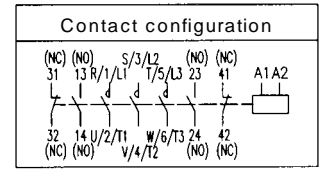
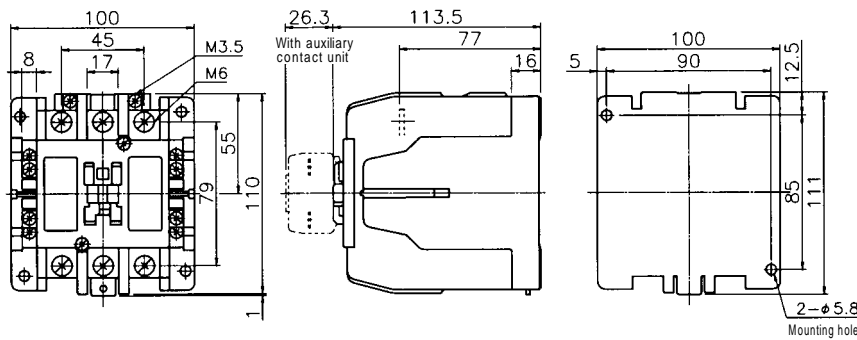
① If operating from other power source, remove " B ", and connect the supply to #95 and " A " on the pushbutton terminal.



Ratings		50H	65H	
Rated capacity	Frame	50H	65H	
		AC-3 (kW)	220V 15	19
		440V 30	37	
	550V 26	37		
	AC-1 (A) (500,000 ops)	220V 75	90	
		440V 75	90	
550V 75		90		

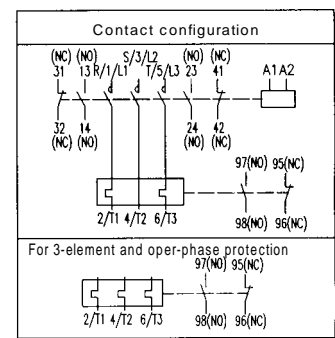
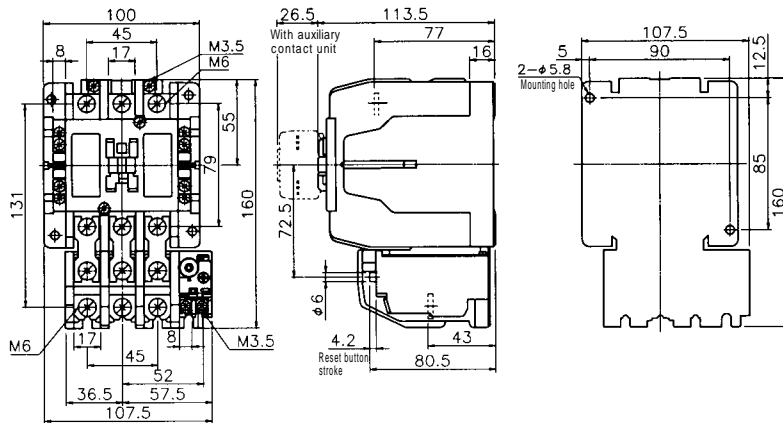
Applicable wire size and tightening torque					
		Screw size	Applicable wire size	Applicable terminal connector	Tightening torque N·m (kgf·cm)
Contactor	Main circuit	M6	2 ~ 38mm ² Using crimped terminals	2-6 38-6S	3.9 ~ 5.9 (40 ~ 60)
	Aux. circuit	M3.5	1 ~ 1.6 0.5 ~ 2mm ²	1.25-3.5	0.8 ~ 1.2 (8 ~ 12)
Thermal overload relay	Main circuit	M6	2 ~ 38mm ² Using crimped terminals	2-6 38-6S	3.9 ~ 5.9 (40 ~ 60)
	Aux. circuit	M3.5	1 ~ 1.6 0.5 ~ 2mm ²	1.25-3.5	0.8 ~ 1.2 (8 ~ 12)

Magnetic contactor (open type) PAK-50H · 65H



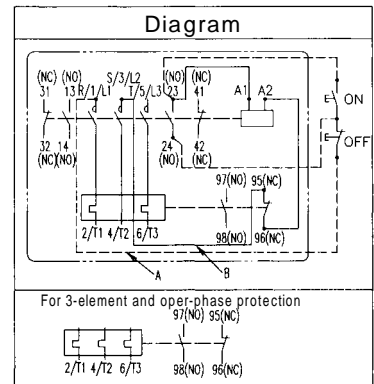
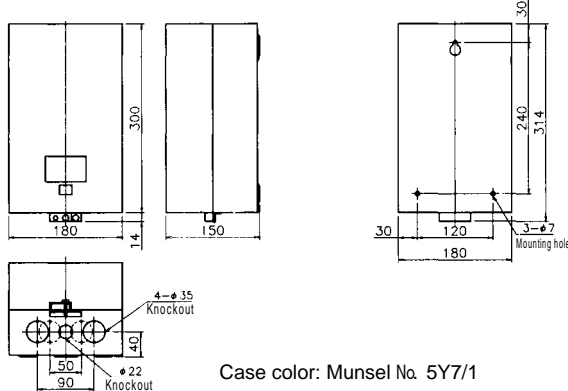
Weight 50H = 1.3kg , 65H = 1.5kg

Magnetic starter (open type) PAK-50HTC · 65HTC



Weight 50HTC = 1.7kg , 65HTC = 1.9kg

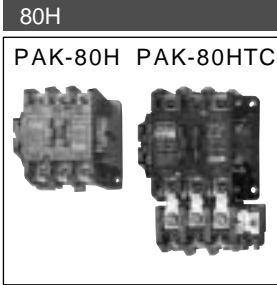
Magnetic starter · contactor (enclosed type) PAK-50HMC (HB) · 65HMC (HB)



Weight 50HMC = 3.78kg , 65HMC = 4.57kg
50HB = 3.38kg , 65HB = 4.17kg

Dashed lines are not connected.
Above diagram is for magnetic starter.

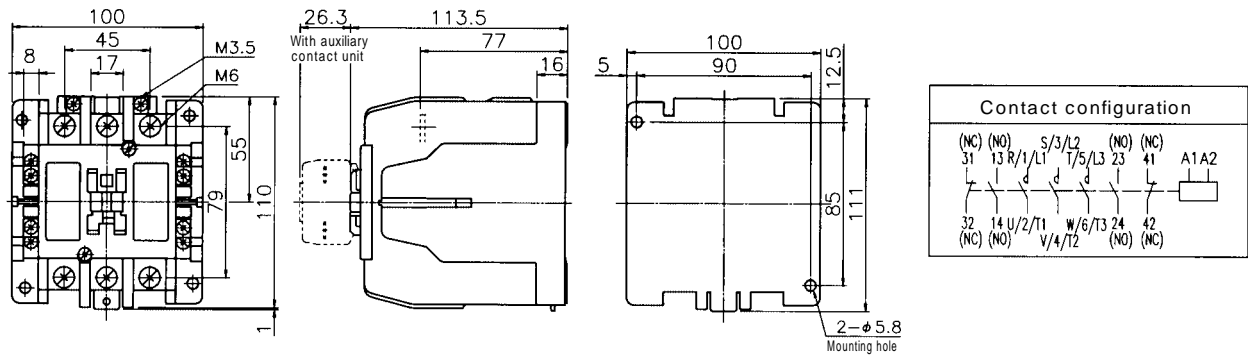
① If operating from other power source, remove " B ", and connect the supply to #95 and " A " on the pushbutton terminal.



Ratings			
Rated capacity	Frame		80H
	AC-3 (kW)	220V	22
		440V	45
		550V	45
	AC-1 (A) (500,000 ops)	220V	110
		440V	110
550V		110	

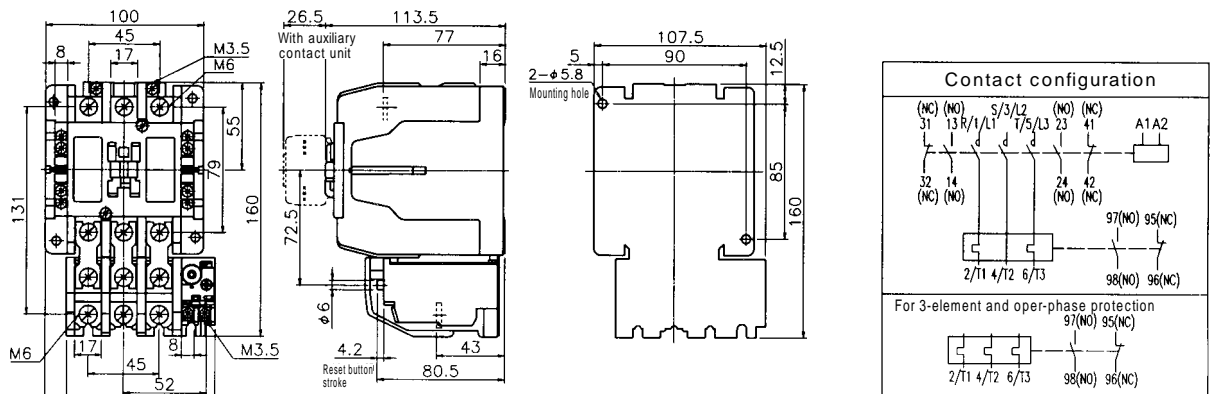
Applicable wire size and tightening torque					
		Screw size	Applicable wire size	Applicable terminal connector	Tightening torque N·m(kgf·cm)
Contactor	Main circuit	M6	2 ~ 38mm ² Using crimped terminals	2-6 38-6S	3.9 ~ 5.9 (40 ~ 60)
	Aux. circuit	M3.5	1 ~ 1.6 0.5 ~ 2mm ²	1.25-3.5 2-3.5	0.8 ~ 1.2 (8 ~ 12)
Thermal overload relay	Main circuit	M6	2 ~ 38mm ² Using crimped terminals	2-6 38-6S	3.9 ~ 5.9 (40 ~ 60)
	Aux. circuit	M3.5	1 ~ 1.6 0.5 ~ 2mm ²	1.25-3.5 2-3.5	0.8 ~ 1.2 (8 ~ 12)

Magnetic contactor (open type) PAK-80H



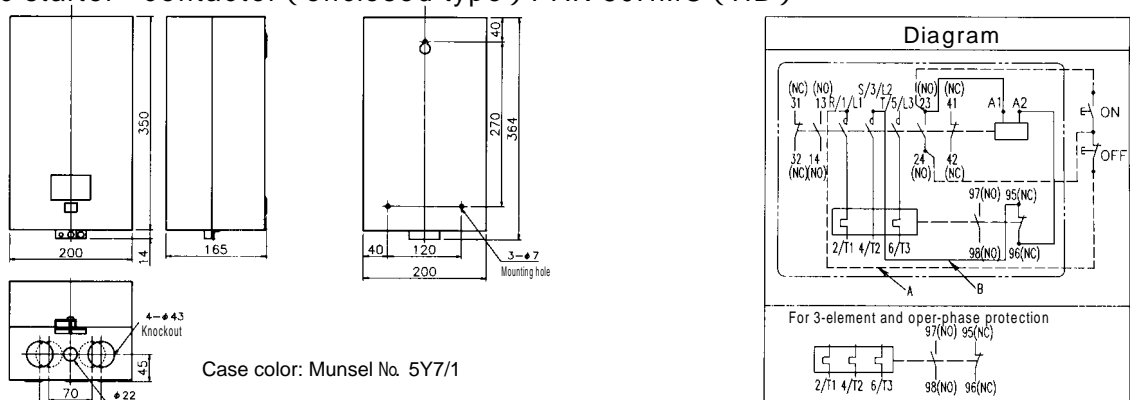
Weight 1.5kg

Magnetic starter (open type) PAK-80HTC



Weight 1.9kg

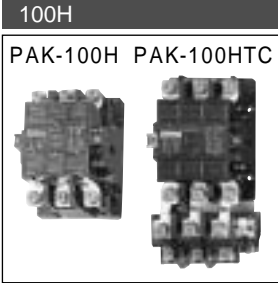
Magnetic starter · contactor (enclosed type) PAK-80HMC (HB)



Weight 80HMC = 4.57kg
80HB = 4.17kg

Dashed lines are not connected.
Above diagram is for magnetic starter.

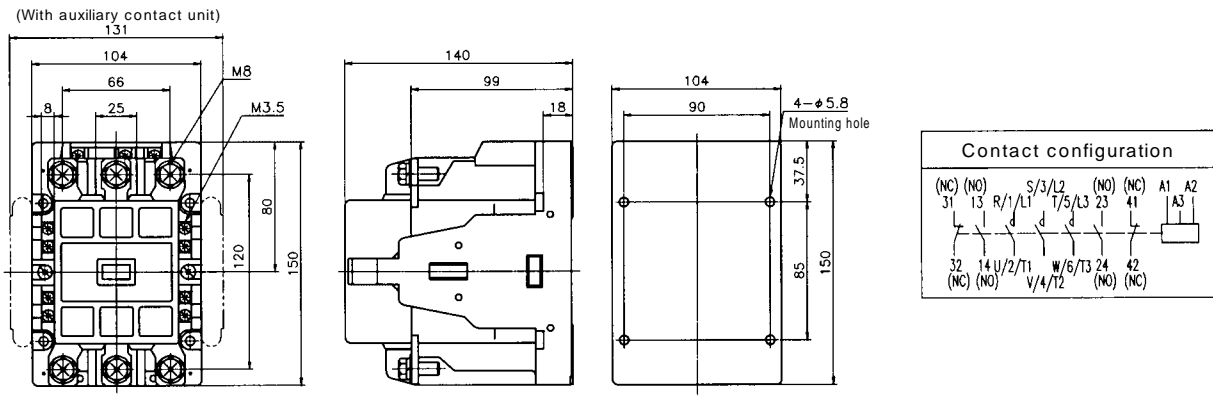
① If operating from other power source, remove " B ", and connect the supply to #95 and " A " on the pushbutton terminal.



Ratings		100H	
Rated capacity	AC-3 (kW)	220V	30
		440V	55
		550V	55
	AC-1 (A) (500,000 ops)	220V	150
		440V	150
		550V	150

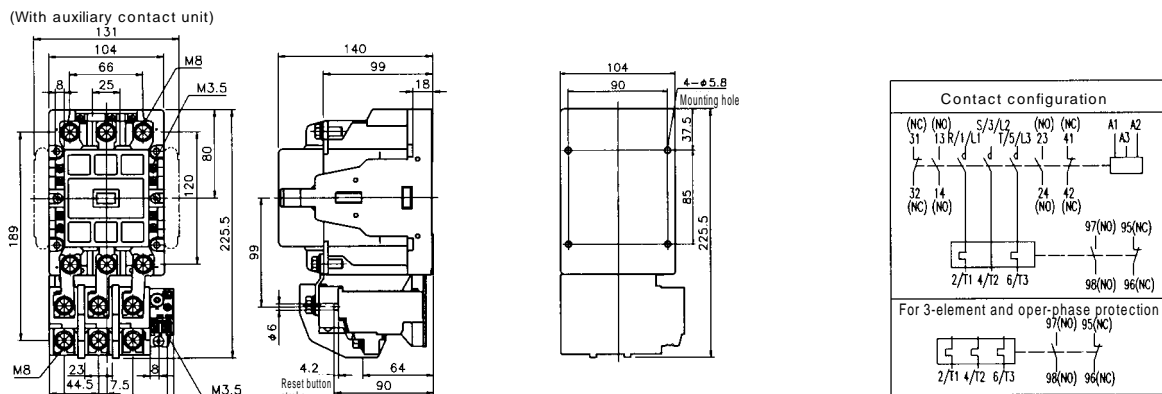
Applicable wire size and tightening torque					
		Screw size	Applicable wire size	Applicable terminal connector	Tightening torque N·m(kgf·cm)
Contactor	Main circuit	M8	2 ~ 80mm ² Using crimped terminals	2-8 CB80-8	9.0 ~ 13.5 (92 ~ 138)
	Aux. circuit	M3.5	1 ~ 1.6 0.5 ~ 2mm ²	1.25-3.5 2-3.5	0.8 ~ 1.2 (8 ~ 12)
Thermal overload relay	Main circuit	M8	2 ~ 80mm ² Using crimped terminals	2-8 CB80-8	9.0 ~ 13.5 (92 ~ 138)
	Aux. circuit	M3.5	1 ~ 1.6 0.5 ~ 2mm ²	1.25-3.5 2-3.5	0.8 ~ 1.2 (8 ~ 12)

Magnetic contactor (open type) PAK-100H



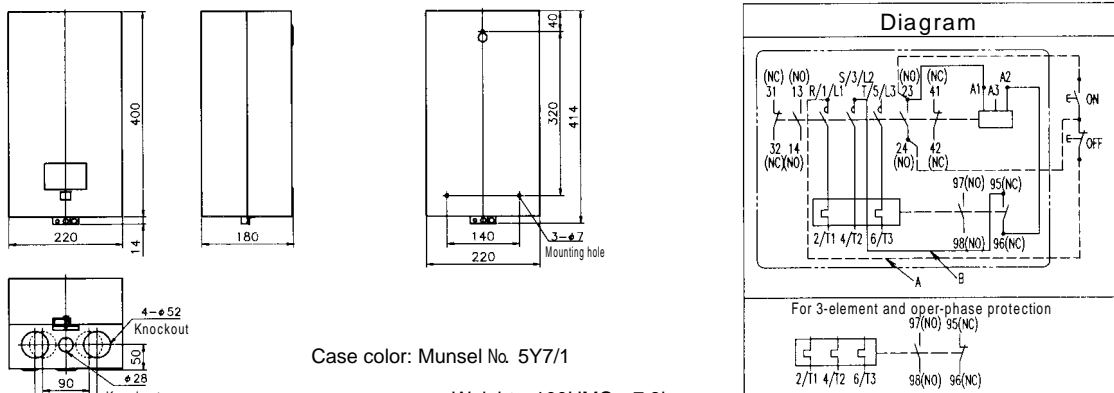
Weight 2.9kg

Magnetic starter (open type) PAK-100HTC



Weight 3.7kg

Magnetic starter · contactor (enclosed type) PAK-100HMC (HB)

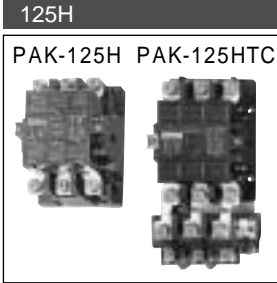


Case color: Munsel No. 5Y7/1

Weight 100HMC = 7.8kg
100HB = 7.0kg

Dashed lines are not connected.
Above diagram is for magnetic starter.

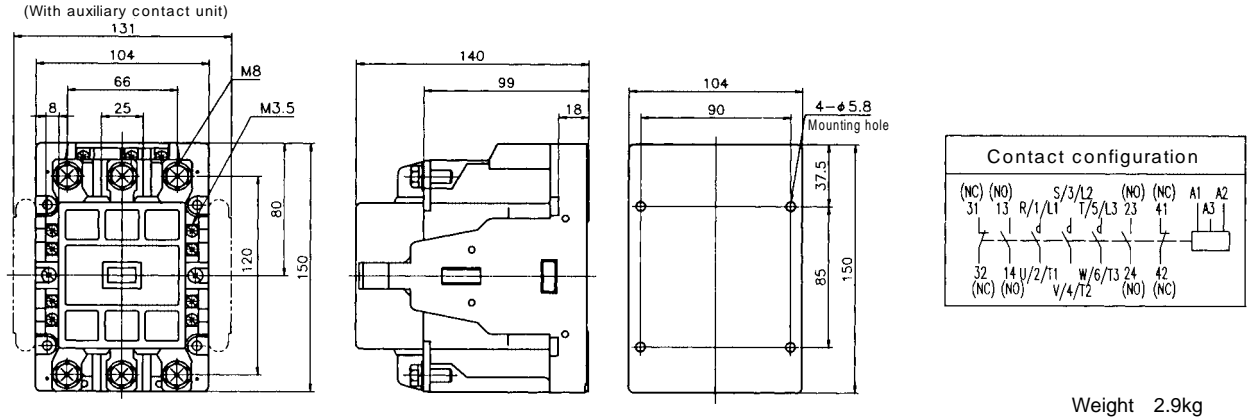
① If operating from other power source, remove " B ", and connect the supply to #95 and " A " on the pushbutton terminal.



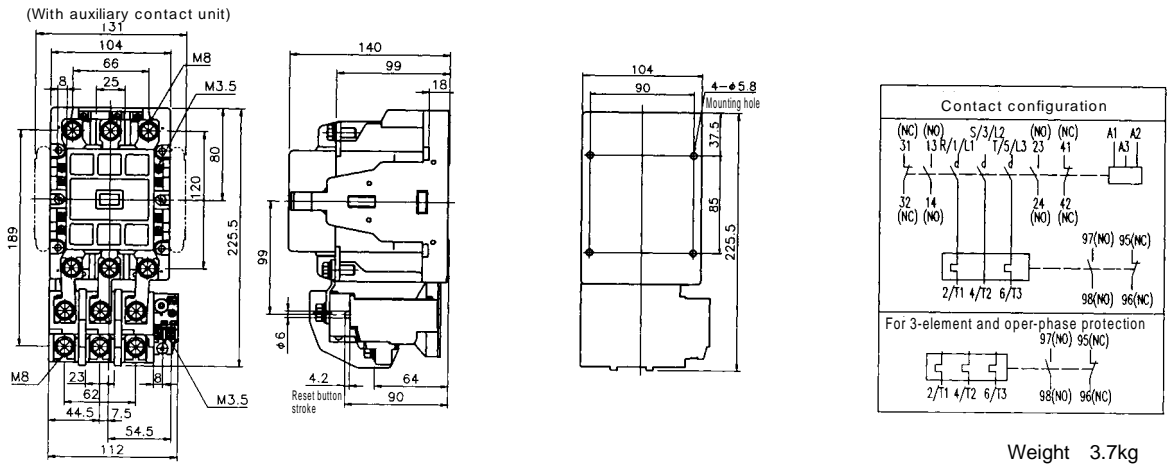
Ratings		Frame	125H
Rated capacity	AC-3 (kW)	220V	37
		440V	60
		550V	70
	AC-1 (A) (500,000 ops)	220V	170
		440V	170
550V		170	

Applicable wire size and tightening torque					
		Screw size	Applicable wire size	Applicable terminal connector	Tightening torque N·m(kgf·cm)
Contactor	Main circuit	M8	2 ~ 80mm ² Using crimped terminals	2-8 CB80-8	9.0 ~ 13.5 (92 ~ 138)
	Aux. circuit	M3.5	1 ~ 1.6 0.5 ~ 2mm ²	1.25-3.5 2-3.5	0.8 ~ 1.2 (8 ~ 12)
Thermal overload relay	Main circuit	M8	2 ~ 80mm ² Using crimped terminals	2-8 CB80-8	9.0 ~ 13.5 (92 ~ 138)
	Aux. circuit	M3.5	1 ~ 1.6 0.5 ~ 2mm ²	1.25-3.5 2-3.5	0.8 ~ 1.2 (8 ~ 12)

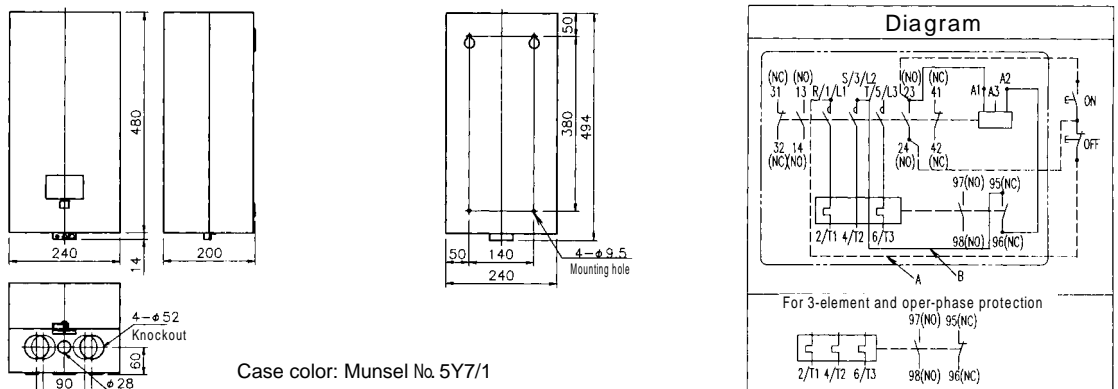
Magnetic contactor (open type) PAK-125H



Magnetic starter (open type) PAK-125HTC



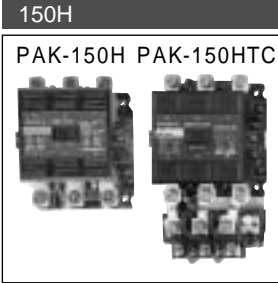
Magnetic starter · contactor (enclosed type) PAK-125HMC (HB)



Weight 125HMC = 9.6kg 125HB = 8.8kg

Dashed lines are not connected.
Above diagram is for magnetic starter.

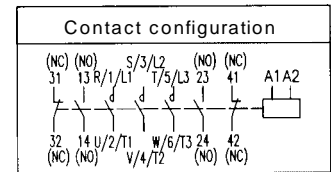
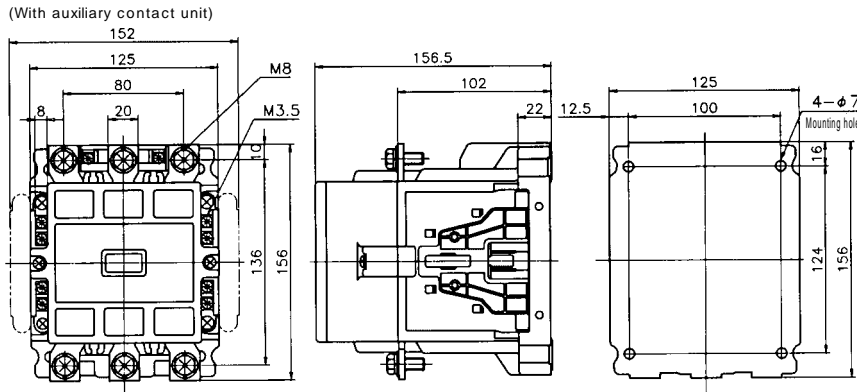
① If operating from other power source, remove " B ", and connect the supply to #95 and " A " on the pushbutton terminal.



Ratings		Frame	150H
Rated capacity	AC-3 (kW)	220V	55
		440V	75
		550V	75
AC-1 (A) (500,000 ops)	220V	220	
	440V	220	
	550V	220	

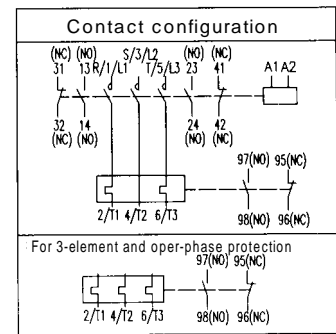
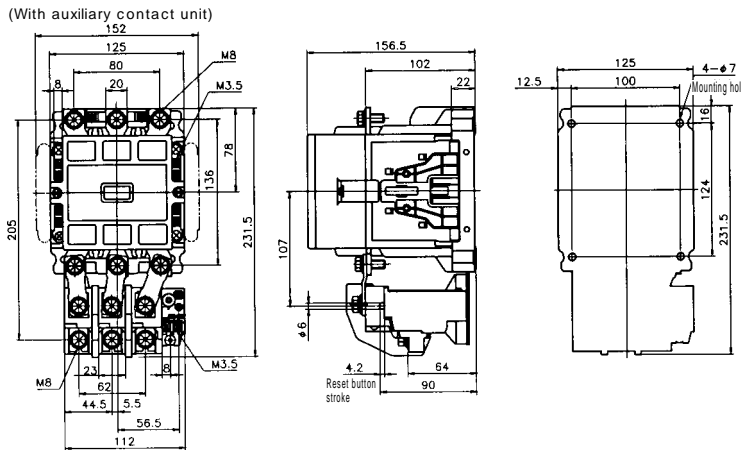
Applicable wire size and tightening torque					
		Screw size	Applicable wire size	Applicable terminal connector	Tightening torque N·m(kgf·cm)
Contactor	Main circuit	M8	2 ~ 100mm ² Using crimped terminals	2-8 CB100-8	9.0 ~ 13.5 (92 ~ 138)
	Aux. circuit	M3.5	1 ~ 1.6 0.5 ~ 2mm ²	1.25-3.5 2-3.5	0.8 ~ 1.2 (8 ~ 12)
Thermal overload relay	Main circuit	M8	2 ~ 100mm ² Using crimped terminals	2-8 CB100-8	9.0 ~ 13.5 (92 ~ 138)
	Aux. circuit	M3.5	1 ~ 1.6 0.5 ~ 2mm ²	1.25-3.5 2-3.5	0.8 ~ 1.2 (8 ~ 12)

Magnetic contactor (open type) PAK-150H



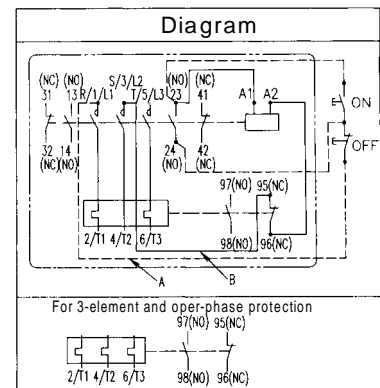
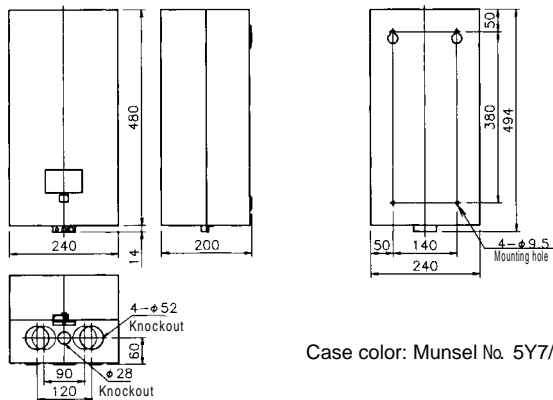
Weight 3.5kg

Magnetic starter (open type) PAK-150HTC



Weight 4.6kg

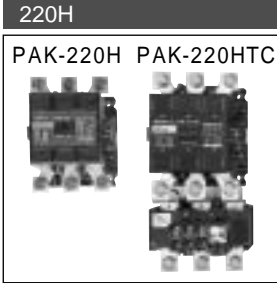
Magnetic starter · contactor (enclosed type) PAK-150HMC (HB)



Weight 150HMC = 10.2kg
150HB = 9.7kg

Dashed lines are not connected.
Above diagram is for magnetic starter.

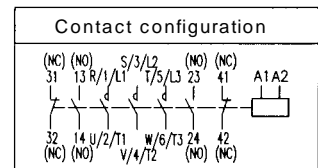
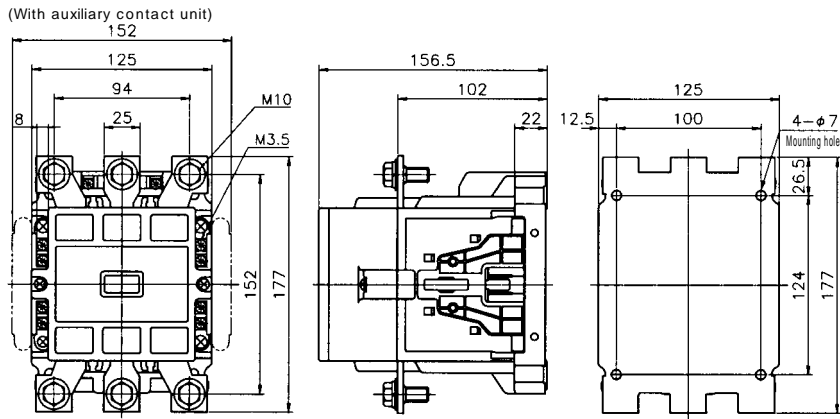
① If operating from other power source, remove " B ", and connect the supply to #95 and " A " on the pushbutton terminal.



Ratings		Frame	220H
Rated capacity	AC-3 (kW)	220V	75
		440V	95
		550V	95
AC-1 (A) (500,000 ops)	220V	275	
	440V	275	
	550V	275	

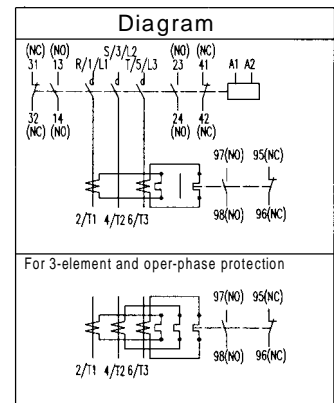
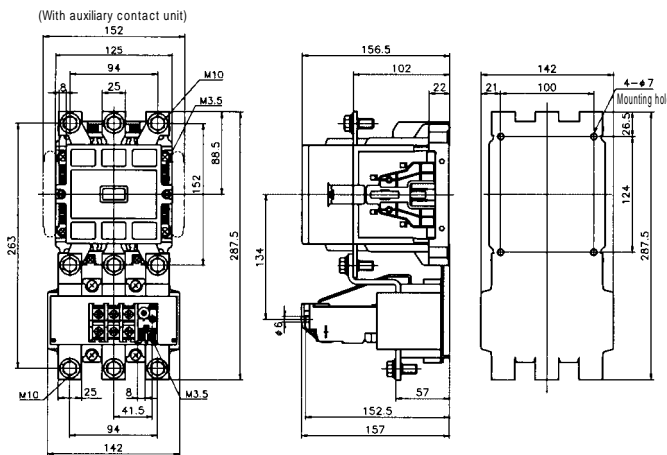
Applicable wire size and tightening torque					
		Screw size	Applicable wire size	Applicable terminal connector	Tightening torque N·m(kgf·cm)
Contactor	Main circuit	M10	2 ~ 150mm ² Using crimped terminals	2-10 150-10	18.1 ~ 27 (185 ~ 275)
	Aux. circuit	M3.5	1 ~ 1.6 0.5 ~ 2mm ²	1.25-3.5 2-3.5	0.8 ~ 1.2 (8 ~ 12)
Thermal overload relay	Main circuit	M10	2 ~ 150mm ² Using crimped terminals	2-10 150-10	18.1 ~ 27 (185 ~ 275)
	Aux. circuit	M3.5	1 ~ 1.6 0.5 ~ 2mm ²	1.25-3.5 2-3.5	0.8 ~ 1.2 (8 ~ 12)

Magnetic contactor (open type) PAK-220H



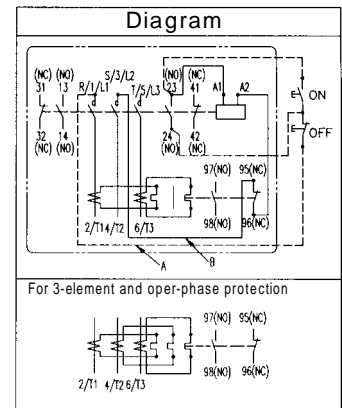
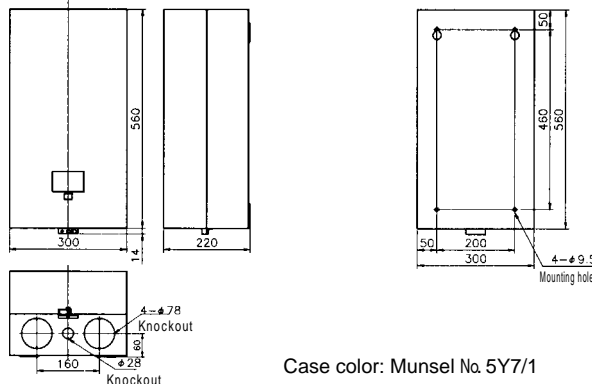
Weight 4.0kg

Magnetic starter (open type) PAK-220HTC



Weight 6.3kg

Magnetic starter (enclosed type) PAK-220HMC (HB)

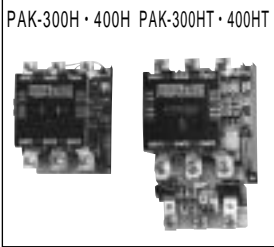


Weight 220HMC = 13.3kg
220HB = 11.0kg

Dashed lines not connected.
Above diagram for magnetic starter.

① If operating from other power source, remove " B " , and connect the supply to #95 and " A " on the pushbutton terminal.

300H · 400H



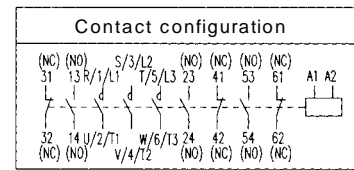
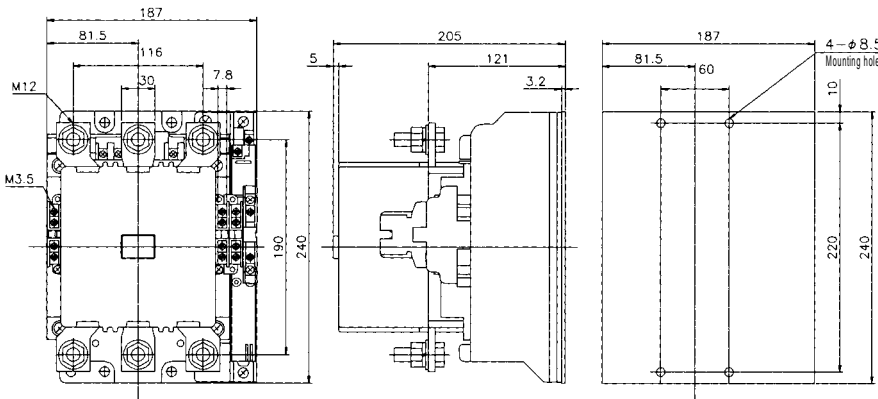
Ratings

Rated capacity	Frame		300H	400H
	AC-3 (kW)	220V	90	115
440V		150	200	
550V		160	-	
AC-1 (A) (500,000 ops)	220V	350	420	
	440V	350	420	
	550V	-	-	

Applicable wire size and tightening torque

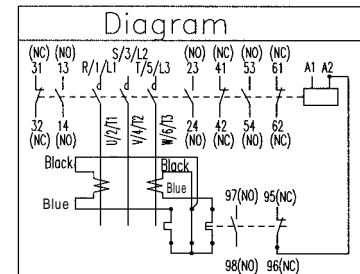
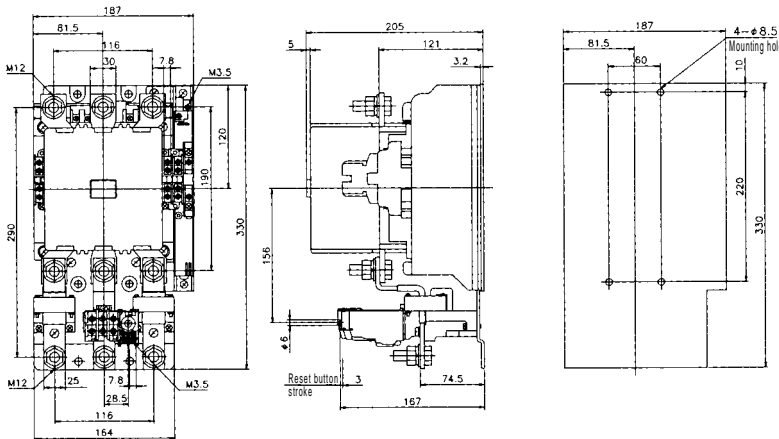
		Screw size	Applicable wire size	Applicable terminal connector	Tightening torque N·m(kgf·cm)
Contactor	Main circuit	M12	2 ~ 200mm ²	2-12 200-12	30.4 ~ 46.1 (310 ~ 470)
	Aux. circuit	M3.5	1 ~ 2 0.5 ~ 3.5mm ²	1.25-3.5 2-3.5	0.8 ~ 1.2 (8 ~ 12)
Thermal overload relay	Main circuit	M12	2 ~ 200mm ²	2-12 200-12	30.4 ~ 46.1 (310 ~ 470)
	Aux. circuit	M3.5	1 ~ 1.6 0.5 ~ 2mm ²	1.25-3.5 2-3.5	0.8 ~ 1.2 (8 ~ 12)

Magnetic contactor (open type) PAK-300H · 400H

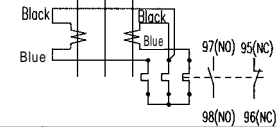


Weight 9.7kg

Magnetic starter (open type) PAK-300HT · 400HT

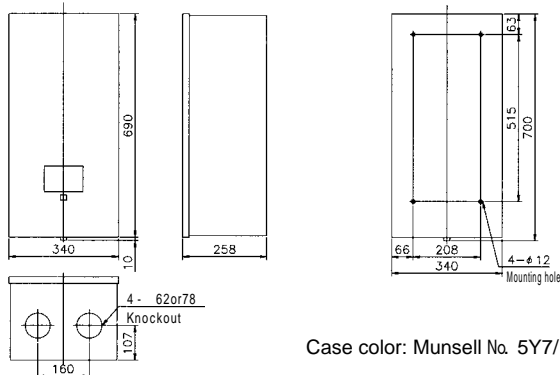


For oper-phase protection



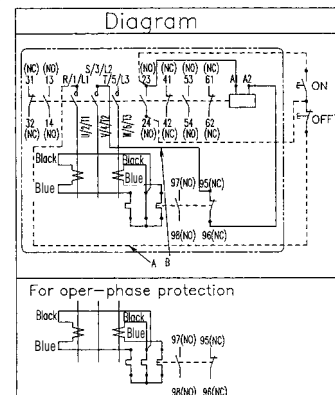
Weight 13kg

Magnetic starter (enclosed type) PAK-300HM(HB) · 400HM(HB)

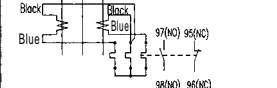


Case color: Munsell No. 5Y7/1

Weight 300HM · 400HM=25kg
300HB · 400HB=22kg

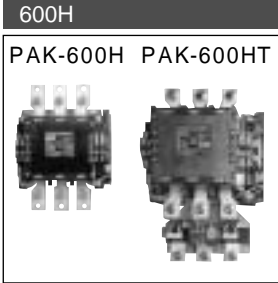


For oper-phase protection



Dashed lines not connected.
Above diagram for magnetic starter.

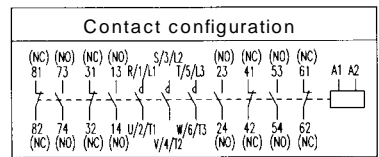
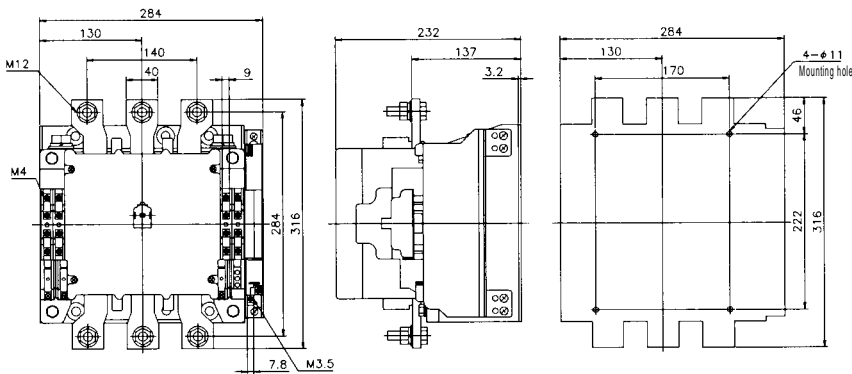
① If operating from other power source, remove "B", and connect the supply to #95 and "A" on the pushbutton terminal.



Ratings		600H
Rated capacity	Frame	220V
		440V
		550V
	AC-3 (kW)	160
		300
AC-1 (A) (500,000 ops)	220V	600
	440V	600
	550V	-
	-	-

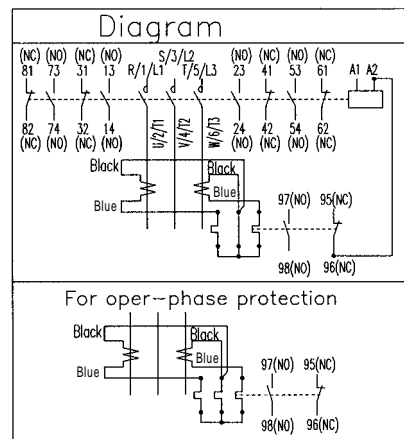
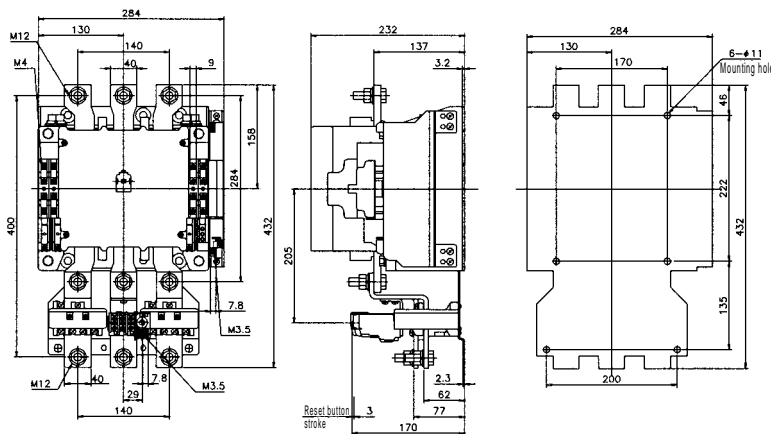
Applicable wire size and tightening torque					
		Screw size	Applicable wire size	Applicable terminal connector	Tightening torque N·m(kgf·cm)
Contactor	Main circuit	M12	2 ~ 200mm ²	2-12 200-12	30.4 ~ 46.1 (310 ~ 470)
	Aux. circuit	M4 M3.5	1.6 1.25 ~ 2mm ²	1.25-4 2-4	1.2 ~ 1.8 (12 ~ 18)
Thermal overload relay	Main circuit	M12	2 ~ 200mm ²	2-12 200-12	30.4 ~ 46.1 (310 ~ 470)
	Aux. circuit	M3.5	1.6 1.25 ~ 2mm ²	1.25-3.5 2-3.5	0.8 ~ 1.2 (8 ~ 12)

Magnetic contactor (open type) PAK-600H



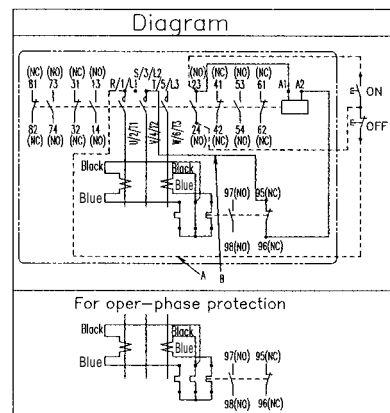
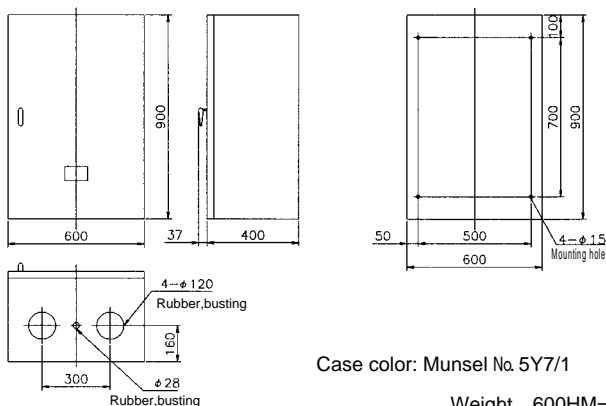
Weight 22kg

Magnetic starter (open type) PAK-600HT



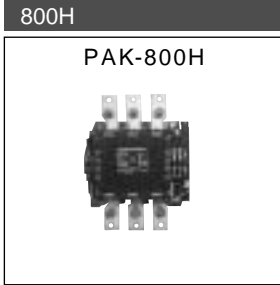
Weight 28kg

Magnetic starter (enclosed type) PAK-600HM(HB)



Dashed lines are not connected.
Above diagram is for magnetic starter.

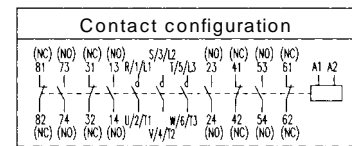
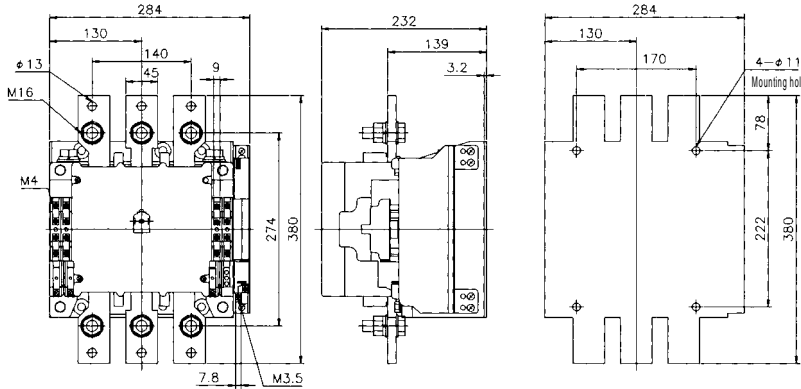
① If operating from other power source, remove " B ", and connect the supply to #95 and " A " on the pushbutton terminal.



Ratings		800H	
Rated capacity	AC-2 (kW)	220V	200
		440V	400
		550V	-
	AC-1 (A) (100,000 ops)	220V	800
		440V	800
		550V	-

Applicable wire size and tightening torque					
		Screw size	Applicable wire size	Applicable terminal connector	Tightening torque N·m(kgf·cm)
Contactor	Main circuit	M16	2 ~ 325mm ²	2-16 325-16	75.5 ~ 114.7 (770 ~ 1170)
	Aux. circuit	M4	1 ~ 2 0.5 ~ 3.5mm ²	1.25-4 2-4	1.2 ~ 1.8 (12 ~ 18)

Magnetic contactor (open type) PAK-800H



Weight 25kg