Building a better future
Global Leader

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DNV Certification B.V., The Netherlands

Hyundai Innovative

Magnetic Contactor | Overload Relay

HYUNDAI
HEAVY INDUSTRIES CO.,LTD.

Hi Series Hyundai Innovative Magnetic Contactor | Overload Relay

Innovative Technology, High Performance
Magnetic Contactor

Strong Significantly extended lifetime

Silent Noise free

Small Compact design

Reliability

HiMC magnetic contactor series employ a modular design which allows quick and simple mounting of auxiliary contact blocks, timers, mechanical latching blocks, etc.
HiMC provides convenience, economic benefit and high reliability.

Solution

Featuring superior design for industrial applications such as motor control centers, HiMC contactors are appropriate for various control systems, and favored by shipyards and power plants, where high reliability and performance are the critical criteria.

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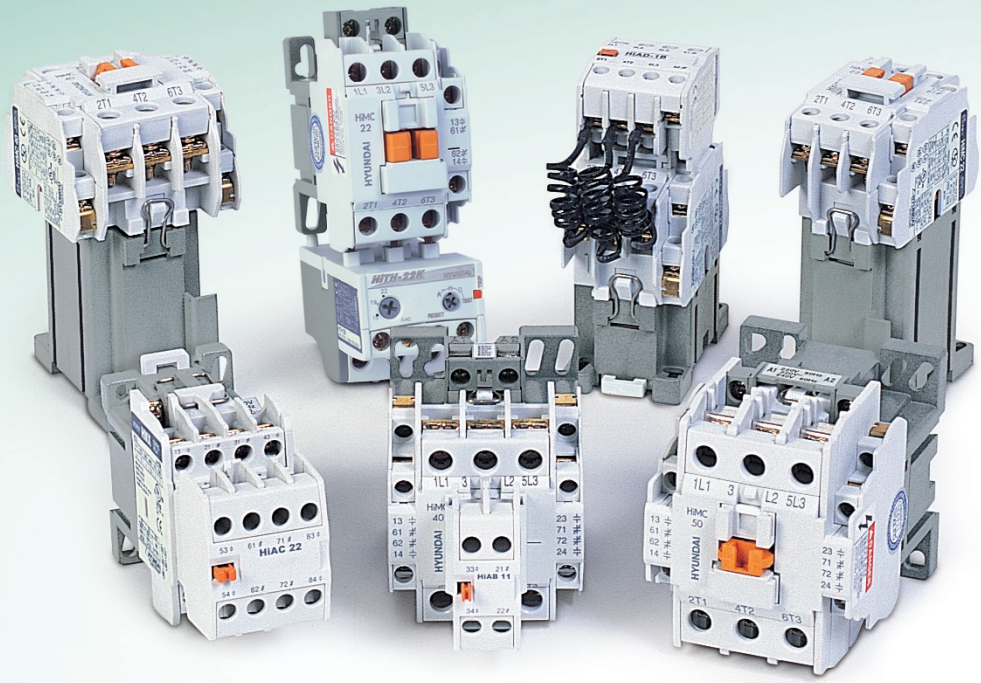
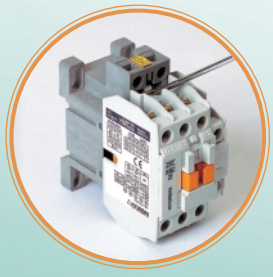
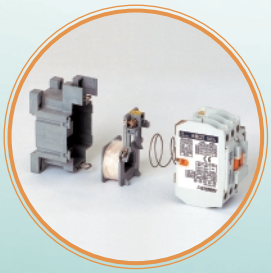
HiMC9 - HiMC50



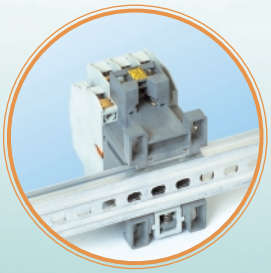
- The electrical and mechanical lifetime of HiMC has been significantly extended.
- New materials prevent any generation of corroded substances, and the core maintains noise-free status with the help of special anti-rust oil treatment.
- Various accessories can be attached easily.
- Terminal wiring is designed to meet IEC 60529 and protection degree of IP 20.
- By using clips, the coil can be replaced easily and its frequency is available in both 50Hz and 60Hz.



Quick and easy disassembly

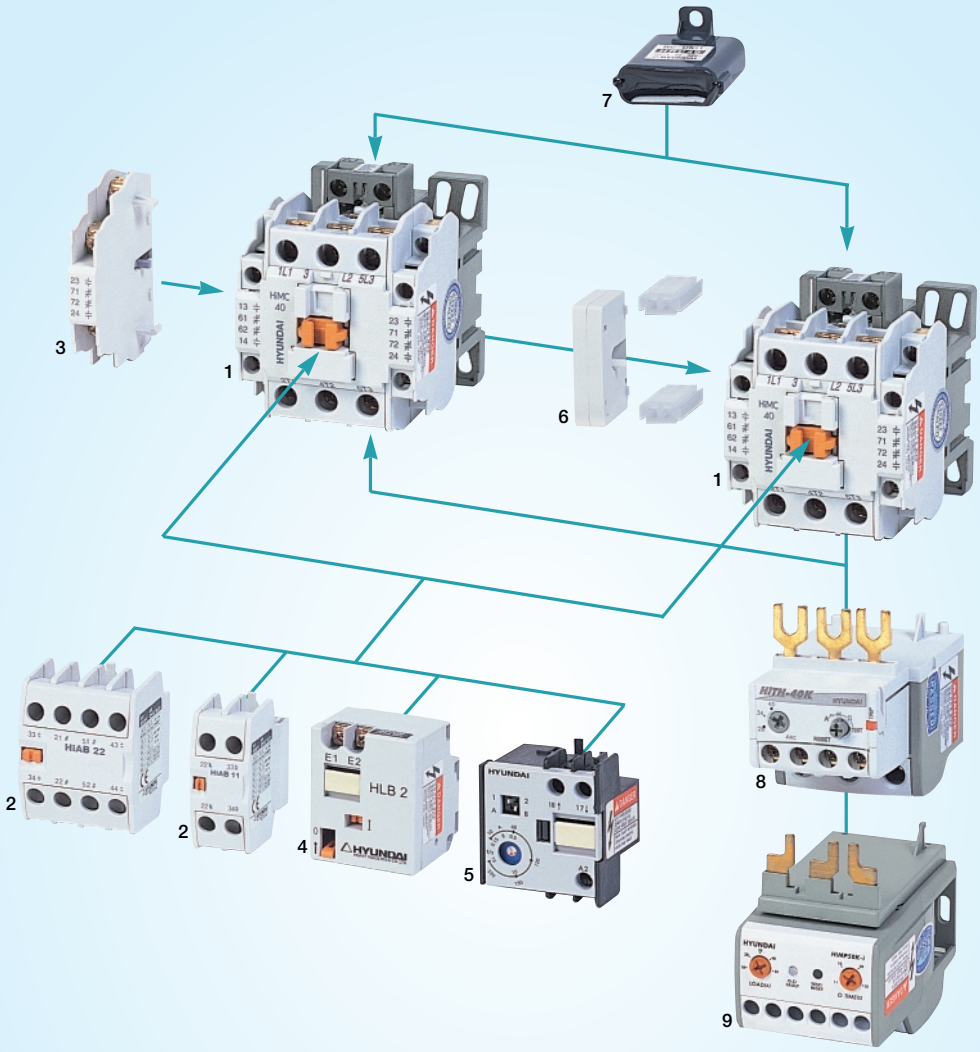


Fast and easy coil change



Flexible installation

Accessory overview



Accessories

1. Contactor
   - HiMC9-50

2. Auxiliary contact block: front mounting
   - HiAB for HiMC9-50

3. Auxiliary contact block: side mounting
   - HiAL11 for HiMC9-22

4. Mechanical latching block
   - HLB2

5. Electronic timer block
   - HOKZE

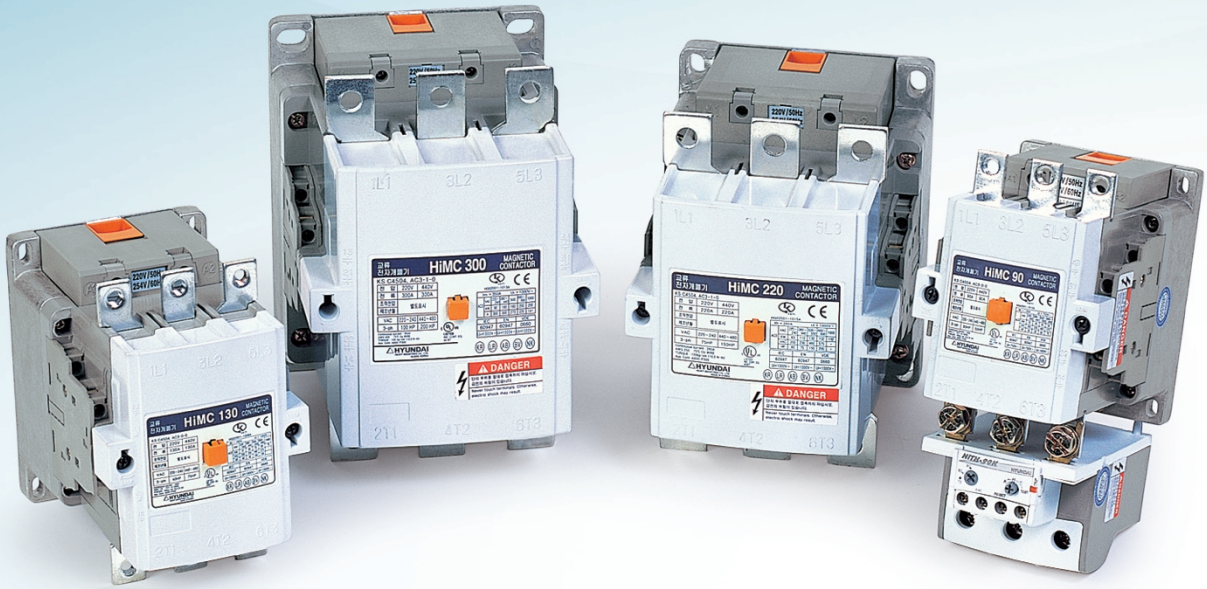
6. Mechanical interlock unit
   - HiTL40 for HiMC9-40
   - HiTL50 for HiMC50

7. Surge absorber
   - HRC40 for HiMC9-40
   - HRC50 for HiMC50

8. Thermal overload relay
   - HiTH22 for HiMC9-22
   - HiTH40 for HiMC32, 40
   - HiTH50 for HiMC50

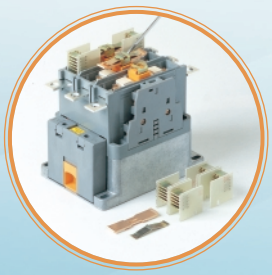
9. Digital motor protection relay
   - HiMP22 for HiMC9-22
   - HiMP40 for HiMC32, 40
   - HiMP50 for HiMC50

HiMC65 - HiMC800



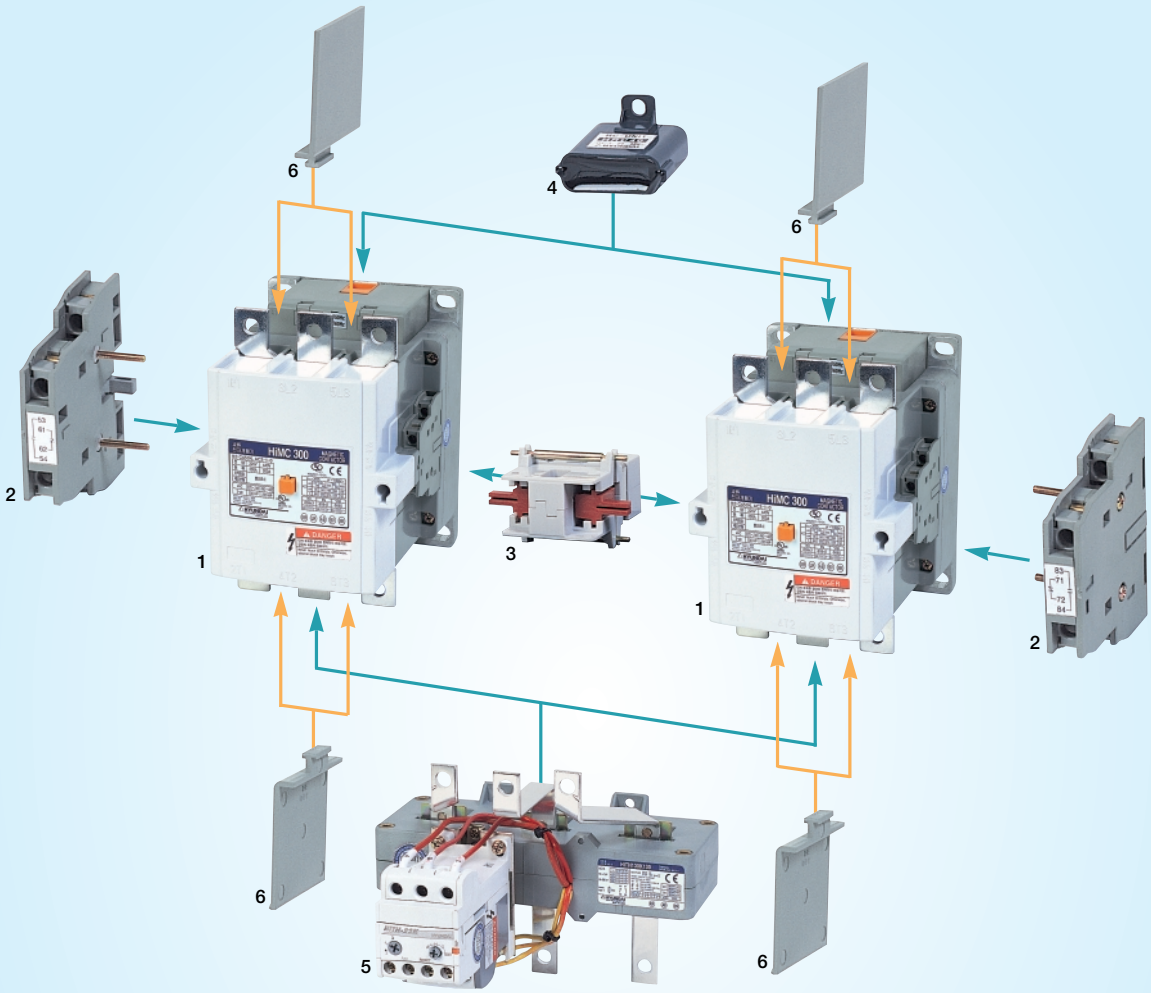
- The electrical and mechanical lifetime of HiMC has been significantly extended. The optimized design of the arc chamber minimizes contact erosion.
- HiMC contactor maintains noise-free operation through the DC-control method.
- HiMC contactor is available in both AC/DC and 50Hz/60Hz with an electronic circuit which enables operation through severe voltage drop.
- HiMC contactors can be used in various environments by adopting special plastic (CTI/600V) which has heat & waterproof characteristics.
- By adopting a cassette unit, the coil assembly can be replaced conveniently.
- As the cover of HiMC contactor can be easily opened, maintenance is very convenient.
- Two auxiliary contact blocks of 1NO+1NC can be attached to each side of HiMC, allowing auxiliary contacts to be added up to 4NO+4NC.

Easy coil change



Easy contacts inspection

Accessory overview



Accessories

1. Contactor
- HHiMC65-800

2. Auxiliary contact block: side mounting
- HiAE11 for HiMC65-150B
- HiAF11 for HiMC150-800

3. Mechanical interlock unit
- HiTL130 for HiMC65-150B
- HiTL220 for HiMC150-260B
  HiTL300 for HiMC260, 300
  HiTL800 for HiMC400, 800

4. Surge absorber
- HRC90 for HiMC65-110B
- HRC300 for HiMC110-300

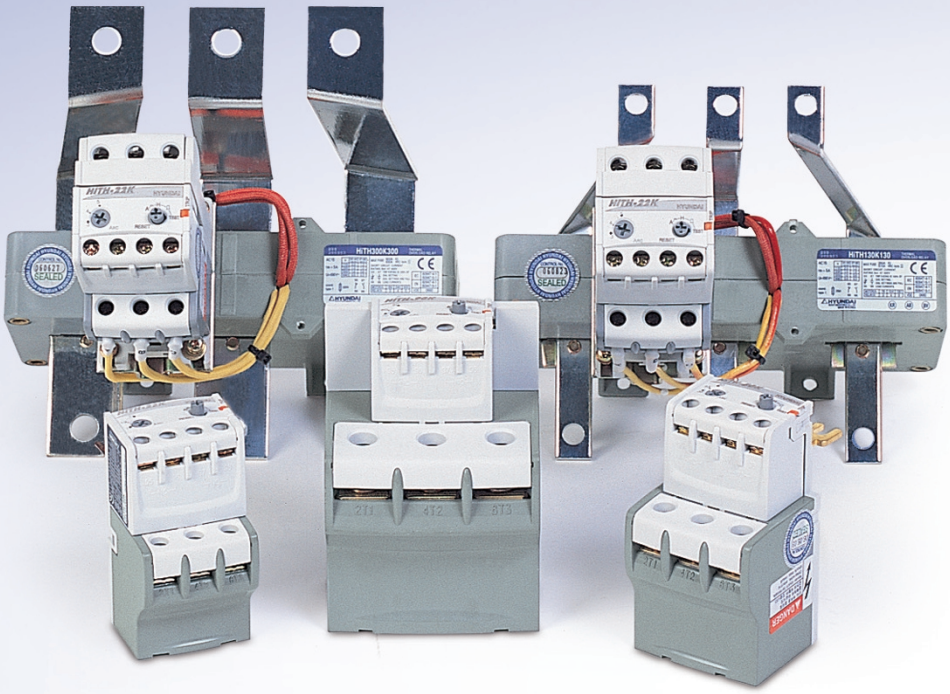
5. Thermal overload relay
- HiTH90 for HiMC65-110B
- HiTH130 for HiMC110-150B
- HiTH220 for HiMC150-260B
- HiTH300 for HiMC260, 300
- HiTH500 for HiMC400, 500
- HiTH800 for HiMC630, 800

6. Insulation barrier unit
- IMCIB130 for HiMC65-150B
- IMCIB300 for HiMC150-300
- IMCIB500 for HiMC400, 500
- IMCIB800 for HiMC630, 800

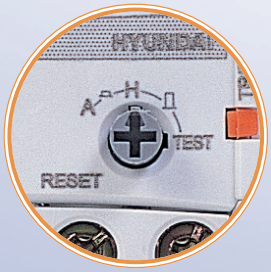
[Thermal type]

Thermal Overload Relay

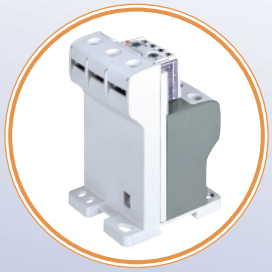
HiTH series



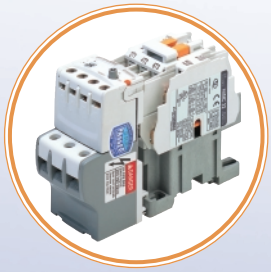
- Total 9 frame size HiTH series thermal overload relays cover all HiMC contactors with 0.12-800A current range.
- HiTH series thermal overload relays automatically compensate the ambient temperature. The compensation range is between -25℃ and +55℃.
- HiTH relays can operate in three modes: Auto (A), Manual (H), Test (TEST).
- HiTH relays have the phase fault protection device, which increases the reliability of the motor protection.
- HiTH relays are provided with the built-in free tripping mechanism, which can be tripped regardless of the Reset Button position.
- Tripping indicator helps to recognize relay status easily.
- HiTH relays have differential trip features for effective motor protection and 40-60% of trip time at phase loss.
- 1NO+1NC auxiliary contact with the galvanic isolation is built in HiTH relays.
- Both screw and 35mm DIN rail mounting are available through the separate mounting units.
- The safety cover for the main and control terminal meets IP 20 (HiTH22-90).
- The HiTH relays can be connected to the HiMC contactor directly (HiTH22-90).
- HiTH130-800 relays are operated by CT (Current Transformer). HiTH800 is able to transmit Max. 800 ampere.



Three operation modes



Separate mounting



Direct mounting

[Electronic type]

Digital Motor Protection Relay

HiMP series

Standard type [0.3-300A]

- Protective function
  - Over current
  - Under current
  - Phase failure
  - Phase unbalance
  - Reverse phase
  - Stall & Lock
- Connection
  - Tunnel type
  - Screw type
  - Pin type

Pin type can be mounted directly to the contactor.

Deluxe type [0.5-60A]

- Protective function
  - Over current & Under current
  - Phase failure & Phase unbalance
  - Reverse phase / Stall & lock
  - Earth leakage or short circuit (Option)
- Alert function
  - Overload alert
  - Accumulated operating time alert
  - Setting time alert
- Display function
  - Display ampere
  - Trip cause & Trip current
  - Separable display part
- Connection
  - Screw type
  - Tunnel type
- Trip characteristics
  - Inverse
  - Definite

Contactor & Control Relay

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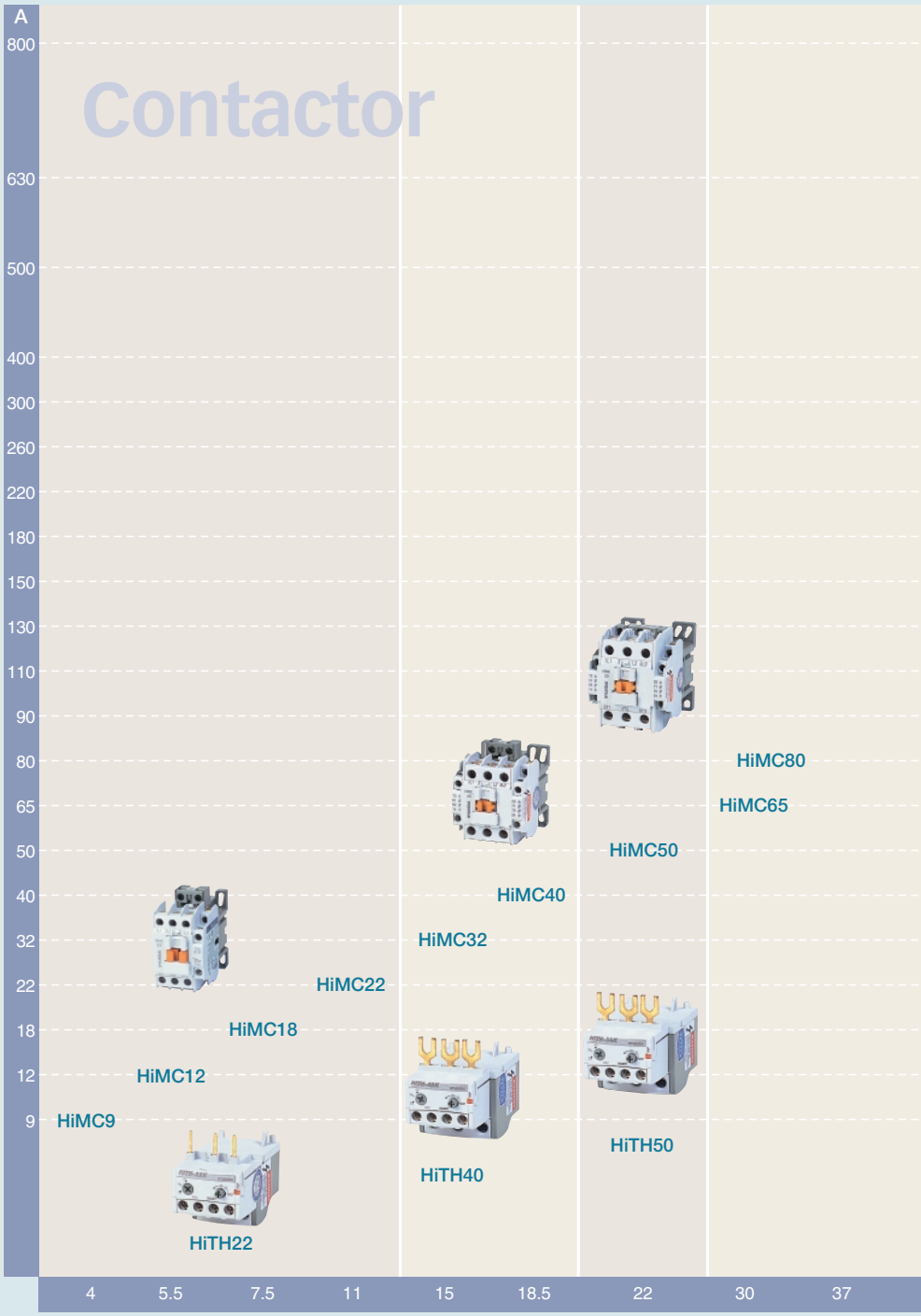


Qualified Standard & Approval

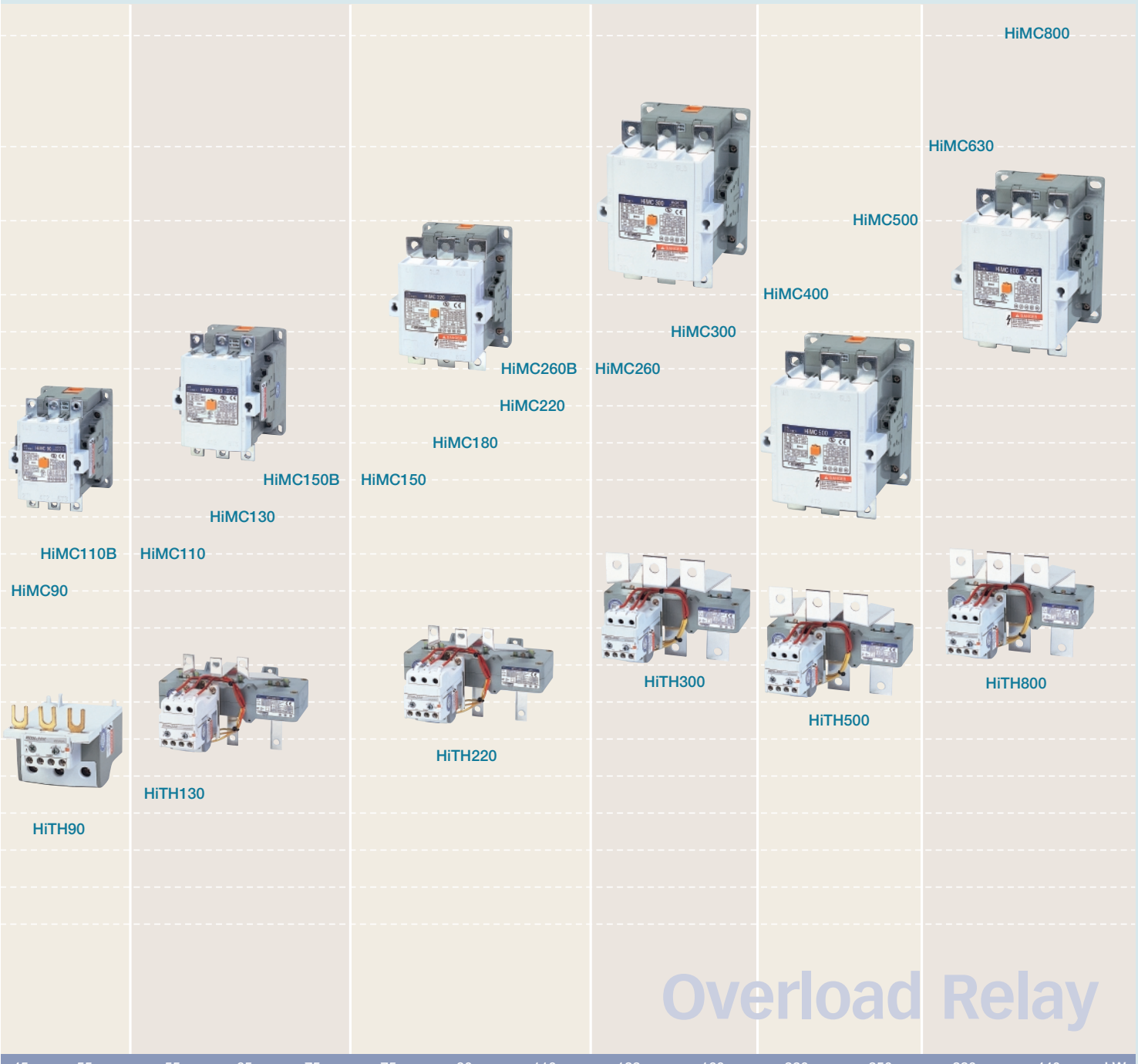
Standard

- IEC 60947
- EN 60947
- UL 508
- BS 47794, BS 5424, BS 4941
- VDE 0660
- Det Norske Veritas
- KS C4504
- JISC 8328, JEM 1038

Approval

- ISO 18001, 14001, 9001
- CE (Community European / TÜV Rheinland)
- KERI
- UL / C-UL
- TSE
- GOST-R
- CCC

Wide range covering up to 440kW 800A

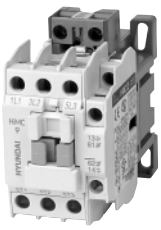


Full Ratings

Model					HiMC9	HiMC12	HiMC18	HiMC22	HiMC32	HiMC40	HiMC50	HiMC65	HiMC80	HiMC90
IEC 60947	Rated insulation voltage			V	750	750	750	750	750	750	750	750	750	750
	Rated operation voltage			V	690	690	690	690	690	690	690	690	690	690
	Rated current	AC-1(Ith)		A	20	20	25	32	50	50	70	100	110	135
		AC-3 (Ie)	200-240V	kW/A	2.2/10	3.7/13	4.5/18	5.5/22	7.5/32	11/40	15/50	18.5/70	22/80	25/90
			380-440V		4/9	5.5/12	7.5/18	11/22	15/32	18.5/40	22/50	30/65	37/80	45/90
			500-550V		4/7	7.5/12	8.5/15	15/22	18.5/28	22/32	30/45	37/60	45/64	50/80
			660-690V		5.5/7	7.5/9	7.5/9	15/18	18.5/22	22/26	25/31	37/44	45/52	50/60
			1000V		-	-	-	-	-	-	-	-	-	-
			200V	HP	2	3	5	5	10	10	15	20	25	30
			230V		2	3	5	7.5	10	10	15	20	30	30
			460V		5	7.5	10	15	20	30	40	50	60	60
			575V		7.5	10	15	20	25	30	40	50	60	75
		AC-4 (Ie)	200-240V	A	8	11	15	18	22	25	35	50	55	65
			380-440V		6	9	9	13	17	24	32	47	52	62
	Lifetime	Electrical (AC-3)	×1,000	times	2,500	2,500	2,500	2,500	2,000	2,000	2,000	2,000	2,000	2,000
		Mechanical			25,000	25,000	25,000	25,000	15,000	15,000	10,000	10,000	10,000	10,000
	Operating time		Closing	ms	15-25	15-25	15-25	15-25	15-25	15-25	15-25	50-65	50-65	50-65
			Opening		4-15	4-15	4-15	4-15	4-15	4-15	4-15	25-90	25-90	25-90
	Operating frequency per hour (AC-3)			times	1,000	1,000	1,000	1,000	750	750	750	450	450	450
	Making capacity		AC220V	A	100	130	180	220	320	400	500	700	800	900
			AC480V		90	120	180	220	320	400	500	650	800	900
			Operating frequency	times	50	50	50	50	50	50	50	50	50	50
	Breaking capacity		AC220V	A	80	104	144	176	256	320	400	560	640	720
			AC480V		72	96	144	176	256	320	400	520	640	720
			Operating frequency	times	50	50	50	50	50	50	50	50	50	50
UL 508	Continuous current			A	20	20	25	32	45	50	65	80	90	100
	Max. HP		100-120V	1 phase HP/A	0.5/9.8	0.5/9.8	1/16	1.5/20	2/24	2/24	3/34	-	-	-
			220-240V		1/8	1/8	3/17	3/17	5/28	5/28	7.5/40	-	-	-
			220-240V	3 phase HP/A	2/6.8	3/9.6	5/15.2	5/15.2	10/28	10/28	15/42	20/54	25/68	30/80
			440-480Y		5/7.6	5/7.6	10/14	10/14	20/27	20/27	30/40	50/52	60/65	60/65
NEMA	Size				00		0		1		2			3
	Max. HP		115V	1 phase HP/A	0.33		1		2		3			7.5
			230V		1		3		3		7.5			15
			200V	3 phase HP/A	1.5		3		7.5		10			25
			230V		1.5		3		7.5		15			30
			460/575V		2		5		10		25			50
Mounting method					Screw & DIN-Rail				Screw & DIN-Rail			Screw		
Contacts	Main				3NO				3NO		3NO	3NO		
	Auxiliary	AC, AC/DC			1NO+1NC				2NO+2NC		2NO+2NC	2NO+2NC		
		DC			1NO+1NC				2NO+2NC		2NO+1NC	2NO+2NC		
Dimension	AC, AC/DC	(W×H×D)		mm	44×83×86				68×83×87		70×86×99	94×138×143		
	DC				44×83×121				63×83×122					
Weight	AC			kg	0.35	0.35	0.35	0.35	0.44	0.44	0.72	2.00	2.00	2.00
	DC				0.63	0.63	0.63	0.63	0.75	0.75	0.78	2.11	2.11	2.11
	AC/DC				-	-	-	-	-	-	-	2.11	2.11	2.11

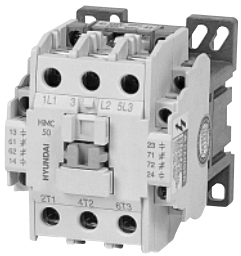
HiMC110B	HiMC110	HiMC130	HiMC150B	HiMC150	HiMC180	HiMC220	HiMC260B	HiMC260	HiMC300	HiMC400	HiMC500	HiMC630	HiMC800
750	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
690	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
160	160	160	230	230	230	260	300	300	350	450	550	750	900
30/110	30/110	37/130	45/150	45/150	55/180	63/220	75/260	75/260	90/300	125/400	140/500	190/630	220/800
55/110	55/110	65/130	75/150	75/150	90/180	110/220	132/260	132/260	160/300	220/400	250/500	330/630	440/800
60/110	60/110	70/120	90/140	90/140	110/180	132/200	150/220	150/220	160/273	220/350	300/426	330/500	500/720
55/65	55/65	60/70	90/100	90/100	110/120	132/150	160/173	160/173	200/220	250/300	335/360	400/412	500/630
-	65/50	75/54	90/66	90/66	110/78	132/96	160/113	160/113	200/141	250/178	275/192	300/213	400/284
30	30	40	40	40	50	60	75	75	100	125	150	200	250
40	40	40	50	50	60	75	75	75	100	150	200	250	300
75	75	100	100	100	125	150	200	200	200	300	400	500	600
100	100	100	125	125	150	200	200	200	250	350	400	500	600
80	80	90	125	125	150	180	200	200	220	300	350	400	630
75	75	90	110	110	150	180	200	200	220	300	350	400	630
1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	500	500	500	500
5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
50-65	55-65	55-65	55-65	50-55	50-55	50-55	50-55	55-65	55-65	55-65	55-65	55-65	55-65
25-90	55-65	55-65	55-65	42-55	42-55	42-55	42-55	45-65	45-65	45-65	45-65	45-65	45-65
450	450	450	300	300	300	300	300	300	300	300	300	300	300
1,100	1,100	1,300	1,500	1,500	1,800	2,200	2,600	2,600	3,000	4,000	5,000	6,300	8,000
1,100	1,100	1,300	1,500	1,500	1,800	2,200	2,600	2,600	3,000	4,000	5,000	6,300	8,000
50	50	50	50	50	50	50	50	50	50	50	50	50	50
880	880	1,040	1,200	1,200	1,440	1,760	2,080	2,080	2,400	3,200	4,000	5,040	6,400
880	880	1,040	1,200	1,200	1,440	1,760	2,080	2,080	2,400	3,200	4,000	5,040	6,400
50	50	50	50	50	50	50	50	50	50	50	50	50	50
150	150	160	200	200	230	260	300	300	350	450	550	750	900
-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-
30/80	30/80	40/104	50/130	50/130	60/154	75/192	75/192	75/192	100/248	125/312	150/360	250/480	300/720
60/77	60/77	75/96	100/124	100/124	125/156	150/180	150/180	150/180	200/240	250/302	250/302	500/477	600/708
				4	4				5			6	7
				-	-				-			-	-
				-	-				-			-	-
				40	40				75			150	-
				50	50				100			200	300
				100	100				200			400	600
Screw	Screw			Screw				Screw		Screw		Screw	
3NO	3NO			3NO				3NO		3NO		3NO	
2NO+2NC	2NO+2NC			2NO+2NC				2NO+2NC		2NO+2NC		2NO+2NC	
2NO+2NC	2NO+1NC			2NO+1NC				2NO+1NC		2NO+1NC		2NO+1NC	
94×138×143	103×155×154			138×189×171				150×210×190		179×251×238		276×300×275	
2.00	2.37	2.37	2.37	5.27	5.27	5.27	5.27	7.06	7.06	14.12	14.12	26.53	26.53
2.11	3.01	3.01	3.01	5.32	5.32	5.32	5.32	7.14	7.14	14.53	14.53	27.53	27.53
2.11	3.01	3.01	3.01	5.32	5.32	5.32	5.32	7.14	7.14	14.53	14.53	27.53	27.53

9-50A Contactor | IEC 60947



HiMC9

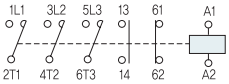
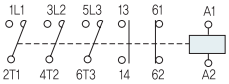
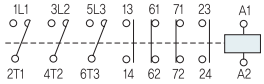
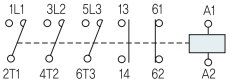
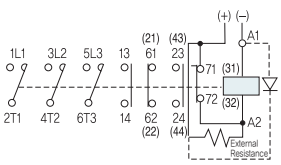
HiMC32



HiMC50

Model					HiMC9	HiMC12	HiMC18	HiMC22	HiMC32	HiMC40	HiMC50
Rated insulation voltage				V	750	750	750	750	750	750	750
Rated operation voltage				V	690	690	690	690	690	690	690
Rated current	AC-1(I_{th})			A	20	20	25	32	50	50	70
	AC-3 (I_e)	200-240V	kW/A		2.2/10	3.7/13	4.5/18	5.5/22	7.5/32	11/40	15/50
		380-440V			4/9	5.5/12	7.5/18	11/22	15/32	18.5/40	22/50
		500-550V			4/7	7.5/12	8.5/15	15/22	18.5/28	22/32	30/45
		660-690V			5.5/7	7.5/9	7.5/9	15/18	18.5/22	22/26	25/31
		1000V			-	-	-	-	-	-	-
		200V	HP		2	3	5	5	10	10	15
		230V			2	3	5	7.5	10	10	15
		460V			5	7.5	10	15	20	30	40
		575V			7.5	10	15	20	25	30	40
	AC-4 (I_e)	200-240V	A		8	11	15	18	22	25	35
		380-440V			6	9	9	13	17	24	32
Lifetime	Electrical (AC-3)	×1,000	times		2,500	2,500	2,500	2,500	2,000	2,000	2,000
	Mechanical				25,000	25,000	25,000	25,000	15,000	15,000	10,000
Operating time		Closing	ms		15-25	15-25	15-25	15-25	15-25	15-25	15-25
		Opening			4-15	4-15	4-15	4-15	4-15	4-15	4-15
Operating frequency per hour (AC-3)			times		1,000	1,000	1,000	1,000	750	750	750
Making capacity		AC220V	A		100	130	180	220	320	400	500
		AC480V			90	120	180	220	320	400	500
		Operating frequency	times		50	50	50	50	50	50	50
Breaking capacity		AC220V	A		80	104	144	176	256	320	400
		AC480V			72	96	144	176	256	320	400
		Operating frequency	times		50	50	50	50	50	50	50
Mounting method					Screw & DIN-Rail				Screw & DIN-Rail		
Contacts	Main				3NO				3NO		3NO
	Auxiliary	AC, AC/DC			1NO+1NC				2NO+2NC		2NO+2NC
		DC			1NO+1NC				2NO+2NC		2NO+1NC
Dimension	AC, AC/DC	(W×H×D)	mm		44×83×86				68×83×87		70×86×99
	DC				44×83×121				63×83×122		
Weight	AC		kg		0.35	0.35	0.35	0.35	0.44	0.44	0.72
	DC				0.63	0.63	0.63	0.63	0.75	0.75	0.78
	AC/DC				-	-	-	-	-	-	-

Contact arrangement

Model	AC	DC
HiMC9		
HiMC12		
HiMC18		
HiMC22		
HiMC32		
HiMC40		
HiMC50		

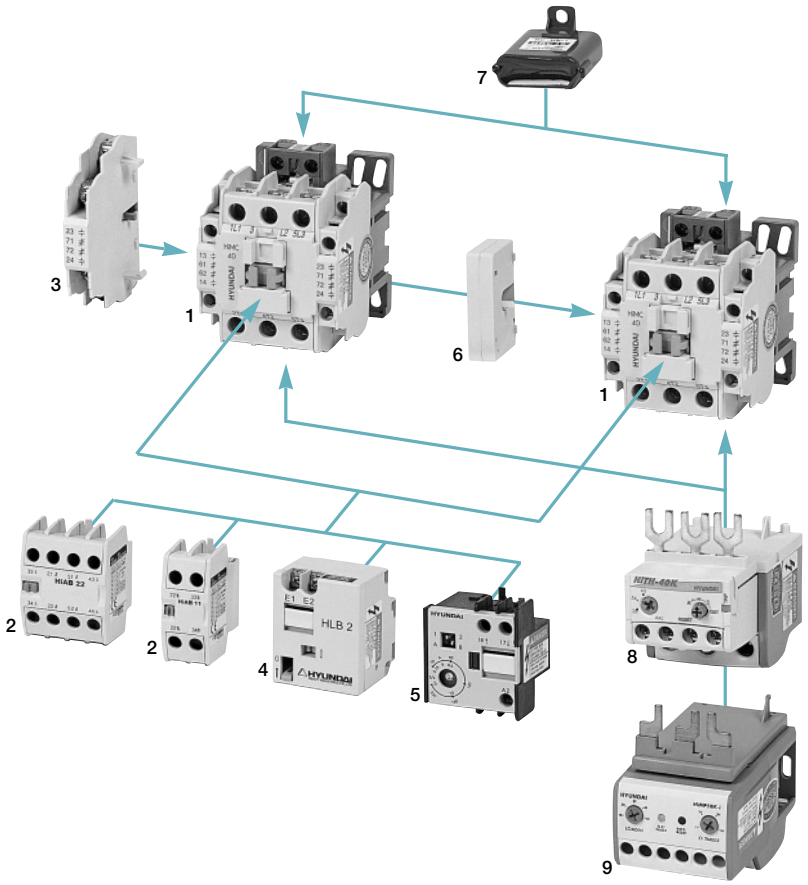
Operation voltage

Unit: V

	AC, 50Hz	AC, 60Hz	DC
Rating	24	24	12
	42	48	24
	48	100	48
	80	110	60
	100	120	80
	110	208	100
	120	220	110
	220	230	125
	230	240	200
	240	277	220
	380	380	250
	400	440	
	415	460	
	440	480	
	500	575	
	550	600	
Range	22-500	24-600	12-250

Coil characteristics: Page 36

1. Contactor
   - HiMC9-50
2. Auxiliary contact block: front mounting
   - HiAB
   Page 24
3. Auxiliary contact block: side mounting
   - HiAL11 for HiMC9-22
   Page 24
4. Mechanical latching block
   - HLB2
   Page 28
5. Electronic timer block
   - HOKZE
   Page 30
6. Mechanical interlock unit
   - HiTL40 for HiMC9-40
   - HiTL50 for HiMC50
   Page 26
7. Surge absorber
   - HRC40 for HiMC9-40
   - HRC90 for HiMC50
   Page 29
8. Thermal overload relay
   - HiTH22 for HiMC9-22
   - HiTH40 for HiMC32, 40
   - HiTH50 for HiMC50
   Page 44
9. Digital motor protection relay
   - HiMP22 for HiMC9-22
   - HiMP40 for HiMC32, 40
   - HiMP50 for HiMC50
   Page 52



Order information

IMC		22		
Code	Model name	Code	Rated current	Power
			AC-3/AC440V	
IMC	HiMC	9	9A	4.0kW
		12	12A	5.5kW
		18	18A	7.5kW
		22	22A	11.0kW
		32	32A	15.0kW
		40	40A	18.5kW
		50	50A	22.0kW

22		N		S	
Code	Auxiliary contact	Code	Application	Code	Terminal protection
11	1NO+1NC (HiMC9-22)	N	Standard	S	Safety cover
		H	Hoist		
21	2NO+1NC (HiMC50, DC)				
22	2NO+2NC (HiMC32-50, AC) (HiMC32-40, DC)				

X220		
Code	Voltage	Current, Frequency
X	22-550	AC, 50Hz
A	24-600	AC, 60Hz
D	12-250	DC

Standard order code and unit

Model	AC220V, 50Hz		DC110V		Category	
	Code	Unit	Code	Unit		
HiMC9	IMC9 11NS X220	40EA	IMC9 11NS D110	20EA	MC	C1
HiMC12	IMC12 11NS X220		IMC12 11NS D110			
HiMC18	IMC18 11NS X220		IMC18 11NS D110			
HiMC22	IMC22 11NS X220		IMC22 11NS D110			
HiMC32	IMC32 22NS X220	30EA	IMC32 22NS D110			
HiMC40	IMC40 22NS X220		IMC40 22NS D110			
HiMC50	IMC50 22NS X220	25EA	IMC50 21NS D110	6EA		

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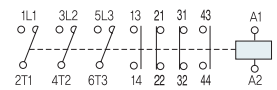
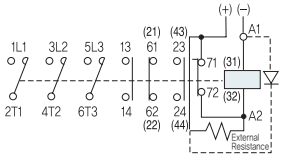
HiMC90

HiMC130

HiMC220

Model				HiMC65	HiMC80	HiMC90	HiMC110B	HiMC110	HiMC130	HiMC150B	HiMC150	HiMC180	HiMC220	HiMC260B
Rated insulation voltage			V	750	750	750	750	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Rated operation voltage			V	690	690	690	690	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Rated current	AC-1(I_{th})		A	100	110	135	160	160	160	230	230	230	260	300
	AC-3 (I_e)	200-240V	kW/A	18.5/70	22/80	25/90	30/110	30/110	37/130	45/150	45/150	55/180	63/220	75/260
		380-440V		30/65	37/80	45/90	55/110	55/110	65/130	75/150	75/150	90/180	110/220	132/260
		500-550V		37/60	45/64	50/80	60/110	60/110	70/120	90/140	90/140	110/180	132/200	150/220
		660-690V		37/44	45/52	50/60	55/65	55/65	60/70	90/100	90/100	110/120	132/150	160/173
		1000V		-	-	-	-	65/50	75/54	90/66	90/66	110/78	132/96	160/113
		200V	HP	20	25	30	30	30	40	40	40	50	60	75
		230V		20	30	30	40	40	40	50	50	60	75	75
		460V		50	60	60	75	75	100	100	100	125	150	200
		575V		50	60	75	100	100	100	125	125	150	200	200
	AC-4 (I_e)	200-240V	A	50	55	65	80	80	90	125	125	150	180	200
		380-440V		47	52	62	75	75	90	110	110	150	180	200
Lifetime	Electrical (AC-3)	×1,000	times	2,000	2,000	2,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
	Mechanical			10,000	10,000	10,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
Operating time		Closing	ms	50-65	50-65	50-65	55-65	55-65	55-65	55-65	50-55	50-55	50-55	50-55
		Opening		25-90	25-90	25-90	55-65	55-65	55-65	55-65	42-55	42-55	42-55	42-55
Operating frequency per hour (AC-3)			times	450	450	450	450	450	450	300	300	300	300	300
Making capacity		AC220V	A	650	800	900	1,100	1,100	1,300	1,500	1,500	1,800	2,200	2,600
		AC480V		700	800	900	1,100	1,100	1,300	1,500	1,500	1,800	2,200	2,600
		Operating frequency	times	50	50	50	50	50	50	50	50	50	50	50
Breaking capacity		AC220V	A	560	640	720	880	880	1,040	1,200	1,200	1,440	1,760	2,080
		AC480V		520	640	720	880	880	1,040	1,200	1,200	1,440	1,760	2,080
		Operating frequency	times	50	50	50	50	50	50	50	50	50	50	50
Mounting method				Screw										
Contacts	Main			3NO				3NO			3NO			
	Auxiliary	AC, AC/DC		2NO+2NC				2NO+2NC			2NO+2NC			
		DC		2NO+1NC				2NO+1NC			2NO+1NC			
Dimension	AC, AC/DC	(W×H×D)	mm	94×138×143				103×155×154			138×189×171			
	DC													
Weight	AC		kg	2.00	2.00	2.00	2.00	2.37	2.37	2.37	5.27	5.27	5.27	5.27
	DC			2.11	2.11	2.11	2.11	3.01	3.01	3.01	5.32	5.32	5.32	5.32
	AC/DC			2.11	2.11	2.11	2.11	3.01	3.01	3.01	5.32	5.32	5.32	5.32

Contact arrangement

Model	HiMC65 HiMC80 HiMC90 HiMC110B	HiMC110 HiMC130 HiMC150B HiMC150	HiMC180 HiMC220 HiMC260B
AC, AC/DC			
DC			

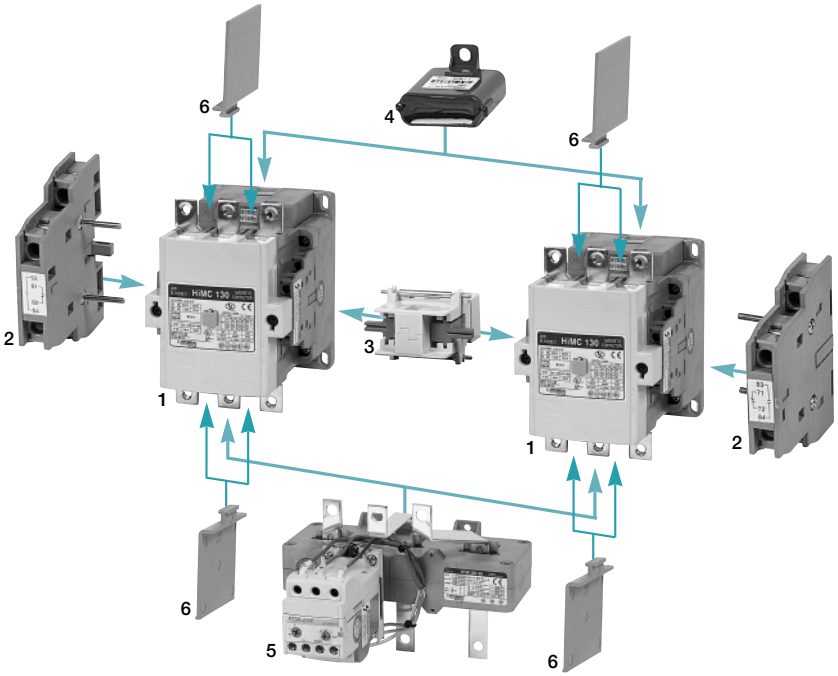
Operation voltage

Unit: V

	AC, 50Hz	AC, 60Hz	DC	AC/DC	Range
Rating	24 42 48 80 100 110 120 220 230 240 380 400 415 440 500 550	24 48 100 110 120 208 220 230 240 277 380 440 460 480 575 600	24 48 60 80 100 110 125 200 220 250	110 220 440	AC: 100-127 DC: 100-110 AC: 200-240 DC: 200-220 AC: 380-450
Range	22-500	24-600	24-250		

Coil characteristics: Page 36

1. Contactor
   - HiMC65-260B
2. Auxiliary contact block: side mounting
   - HiAE for HiMC65-150B
   - HiAF for HiMC150-260B
   Page 24
3. Mechanical interlock unit
   - HiTL130 for HiMC65-150B
   - HiTL220 for HiMC150-260B
   Page 26
4. Surge absorber
   - HRC90 for HiMC65-110B
   - HRC300 for HiMC110-260B
   Page 29
5. Thermal overload relay
   - HiTH90 for HiMC65-110B
   - HiTH130 for HiMC110-150B
   - HiTH220 for HiMC150-260B
   Page 44-47
6. Insulation barrier unit
   - IMCIB130 for HiMC65-150B
   - IMCIB300 for HiMC150-260B
   Page 32



Order information

IMC		150B		
Code	Model name	Code	Rated current	Power
			AC-3/AC440V	
IMC	HiMC	65	65A	30.0kW
		80	80A	37.0kW
		90	90A	45.0kW
		110B	110A	55.0kW
		110	110A	55.0kW
		130	130A	65.0kW
		150B	150A	75.0kW
		150	150A	75.0kW
		180	180A	90.0kW
		220	220A	110.0kW
		260B	260A	132.0kW

22		N		S	
Code	Auxiliary contact	Code	Application	Code	Terminal protection
21	2NO+1NC (DC)	N	Standard	S	Safety cover
		H	Hoist		
22	2NO+2NC (AC, AC/DC)				

X220		
Code	Voltage	Current, Frequency
X	22-550	AC, 50Hz
A	24-600	AC, 60Hz
D	24-250	DC
F	110	AC/DC
	220	
	440	

Standard order code and unit

Model	AC220V, 50Hz		DC110V		AC/DC220V		Category	
	Code	Unit	Code	Unit	Code	Unit		
HiMC65	IMC65 22NS X220	6EA	IMC65 21NS D110	6EA	IMC65 22NS F220	6EA	MC	C1
HiMC80	IMC80 22NS X220		IMC80 21NS D110		IMC80 22NS F220			
HiMC90	IMC90 22NS X220		IMC90 21NS D110		IMC90 22NS F220			
HiMC110B	IMC110B 22NS X220		IMC110B 21NS D110		IMC110B 22NS F220			
HiMC110	IMC110 22NS X220		IMC110 21NS D110		IMC110 22NS F220			
HiMC130	IMC130 22NS X220		IMC130 21NS D110		IMC130 22NS F220			
HiMC150B	IMC150B 22NS X220		IMC150B 21NS D110		IMC150B 22NS F220			
HiMC150	IMC150 22NS X220	3EA	IMC150 21NS D110	3EA	IMC150 22NS F220	3EA		
HiMC180	IMC180 22NS X220		IMC180 21NS D110		IMC180 22NS F220			
HiMC220	IMC220 22NS X220		IMC220 21NS D110		IMC220 22NS F220			
HiMC260B	IMC260B 22NS X220		IMC260B 21NS D110		IMC260B 22NS F220			

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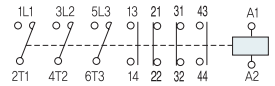
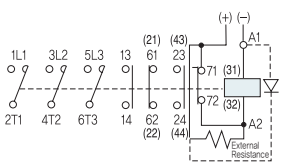
HiMC260

HiMC400

HiMC630

Model					HiMC260	HiMC300	HiMC400	HiMC500	HiMC630	HiMC800
Rated insulation voltage				V	1,000	1,000	1,000	1,000	1,000	1,000
Rated operation voltage				V	1,000	1,000	1,000	1,000	1,000	1,000
Rated current	AC-1(I_{th})			A	300	350	450	550	750	900
	AC-3 (I_e)	200-240V	kW/A		75/260	90/300	125/400	140/500	190/630	220/800
		380-440V			132/260	160/300	220/400	250/500	330/630	440/800
		500-550V			150/220	160/273	220/350	300/426	330/500	500/720
		660-690V			160/173	200/220	250/300	335/360	400/412	500/630
		1000V			160/113	200/141	250/178	275/192	300/213	400/284
		200V	HP		75	100	125	150	200	250
		230V			75	100	150	200	250	300
		460V			200	200	300	400	500	600
		575V			200	250	350	400	500	600
	AC-4 (I_e)	200-240V	A		200	220	300	350	400	630
		380-440V			200	220	300	350	400	630
Lifetime	Electrical (AC-3)	×1,000	times		1,000	1,000	500	500	500	500
	Mechanical				5,000	5,000	5,000	5,000	5,000	5,000
Operating time		Closing	ms		55-65	55-65	55-65	55-65	55-65	55-65
		Opening			45-65	45-65	45-65	45-65	45-65	45-65
Operating frequency per hour (AC-3)			times		300	300	300	300	300	300
Making capacity		AC220V	A		2,600	3,000	4,000	5,000	6,300	8,000
		AC480V			2,600	3,000	4,000	5,000	6,300	8,000
		Operating frequency	times		50	50	50	50	50	50
Breaking capacity		AC220V	A		2,080	2,400	3,200	4,000	5,040	6,400
		AC480V			2,080	2,400	3,200	4,000	5,040	6,400
		Operating frequency	times		50	50	50	50	50	50
Mounting method					Screw		Screw		Screw	
Contacts	Main				3NO		3NO		3NO	
	Auxiliary	AC, AC/DC			2NO+2NC		2NO+2NC		2NO+2NC	
		DC			2NO+1NC		2NO+1NC		2NO+1NC	
Dimension	AC, AC/DC	(W×H×D)	mm		150×210×190		179×251×238		276×300×275	
	DC									
Weight	AC		kg		7.06	7.06	14.12	14.12	26.53	26.53
	DC				7.14	7.14	14.53	14.53	27.53	27.53
	AC/DC				7.14	7.14	14.53	14.53	27.53	27.53

Contact arrangement

Model	HiMC260 HiMC300 HiMC400 HiMC500 HiMC630 HiMC800
AC, AC/DC	
DC	

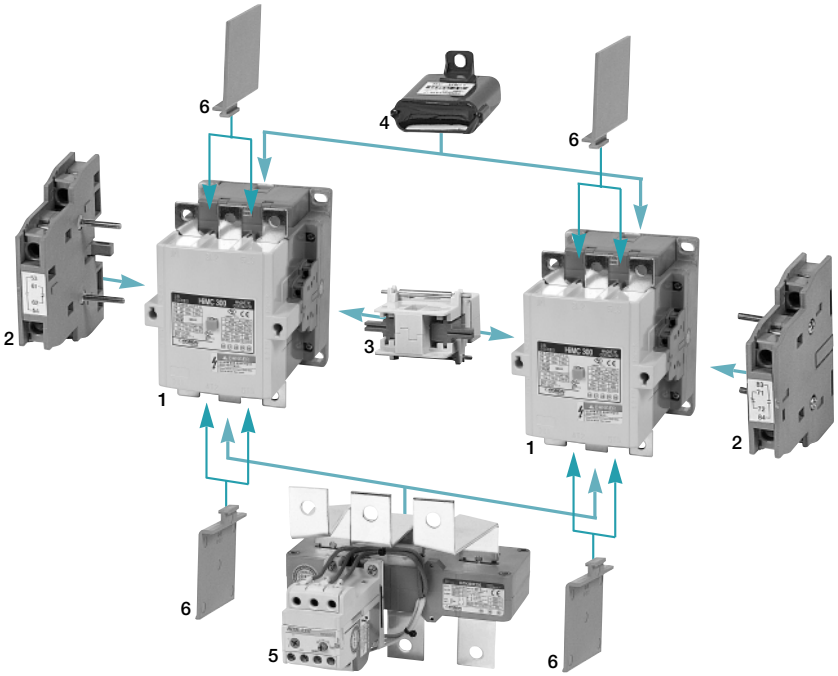
Operation voltage

Unit: V

	AC, 50Hz	AC, 60Hz	DC	AC/DC	Range
Rating	100	100	24	110	AC: 100-127
	110	110	48		DC: 100-110
	120	120	60		
	220	208	80	220	AC: 200-240
	230	220	100		DC: 200-220
	240	230	110		
	380	240	125	440	AC: 380-450
	400	277	200		
	415	380	220		
	440	440	250		
	500	460			
	550	480			
		575			
		600			
Range	100-500	100-600	24-250		

Coil characteristics: Page 36

1. **Contactor**
   - HiMC260-800
2. **Auxiliary contact block: side mounting**
   - HiAF for HiMC260-800
   Page 24
3. **Mechanical interlock unit**
   - HiTL300 for HiMC260, 300
   - HiTL800 for HiMC400-800
   Page 26
4. **Surge absorber**
   - HRC300 for HiMC260, 300
   Page 29
5. **Thermal overload relay**
   - HiTH300 for HiMC260, 300
   - HiTH500 for HiMC400, 500
   - HiTH800 for HiMC630, 800
   Page 46
6. **Insulation barrier unit**
   - IMCIB300 for HiMC260, 300
   - IMCIB500 for HiMC400, 500
   - IMCIB800 for HiMC630, 800
   Page 32



Order information

IMC		800		
Code	Model name	Code	Rated current	Power
			AC-3/AC440V	
IMC	HiMC	260	260A	132.0kW
		300	300A	160.0kW
		400	400A	220.0kW
		500	500A	250.0kW
		630	630A	330.0kW
		800	800A	440.0kW

22		N		S	
Code	Auxiliary contact	Code	Application	Code	Terminal protection
21	2NO+1NC (DC)	N	Standard	S	Safety cover
		H	Hoist		
22	2NO+2NC (AC, AC/DC)				

X220		
Code	Voltage	Current, Frequency
X	100-550	AC, 50Hz
A	100-600	AC, 60Hz
D	24-250	DC
F	110	AC/DC
	220	
	440	

Standard order code and unit

Model	AC220V, 50Hz		DC110V		AC/DC220V		Category	
	Code	Unit	Code	Unit	Code	Unit		
HiMC260	IMC260 22NS X220	3EA	IMC260 21NS D110	3EA	IMC260 22NS F220	3EA	MC	C1
HiMC300	IMC300 22NS X220		IMC300 21NS D110		IMC300 22NS F220			
HiMC400	IMC400 22NS X220	1EA	IMC400 21NS D110	1EA	IMC400 22NS F220	1EA		
HiMC500	IMC500 22NS X220		IMC500 21NS D110		IMC500 22NS F220			
HiMC630	IMC630 22NS X220		IMC630 21NS D110		IMC630 22NS F220			
HiMC800	IMC800 22NS X220		IMC800 21NS D110		IMC800 22NS F220			

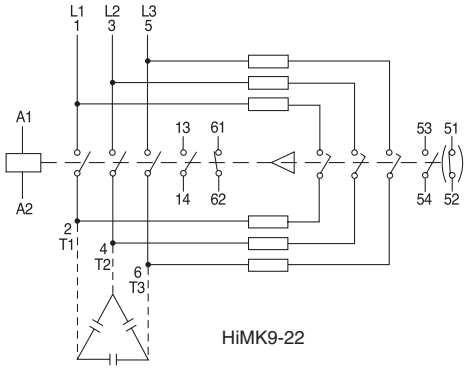
Capacitor Switching Contactor

- The capacitor switching contactor is fitted with a special mounted block, which ensures safety and long lifetime of the installation.
- The capacitor switching contactor is precharged by means of the mounted leading NO contacts of unit and resistive wire, only then does the main contacts of conatctor close.
- Capacitor switching unit is composed of three NO main contacts and one auxiliary contact (1NO or 1NC).

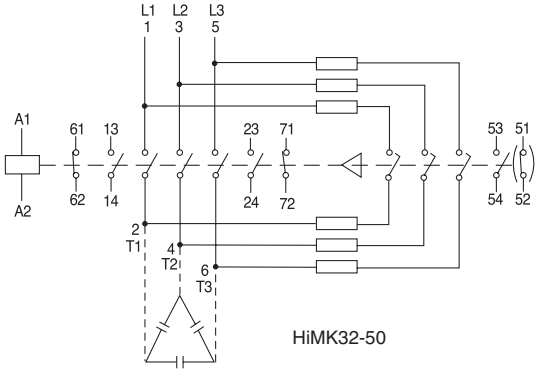
Model			HiMK9	HiMK12	HiMK18	HiMK22	HiMK32	HiMK40	HiMK50
AC-6b (3 phase 50/60Hz capacitor)									
Max. power	220V	kVAR	5	6.7	8.5	10	14	20	21
	230/240V		5	6.7	8.5	10	16	20	24
	400/415V		9.7	12.5	16.7	18	27.5	30	40
	500/550V		14	18	24	26	34	48	50
	690V		14	18	24	26	45	48	65
Electrical lifetime	up to AC440V	times	250,000						
	AC550-690V		100,000						
Operating frequency per hour		times	240						
Composition	Contactor		HiMC9	HiMC12	HiMC18	HiMC22	HiMC32	HiMC40	HiMC50
	Capacitor switching block		HiAD50	HiAD50	HiAD50	HiAD50	HiAD50	HiAD50	HiAD50
	Auxiliary contact		2NO+1NC or 1NO+2NC				3NO+2NC or 2NO+3NC		
Dimension	W×H×D	mm	44×166×123				63×166×123		70×178×136
Weight		kg	0.4				0.5		0.77

※The ambient temperature is 55℃

Wiring diagram

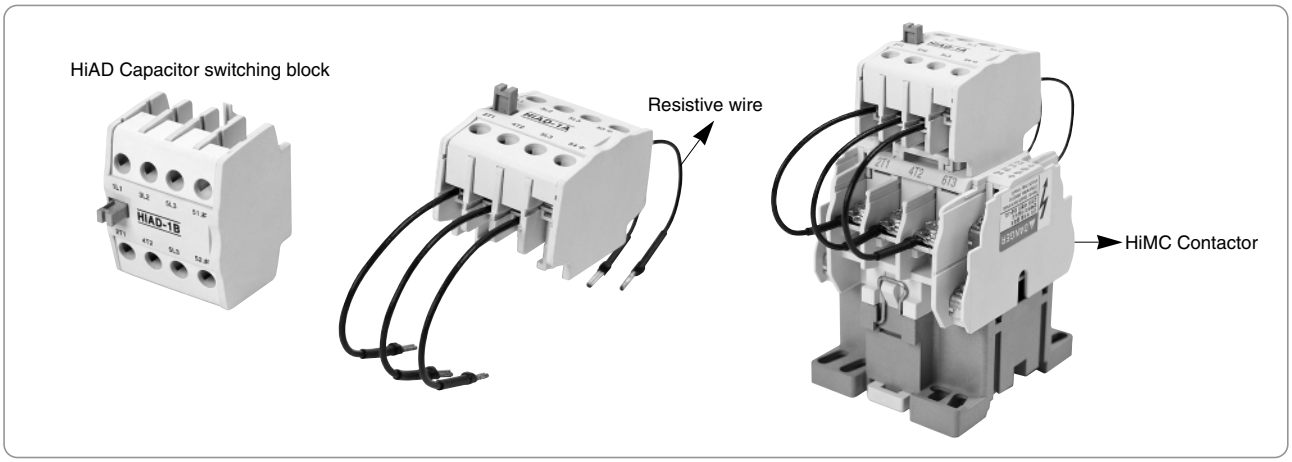


HiMK9-22



HiMK32-50

Composition



Order information

IMK		32			23			N		S		X220		
Code	Model name	Code	Rated current	Maximum power	Code	Auxiliary contact		Code	Application	Code	Terminal protection	Code	Voltage	Current, Frequency
			AC-6b/AC440V											
IMK	HiMK	9	9A	9.7kVAR	21	2NO+1NC	HiMK9-22	N	Standard	S	Safety cover	X	22-550	AC, 50Hz
		12	12A	12.5kVAR	12	1NO+2NC						A	24-600	AC, 60Hz
		18	18A	16.7kVAR	32	3NO+2NC	HiMK32-50							
		22	22A	18.0kVAR	23	2NO+3NC								
		32	32A	30.3kVAR										
		40	40A	33.3kVAR										
		50	50A	45.0kVAR										

Standard order code and unit

Model	AC220V, 50Hz		Composition		Category	
	Code	Unit	Contactor	Capacitor switching block		
HiMK9	IMK9 21NS X220	6EA	IMC9 11NS X220	IAD50 10NR	MC	C5
	IMK9 12NS X220		IMC9 11NS X220	IAD50 01NR		
HiMK12	IMK12 21NS X220		IMC12 11NS X220	IAD50 10NR		
	IMK12 12NS X220		IMC12 11NS X220	IAD50 01NR		
HiMK18	IMK18 21NS X220		IMC18 11NS X220	IAD50 10NR		
	IMK18 12NS X220		IMC18 11NS X220	IAD50 01NR		
HiMK22	IMK22 21NS X220		IMC22 11NS X220	IAD50 10NR		
	IMK22 12NS X220		IMC22 11NS X220	IAD50 01NR		
HiMK32	IMK32 32NS X220		IMC32 22NS X220	IAD50 10NR		
	IMK32 23NS X220		IMC32 22NS X220	IAD50 01NR		
HiMK40	IMK40 32NS X220		IMC40 22NS X220	IAD50 10NR		
	IMK40 23NS X220		IMC40 22NS X220	IAD50 01NR		
HiMK50	IMK50 32NS X220		IMC50 22NS X220	IAD50 10NR		
	IMK50 23NS X220		IMC50 22NS X220	IAD50 01NR		

Operation voltage

Unit: V

	AC, 50Hz	AC, 60Hz	DC
Rating	24	24	12
	42	48	24
	48	100	48
	80	110	60
	100	120	80
	110	208	100
	120	220	110
	220	230	125
	230	240	200
	240	277	220
	380	380	250
	400	440	
	415	460	
	440	480	
	500	575	
	550	600	
Range	22-500	24-600	

Coil characteristics: Page 36 (HiMC9-50)

Capacitor switching block (Auxiliary contact block for HiMK capacitor switching contactor)

Model	Order information			Composition	Category	
	Code	Unit				
HiAD50	IAD50 10NR	1EA	120EA	1NO Contact block + Resistive wires 6EA	MC	C9
	IAD50 01NR			1NC Contact block + Resistive wires 6EA		

Control Relay

- HMX is for AC operation, and HMT is for DC operation.
- The protection degree is IP20.
- Screw and 35mm DIN-Rail mounting is available.
- Both HMX and HMT have three types of contact; 2NO+2NC, 3NO+1NC, & 4NO. Additional contact block can be added on it.
- These are proper for control circuit and factory automation.
- Accessories can be attached by one-touch method.
  - Aux. contact block
  - Timer
  - Latching block
  - Surge absorber (RC-Unit)
- Applicable standard
  IEC 60947-5-1, UL 508, VDE 0660, CENELEC-EN 50011

HMX

HMT

Model				HMX	HMT
				AC Operation	DC Operation
Rated insulation voltage	IEC 60947		V	750	
	VDE 0660			1,000	
Rated current	AC-1 (Ith)		A	20	
	AC-15 (Ie) Coil loads	220V		10	
		380V		4	
		440V		3.5	
		500V		3	
		690V		2	
	DC-12 (Ie) Resistive loads	24V		5	
		48V		3	
		110V		2.5	
		220V		1	
	DC-13 (Ie) Coil loads	24V		3	
		48V		2	
		110V		1	
		220V		0.6	
	UL/CSA (Ie)	AC120V		6	
		AC240V		3	
		DC120V		1.1	
Mechanical lifetime		×1,000	times	15,000	
Operating time		Closing	ms	10-25	20-50
		Opening		5-20	15-35
Operating frequency per hour (AC-3)			times	3,000	
Wire size			㎟	0.75-2.5×2EA	
Short circuit protection	Plug-Fuse (Fast/Slow)		A	35/25	
	HRC Fuse (DIN.BS88)			25	
	MCB (C cuve)			16	
Mounting method				Screw & DIN-Rail	
Contacts				2NO+2NC	
				3NO+1NC	
				4NO+0NC	
Coil consumption	AC	Pick-up	VA/W	60/44	
		Normal		7.5/1.9	
	DC	Pick-up	W	6.5	
		Normal			
Dimension		W×H×D	mm	44×74×80	44×74×115
Weight			kg	0.34	0.63

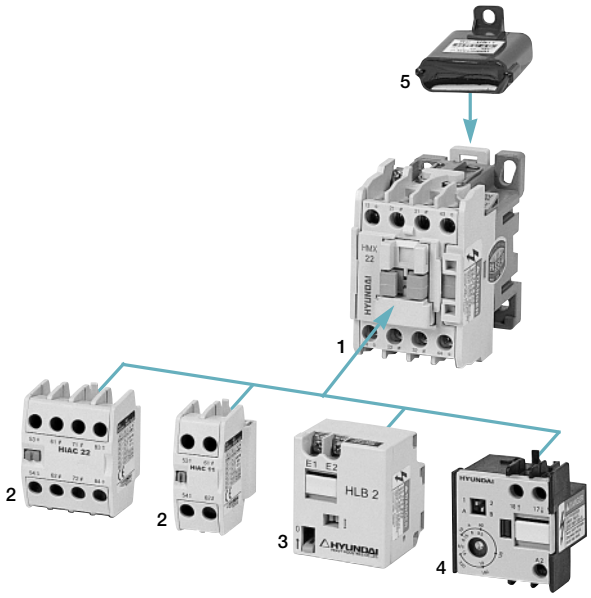
1. **Control relay**
   - HMX, HMT
2. **Auxiliary contact block: Front mounting**
   - HiAC
   - 4 pole and 2 pole blocks

   Page 24
3. **Mechanical latching block**
   - HLB2

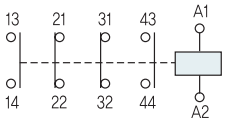
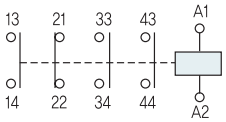
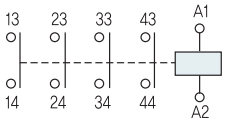
   Page 28
4. **Electronic timer block**
   - HOKZE

   Page 30
5. **Surge absorber**
   - HRC40 for HMX

   Page 29



Contact arrangement

HMX22 **HMT22**	
HMX31 **HMT31**	
HMX40 **HMT40**	

Operation voltage

Unit: V

	AC, 50Hz	AC, 60Hz	DC
Rating	24	24	12
	42	48	24
	48	100	48
	80	110	60
	100	120	80
	110	208	100
	120	220	110
	220	230	125
	230	240	200
	240	277	220
	380	380	250
	400	440	
	415	460	
	440	480	
	500	575	
	550	600	
Range	22-500	24-600	12-250

Order information

HMX		
Code	Model name	Operation
HMX	HMX	AC
HMT	HMT	DC

22	
Code	Auxiliary contact
22	2NO+2NC
31	3NO+1NC
40	4NO+0NC

N	
Code	Application
N	Standard

S	
Code	Terminal connection
S	Screw

X220		
Code	Voltage	Current, Frequency
X	22-550	AC, 50Hz
A	24-600	AC, 60Hz
D	12-250	DC

Standard order code and unit

Model	Order information		Specification	Category	
	Code	Unit			
HMX22	HMX 22NS X220	48EA	AC220V, 50Hz	MC	C8
HMX31	HMX 31NS X220				
HMX40	HMX 40NS X220				
HMT22	HMT 22NS D110	40EA	DC110V		
HMT31	HMT 31NS D110				
HMT40	HMT 40NS D110				

Auxiliary Contact Block

Order information

IAB			
Code	Model name	Appliced products	Mounting
IAB	HiAB	HiMC9-50	Top
IAL	HiAL	HiMC9-22	Left
IAE11	HiAE	HiMC65-150B	Side*
IAF11	HiAF	HiMC150-800	Side*
IAC	HiAC	HMX, HMT	Top
IAD50	HiAD50	HiMK9-50	Top

※HiAE and HiAS can be mounted on both left and right side.

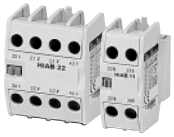
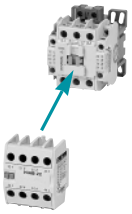
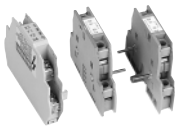
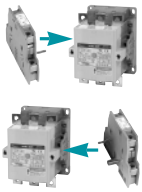
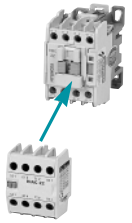
20		
Code	Auxiliary contact	
01	0NO+1NC	HiAD50
10	1NO+0NC	
11	1NO+1NC	HiAB, HiAC HiAE, HiAF
02	0NO+2NC	HiAB, HiAC*
20	2NO+0NC	
13	1NO+3NC	
31	3NO+1NC	
40	4NO+0NC	HiAB, HiAC*

※The total NC (b) contacts of HiAC and HMX, HMT shall not exceed 4NC.

N	
Code	Application
N	Standard

S		
Code	Terminal protection	
S	Safety cover	HiAB, HiAE, HiAF
R	Safety cover	HiAL, HiAD50

Standard order code and unit

Model		Specification					Ordering information			Category	
		Contacts	Applied product	Mounting position		Dimension W×H×D	Weight (kg)	Code	Unit		
HiAB 	HiAB13	1NO+3NC	Contactor HiMC9-50	Front			0.65	IAB 13NS	1EA 120EA	MC	C9
	HiAB22	2NO+2NC					0.65	IAB 22NS	1EA 120EA		
	HiAB31	3NO+1NC					0.65	IAB 31NS	1EA 120EA		
	HiAB40	4NO+0NC					0.65	IAB 40NS	1EA 120EA		
	HiAB02	0NO+2NC					0.40	IAB 02NS	2EA 240EA		
	HiAB11	1NO+1NC					0.40	IAB 11NS	2EA 240EA		
	HiAB20	2NO+0NC					0.40	IAB 20NS	2EA 240EA		
HiAL, HiAE, HiAF 	HiAL11	1NO+1NC	Contactor HiMC9-22	Left			0.70	IAL 11NR	2EA 150EA		
	HiAE11	1NO+1NC	Contactor HiMC65-150B	Left/ Right			0.70	IAE 11NS	2EA 150EA		
	HiAF11	1NO+1NC	Contactor HiMC150-800	Left/ Right			0.70	IAF 11NS	2EA 150EA		
HiAC	HiAC13	1NO+3NC	Control relay HMX, HMT	Front			0.75	IAC 13NS	1EA 120EA		
	HiAC22	2NO+2NC					0.75	IAC 22NS	1EA 120EA		
	HiAC31	3NO+1NC					0.75	IAC 31NS	1EA 120EA		
	HiAC40	4NO+0NC					0.75	IAC 40NS	1EA 120EA		
	HiAC02	0NO+2NC					0.45	IAC 02NS	2EA 240EA		
	HiAC11	1NO+1NC					0.45	IAC 11NS	2EA 240EA		
	HiAC20	2NO+0NC					0.45	IAC 20NS	2EA 240EA		
HiAD	HiAD50	1NO+0NC	Capacitor switching contactor HiMC9-50	Front			0.75	IAD50 10NR	1EA		
	HiAD50	0NO+1NC					0.75	IAD50 01NR	1EA		

Characteristics of contact

■ HiAB, HiAC

Rated insulation voltage		V	690 (IEC), 600 (UL)
Rated thermal current (I_{th})		A	16
Rated current AC-15 (Resistive loads)	120V	A	6
	240V		4
	380V		3
	440V		3
	500V		3
	690V		2
Rated current DC-13 (Coil loads)	24V	A	6
	48V		2.8
	120V		1.1
	240V		0.55
	480V		0.31
	600V		0.2

■ HiAL, HiAE, HiAF

IEC 60947

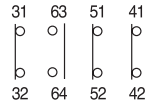
Rated insulation voltage		V	750
Rated thermal current (I_{th})		A	16
Rated current AC-12 (Resistive loads)	110V	A	10
	220V		8
	440V		6
	690V		2
Rated current AC-15 (Coil loads)	110V	A	6
	220V		6
	440V		3
	690V		2
Rated current DC-12 (Resistive loads)	24V	A	5
	48V		3
	110V		2.5
	220V		1
Rated current DC-13 (Coil loads)	24V	A	3
	48V		2
	110V		1
	220V		0.6

UL & CSA

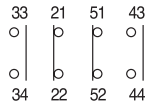
Rated thermal current (I_{th})		V	16
Rated current AC	120V	A	6
	240V		3
	480V		1.5
	600V		1.2
Rated current DC	125V	A	1.1
	250V		0.55
	440V		0.31
	600V		0.2

Contact arrangement

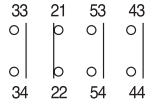
HiAB13
1NO+3NC



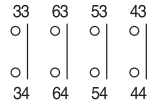
HiAB22
2NO+2NC



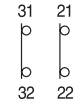
HiAB31
3NO+1NC



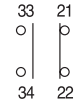
HiAB40
4NO+0NC



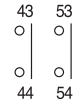
HiAB02
0NO+2NC



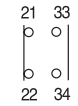
HiAB11
1NO+1NC



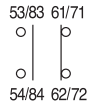
HiAB20
2NO+0NC



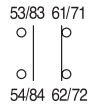
HiAL11
1NO+1NC



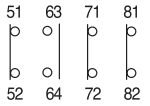
HiAE11
1NO+1NC



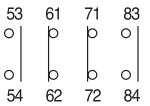
HiAF11
1NO+1NC



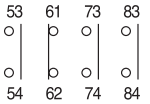
HiAC13
1NO+3NC



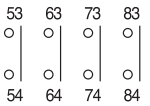
HiAC22
2NO+2NC



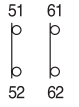
HiAC31
3NO+1NC



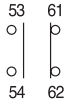
HiAC40
4NO+0NC



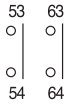
HiAC02
0NO+2NC



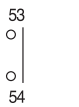
HiAC11
1NO+1NC



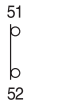
HiAC20
2NO+0NC



HiAD50
1NO



HiAD50
1NC

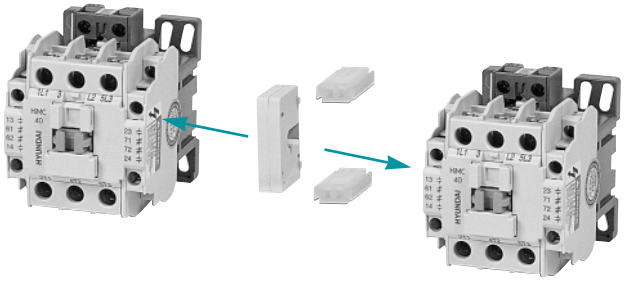


Mechanical Interlock Unit

- The mechanical interlocking of two contactors for reversing contactors is available with interlock unit.
- A simultaneous closing of two contactors is prevented.

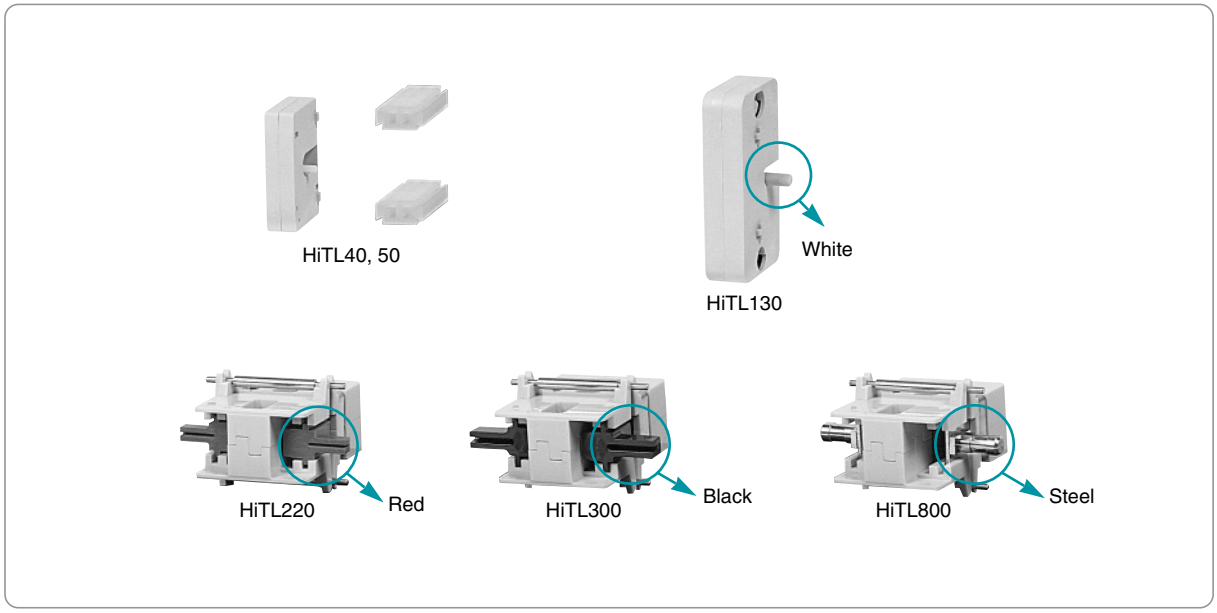
Handling

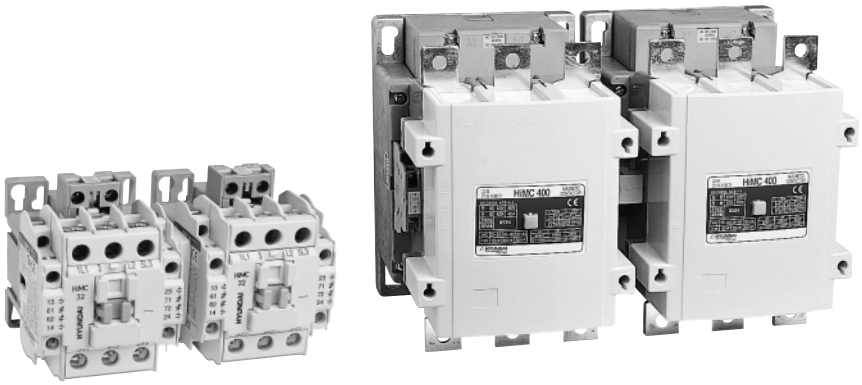
- The electrical interlock should be applied via the "NC" contact when mechanical interlock is used.
- Horizontal installation is not allowed.
- Mechanical interlock shall be installed on HiMC150-800 after removing auxiliary contact blocks between two magnetic contactors.



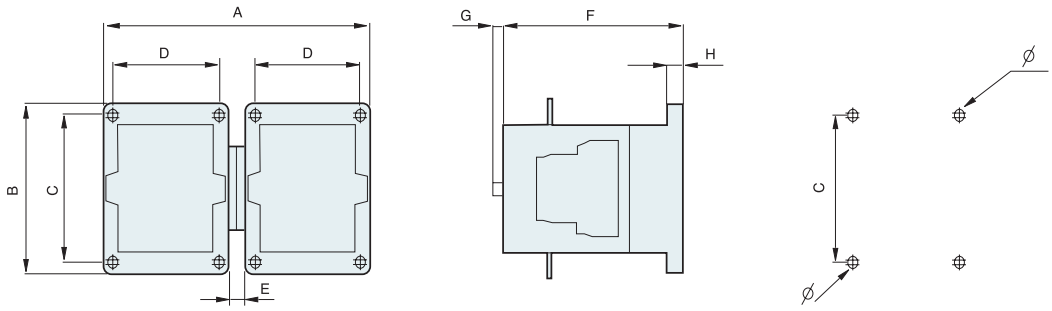
Model	Order information			Specification		Category	
	Code	Unit		Applied contactor	Weight (kg)		
HiTL	ITL40	5EA	375EA	HiMC9-40 *	0.08	MC	CB
	ITL50	5EA	375EA	HiMC50 *	0.08		
	ITL130	2EA	150EA	HiMC110-150B	0.04		
	ITL220	1EA	75EA	HiMC150-260B	0.09		
	ITL300	1EA	75EA	HiMC260, 300	0.09		
	ITL800	1EA	75EA	HiMC400-800	0.09		

* Not applicable to HiMC32-50 DC type contactor.





Dimensions

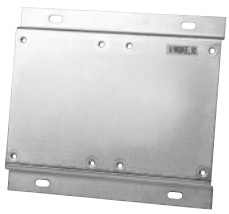


Contactor	M.I. unit	A	B	C	D	E	F	G	H	ϕ
HiMC9, 12, 15, 18, 22	HiTL40	98	83	50-66	32-35	19	86.2	-	7.5	4.8
HiMC32, 40	HiTL40	136	83.2	50-66	33.5-53.5	19.5	86.7	-	8	4.8
HiMC50	HiTL50	149.2	85.8	57.6-70	53.8-60.8	18.8	99.2	-	8	4.8
HiMC65, 80, 90, 110B	HiTL130	201.6	138	110-116	80	27.8	135.7	7.5	12	5.5
HiMC110, 130, 150B	HiTL130	220	155	120-130	90	27	150.3	3.5	12	6.2
HiMC150, 180, 220, 260B	HiTL220	313.6	189	161-171	120	30	168	3	15	9
HiMC260, 300	HiTL300	335.7	210	180	120-130	30	187.4	3	15	11
HiMC400, 500	HiTL800	383.6	251	196-225	154	31	235.5	3	20	11
HiMC630, 800	HiTL800	573.6	300	230-250	226-250	30	272.3	3	24	12

Mounting base

- The mounting bases are available from HiMC65 to HiMC800.
  These are supplied on request.

Order Information		Specification		Category	
Code	Unit	Applied contactor	Weight (kg)		
IMRBASE90	1EA	HiMC9-40	0.70	MC	CB
IMRBASE130		HiMC50	0.85		
IMRBASE220		HiMC110-150B	2.15		
IMRBASE300		HiMC150-260B	2.35		
IMRBASE500		HiMC260, 300	3.10		
IMRBASE800		HiMC400-800	5.60		



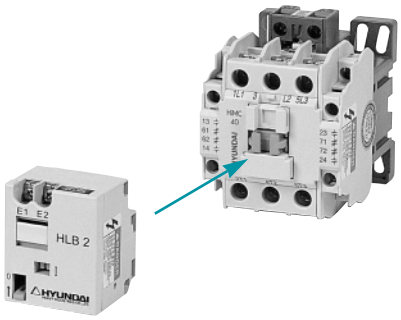
Mechanical Latching Block

- Mechanical latching block keeps the contactor mechanically latched.
- Fast & Easy mounting to contactors and control relays.

Model	Order information			Specification		Direct applied contactor	Category	
	Code	Unit		Current, Frequency	Voltage range			
HLB2	HLB2 F024	1EA	114EA	AC/DC	24V	HiMC9-50	MC	CA
	HLB2 F048				48V			
	HLB2 F110				100-125V			
	HLB2 F220				200-240V			
	HLB2 A440			AC, 60Hz	440V			
	HLB2 A600				600V			

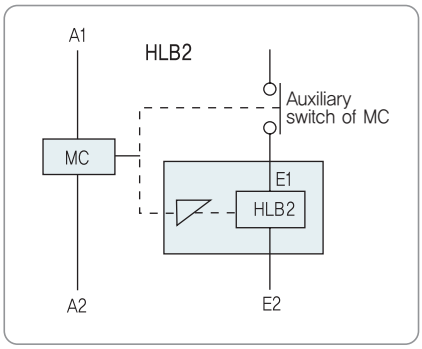
Handling

- How to OFF contactors or control relays
  - Manually: Push the lever to the “O” position.
  - Electrically: Put power to the coil.
- Caution
  - Do not excite the contactors (or control relays) and mechanical latching blocks simultaneously.
  - Do not impress the power to E1 and E2 more than 1sec.
  - Refer to the diagram for the control circuit.



Ratings and characteristics

Power consumption	VA	25
	W	30
Rated voltage	AC	24, 48, 100-125, 200-240, 440, 600V
	DC	24, 48, 100-125, 200-240V
Operation voltage	V	0.85 - 1.1×Uc
Operating frequency	times	1,200 / Hour
Mechanical lifetime	times	500,000
Dimension (W×D×H)	mm	
Weight	kg	0.11



Surge Absorber

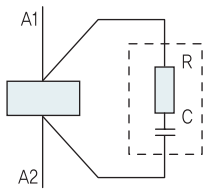
- Surge absorber drops surge voltage, which is 10-20 times of the rated voltage occurred at the operation of the contactor or auxiliary switch, to below 3 times of rated voltage.
- It is suitable for PLC control circuit.
- Damage to electronic parts from high surge voltage is prevented by the use of surge absorber.
- Applicable to 50Hz and 60Hz.

RC-Unit

HOKYZX38

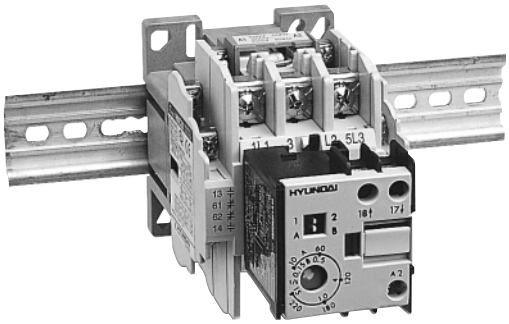
Model	Order information			Specification				Category	
	Code	Unit		Applied product	Rated voltage	Weight (kg)	Frequency		
HRC (RC-Unit)	HRC40 Y048	1EA	100EA	HMX, HiMC9-40	AC28-48V	0.03	50/60Hz	MC	CA
	HRC40 Y220				AC110-220V				
	HRC40 Y380				AC240-380V				
	HRC90 Y048			HiMC50-110B	AC28-48V				
	HRC90 Y220				AC110-220V				
	HRC90 Y380				AC240-380V				
	HRC300 Y048			HiMC110-300	AC28-48V				
	HRC300 Y220				AC110-220V				
	HRC300 Y380				AC240-380V				
HOKYZX38 (Clamping diode)	HOKYZX38	1EA		HMX, HiMC9-50	DC	0.01			

■ Diagram

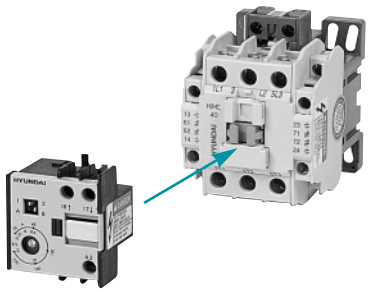


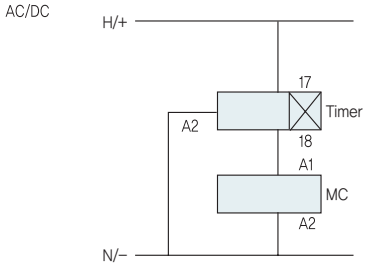
Electronic Timer

- ON-delay and interval timer functions are furnished on the timer block at once.
- Accurate and multi-function through electronic method.
- Wide voltage range is realized, and both AC & DC are applicable on the block.
- Fast & Easy mounting.



Model	Order information			Rated voltage		Direct applied product	Category	
	Code	Unit						
HOKZE	HOKZE1	1EA	96EA	AC/DC	90-240V	HMX, HMT, HiMC9-50	MC	CA
	HOKZE2				24-60V			



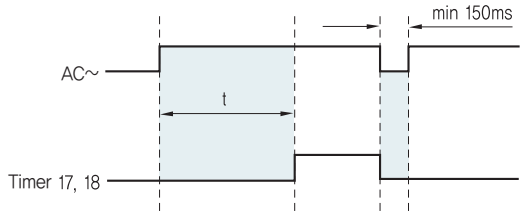


Ratings

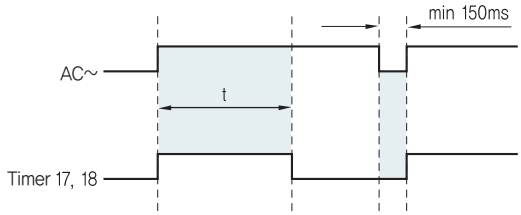
Operation voltage		0.85-1.1×Rated voltage
Making capacity		90VA
Maximum load		15VA
Delay time	Position A	10-220sec
	Position B	0.15-15sec
Precision		±5%
Repeat accuracy		0.10%
		50ms
Dimension (W×H×D)		
Weight		0.07kg

Function charts

■ Position A: ON-delay / t: Adjustable delay time 0.15...220sec



■ Position B: Interval timer



※ The timer needs a recovery time of at least 150ms between operations to be reset for the next operation.

Coil & AD Converter

Standard order code and unit

Item	Ordering information		Specification		Category	
	Code	Unit	Applied product	Voltage, Frequency		
Coil for control relay	HMCOL22X X220	1EA	HMX	AC220V, 50Hz	MC	CC
	HMCOL22T D110		HMT	DC110V		
Coil for contactor	IMCOL40 X220	1EA	HiMC9-40	AC220V, 50Hz		
	IMCOL50 X220		HiMC50			
	IMCOL90 X220		HiMC65-110B			
	IMCOL130 X220		HiMC110-150B			
	IMCOL220 X220		HiMC150-260B			
	IMCOL300 X220		HiMC260/300			
	IMCOL500 X220		HiMC400/500			
	IMCOL800 X220		HiMC630/800			
	IMCOL40 D110		HiMC9-40	DC110V		
	IMCOL50 D110		HiMC50			
	IMCOL90 D110		HiMC65-110B			
	IMCOL130 D110		HiMC110-150B			
	IMCOL220 D110		HiMC150-260B			
	IMCOL300 D110		HiMC260/300			
	IMCOL500 D110		HiMC400/500			
	IMCOL800 D110		HiMC630/800			
	IMCOL90 F220		HiMC65-110B	AC/DC220V		
	IMCOL130 F220		HiMC110-150B			
	IMCOL220 F220		HiMC150-260B			
	IMCOL300 F220		HiMC260/300			
	IMCOL500 F220		HiMC400/500			
	IMCOL800 F220		HiMC630/800			
AD Converter	IMCVT90 F220	1EA	HiMC65-110B	AC/DC220V		
	IMCVT130 F220		HiMC110-150B			
	IMCVT220 F220		HiMC150-260B			
	IMCVT300 F220		HiMC260/300			
	IMCVT500 F220		HiMC400/500			
	IMCVT800 F220		HiMC630/800			
	IMCVT90 F440		HiMC65-110B	AC/DC440V		
	IMCVT130 F440		HiMC110-150B			
	IMCVT220 F440		HiMC150-260B			
	IMCVT300 F440		HiMC260/300			
	IMCVT500 F440		HiMC400/500			
	IMCVT800 F440		HiMC630/800			

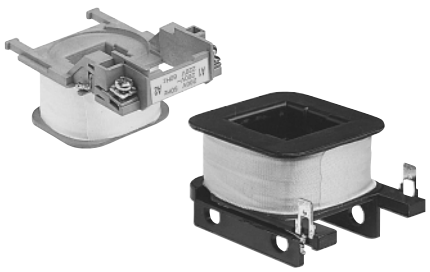
Order information

IMCOL		
Code	Model name	Description
HMCOL	HMCOL	Control relay coil
IMCOL	HiMCOL	Contactor coil
IMCVT	HiMCVT	AD converter

22	
Code	Application
22	HMX, HMT
40	HiMC9-40
50	HiMC50
90	HiMC65-110B
130	HiMC110-150B
220	HiMC150-260B
300	HiMC260/300
500	HiMC400/500
800	HiMC630/800

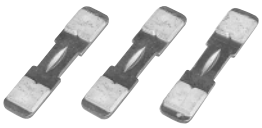
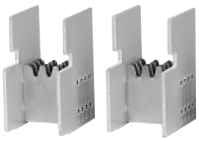
X220		
Code	Voltage	Current, Frequency
X	22-550	AC, 50Hz
A	24-600	AC, 60Hz
D	12-250	DC
F	220, 440	AC/DC

※ Please refer to page 36 for IMCOL & IMCVT, page 23 for HMCOL.



Spare Part

Standard order code and unit

Item	Order information		Specification		Category	
	Code	Unit	Applied contactor	Composition of 1 set		
Insulation barrier	IMCIB130	1EA	HiMC65-150B	4EA	MC	CD
	IMCIB300		HiMC150-300			
	IMCIB500		HiMC400-500			
	IMCIB800		HiMC630-800			
Main contact  • Moving contacts • Fixed contacts	IMCTIP9	1EA	HiMC9	3EA moving contacts +6EA fixed contacts		
	IMCTIP12		HiMC12			
	IMCTIP18		HiMC18			
	IMCTIP22		HiMC22			
	IMCTIP32		HiMC32			
	IMCTIP40		HiMC40			
	IMCTIP50		HiMC50			
	IMCTIP65		HiMC65			
	IMCTIP80		HiMC80			
	IMCTIP90		HiMC90			
	IMCTIP110B		HiMC110B			
	IMCTIP110		HiMC110			
	IMCTIP130		HiMC130			
	IMCTIP150B		HiMC150B			
	IMCTIP150		HiMC150			
	IMCTIP180		HiMC180			
	IMCTIP220		HiMC220			
	IMCTIP260B		HiMC260B			
	IMCTIP260		HiMC260			
	IMCTIP300		HiMC300			
	IMCTIP400		HiMC400			
	IMCTIP500		HiMC500			
	IMCTIP630	1EA	HiMC630	3EA moving contacts +6EA fixed contacts (Two contact elements make one contact set.)		
	IMCTIP800		HiMC800			
Arc chute 	IMCHT90	1EA	HiMC65-110B	6EA		
	IMCHT130		HiMC110-150B			
	IMCHT220		HiMC150-260B			
	IMCHT300		HiMC260-300			
	IMCHT500		HiMC400-500			
	IMCHT800		HiMC630-800			

Utilization Category

The contactors can be operated according to rated thermal current (Ith), rated operating current (Ie), making & breaking capacities, electrical & mechanical endurance and utilization category.

Utilization categories of IEC 60947

AC-1	Non-inductive or slightly inductive loads, resistance furnaces
AC-2	Slip-ring motors: starting, plugging
AC-3	Squirrel cage motors: starting, switching off motors during running
AC-4	Squirrel cage motors: plugging, inching
AC-12	Resistive heating loads
AC-15	Coil loads
DC-1	Non-inductive or slightly inductive loads, resistance furnaces
DC-3	Shunt motors: plugging, inching
DC-5	Series motors: plugging, inching
DC-12	Resistive heating loads
DC-13	Coil loads

Making and breaking capacities

Category	Making				Making and breaking			
	Current	Voltage	Cos ϕ	Number of operation	Current	Voltage	Cos ϕ	Number of operation
AC-1	-	-	-	-	1.5Ie	1.05Ue	0.8	50
AC-2	-	-	-	-	4.0Ie	1.05Ue	0.65	50
AC-3	10Ie	Ue	0.45 ($\leq$100A)	50	8.0Ie	1.05Ue	0.45 ($\leq$100A)	50
AC-4	12Ie	Ue	0.35 ($>$100A)	50	10.0Ie	1.05Ue	0.35 ($>$100A)	50
DC-1	-	-	-	-	1.5Ie	1.05Ue	1.0	50
DC-3	-	-	-	-	4.0Ie	1.05Ue	2.5	50
DC-5	-	-	-	-	4.0Ie	1.05Ue	15	50
AC-15	-	-	-	-	10Ie	1.1Ue	0.3	10
DC-13	-	-	-	-	1.1Ie	1.1Ue	6P	10

Operating times

Category	Making and breaking				
	Current	Voltage	Cos ϕ	On-time	Number of operation
AC-1	1.0Ie	1.05Ue	0.8	0.05sec	6000
AC-2	2.0Ie	1.05Ue	0.65	0.05sec	6000
AC-3	2.0Ie	1.05Ue	0.45 (Ie$\leq$100A)	0.05sec	6000
AC-4	6.0Ie	1.05Ue	0.35 (Ie$>$100A)	0.05sec	6000
DC-1	1.0Ie	1.05Ue	1.0	0.05sec	6000
DC-3	2.5Ie	1.05Ue	2.0	0.05sec	6000
DC-5	2.5Ie	1.05Ue	7.5	0.05sec	6000
AC-15	10Ie	1.1Ue	0.3	0.05sec	6000
DC-13	1.1Ie	1.1Ue	6P	0.05sec	6000

Electrical Endurance

Electrical endurance

Category	Making			Breaking		
	Current	Voltage	Cos ϕ	Current	Voltage	Cos ϕ
AC-1	1Ie	1Ue	0.95	1Ie	1Ue	0.95
AC-2	2.5Ie	1Ue	0.65	2.5Ie	1Ue	0.65
AC-3	6Ie	1Ue	0.65 (Ie≤17A)	1Ie	0.17Ue	0.65 (Ie≤17A)
AC-4	6Ie	1Ue	0.35 (Ie＞17A)	6Ie	1Ue	0.35 (Ie＞17A)
DC-1	1Ie	1Ue	1	1Ie	1Ue	1
DC-3	2.5Ie	1Ue	2	2.5Ie	1Ue	2
DC-5	2.5Ie	1Ue	7.5	2.5Ie	1Ue	7.5

Ie: Rated current
Ue: Rated voltage

Selection of AC-3 & AC-4 contactors

- When the frequency of operation is lower than the recommendation, motor output can be increased, but should not exceed the making and breaking capacities of the contactor. If thermal overload relay is used, the short-circuit protection should be carefully considered and the recommended fuse ratings should not be exceeded.
- The contactors can be chosen considering the electrical endurance by means of the diagrams.
- The electrical endurance of the contactor for AC-3, AC-4 duty can be calculated using this formula.

$$L = \frac{1}{P1/L1 + P2/L2 + \cdots + Pn/Ln}$$

- L: electrical endurance of the contactor.
- L1: electrical endurance in AC-3 duty
- L2: electrical endurance in AC-4 duty
- P1: part of use in AC-3 duty
- P2: part of use in AC-4 duty
- P1 + P2 + ⋯ + Pn = 1

■ Example

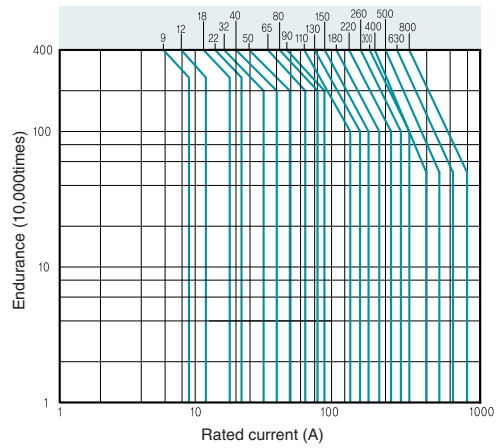
In=80A, Is=480A, 95% non-plugging duty Ia=60A and 5% plugging duty Is=360A.
What is the electrical endurance of contactor HiMC90.

$$L = \frac{10^6}{0.95/3.0 + 0.05/0.35} = 0.57 \times 10^6 \quad \text{(Operation)}$$

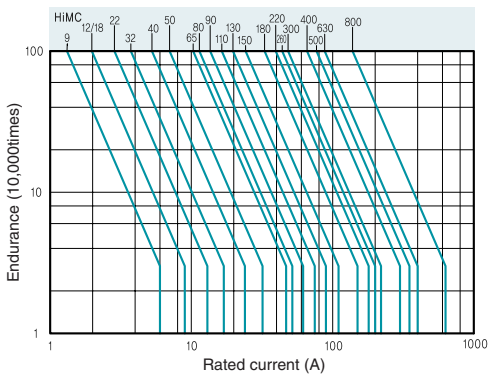
- On AC-3 duty endurance curve, lifetime of HiMC90 is 3.0×106 at 60A
- On AC-4 duty, lifetime of HiMC90 is 0.035×106 at 360A

Electrical endurance curve of main contact

< AC-3, 380-440V / Standard duty >



< AC-4, 380-440V / Inching & Plugging duty >



※ Starting current shall be under 6 times of rated current.

Star-Delta Starting Contactor

Voltage, current & torque of Star-Delta starting contactors

Starting method	Starting (Star-use contactor)				Operating (Delta-use contactor / C2)		
	Starting current	Torque	Full load current	Contact voltage	Full load current	Contact current	Contact voltage
Direct	6Im	1.5T	6Im	Em / $\sqrt{3}$	Im	Im	Em / $\sqrt{3}$
Star-Delta	2Im	0.5T	2Im	Em / $\sqrt{3}$	Im	Im / $\sqrt{3}$	Em

※Im: Delta wiring load current Em: line-to-line voltage T: Rated torque (assumed torque fluctuations)

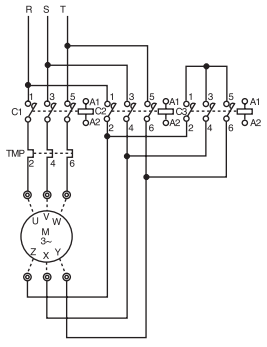
Application for Star-Delta starters

AC200-240V, 3ϕ, 60Hz						
Motor capacity			Main circuit (C1)	△ Circuit (C2)	Y Circuit (C3)	TOR
kW	HP	FLC				
5.5	7.5	22	HiMC22	HiMC22	HiMC22	HiTH22K
7.5	10	32	HiMC32	HiMC32	HiMC22	HiTH40K
11	15	40	HiMC40	HiMC40	HiMC32	HiTH40K
15	20	50	HiMC50	HiMC50	HiMC32	HiTH50K
18.5	25	70	HiMC50	HiMC50	HiMC40	HiTH50K
22	30	80	HiMC65	HiMC65	HiMC40	HiTH90K
30	40	110	HiMC90	HiMC90	HiMC50	HiTH90K
37	50	130	HiMC110B	HiMC110B	HiMC65	HiTH130K
37	50	130	HiMC110	HiMC110	HiMC65	HiTH130K
45	60	150	HiMC130	HiMC130	HiMC65	HiTH130K
55	75	180	HiMC150B	HiMC150B	HiMC90	HiTH220K
55	75	180	HiMC150	HiMC150	HiMC90	HiTH220K
75	100	260	HiMC180	HiMC180	HiMC110	HiTH220K
90	125	300	HiMC220	HiMC220	HiMC130	HiTH220K
110	150	367	HiMC300	HiMC300	HiMC150	HiTH300K
132	180	434	HiMC400	HiMC400	HiMC220	HiTH500K
160	220	519	HiMC400	HiMC400	HiMC220	HiTH500K
250	350	810	HiMC630	HiMC630	HiMC400	HiTH800K
300	-	-	-	-	-	-

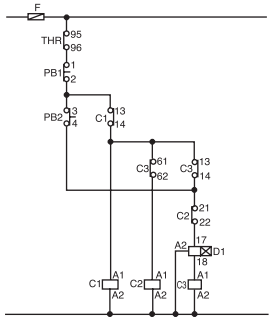
AC380-440V, 3ϕ, 60Hz						
Motor capacity			Main circuit (C1)	△ Circuit (C2)	Y Circuit (C3)	TOR
kW	HP	FLC				
5.5	7.5	12	HiMC22	HiMC22	HiMC22	HiTH22K
7.5	10	18	HiMC22	HiMC22	HiMC22	HiTH22K
11	15	22	HiMC22	HiMC22	HiMC22	HiTH22K
15	20	32	HiMC32	HiMC32	HiMC22	HiTH40K
18.5	25	40	HiMC40	HiMC40	HiMC22	HiTH40K
22	30	50	HiMC40	HiMC40	HiMC32	HiTH40K
30	40	65	HiMC50	HiMC50	HiMC40	HiTH50K
37	50	80	HiMC65	HiMC65	HiMC40	HiTH90K
45	60	90	HiMC65	HiMC65	HiMC40	HiTH90K
55	75	110	HiMC90	HiMC90	HiMC50	HiTH90K
75	100	150	HiMC110B	HiMC110B	HiMC65	HiTH130K
75	100	150	HiMC110	HiMC110	HiMC65	HiTH130K
90	125	180	HiMC130	HiMC130	HiMC90	HiTH130K
110	150	220	HiMC150B	HiMC150B	HiMC110	HiTH220K
110	150	220	HiMC150	HiMC150	HiMC110	HiTH220K
132	180	260	HiMC180	HiMC180	HiMC110	HiTH220K
160	220	300	HiMC220	HiMC220	HiMC130	HiTH220K
250	350	500	HiMC400	HiMC400	HiMC220	HiTH500K
300	402	560	HiMC400	HiMC400	HiMC300	HiTH500K

※ - Above data are based on squirrel cage motor (AC-3) and slip-ring motor (AC-2). Those data are subject to change according to motor classes and motor manufacturers.
- Above data are based on less than 10 seconds motor starting time. Motor starting time must be considered when over 10 seconds motor starting time shall be applied.
- Inrush current shall be considered when a capacitor is used.
- Recommendable change-over time from Y to △ is between 30ms and 80ms.
- 58% of motor full load current is recommended for HiTH setting current.

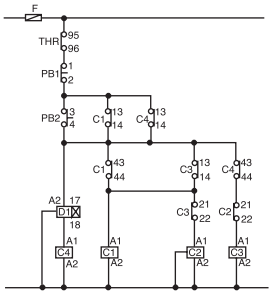
■ Main circuit diagram



■ Control circuit diagram



For HiMC9-50



For HiMC65-800

Characteristics of Operation Coil

					HiMC 9	HiMC 12	HiMC 18	HiMC 22	HiMC 32	HiMC 40	HiMC 50	HiMC 65	HiMC 80	HiMC 90,110B	HiMC 110
Power consumption	AC & DC coil	AC operation coil (220V/60Hz)	Inrush	VA	60	60	60	60	60	60	140	390	390	390	515
			Sealed	VA/W	14/2.9	14/2.9	14/2.9	14/2.9	14/2.9	14/2.9	16/5	36/10	36/10	36/10	36/10
		DC operation coil	Inrush	W	6.5	6.5	6.5	6.5	6.5	6.5	100	160	160	160	280
			Sealed	W	6.5	6.5	6.5	6.5	6.5	6.5	14	14	14	14	16
	AC/DC common coil	AC operation coil (220V/60Hz)	Inrush	VA	-	-	-	-	-	-	-	180	180	180	290
			Sealed	VA/W	-	-	-	-	-	-	-	6.7/3.3	6.7/3.3	6.7/3.3	7.4/3.8
		AC operation coil (110V/60Hz)	Inrush	VA	-	-	-	-	-	-	-	100	100	100	180
			Sealed	VA/W	-	-	-	-	-	-	-	2.7/1.6	2.7/1.6	2.7/1.6	3.3/2.1
		DC operation coil	Inrush	W	-	-	-	-	-	-	-	91	91	91	193
			Sealed	W	-	-	-	-	-	-	-	1.7	1.7	1.7	2.3
Operating time	AC & DC coil	Closing (Coil ON → Contact ON)	AC	ms	15-25	15-25	15-25	15-25	15-25	15-25	14-25	15-25	15-25	15-25	19-30
			DC		38-45	38-45	38-45	38-45	38-45	38-45	32-40	34-42	34-42	34-42	34-42
	AC/DC common coil		AC		-	-	-	-	-	-	-	25-100	25-100	25-100	25-100
			DC		-	-	-	-	-	-	-	25-100	25-100	25-100	25-100
	AC & DC coil	Opening (Coil OFF → Contact OFF)	AC		4-15	4-15	4-15	4-15	4-15	4-15	5-15	5-15	5-15	5-15	5-15
			DC		5-10	5-10	5-10	5-10	5-10	5-10	10-14	12-16	12-16	12-16	12-16
	AC/DC common coil		AC		-	-	-	-	-	-	-	25-100	25-100	25-100	25-100
			DC		-	-	-	-	-	-	-	25-100	25-100	25-100	25-100
Control transformer	AC or DC coil	Min. capacity		VA	50	50	50	50	50	50	100	200	200	200	250
	AC/DC common coil				-	-	-	-	-	-	-	100	100	100	150

					HiMC 130,150B	HiMC 150	HiMC 180	HiMC 220	HiMC 260B	HiMC 260	HiMC 300	HiMC 400	HiMC 500	HiMC 630	HiMC 800
Power consumption	AC & DC coil	AC operation coil (220V/60Hz)	Inrush	VA	515	981	981	981	981	1,090	1,090	3,500	3,500	4,450	4,450
			Sealed	VA/W	36/10	67/21	67/21	67/21	67/21	74/23	74/23	185/70	185/70	200/95	200/95
		DC operation coil	Inrush	W	280	389	389	389	389	432	432	730	730	1,650	1,650
			Sealed	W	16	16	16	16	16	16	16	4	4	4	4
	AC/DC common coil	AC operation coil (220V/60Hz)	Inrush	VA	290	360	360	360	360	380	380	1,700	1,700	1,700	1,700
			Sealed	VA/W	7.4/3.8	9.3/5.8	9.3/5.8	9.3/5.8	9.3/5.8	9.3/5.8	9.3/5.8	14.7/7.2	14.7/7.2	17.1/10.6	17.1/10.6
		AC operation coil (110V/60Hz)	Inrush	VA	180	240	240	240	240	250	250	800	800	850	850
			Sealed	VA/W	3.3/2.1	6.4/4.4	6.4/4.4	6.4/4.4	6.4/4.4	6.4/4.4	6.4/4.4	10/5.2	10/5.2	10.5/8	10.5/8
		DC operation coil	Inrush	W	193	234	234	234	234	234	234	850	850	850	850
			Sealed	W	2.3	3.4	3.4	3.4	3.4	3.4	3.4	5.9	5.9	9.5	9.5
Operating time	AC & DC coil	Closing (Coil ON → Contact ON)	AC	ms	19-30	19-34	19-34	19-34	19-34	19-34	19-34	15-30	15-30	25-40	25-40
			DC		34-42	34-42	34-42	34-42	34-42	34-42	34-42	55-65	55-65	45-51	45-51
	AC/DC common coil		AC		25-100	45-150	45-150	45-150	45-150	45-150	45-150	45-150	45-150	45-150	45-150
			DC		25-100	45-150	45-150	45-150	45-150	45-150	45-150	45-150	45-150	45-150	45-150
	AC & DC coil	Opening (Coil OFF → Contact OFF)	AC		5-15	8-15	8-15	8-15	8-15	8-15	8-15	8-15	8-15	10-17	10-17
			DC		12-16	10-16	10-16	10-16	10-16	10-16	10-16	12-17	12-17	10-25	10-25
	AC/DC common coil		AC		25-100	45-150	45-150	45-150	45-150	45-150	45-150	45-150	45-150	45-150	45-150
			DC		25-100	45-150	45-150	45-150	45-150	45-150	45-150	45-150	45-150	45-150	45-150
Control transformer	AC or DC coil	Min. capacity		VA	250	500	500	500	500	500	500	1,000	1,000	1,500	1,500
	AC/DC common coil				150	200	200	200	200	200	200	1,000	1,000	1,000	1,000

Operation Voltage of Coil

Contactor	AC, 50Hz	AC, 60Hz	DC
HiMC9 HiMC12 HiMC18 HiMC22 HiMC32 HiMC40 HiMC50	24 42 48 80 100 110 120 220 230 240 380 400 415 440 500 550	24 48 100 110 120 208 220 230 240 277 380 440 460 480 575 600	12 24 48 60 80 100 110 125 200 220 250
Range	22-500	24-600	12-250

Contactor	AC, 50Hz	AC, 60Hz	DC	AC/DC	Range
HiMC65 HiMC80 HiMC90 HiMC110B HiMC110 HiMC130 HiMC150B HiMC150 HiMC180 HiMC220 HiMC260B	24 42 48 80 100 110 120 220 230 240 380 400 415 440 500 550	24 48 100 110 120 208 220 230 240 277 380 440 460 480 575 600	24 48 60 80 100 110 125 200 220 250	110 220 440	AC: 100-127 DC: 100-110 AC: 200-240 DC: 200-220 AC: 380-450
Range	22-500	24-600	24-250		

※ - The rated voltage shall be applied to the contactor coil.
- The coil can operate correctly during short period even at 85-110% of the rated voltage, when it is saturated at 40℃ on the rated voltage and frequency.
- If none-rated voltage is applied to the coil continuously, it is apt to be deteriorated in electrical insulation and mechanical operation.
- Non-specified voltage shall be available on request.

Contactor	AC, 50Hz	AC, 60Hz	DC	AC/DC	Range
HiMC260 HiMC300 HiMC400 HiMC500 HiMC630 HiMC800	100 110 120 220 230 240 380 400 415 440 500 550	100 110 120 208 220 230 240 277 380 440 460 480 575 600	24 48 60 80 100 110 125 200 220 250	110 220 440	AC: 100-127 DC: 100-110 AC: 200-240 DC: 200-220 AC: 380-450
Range	100-500	100-600	24-250		

Characteristics of Auxiliary Contact in Contactor

IEC 60947

Contactor			HiMC9-800
Rated insulation voltage		V	750
Rated thermal current (I_{th})		A	16
Rated current AC-12 (Resistive loads)	110V	A	10
	220V		8
	440V		6
	690V		2
Rated current AC-15 (Coil loads)	110V	A	6
	220V		6
	440V		3
	690V		2
Rated current DC-12 (Resistive loads)	24V	A	5
	48V		3
	110V		2.5
	220V		1
Rated current DC-13 (Coil loads)	24V	A	3
	48V		2
	110V		1
	220V		0.6

UL & CSA

Contactor			HiMC9-800
Rated thermal current (I_{th})		V	16
Rated current AC	120V	A	6
	240V		3
	480V		1.5
	600V		1.2
Rated current DC	125V	A	1.1
	250V		0.55
	440V		0.31
	600V		0.2

Contact arrangement

Contactor	AC	DC
HiMC9	Fig. 1	Fig. 1
HiMC12		
HiMC18		
HiMC22		
HiMC32	Fig. 2	Fig. 2
HiMC40		
HiMC50		Fig. 3

Contactor	AC, AC/DC	DC
HiMC65	Fig. 4	Fig. 3
HiMC80		
HiMC90		
HiMC110B		
HiMC110		
HiMC130		
HiMC150B		
HiMC150		
HiMC180		
HiMC220		
HiMC260B		

Contactor	AC, AC/DC	DC
HiMC260	Fig. 4	Fig. 3
HiMC300		
HiMC400		
HiMC500		
HiMC630		
HiMC800		

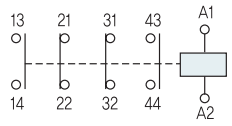
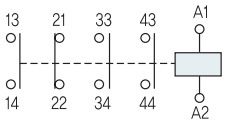
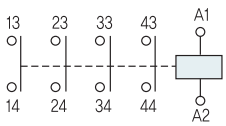
HMX22, HMT22	HMX31, HMT31	HMX40, HMT40
		

Fig. 1

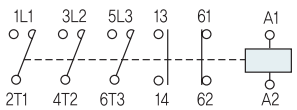


Fig. 2

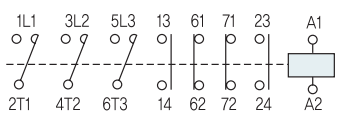


Fig. 3

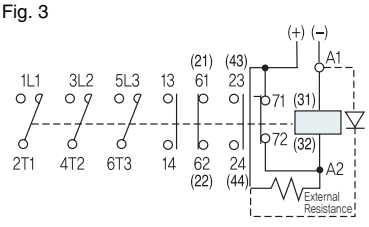
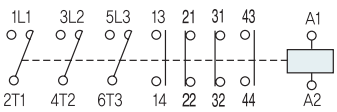


Fig. 4



Inching & Plugging Duty (AC-4)

Operation voltage		Ratio of inching	Electrical lifetime		HiMC 9	HiMC 12	HiMC 18	HiMC 22	HiMC 32	HiMC 40	HiMC 50	HiMC 65	HiMC 80	HiMC 90	HiMC 110B	HiMC 110
Inching	220V	10%	1Mil.	kW	1.5	2.7	3.7	4	5.5	7.5	11	15	18.5	19	25	25
			5Mil.		1	1.5	2.7	3.7	4.5	5.5	7.5	11	15	15	15	15
		50%	1Mil.		1	1.5	2.7	3.7	4.5	5.5	7.5	11	15	15	19	19
			5Mil.		0.5	0.75	1.1	1.5	2.2	3.7	3.7	5.5	7.5	7.5	9	9
		100%	1Mil.		0.75	1.1	1.5	2.5	4.5	4.5	5.5	7.5	9	11	11	11
			5Mil.		0.3	0.5	0.75	1.1	1.8	2.7	3.7	4	4	5.5	5.5	5.5
	440V	10%	1Mil.		2.2	4	4	7.5	11	15	22	30	37	37	50	50
			5Mil.		1.5	2.2	3.7	7.5	9	11	15	22	30	30	37	37
		50%	1Mil.		1.5	3.7	4	7.5	9	11	15	22	30	30	37	37
			5Mil.		0.75	1.5	2.2	3.7	4.5	5.5	7.5	11	15	15	18.5	18.5
		100%	1Mil.		1.1	2.2	3.7	5.5	7.5	11	15	15	15	22	25	25
			5Mil.		0.5	1.1	1.5	2.2	3.7	3.7	5.5	7.5	7.5	11	13	13
Plugging	220V	100%	1Mil.		0.75	0.75	1.5	2.2	2.5	3.7	5.5	7.5	9	9	11	11
			5Mil.		0.2	0.4	0.5	0.75	1.1	1.5	2.2	3	3.7	3.7	4.5	4.5
	440V		1Mil.		0.75	1	2.2	3.7	4.5	4.5	7.5	11	15	18.5	22	22
			5Mil.		0.2	0.4	0.75	1.5	2.2	2.2	3.7	5.5	5.5	7.5	11	11

Operation voltage		Ratio of inching	Electrical lifetime		HiMC 130	HiMC 150B	HiMC 150	HiMC 180	HiMC 220	HiMC 260B	HiMC 260	HiMC 300	HiMC 400	HiMC 500	HiMC 630	HiMC 800
Inching	220V	10%	1Mil.	kW	30	37	37	45	55	65	65	75	110	132	160	200
			5Mil.		22	25	25	30	37	45	45	50	65	70	75	132
		50%	1Mil.		22	30	30	37	45	50	50	55	75	80	90	150
			5Mil.		9	11	11	15	19	22	22	25	30	32	37	45
		100%	1Mil.		15	19	19	25	30	32	32	37	45	50	55	75
			5Mil.		7.5	9	9	11	15	17	17	22	25	30	37	45
	440V	10%	1Mil.		60	75	75	90	110	132	132	150	200	250	300	400
			5Mil.		45	55	55	75	90	110	110	125	132	140	150	190
		50%	1Mil.		45	55	55	75	90	110	110	132	150	167	190	220
			5Mil.		22	30	30	37	37	42	42	50	75	80	90	110
		100%	1Mil.		30	45	45	55	60	65	65	75	110	120	132	160
			5Mil.		15	22	22	25	30	32	32	37	55	63	75	90
Plugging	220V	100%	1Mil.		15	19	19	22	25	30	30	37	45	50	55	75
			5Mil.		5.5	7.5	7.5	11	13	15	15	18.5	22	25	30	37
	440V		1Mil.		30	37	37	45	45	49	49	55	75	90	110	150
			5Mil.		15	19	19	22	25	26	26	30	37	40	45	75

※ - Ratio of inching (%) = $\frac{\text{Inching operations}}{\text{Standard operations + Inching operations}} \times 100$

- The inching limit of making & breaking frequency is below the continuous 10 operations based on 1 operation per 1 second.

Rated Operation Current for DC Loads

Con-nection	Application	Operation voltage	HiMC 9	HiMC 12	HiMC 18	HiMC 22	HiMC 32	HiMC 40	HiMC 50	HiMC 65	HiMC 80	HiMC 90	HiMC 110B	HiMC 110
2 poles series	DC-1 (L/R≤1ms)	24V	10	12	18	20	25	35	50	65	75	80	100	100
		48V	10	12	18	20	25	35	40	65	65	65	100	100
		110V	6	10	13	15	25	25	35	65	50	50	80	80
		220V	3	7	8	10	12	12	15	50	20	20	50	50
	DC-3, DC-5 (L/R≤15ms)	24V	8	12	12	20	25	35	45	45	65	65	100	100
		48V	4	6	6	15	20	20	25	25	40	40	60	60
		110V	2.5	4	4	8	10	10	15	15	20	20	40	40
		220V	0.8	1.2	1.2	2	3	3	3.5	3.5	5	5	30	30
	DC-13 (L/R≤40ms)	24V	8	12	12	20	25	35	-	-	-	-	-	-
		48V	4	6	6	12	15	15	-	-	-	-	-	-
		110V	2	3	3	3	4	4	-	-	-	-	-	-
		220V	0.3	0.5	0.5	1.2	1.2	1.2	-	-	-	-	-	-
3 poles series	DC-1 (L/R≤1ms)	24V	10	12	18	20	25	35	50	65	75	80	100	100
		48V	10	12	18	20	25	35	50	65	75	80	100	100
		110V	8	12	18	20	25	35	50	65	75	80	100	100
		220V	8	12	18	20	22	30	40	50	55	60	80	80
	DC-3, DC-5 (L/R≤15ms)	24V	8	12	12	20	25	35	50	50	80	80	100	100
		48V	6	10	10	20	25	30	35	35	60	60	90	90
		110V	4	8	8	15	20	20	30	30	50	50	80	80
		220V	2	4	4	8	10	10	12	12	20	20	50	50
	DC-13 (L/R≤40ms)	24V	8	12	12	20	25	35	-	-	-	-	-	-
		48V	6	10	10	15	25	25	-	-	-	-	-	-
		110V	3	5	5	10	12	12	-	-	-	-	-	-
		220V	0.8	2	2	4	4	4	-	-	-	-	-	-

Con-nection	Application	Operation voltage	HiMC 130	HiMC 150B	HiMC 150	HiMC 180	HiMC 220	HiMC 260B	HiMC 260	HiMC 300	HiMC 400	HiMC 500	HiMC 630	HiMC 800
2 poles series	DC-1 (L/R≤1ms)	24V	120	150	150	180	220	260	260	300	400	500	630	800
		48V	100	120	120	180	180	220	220	240	240	300	630	800
		110V	80	100	100	150	150	180	180	200	200	220	630	630
		220V	50	100	100	150	150	180	180	200	200	220	630	630
	DC-3, DC-5 (L/R≤15ms)	24V	120	150	150	180	220	260	260	300	400	500	630	800
		48V	60	100	100	150	150	180	180	200	200	260	630	630
		110V	40	80	80	120	120	130	130	150	150	180	630	630
		220V	30	60	60	80	80	80	80	90	90	130	210	210
	DC-13 (L/R≤40ms)	24V	-	-	-	-	-	-	-	-	-	-	-	-
		48V	-	-	-	-	-	-	-	-	-	-	-	-
		110V	-	-	-	-	-	-	-	-	-	-	-	-
		220V	-	-	-	-	-	-	-	-	-	-	-	-
3 poles series	DC-1 (L/R≤1ms)	24V	120	150	150	180	220	260	260	300	400	500	630	800
		48V	120	150	150	180	220	260	260	300	400	500	630	800
		110V	100	150	150	180	220	260	260	300	400	500	630	630
		220V	80	150	150	180	220	260	260	300	300	400	630	630
	DC-3, DC-5 (L/R≤15ms)	24V	120	150	150	180	220	260	260	300	400	500	630	800
		48V	90	130	130	180	220	260	260	280	280	400	630	630
		110V	80	120	120	150	150	180	180	200	200	260	630	630
		220V	50	80	80	100	100	130	130	150	150	180	310	310
	DC-13 (L/R≤40ms)	24V	-	-	-	-	-	-	-	-	-	-	-	-
		48V	-	-	-	-	-	-	-	-	-	-	-	-
		110V	-	-	-	-	-	-	-	-	-	-	-	-
		220V	-	-	-	-	-	-	-	-	-	-	-	-

※ - DC-1 is applied to resistive loads and DC-13 is applied to inductive coil loads (IEC 60947).
- DC-3 is applied to starting or inching of shunt motors and DC-5 is applied to starting or inching of series motors (IEC 60947).
- DC-3 and DC-5 of making & breaking capacity is 4 times to above table and its operation is fifty times.
- Electrical lifetime is up to 500,000 when the frequency is below than 100 operations per a hour.

Transformer & Condenser Load

Contactor	Transformer load *				Condenser load **	
	Single phase		Three phase		Three phase	
	220V	440V	220V	440V	220V	440V
	(kVA)				(kVAR)	
HiMC9	1	1.5	2	2.5	2	3
HiMC12	1.5	2	3	4	3	4
HiMC18	2	3	3.5	5	4	6
HiMC22	2.5	4	4	7.5	5	10
HiMC32	3	5	5	10	9	16
HiMC40	4	7.5	6.5	12	11	20
HiMC50	5	10	10	18	13	24
HiMC65	7	15	12	25	17	34
HiMC80	8	17	13	27	20	40
HiMC90	9	18	15	30	22	45
HiMC110B	10	20	18	35	24	48
HiMC110	10	20	18	35	24	48
HiMC130	15	25	25	42	29	58
HiMC150B	17	33	30	60	35	70
HiMC150	17	33	30	60	35	70
HiMC180	20	40	35	70	42	84
HiMC220	25	50	42	85	58	115
HiMC260B	30	57	48	95	63	125
HiMC260	30	57	48	95	63	125
HiMC300	33	66	57	100	69	139
HiMC400	44	90	75	150	92	185
HiMC500	55	110	90	180	115	230
HiMC630	65	130	110	220	145	291
HiMC800	90	175	150	300	185	369

※ - Electrical endurance: 100,000 times (IEC 60947-4-1, AC-6a/6b)

* The inrush shall be less than 30 times of the full load current of the transformer.

** The condenser must be discharged before being re-energized. Maximum residual voltage at terminals shall be under than 50V.

Lighting Load

Quantity of incandescent lamp per contactor

Unit: EA

Contactor	AC110V								AC220V							
	100W	150W	200W	250W	300W	500W	1000W	1500W	100W	150W	200W	250W	300W	500W	1000W	1500W
HiMC9	11	7	5	4	2	2	1	-	22	14	11	8	7	4	2	1
HiMC12	14	8	6	5	4	2	1	-	26	18	14	10	8	5	2	1
HiMC18	19	13	10	7	6	3	1	1	38	25	20	15	13	7	3	2
HiMC22	20	13	10	8	6	3	1	1	40	27	20	16	13	8	3	2
HiMC32	28	18	14	11	9	5	2	1	55	36	28	22	18	11	5	3
HiMC40	38	25	19	15	12	7	3	2	75	50	38	30	25	15	7	4
HiMC50	55	35	27	22	16	10	5	3	105	70	54	43	35	22	10	6

Wire Size & Tightening Torque

Main circuit

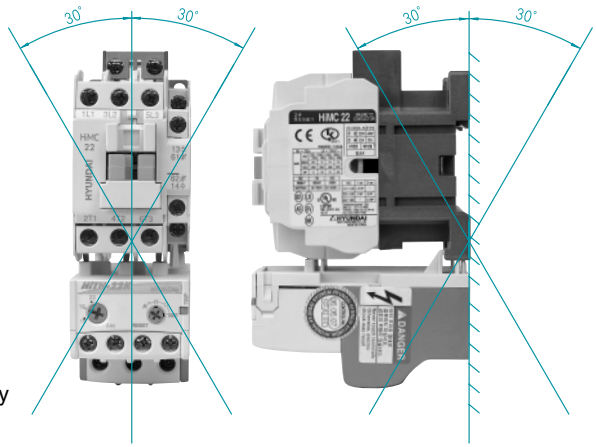
Contactor	Terminal screw	Wire size (mm²)	Compressing terminal size (mm²)	Tightening torque (kgf.cm)
HiMC9	M4	1.25-5.5	1.25/M4-5.5/M4	23
HiMC12	M4	1.25-5.5	1.25/M4-5.5/M4	23
HiMC18	M4	1.25-5.5	1.25/M4-5.5/M4	23
HiMC22	M4	1.25-5.5	1.25/M4-5.5/M4	23
HiMC32	M5	2-14	1.25/M5-14/M5	26.5
HiMC40	M5	2-14	1.25/M5-14/M5	26.5
HiMC50	M5	2-22	2/M5-22/M5	28.8
HiMC65	M8	2-38	2/M8-38/M8	60
HiMC80	M8	2-38	2/M8-38/M8	60
HiMC90	M8	2-38	2/M8-38/M8	60
HiMC110B	M8	2-38	2/M8-38/M8	60
HiMC110	M8	2-60	2/M8-60/M8	60
HiMC130	M8	2-60	2/M8-60/M8	60
HiMC150B	M8	2-60	2/M8-60/M8	60
HiMC150	M10	2-150	2/M10-150/M10	100
HiMC180	M10	2-150	2/M10-150/M10	100
HiMC220	M10	2-150	2/M10-150/M10	100
HiMC260B	M10	2-150	2/M10-150/M10	100
HiMC260	M10	2-200	2/M10-200/M10	100
HiMC300	M10	2-200	2/M10-200/M10	100
HiMC400	M10	2-240	2/M10-240/M10	100
HiMC500	M10	2-240	2/M10-240/M10	100
HiMC630	M12	80-325	80/M12-325/M12	140
HiMC800	M12	80-325	80/M12-325/M12	140

Control circuit

Contactor	Terminal screw	Wire size (mm²)	Compressing terminal (mm²)	Tightening torque (kgf.cm)
HiMC9-50	M3.5	1.25-2	1.25/M3.5-2/M3.5	12
HiMC65-800				

Installation

Ambient temperature	20℃ (Standard), −25-40℃
Average temperature (24hours)	below 35℃
Storage temperature	−30-65℃, Non freezing site
Relative humidity	45-85% RH
Altitude	below 2,000m
Vibration-proof	10-55Hz, 2g
Impact-proof	5g



- Please install in a dry and vibration-free location.
- Perpendicular installation is recommended, but ±30° slant is acceptable.
- Over 30° slant and horizonal installation may shorten the lifetime, and may have an effect on other characteristics.

Thermal Overload Relay

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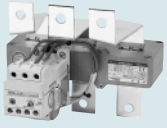
Overview

Model	HiTH22	HiTH40	HiTH50	HiTH90	HiTH130	HiTH220	HiTH300	HiTH500	HiTH800
Setting range	0.12-22A	7-40A	18-50A	28-90A	48-130A	78-220A	132-300A	180-500A	378-800A
Applied contactor	HiMC9 HiMC12 HiMC18 HiMC22	HiMC30 HiMC40	HiMC50	HiMC65 HiMC80 HiMC90 HiMC110B	HiMC110 HiMC130 HiMC150B	HiMC150 HiMC180 HiMC220 HiMC260B	HiMC260 HiMC300	HiMC400 HiMC500	HiMC630 HiMC800
Feature									

0.12-90A | HiTH22-90

Model		HiTH22	HiTH40	HiTH50	HiTH90
Applied contactor		HiMC9 HiMC12 HiMC18 HiMC22	HiMC32 HiMC40	HiMC50	HiMC65 HiMC80 HiMC90 HiMC110B
Rated current (A)		Setting range			
0.18		0.12-0.18			
0.26		0.18-0.26			
0.35		0.25-0.35			
0.5		0.34-0.5			
0.7		0.5-0.7			
0.9		0.6-0.9			
1.2		0.8-1.2			
1.6		1.1-1.6			
2.1		1.5-2.1			
3		2-3			
4.2		2.8-4.2			
5		3-5			
6		4-6			
8		5.6-8			
10		7-10	7-10		
13		9-13	9-13		
18		12-18	12-18		
22		16-22	16-22		
26			18-26	18-26	
32			24-32	24-32	
40			28-40	28-40	28-40
50				36-50	36-50
65					45-65
80					60-80
90					70-90
Phase fault protection	3 Element	○	○	○	○
	2 Element	-	-	-	-
Reset method		Manual & Automatic			
Auxiliary contacts		1NO+1NC			
Wire size (㎟)	Main terminal	1-6	2-14	2-22	2-35
	Aux. terminal	0.75-25×2EA			
Dimension (mm)	W	44	53	53	79
	H	65	70	73	84
	D	87	88	97	117
Weight (kg)	3 Element	0.16	0.22	0.27	0.54
	2 Element	0.15	0.21	0.26	0.52

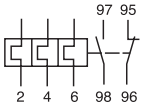
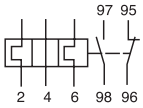
HiTH22

HiTH40

HiTH50

HiTH90

Contact arrangement

3 Element	2 Element
	

Mounting to contactor

Order information

ITH		22		K	
Code	Model name	Code	Applied contactor	Code	Element
ITH	HiTH	22	HiMC9-22	K	3
		40	HiMC32, 40	H	2
		50	HiMC50		
		90	HiMC65-110B		

N		0022				S	
Code	Application	Code	Current setting range	Code	Current setting range	Code	Terminal protection
N	Standard	0P18	0.12-0.18	0008	5.6-8	S	Safety cover
		0P26	0.18-0.26	0010	7-10		
		0P35	0.25-0.35	0013	9-13		
		0P50	0.34-0.5	0018	12-18		
		0P70	0.5-0.7	0022	16-22		
		0P90	0.6-0.9	0026	18-26		
		1P20	0.8-1.2	0032	24-32		
		1P60	1.1-1.6	0040	28-40		
		2P10	1.5-2.1	0050	36-50		
		0003	2-3	0065	45-65		
		4P20	2.8-4.2	0080	60-80		
		0005	3-5	0090	70-90		
		0006	4-6				

Standard order code and unit

Model	Code	Current setting range	Unit	Model	Code	Current setting range	Unit	Category	
HiTH22	ITH22K N0P18S	0.12-0.18	56EA	HiTH40K	ITH40K N0010S	7-10	27EA	MC	C6
	ITH22K N0P26S	0.18-0.26			ITH40K N0013S	9-13			
	ITH22K N0P35S	0.25-0.35			ITH40K N0018S	12-18			
	ITH22K N0P50S	0.34-0.5			ITH40K N0022S	16-22			
	ITH22K N0P70S	0.5-0.7			ITH40K N0026S	18-26			
	ITH22K N0P90S	0.6-0.9			ITH40K N0032S	24-32			
	ITH22K N1P20S	0.8-1.2			ITH40K N0040S	28-40			
	ITH22K N1P60S	1.1-1.6		HiTH50K	ITH50K N0026S	18-26	27EA		
	ITH22K N2P10S	1.5-2.1			ITH50K N0032S	24-32			
	ITH22K N0003S	2-3			ITH50K N0040S	28-40			
	ITH22K N4P20S	2.8-4.2			ITH50K N0050S	36-50			
	ITH22K N0005S	3-5		HiTH90K	ITH90K N0040S	28-40	10EA		
	ITH22K N0006S	4-6			ITH90K N0050S	36-50			
	ITH22K N0008S	5.6-8			ITH90K N0065S	45-65			
	ITH22K N0010S	7-10			ITH90K N0080S	60-80			
	ITH22K N0013S	9-13			ITH90K N0090S	70-90			
	ITH22K N0018S	12-18							
	ITH22K N0022S	16-22							

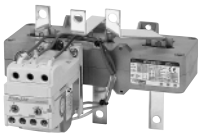
Separate mounting block

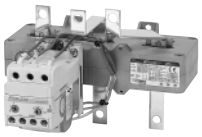
HiTHMB Mounting Block is for the separate installation of small frame HiTH Thermal Overload Relay.

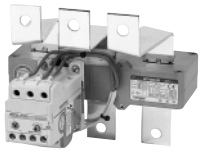
Model	Order information		Weight (kg)	Mounting method	Category	
	Code	Unit				
HiTHMB	ITHMB22 S	1EA	0.08	Screw & DIN Rail	MC	CB
	ITHMB40 S		0.11			
	ITHMB50 S		0.12			
	ITHMB90 S		0.27			

48-800A | HiTH130-800, CT Operated Type

Model		HiTH130	HiTH220	HiTH300	HiTH500	HiTH800
Applied contactor		HiMC110 HiMC130 HiMC150B	HiMC150 HiMC180 HiMC220 HiMC260B	HiMC260 HiMC300	HiMC400 HiMC500	HiMC630 HiMC800
Rated current (A)		Setting range				
80		48-80				
130		78-130	78-130			
180			108-180			
220			132-220	132-220		
300				180-300	180-300	
400					240-400	
500					300-500	
630						378-630
800						480-800
Phase fault protection	3 Element	○	○	○	○	○
	2 Element	-	-	-	-	-
Outcoming current of CT (A)		5				
Reset method		Manual & Automatic				
Auxiliary contacts		1NO+1NC				
Wire size (㎟)	Main terminal	-				
	Aux. terminal	0.75-2.5×2EA				
Dimension (mm)	W	180	180	180	180	245
	H	135	145	159	170	187
	D	187	187	187	187	219
Weight (kg)	3 Element	1.38	1.83	2.02	2.38	5.50
	2 Element	1.03	1.47	1.67	1.93	4.46


HiTH130


HiTH220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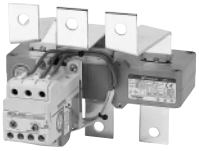
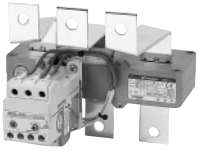
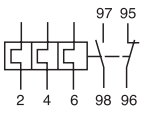
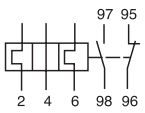
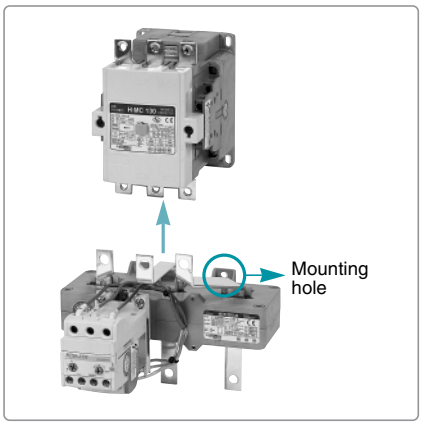

HiTH500


HiTH800

Contact arrangement

3 Element	2 Element
	

Mounting to contactor



Order information

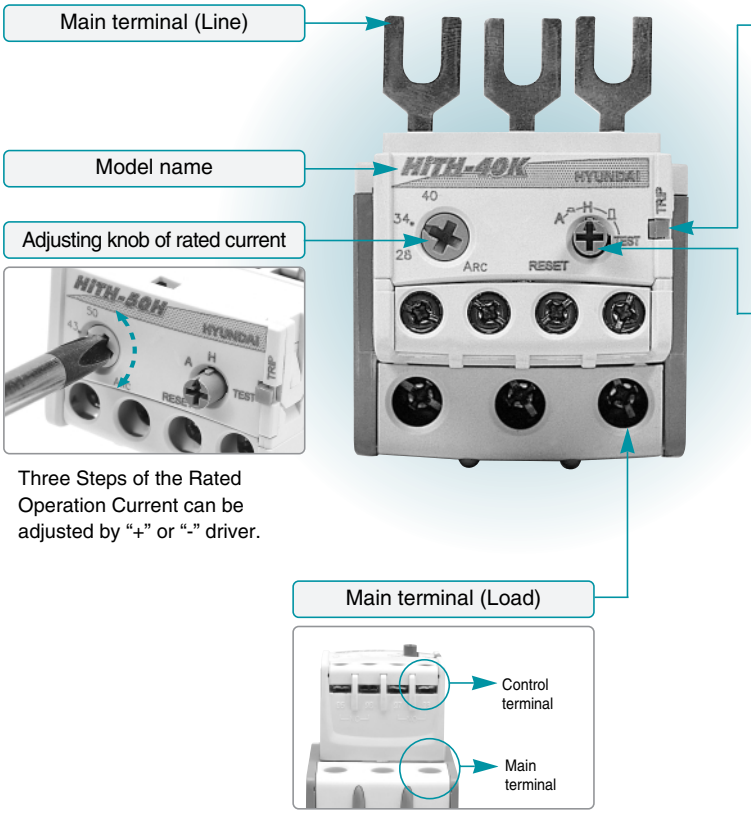
ITH		22		K	
Code	Model name	Code	Applied contactor	Code	Element
ITH	HiTH	130	HiMC110-150B	K	3
		220	HiMC150-260B	H	2
		300	HiMC260, 300		
		500	HiMC400, 500		
		800	HiMC630, 800		

N		0022		S	
Code	Application	Code	Current setting range	Code	Terminal protection
N	Standard	0080	48-80	S	Safety cover
		0130	78-130		
		0180	108-180		
		0220	132-220		
		0300	180-300		
		0400	240-400		
		0500	300-500		
		0630	378-630		
		0800	480-800		

Standard order code and unit

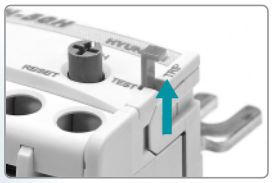
Model	Code	Current setting range	Unit	Category	
HiTH130	ITH130K N0080S	48-80A	3EA	MC	C6
	ITH130K N0130S	78-130A			
HiTH220	ITH220K N0130S	78-130A			
	ITH220K N0180S	108-180A			
	ITH220K N0220S	132-220A			
HiTH300	ITH300K N0220S	132-220A			
	ITH300K N0300S	180-300A			
HiTH500	ITH500K N0300S	180-300A			
	ITH500K N0400S	240-400A			
	ITH500K N0500S	300-500A			
HiTH800	ITH800K N0630S	378-630A	1EA		
	ITH800K N0800S	480-800A			

Operation Method



Three Steps of the Rated Operation Current can be adjusted by "+" or "-" driver.

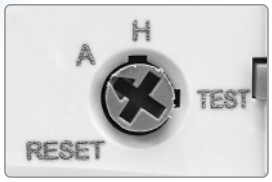
Tripping indicator



The indication bar is to be projected 5-7mm when the relay is tripped, so the relay status can be recognized easily.

Reset button

A position: Auto. reset



In the "A" position, the relay resets automatically around one minute after the relay is tripped. When the reset button is inserted into the relay body at "H" position, the button can be turned to the "A" position.

H position: Manual reset

The "H" position is the normal delivery position. The relay can be reset manually about one minute after the relay is tripped. The reset button can be turned to the "H" from "A" or "TEST" position.

Test position: Manual reset & Test function

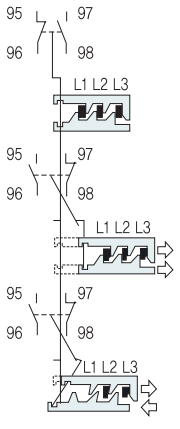
The "TEST" position is to perform the manual test since this mode works like an extra stop button of the operating circuit. When the reset button is pushed at "TEST" position, the "NO" contact is closed and the "NC" contact is opened.

Phase Fault Protection

Discordant tripping unit

When R phase becomes phase loss, the bimetal of R phase remains and the other bimetals of S & T phase are bent.
The bottom slide of the Discordant Tripping Unit keeps the original position due to the bimetal of R phase; whereas, the top slide moves because of the bending bimetals of S & T phase.
The difference of moving ratio between top and bottom slide makes the Discordant Tripping time to be shorter than normal tripping time.

■ Tripping function



Normal position (Untripped position)

Overload of 3 phase (Normal tripping)

Discordant tripping (R phase loss)

Selection by Motor Characteristics

Short starting time motors

- For motors of normal starting time within a few seconds, the relays can be selected by the table of page 56 & 58.
- The full load current (FLC) of the motor must be within the setting range of the thermal overload relay.
- The starting time of high-inertia motor is an important factor at the selection of thermal overload relays.
- The tripping time of the motors, whose starting current is 6-7 times of the rated current, can be obtained from the HiTH tripping curves, page 50. This time should be longer than around 25% of the motor starting time.

Long starting time motors

- If the starting time of the motor is longer than the tripping time of HiTH22-90, the current transformer type shall be used.
- The current transformer type relays include the Non-Tripping features during the motor starting time.
- The rated current can be decreased by looping the primary cable several times on the transformer according to the following table.

■ Current range (ex: 130A)

Number of primary loops	Current range (A)	Current ratio
1	78-130	130/5
2	39-65	65/5
3	26-26.7	26.7/5
4	19.5-43.3	43.3/5
5	15.6-26	26/5
6	13-21.7	21.7/5
7	11.14-18.5	18.5/5
8	9.75-16.25	16.25/5

- The second rated current of current transformer is 5A, the overload relay is able to control the current between 3A and 5A.
- The corresponding setting value for the relay can be calculated by using the following formula.

$$\text{Setting current (A)} = \frac{\text{Rated current of motor}}{\text{Current ratio}}$$

Making and breaking capacities of auxiliary contacts

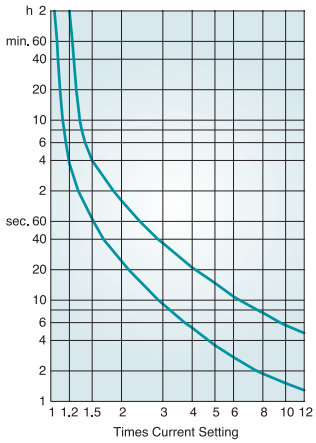
Voltage	AC-15 [1]		Voltage	DC-13 [2]	
	Aux. contact 95-96	Alarm. contact 97-98		Aux. contact 95-96	Alarm. contact 97-98
	Ie (A)	Ie (A)		Ie (A)	Ie (A)
AC110V	2.0	1.2	DC24V	1.0	1.0
AC220V	1.5	1.0	DC110V	0.4	0.4
AC500V	1.0	0.6	DC220V	0.15	0.15
AC660V	0.5	0.3	DC440V	0.07	0.07

1) AC-15: Making/breaking current = Ie×10 2) DC-13: Making/breaking current = Ie×1.1

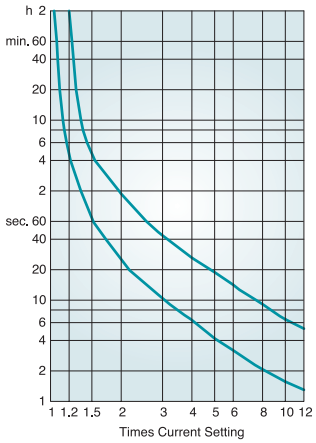
Tripping Curve

- Tripping curve of 3 phase overload condition shows the average tripping time based on the cold starting at +20℃ ambient temperature. Tripping time of hot starting is 20-40% of cold starting.
- Average tripping time of single phase overload is 40-60% of three phase overload.

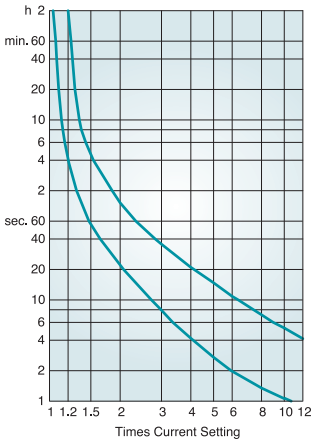
HiTH22, 0.18-3 A



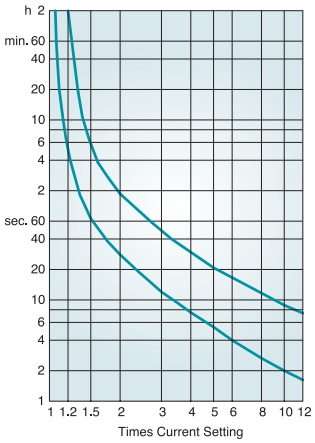
HiTH22, 4.2-6 A



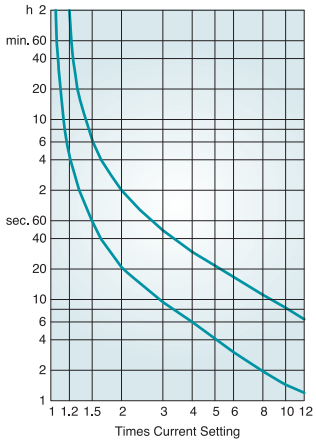
HiTH22/40, 8-22 A



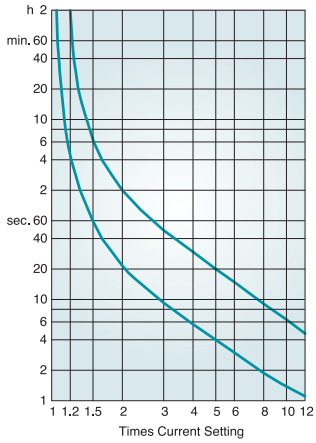
HiTH40/50/90, 26-40 A



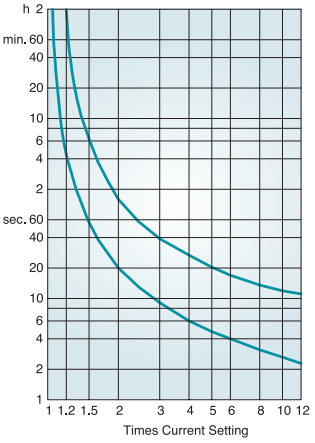
HiTH50/90, 50 A



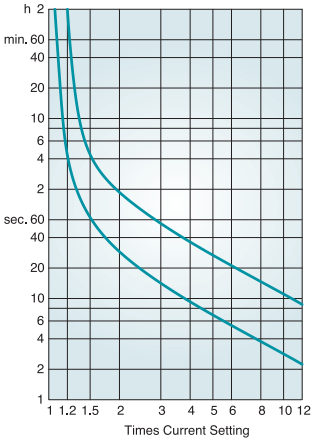
HiTH90, 65-90 A



HiTH130/220/300



HiTH500/800



Digital Motor Protection Relay

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Overview

Standard type

Model	Function					Wiring of main circuit			Allowable current partition
	Over current	Phase failure	Phase unbalance	Restriction	Reverse phase	Pin	Screw	Tunnel	
HiMP22K I **HiMP40K I** **HiMP50K I**	Inverse	●	●	●		●	●	●	HiMP22: 0.3-1.5A, 1-5A, 4.4-22A HiMP40: 8-40A HiMP50: 10-50A
HiMP150K I **HiMP300K I**	Inverse	●	●	●				●	HiMP150: 30-150A HiMP300: 60-300A
HiMP22K N **HiMP40K N** **HiMP50K N**	Inverse/ Reverse	●	●	●	●	●	●	●	HiMP22: 0.3-1.5A, 1-5A, 4.4-22A HiMP40: 8-40A HiMP50: 10-50A
HiMP150K N **HiMP300K N**	Inverse/ Reverse	●	●	●	●			●	HiMP150: 30-150A HiMP300: 60-300A

Deluxe type

Model	Function								Wiring of main circuit		Allowable current partition
	Over current	Under current	Phase failure	Phase unbalance	Restriction	Reverse phase	Short circuit	Leakage current	Screw	Tunnel	
HiMP60K S	●	●	●	●	●	●			●	●	0.5-6A, 5-60A
HiMP60K I	●	●	●	●	●	●	●		●	●	
HiMP60K Z	●	●	●	●	●	●		●	●	●	

Standard Type 0.3-300A

Model			HiMP22K I HiMP40K I HiMP50K I	HiMP150K I HiMP300K I	HiMP22K N HiMP40K N HiMP50K N	HiMP150K N HiMP300K N
Number of CT			3CT	3CT	3CT	3CT
Function	Over current		Inverse	Inverse	Inverse/Reverse	Inverse/Reverse
	Phase failure		○	○	○	○
	Phase unbalance		○	○	○	○
	Restriction		○	○	○	○
	Reverse phase		-	-	○	○
Wiring of main circuit	Pin		○	-	○	-
	Screw		○	-	○	-
	Tunnel		○	○	○	○
Allowable current partition	HiMP22		0.3-1.5A, 1-5A, 4.4-22A		0.3-1.5A, 1-5A, 4.4-22A	
	HiMP40		8-40A		8-40A	
	HiMP50		10-50A		10-50A	
	HiMP150			30-150A		30-150A
	HiMP300			60-300A		60-300A
Operation voltage (50/60Hz)			AC220V: AC90-250V		AC220V: AC90-250V	
Setting range	Over current	Allowance	over 112.5%+/-5% (Definite)		over 112.5%+/-5% (Definite)	
		Delay time	Based on setting time		Based on setting time	
		Operating time	1-30sec		1-30sec	
	Phase failure	Allowance	over 70% of unbalance rate +/-10%		over 70% of unbalance rate +/-10%	
		Time	-		-	
	Phase Unbalance	Allowance	over 50% of unbalance rate +/-10%		over 50% of unbalance rate +/-10%	
		Time	5sec		5sec	
	Restriction	Allowance	Based on characteristic curve		Based on characteristic curve	
		Time				
	Reverse phase		-		200msec	
Reset method	Manual		by RESET button (not working during operation)			
	Electrical		by control power off			
Test method			by TEST button (not working during operation)			
Tolerance	Current		+/-10%			
	Time		+/-10% or 0.5sec			
Auxiliary contact	Number		2SPST (1a1b at power on)			
	Capacity		3A/AC250V (resistive load)			
Over current capacity			20 times of max. operating current at 2sec			
Insulation resistance			Over 100MΩ at DC500V			
Fast transient burst	Between circuit and frame		AC2000V / 1min.			
	Between circuits		AC2000V / 1min.			
	Between contacts		AC1000V / 1min.			
Environment	Ambient Temperature	Operation	-25-70℃			
		Storage	-30-80℃			
	Relative humidity		45-85%			

Pin type

Screw type

Tunnel type

Standard order code and unit

Characteristic	Model	Pin connection		Screw connection		Tunnel connection		Catagory	
		Code	Unit	Code	Unit	Code	Unit		
Inverse	HiMP22	IMP22K I0001PS Y220	32EA	IMP22K I0001SS Y220	32EA	IMP22K I0001TS Y220	60EA	MC	C7
		IMP22K I0005PS Y220		IMP22K I0005SS Y220		IMP22K I0005TS Y220			
		IMP22K I0022PS Y220		IMP22K I0022SS Y220		IMP22K I0022TS Y220			
	HiMP40	IMP40K I0040PS Y220		IMP40K I0040SS Y220		IMP40K I0040TS Y220			
	HiMP50	IMP50K I0050PS Y220		IMP50K I0050SS Y220		IMP50K I0050TS Y220			
	HiMP150					IMP150K I0150TS Y220			
	HiMP300					IMP300K I0300TS Y220			
Inverse/ Reverse	HiMP22	IMP22K N0001PS Y220		IMP22K N0001SS Y220		IMP22K N0001TS Y220			
		IMP22K N0005PS Y220		IMP22K N0005SS Y220		IMP22K N0005TS Y220			
		IMP22K N0022PS Y220		IMP22K N0022SS Y220		IMP22K N0022TS Y220			
	HiMP40	IMP40K N0040PS Y220		IMP40K N0040SS Y220		IMP40K N0040TS Y220			
	HiMP50	IMP50K N0050PS Y220		IMP50K N0050SS Y220		IMP50K N0050TS Y220			
	HiMP150					IMP150K I0150TS Y220			
	HiMP300					IMP300K I0300TS Y220			

Features

High reliability

HiMP series provides superior reliability by the Micro Controller Unit (MCU).

Applicable to the inverter control circuit

HiMP series have high performance under the harmonic noise, so they can be used for the inverter control circuit under 20-200Hz range.

Electron wave and noise tolerance

- Completed to EMS test.
- Secured from the magnetic field as using troidal CT.

Various connection

- Pin type: Directly mountable to HiMC series contactors
- Screw type: Connectable to other devices with screws and cables
- Tunnel type: Cables go through ϕ 12mm cable holes

Accessories and spare parts

Item	Order code	Description	Category	
DIN rail bracket	IMPRAIL			
External bus bar	IMPCN150	for HiMP150	MC	CB
	IMPCN220	for HiMP300		
	IMPCN300			
CT	IMPCT80K	3CT, CT Ratio-80:5		
	IMPCT130K	3CT, CT Ratio-130:5		
	IMPCT180K	3CT, CT Ratio-180:5		
	IMPCT220K	3CT, CT Ratio-220:5		
	IMPCT300K	3CT, CT Ratio-300:5		
	IMPCT400K	3CT, CT Ratio-400:5		
	IMPCT500K	3CT, CT Ratio-500:5		
	IMPCT630K	3CT, CT Ratio-630:5		
	IMPCT800K	3CT, CT Ratio-800:5		

Dimension & weight

Connection		HiMP22		HiMP40		HiMP50		HiMP150		HiMP300	
		mm	kg	mm	kg	mm	kg	mm	kg	mm	kg
Pin	W	55	0.23	55	0.25	55	0.25				
	H	82		82.3		84.3					
	D	92		92		92					
Screw	W	55	0.23	55	0.25	55	0.25				
	H	72.4		72.4		72.4					
	D	92		92		92					
Tunnel	W	55	0.18	55	0.18	55	0.18	106		144	
	H	40.8		40.8		40.8		80		80	
	D	92		92		92		117		137	

Deluxe Type 0.5-60A

Model			HiMP60
Panel mount			Unit or Extension [3]
Wiring of main circuit			Screw or Tunnel
Allowable current partition			• 06: 0.5-6A • 60: 5-60A
Current setting range			Min. current - Max. current×105%
Operating voltage (50Hz/60Hz)			• 110V: 75-120% • 220V: 75-120%
Features & Setting range	Over-current		Over 112.5%±5% - Inverse (cold/hot curve), Definite
	Under-current		User setting (30-70% of operating current/ Min. setting value shall be over 70% of Min. rated current.)
	Phase failure		Over 70% of unbalance rate ±10%
	Phase unbalance		Over 50% of unbalance rate ±10%
	Restriction	Stall	Over 180% of setting current - Definite only
		Lock	User setting (300-1800%) - Definite only
	Reverse phase		Reverse phase perception at the beginning.
	Short circuit [1]		User setting (200-1000% of rated current)
	Leakage current [2]		User setting (100-2500mA)
Time setting range	Over-current	Inverse	Delay time: OFF/1-30sec, Operation time: 1-30sec (600% basis)
		Definite	Delay time: OFF/1-30sec, Operation time: 1-30sec
	Under-current		1-30sec
	Phase failure		2sec
	Phase unbalance		5sec
	Restriction	Stall	5sec
		Lock	Within 500ms
	Reverse phase		Within 500ms
	Leakage current [1]		0.1-10sec
	Short circuit [2]		Within 50ms
Preliminary alert function			60-110% of rated current
Operating time function			OFF / 0-9990 hour
Reset method	Manual		By RESET button manually (Not working during operation)
	Electrical		By control power off.
	Automatic		After setting time.
Test method			Tripping by the TEST button (Not working during operation)
Aux. contact	Number		• Trip contact: 1a1b • Alert contact: 1a [4]
	Capacity		3A/250VAC (Resistance load)
Over-current capacity			Over 20 times/2sec of Max. operating current
Insulation resistance			Over 100MΩ /500VDC
Fast transient burst	Between circuit and frame		2000VAC/1min.
	Between circuits		2000VAC/1min.
	Between contacts		1000VAC/1min.
Environment	Temperature	Operation	–25-70℃
		Storage	–30-80℃
	Humidity		45-85% RH
Dimension & Weight	Screw connection		95.6 (W)×101 (H)×111.3 (D)mm, 0.65kg
	Tunnel connection		95.6 (W)×58 (H)×111.3 (D)mm, 0.50kg

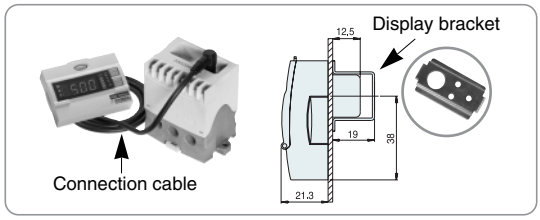
1) 2) Leakage and Short Circuit function can not be selected at the same time.
3) Connecting cable and display bracket should be ordered when extension type is required.
4) When the leakage function is selected, alert contact is used as ZCT input terminal

Screw unit

Screw extension

Tunnel unit

Tunnel extension



Features

High reliability

- The micro controller unit of HiMP series provides superior reliability.
- Real time processing and high precision.

Applicable to the inverter control circuit

Deluxe type relays have high performance under the harmonic noise, so they can be used for the inverter control circuit under 20-240Hz range.

Protective features

- Basic functions
  - Over-current / Under-current
  - Stall / Lock
  - Phase Loss / Phase unbalance / Reverse phase
- Optional functions
  - Earth leakage current
  - Short circuit current

Preliminary alert function

- HiMP series can prevent the sudden over-current trip through the preliminary alert function.
- HiMP series can be inspected easily due to displaying load ratio by bar-graph during operation.

Operating time display function

- Accumulated motor operation time can be displayed.
- Certain operating time can be set to alert, so oil exchange point can be checked conveniently.

Structure

- **Separable display part**

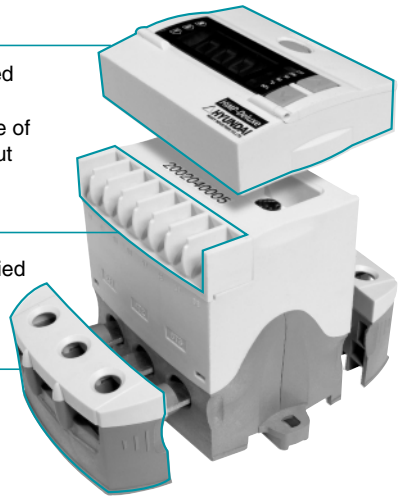
  The display part can be installed separately from the body; therefore, the values and cause of the fault can be checked without opening the panel door.

- **Ring-Terminal**

  Ring-terminal type can be applied to the main and control circuit.

- **Screw and tunnel connection**

  Both screw type and tunnel type are available.



Digital ampere meter function

HiMP series are able to check the three phase ampere without additional ampere meter.

Faults display function

Easy maintenance and repair

Standard order code and unit

Characteristic	Model	Current setting range	Screw connection		Tunnel connection		Category	
			Code	Unit	Code	Unit		
Standard	HiMP60	0.5-6A	IMP60K S0006SS Y220	18EA	IMP60K S0006TR Y220	32EA	MC	C7
		5-60A	IMP60K S0060SS Y220		IMP60K S0060TR Y220			
Short circuit protection	HiMP60	0.5-6A	IMP60K I0006SS Y220		IMP60K I0006TR Y220			
		5-60A	IMP60K I0060SS Y220		IMP60K I0060TR Y220			
Leakage current protection	HiMP60	0.5-6A	IMP60K Z0006SS Y220		IMP60K Z0006TR Y220			
		5-60A	IMP60K Z0060SS Y220		IMP60K Z0060TR Y220			

Accessories and spare parts

Item	Order code	Description	Item	Order code	Description	Category	
Separate connection cable	IMPCBL 1	Length 1.0m	CT	IMPCT80K	3CT, CT ratio - 80:5	MC	CB
	IMPCBL 1.5	Length 1.5m		IMPCT130K	3CT, CT ratio - 130:5		
	IMPCBL 2	Length 2.0m		IMPCT180K	3CT, CT ratio - 180:5		
	IMPCBL 4	Length 4.0m		IMPCT220K	3CT, CT ratio - 220:5		
Display bracket	IMPBRACKET			IMPCT300K	3CT, CT ratio - 300:5		
ZCT for earth leakage protection type	IMPZCT30	Inner diameter 30mm		IMPCT400K	3CT, CT ratio - 400:5		
	IMPZCT50	Inner diameter 50mm		IMPCT500K	3CT, CT ratio - 500:5		
	IMPZCT65	Inner diameter 65mm		IMPCT630K	3CT, CT ratio - 630:5		
	IMPZCT80	Inner diameter 80mm		IMPCT800K	3CT, CT ratio - 800:5		
	IMPZCT100	Inner diameter 100mm					
	IMPZCT120	Inner diameter 120mm					

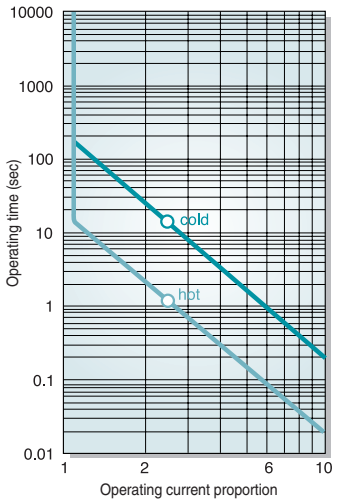
Function | Standard Type

Function		Description	Remark
Protection	Over current	• Prevent the motor from over current. • Trip it over 112.5% of setting current and time.	Ref. Cold/Hot curve
	Phase failure	• Prevent the phase failure from line fault and touch. • Trip 2sec when deviation is over 70% among three phase. (2CT model is perceived only R and T phase)	
	Phase unbalance	• Prevent the phase unbalance from fault of insulation/wiring. • Trip 5sec when deviation is over 50% among three phase. (2CT model is perceived only R and T phase)	
	Restriction	• Prevent damage of motor from rapid load increase of restriction. • The definite is tripped by the rated current over 300% after delay time at the starting time.	
	Reverse phase	• Prevent the reverse rotation from wiring fault. • Trip within 150sec from the starting time.	Only for N type
Delay Time		• Immovable time of over current protection • The definite, delayed over current operation at the motor starting time. Ex) Trip time of the 150% over current - Starting: over current operating time×2 - Normal: trip after over current operating time	Only for definite characteristics
Test		• Check of relay and sequence without supplying power. • Change to the trip state when you press the test button.	Non trip for load operation
Reset		• Decide the reset method after trip. - Manual reset is by button. - Electrical reset is by power off.	Non trip for load operation
Cold/Hot curve		• Curve of over current protection on the inverse. - Cold: First operating condition after enough rest. - Hot: Consecutive operating condition. • Operate according to hot curve after setting time.	On the inverse only

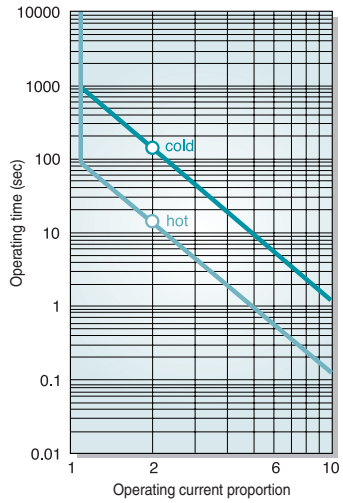
Function		Description	Remark
Protective function	Over-current	• Prevent the motor from over-current. • Trip it over 112.5% of setting current and time.	• Standard • Ref. cold/hot curve
	Under-current	• Prevent the vain rotation from power fault. • Trip it by setting rate of under-current and time.	Selective function
	Phase failure	• Prevent the phase failure from line fault and touch. • Trip 2sec when deviation is over 70% among three phases.	Selective function
	Phase unbalance	• Prevent the phase unbalance from fault of insulation/wring. • Trip 5sec when deviation is over 50% among three phases.	Selective function
	Stall	• Prevent drop-voltage or restriction from rising load. • Current is over 180% of setting current, trip it 5sec on definite condition	Selective function Definite only
	Lock	• Prevent damage of motor from rapid load increase. • Current is over setting current, trip it within 2sec on definite condition	Selective function definite only
	Reverse phase	• Prevent the reverse rotation from wiring fault. • Trip within 500msec at the starting time.	Selective function
	Leakage current	• Prevent the leakage current from insulation fault. • Current is over setting leakage current, trip at the setting time	Optional function
	Short circuit	• Prevent the short circuit from insulation fault of motor and wiring failure. • Current is over setting rate of operating current, trip within 50msec.	Optional function
Preliminary alert[4]		• Prevent trip from sudden over-currents. • Current is over setting rate of operating current, operate the alarm and alert contact until trip.	Selective function
Accumulated operating time		• Display accumulated time over 50% of rated current. • Display unit: day	RESET is not allowed.
Operating time alert[4]		• Certain operating time can be set for motor oil exchange. • At set time, display and alert contact operate.	Optional function
CT ratio		• Compensate the tolerance of current between motor and relay. Increase the number of tunnel on the low-current and use the outer CT on the high-current. • Compensate the setting current and indication value by CT ratio. ex) CT ratio should be 20 when 100:5 CT is used.	0.2/0.5/1/2/5/10/15/20/24/26/30/32/36/40/44/48/50/60/80/100/120/126/150/160/200/240
Delay time		• Immovable time of over-current protection.	Selective function
Test		• Check of relay and sequence without supplying power. • On the same condition of 600% current.	
Reset		• Decide the reset method after trip • Manual (non)/Electrical (Pr)/Automatic (0-20min) reset can be selected - Manual reset is by button - Electrical reset is by power off - Automatic reset is by setting time	Manual reset is basic on the reset condition of electric and auto.
Cold/Hot curve		• Curve of over-current protection on the Inverse - Cold: First operating condition after enough rest - Hot: Consecutive operating condition • Delay time is over 1: operate for hot curve after delay time • Delay time off: operate according to hot curve after setting time	On the inverse only

Characteristic Curve | Standard Type

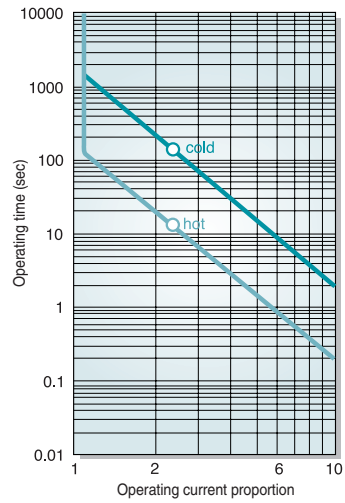
Inverse condition (t1)



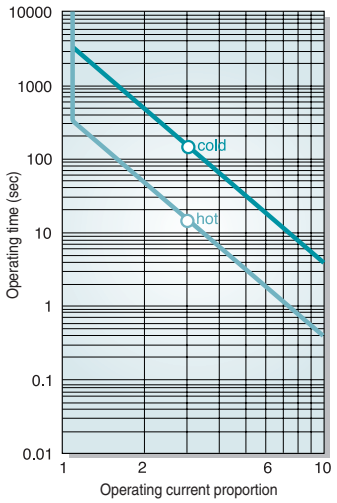
Inverse condition (t5)



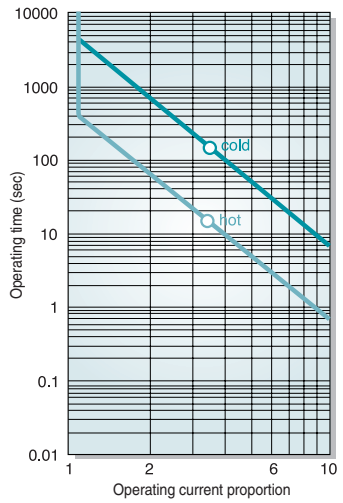
Inverse condition (t10)



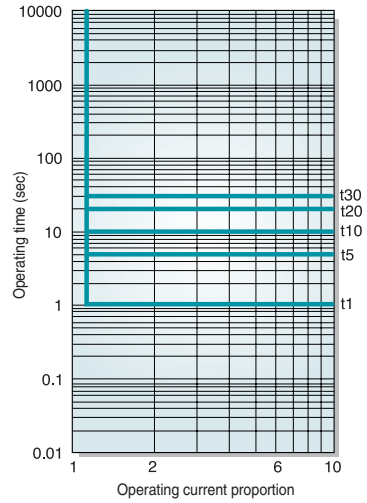
Inverse condition (t20)



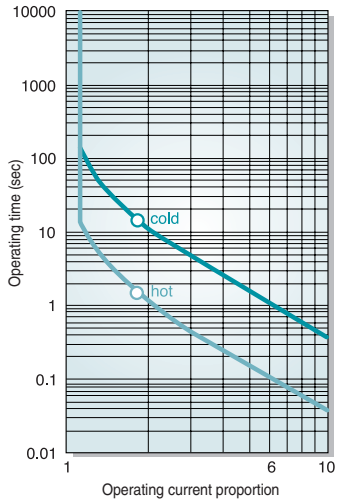
Inverse condition (t30)



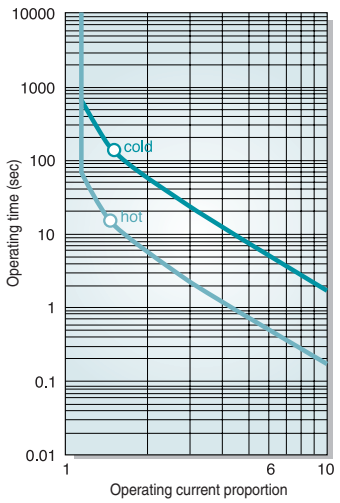
Definite condition



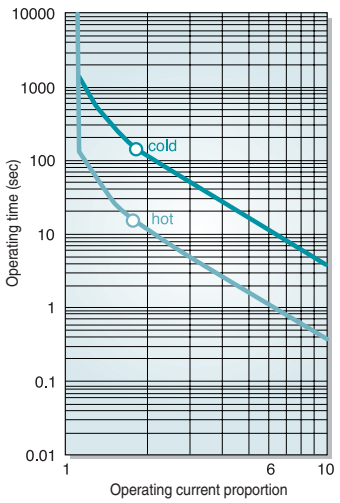
Inverse condition (t1)



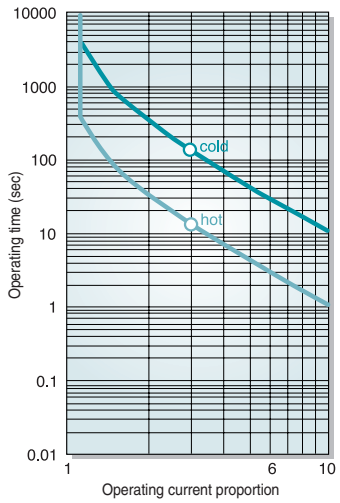
Inverse condition (t5)



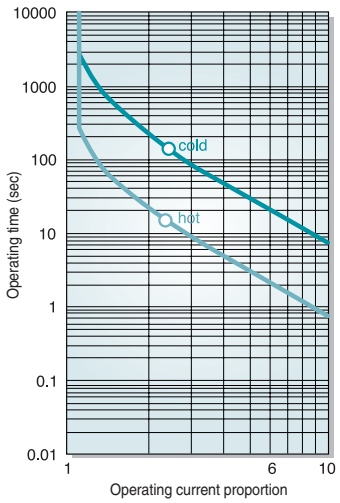
Inverse condition (t10)



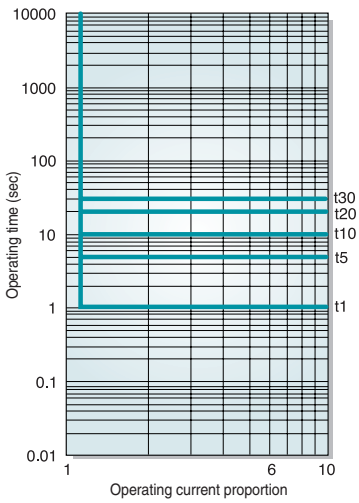
Inverse condition (t20)



Inverse condition (t30)

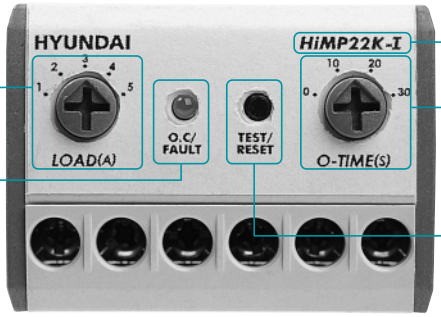


Definite condition



Setting Method & Wiring Diagram | Standard Type

Front plate description



■ LOAD (A) knob
Setting the rated current

■ O.C/FAULT LED
Indication operation state for over current, phase failure and reverse phase

■ Relay type

■ O-Time (s) knob
Setting the operaing time for over current

■ TEST/RESET button
- Test the trip state of relay before motor operation
- Reset after the relay is tripped

Setting method

1. Cut the up stream power supply for safety

2. Check the rated voltage and apply the control power to A1 and A2 terminal

3. Check the TEST/RESET button operation

1) Check the wiring is correct (Refer to the wiring diagram)
2) When you press the TEST/RESET button, the O.C LED is turned on and the HiMP is tripped.
3) When you press the TEST/RESET button under HiMP is tripped, the O.C LED is turned off and HiMP is reset.

Caution) For safety, when the motor is operating the TEST/RESET button does not work.

4. Set the operating time

4-1. Definite characteristics

The operating time is operated to the starting time and normal operation.

1) Starting: After the operation is automatically delayed by over current setting time, start operating the over current protection
2) Normal: The HiMP is tripped after the selected operation time.
3) Set the operation time by considering starting current and starting time according to the load.
EX.) Set the operation time between 6sec and 8sec

Caution) The restriction operates if the motor starting time comes to exceed the setting time at over 300% of full load current. Therefore, excessive setting time could result in the failure of the motor.

4-2. Inverse characteristic

The operating time is set based on 600% of the rated current in the characteristic curve by O-time (Operating time) knob.

1) Set the operating time by considering the operating time and start current according to the types of the load.
(EX: If the start current is 600% of the normal operation current and the starting time is 10sec, set the time knob around 11-12sec. with 10-20% margin)
2) Operate by cold curve at the first operating condition. After that operate by hot curve.

Caution) The HiMP can be tripped to protect the motor when the motor is started a few times continuously. When a motor is frequently changing the rotating direction (foward and reverse), set the operating time longer.

5. Set the operating current

Set the current by considering the rated current of a motor to protect from over current.

1) Check if the rated current of a motor is within the current setting range of an HiMP
2) Set the LOAD (Rated current) knob to the maximum value and then start a motor.
3) Under normal motor operation, rotate the LOAD knob counterclockwise until the O.C LED turns on and off. The current at this point is the rated current of the motor.
4) At this point, rotate the LOAD knob clockwise until the O.C LED turned off. The current at this point is 100% of the rated current.

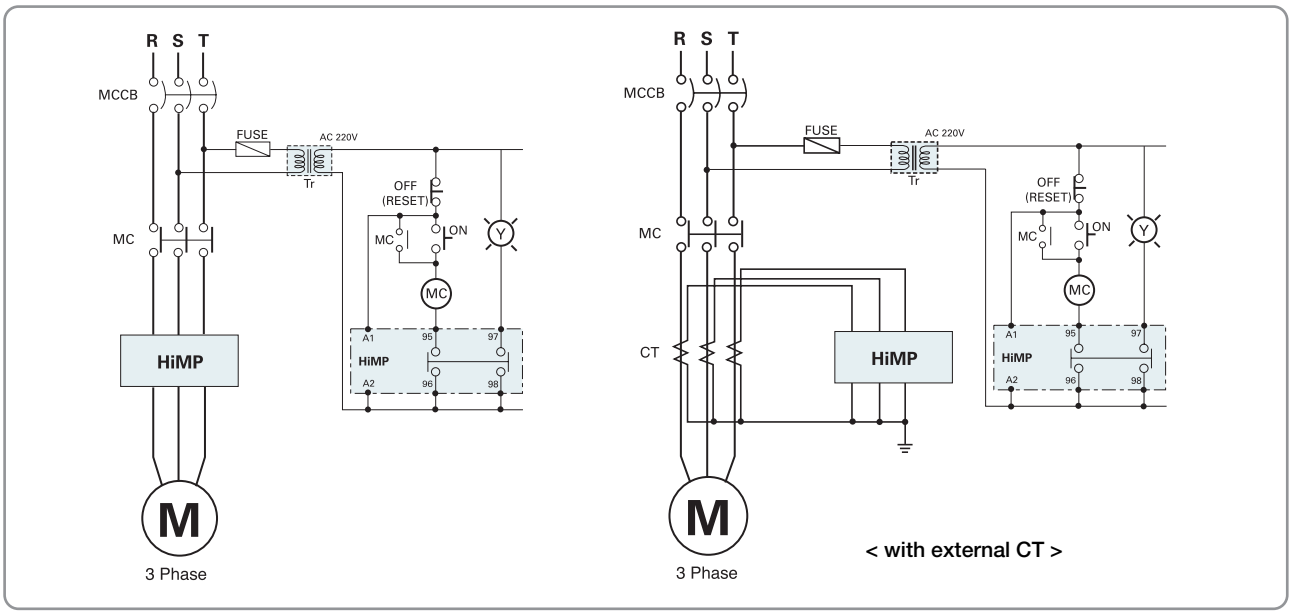
6. LED Indication

- HiMP22/40/50/150/300K I (Inverse 3): Protection for over current, phase failure, and phase unbalance
- HiMP22/40/50/150/300K N (Inverse/Reverse 3): Protection for over current, phase failure, phase unbalance, and reverse phase

Condition			LED signal				Remark
			Red		Green		
Operation	Normal		OFF		ON		
	Over current preliminary alert [1]		ON and OFF		OFF		0.3sec interval
	Phase failure/ Progress of phase unbalance.		OFF		ON and OFF		0.3sec interval
	Progress of over current [2]		ON and OFF		OFF		0.6sec interval
Trip	Over current trip		ON		OFF		
	Phase failure/ Phase unbalance	R-phase	Irregular ON and OFF				2sec cycle
		S-phase except 2CT	Irregular ON and OFF				2sec cycle
		T-phase	Irregular ON and OFF				2sec cycle
	Reverse phase (Only N-type)		Irregular ON and OFF				1sec cycle

1) When the current reaches the setting value (105%), over current preliminary alert operates; giving a signal without trip.
2) When the current reaches the setting value (113%), progress of over current operates; giving a signal without trip.

Wiring diagram



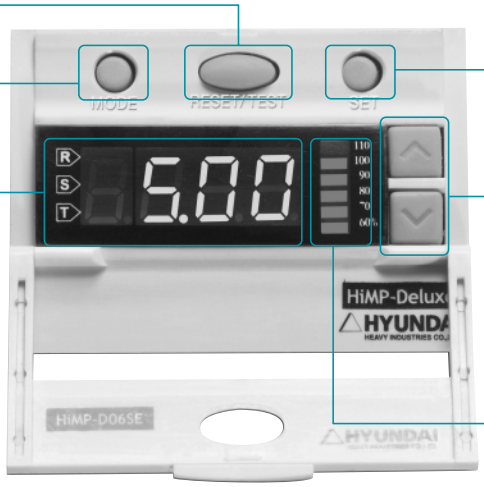
Setting Method & Wiring Diagram | Deluxe Type

Front plate description

■ **TEST / RESET button**
1) Checks the trip condition of relay before operating the motor
2) Resets the relay after trip operation

■ **MODE button**
Change the mode of function set, current display and operating time.

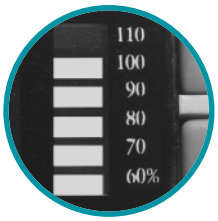
■ **Display window**
Information indicator shows Current Value, Cause of Trip and Setting Value



■ **SET button**
Records the setting condition

■ **SELECT button**
1) Mode of current indication: Displays the current of each phase and rated setting current.
2) Mode of function setting: Changes the function/setting values
3) Trip condition shows the trip cause and displays the failure current value.

■ **Bar-graph**
Displays the load rate



Before operating motor, set the function

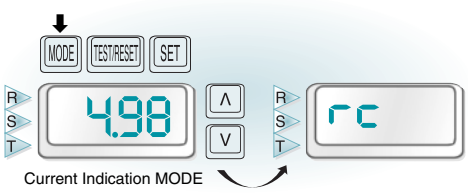
■ Check the relay and circuit through TEST & RESET button
1) Check the wiring condition carefully before testing.
2) After pressing the TEST & RESET button, test is displayed on the indicator.
If the current is over 600% of set current, the tripping operation is executed.
3) Press the TEST & RESET button again to reset to the normal condition.

■ Change the function through the mode button before setting the function.
※Set the function by using SELECT and SET button.

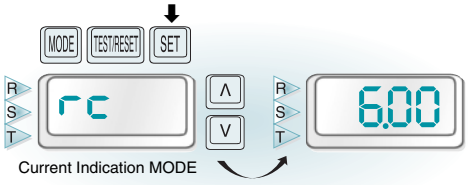
No	Key	Function	Default	Operating scope
1	rc	Operating current	6.3/63	• 06 Type: 0.5-6.3A • 60 Type: 5.0-63A
2	chA	Over-current operating feature	inv	inv : Inverse, dEF : Definite
3	oc-t	Over-current operating time	30	1-30sec
4	dELy	Delay time	30	oFF / 1-30sec
5	Uc	Under-current proportion	oFF	oFF / 30-70%
6	Uc-t	Under-current operating time	30	1-30sec
7	StL	Stall	oFF	oFF / on
8	Loc	Lock	oFF	oFF / 200-1000%
9	nP	Negative phase	oFF	oFF / on
10	PF	Phase fault	oFF	oFF / on
11[1]	EL-t	Electric leakage operating time (optional function)	0.1[3]	oFF / 0.1-10sec
	Sc	Short current operating proportion (optional function)	oFF	oFF / 300-1800%
12	ALt[2]	Pre-alarm function	110	oFF / 60-110%
13	ct	CT Ratio	1/10[4]	0.2-240
14	rh	Operating time alarm	oFF	oFF / 10-9990hour
15	rSEt	Reset	oFF	oFF / Pr / 0-1200sec (Manual/Electric/Auto)

1) Leakage and Short Circuit function can not be selected at the same time.
2) Pre-alarm function does not work when Leakage or Short Circuit function is selected.
3) For Dip switch setting, please refer to page no. 64.
4) The CT ratio of 60 type shall not be changed.(06 type default is 1, and 60 type default is 10.)
CT ratio step: 0.2, 0.5, 1, 2, 5, 10, 15, 20, 24, 26, 30, 32, 36, 40, 44, 48, 50, 60, 80, 100, 120, 126, 150, 160, 200 and 240

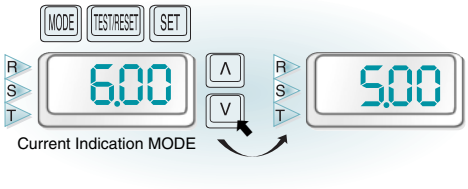
1) Display the rc by pressing the MODE button
- User can be change the function by pressing the SELECT button.
- To return to the current mode, press the MODE button.



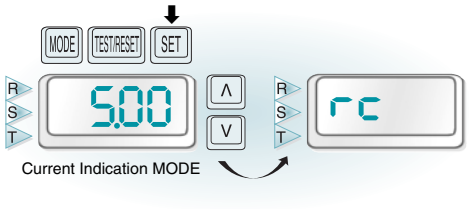
2) To change the setting value, display the set value by pressing the SET button.
- Setting value is displayed for the rated current (rc).



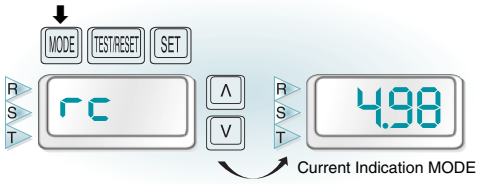
3) Setting value is changed by pressing the SELECT button



4) Setting value is recorded by pressing the 'SET' button, and then the selected function is displayed.
- When value of rated current is set up, rc is displayed after setting values recoding.
- If users do not need to store the setting value, do not press the SET button.
  Push the MODE button without recording.

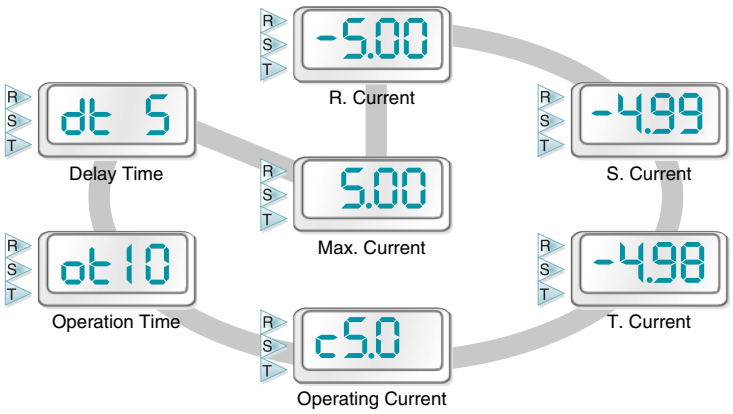


5) If you want to set another function, repeat the above sequence from 2) to 4) section.
- Finish the setting by pressing the MODE button 2 times.



Indication on the current MODE

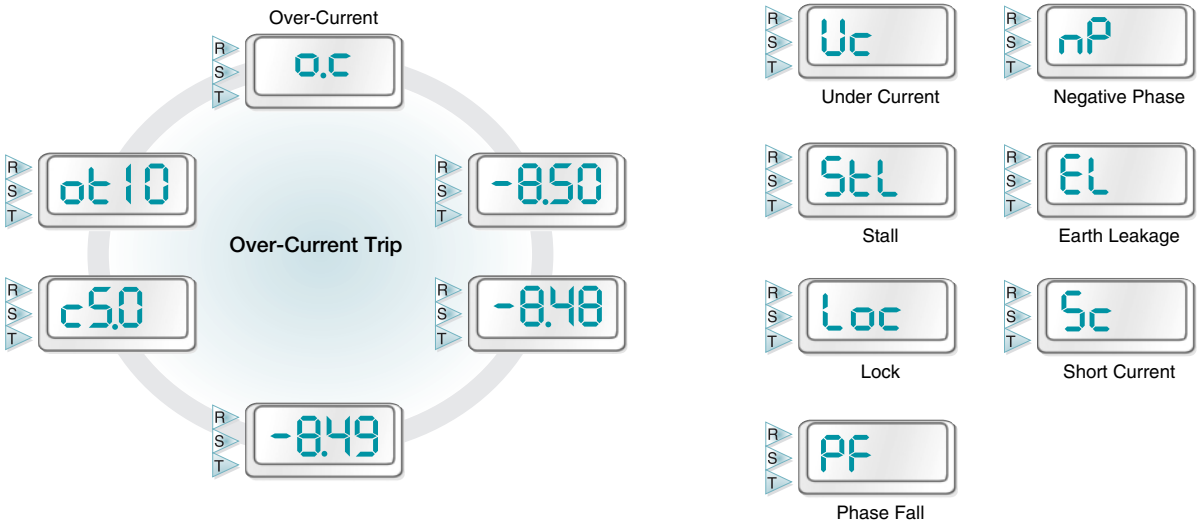
- The max. current is displayed among the three phases in the normal condition.
- When the SELECT button is pressed, the value is displayed according to the order of the diagram.
- If any button is not pressed for 5 seconds, it returns to the normal condition.



Setting Method & Wiring Diagram | Deluxe Type

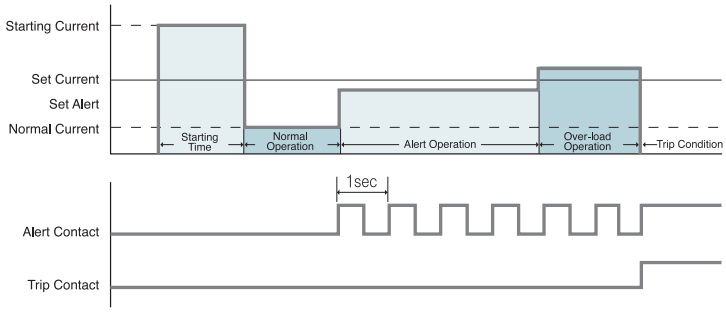
Information indication under the trip condition

- The cause of trip is displayed on the LED.
- By pressing the button, user can see the fault current as the sequence below indicates.



Contact operation condition

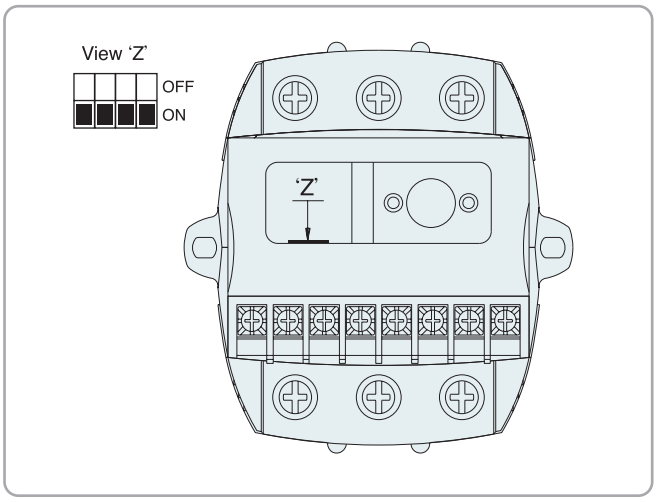
- Alert and trip contact operate simultaneously under the off condition.
  If electric leakage current function is included, alert contact is used as the input terminal for ZCT.



Setting method of earth leakage current

User can change the value of earth leakage current with the Dip switch.

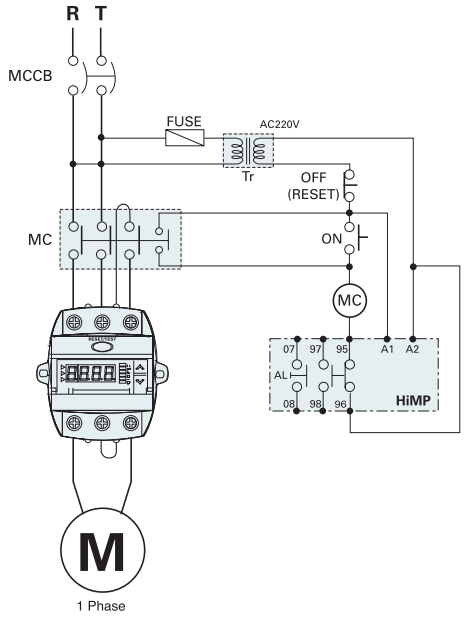
Sensitive current (mA)		Dip switch position at view 'Z'			
		4	3	2	1
100	(OFF)	■	■	■	■
	ON	□	□	□	□
200	(OFF)	■	■	■	□
	ON	□	□	□	■
500	(OFF)	■	■	□	■
	ON	□	□	■	□
1000	(OFF)	■	□	□	■
	ON	□	■	■	□
1500	(OFF)	□	■	■	■
	ON	■	□	□	□
2000	(OFF)	□	■	□	□
	ON	■	□	■	■
2500	(OFF)	□	□	□	□
	ON	■	■	■	■



※ To set the value of earth leakage current, check the position of Dip switch.

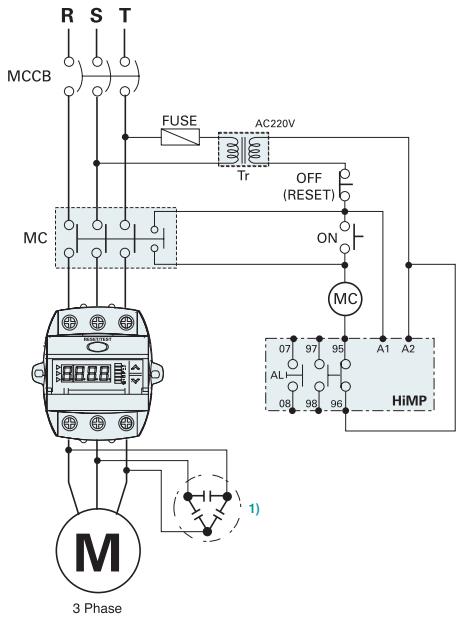
Wiring diagram

Single phase - HiMP60K S/I

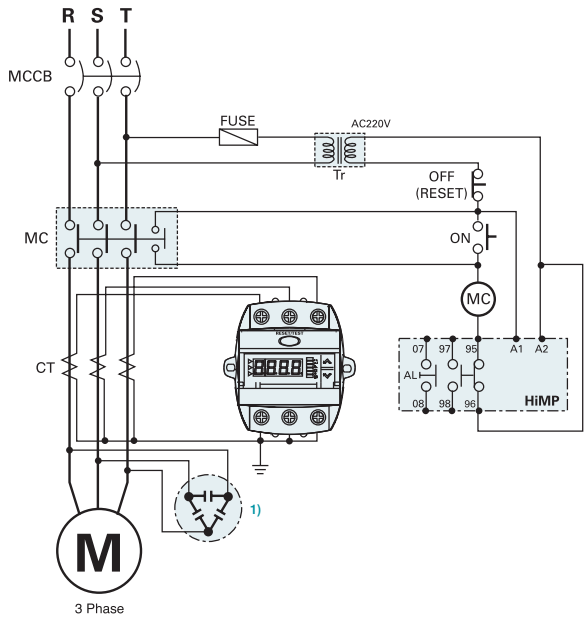


※Please turn off the reverse phase function when it is used for single phase motor.

Three phase - HiMP60K S/I

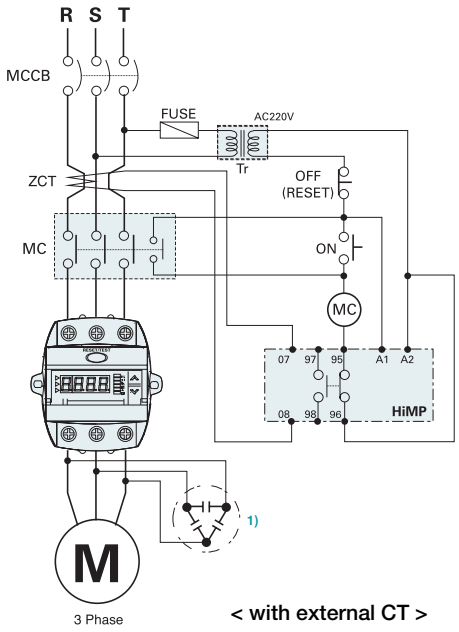


Three phase - HiMP60K S/I



< with external CT >

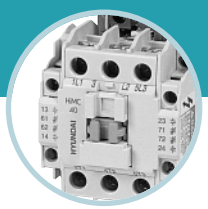
Three phase - HiMP60K Z



< with external CT >

※- General ZCT is not applicable, please use HiMPZCT.
- 07, 08 Contact of HiMP60K Z shall be used as the input terminal for ZCT.

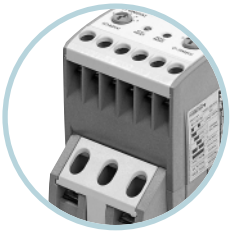
1) It is recommend to install capacitor near the motor side rather than the line side.

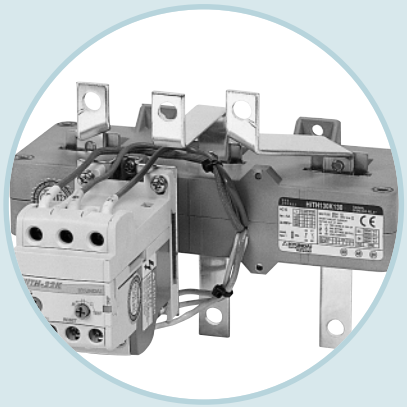


Dimensions

Contents

Contactor 67
Motor Starter 70
Capacitor Switching Contactor & Control Relay 73
Thermal Overload Relay 74
Digital Motor Protection Relay 78

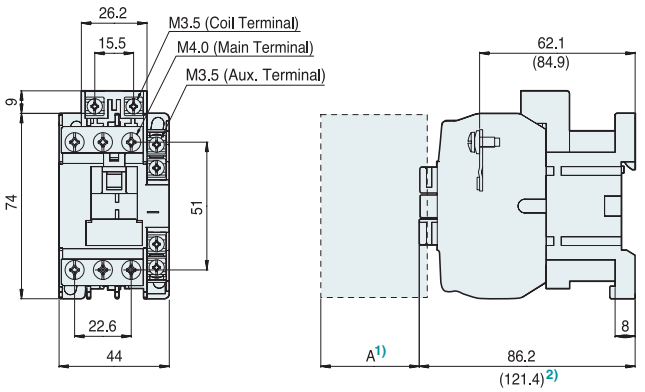




Contactor

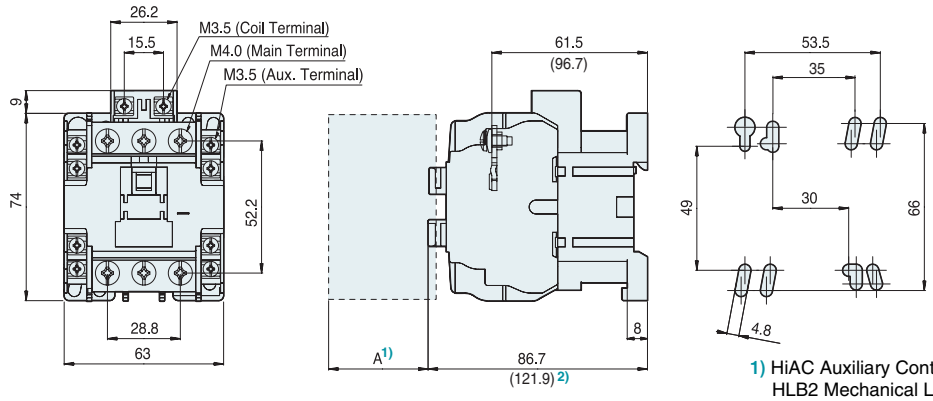
Unit: mm

HiMC9 / HiMC12 / HiMC18 / HiMC22



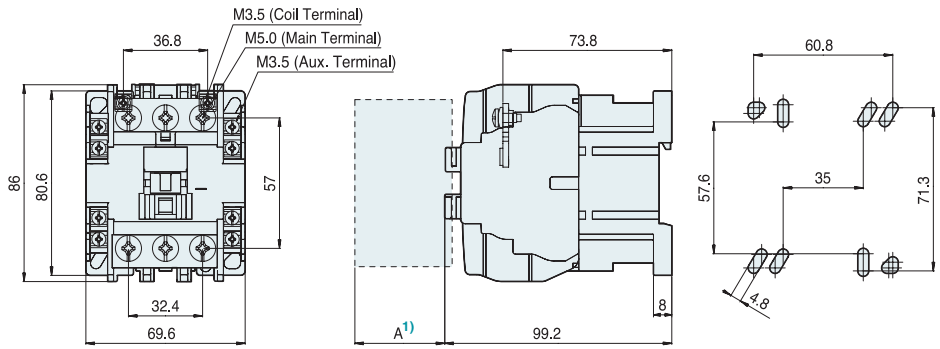
1) HiAC Auxiliary Contact Block: 35
HLB2 Mechanical Latching Block: 42.5
HOKZE Electronic Timer Block: 39
2) Figure for DC Operation Contactor

HiMC32 / HiMC40



1) HiAC Auxiliary Contact Block: 35
HLB2 Mechanical Latching Block: 42.5
HOKZE Electronic Timer Block: 39
2) Figure for DC Operation Contactor

HiMC50

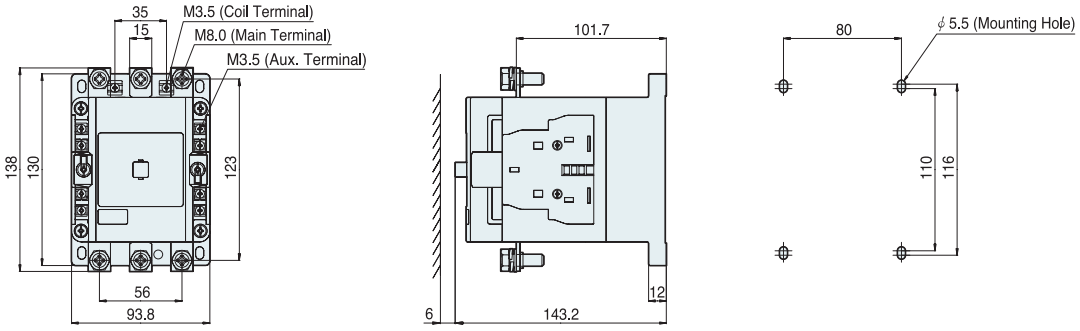


1) HiAC Auxiliary Contact Block: 35
HLB2 Mechanical Latching Block: 42.5
HOKZE Electronic Timer Block: 39

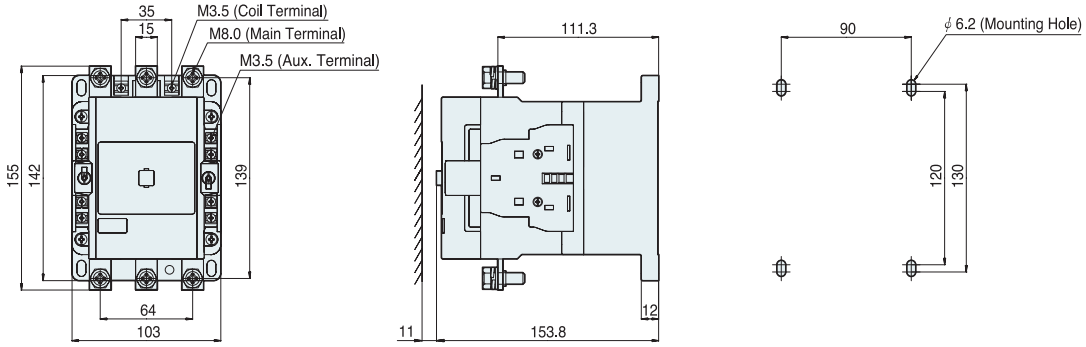
Contactor

Unit: mm

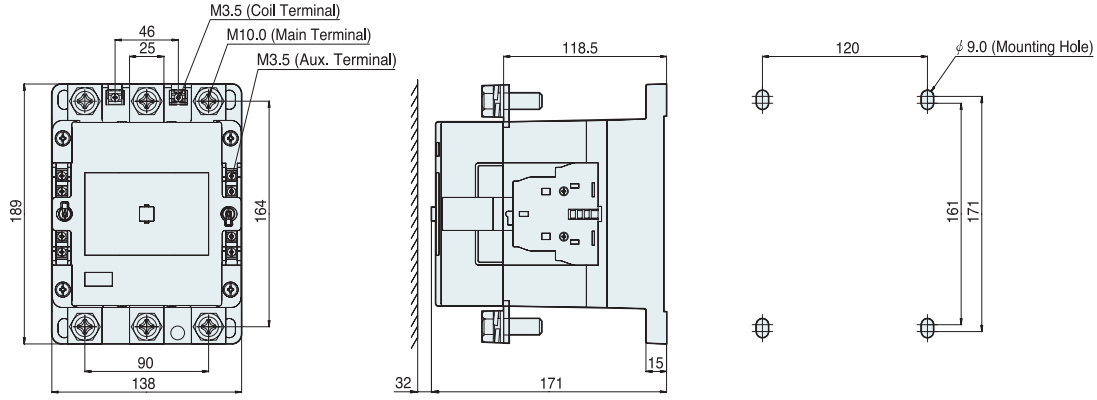
HiMC65 / HiMC80 / HiMC90 / HiMC110B



HiMC110 / HiMC130 / HiMC150B

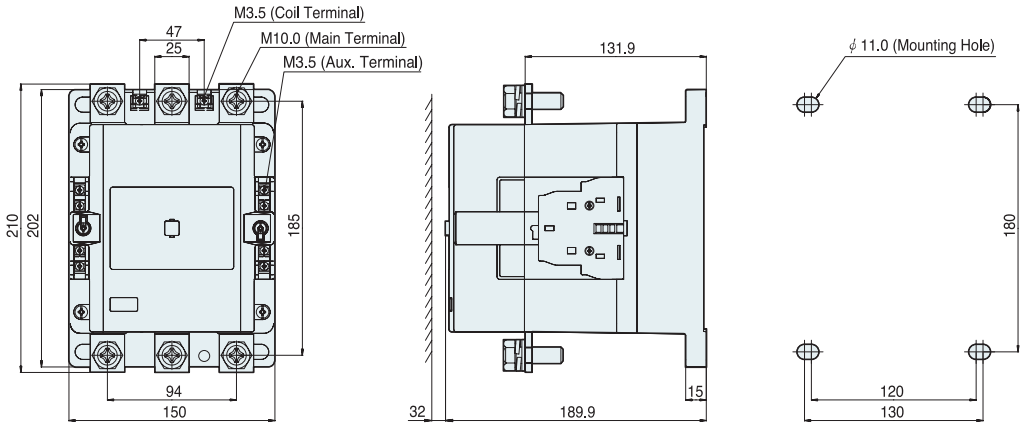


HiMC150B / HiMC180 / HiMC220 / HiMC260B

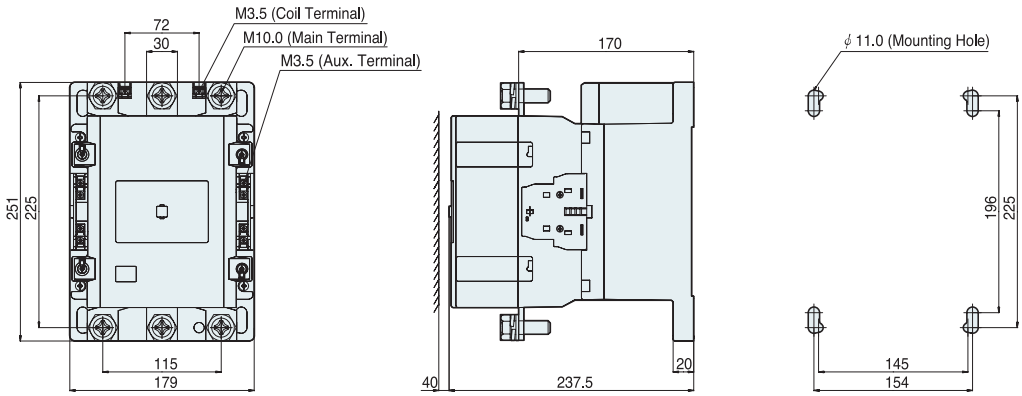


Unit: mm

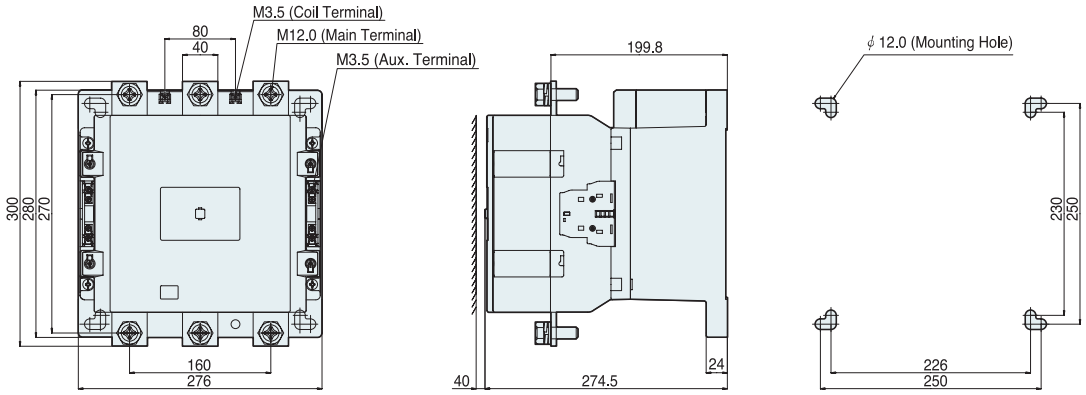
HiMC260 / HiMC300



HiMC400 / HiMC500



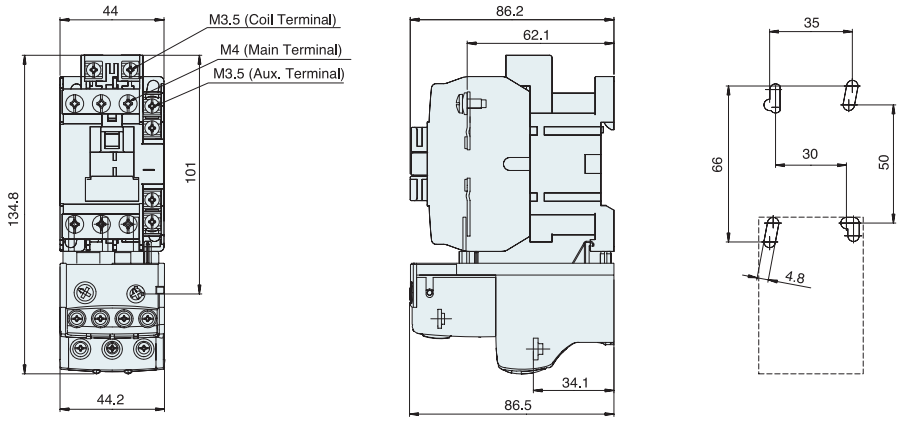
HiMC630 / HiMC800



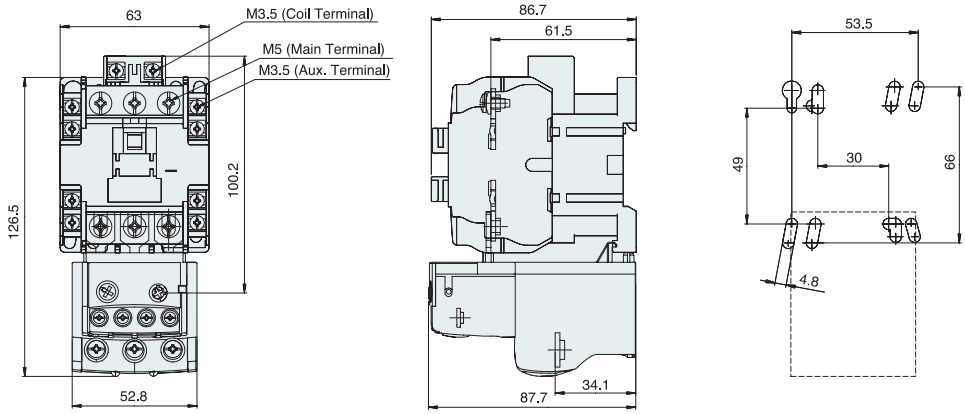
Motor Starter

Unit: mm

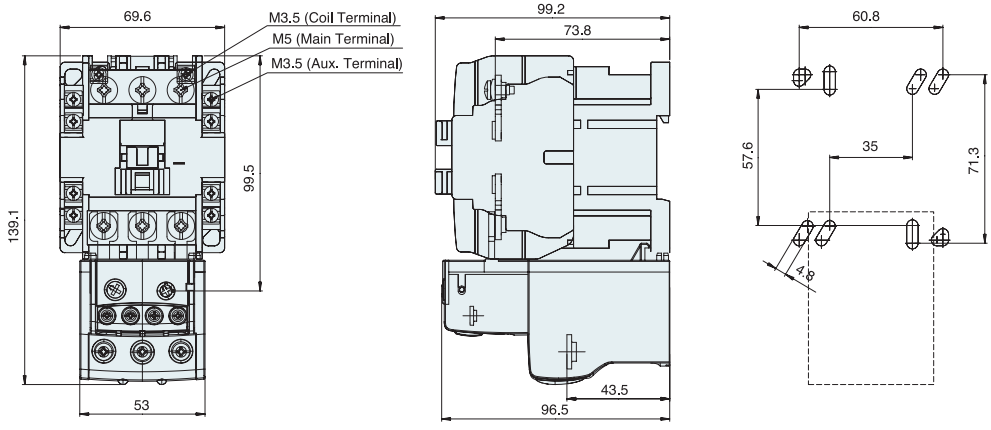
HiMC9 / HiMC12 / HiMC18 / HiMC22 + HiTH22



HiMC32 / HiMC40 + HiTH40

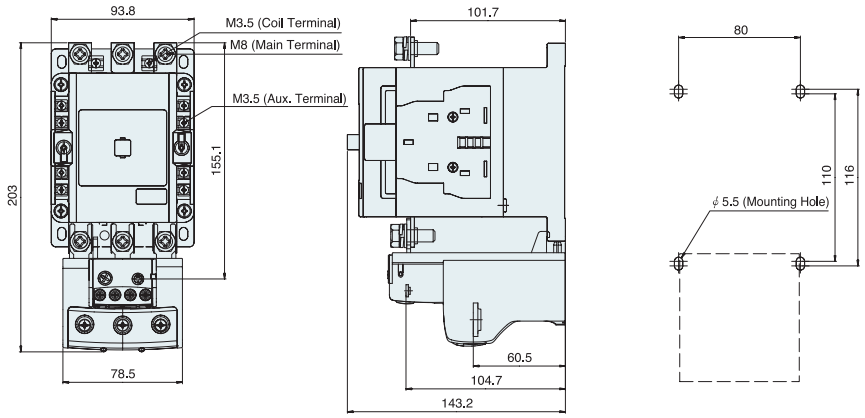


HiMC50 + HiTH50

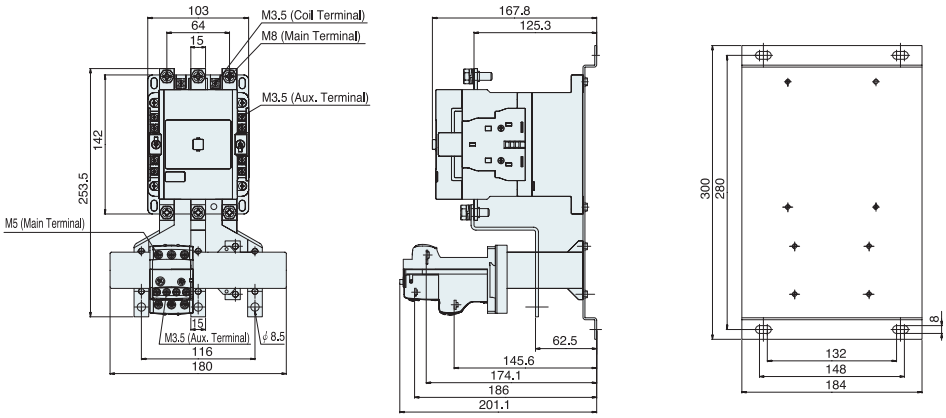


Unit: mm

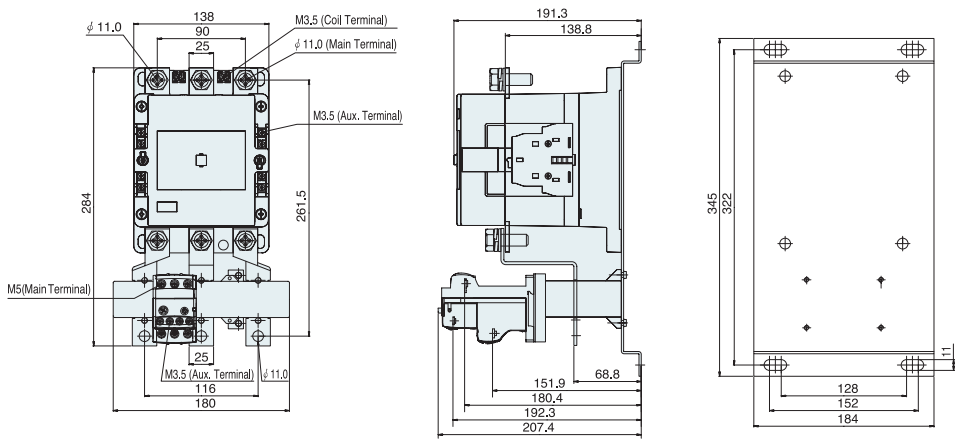
HiMC65 / HiMC80 / HiMC90 / HiMC110B + HiTH90



HiMC110 / HiMC130 / HiMC150B + HiTH130



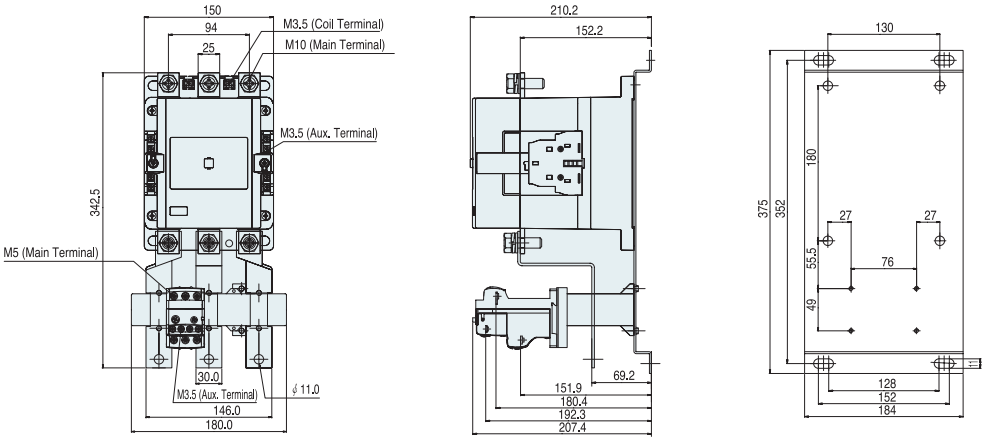
HiMC150 / HiMC180 / HiMC220 / HiMC260B + HiTH220



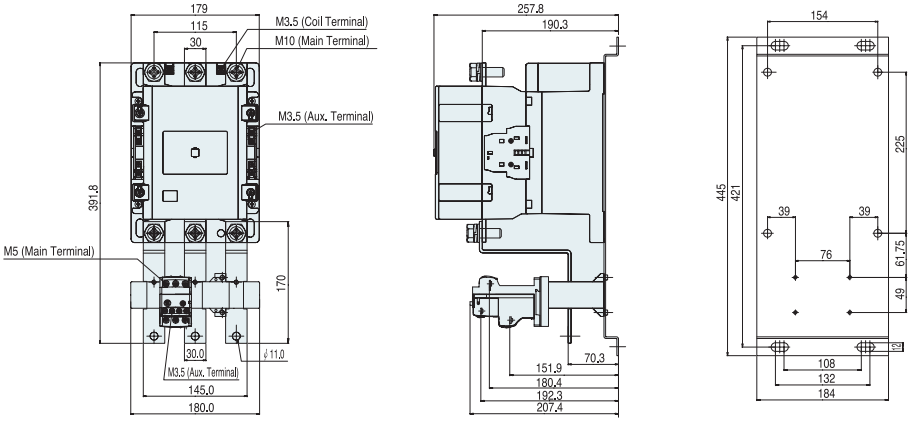
Motor Starter

Unit: mm

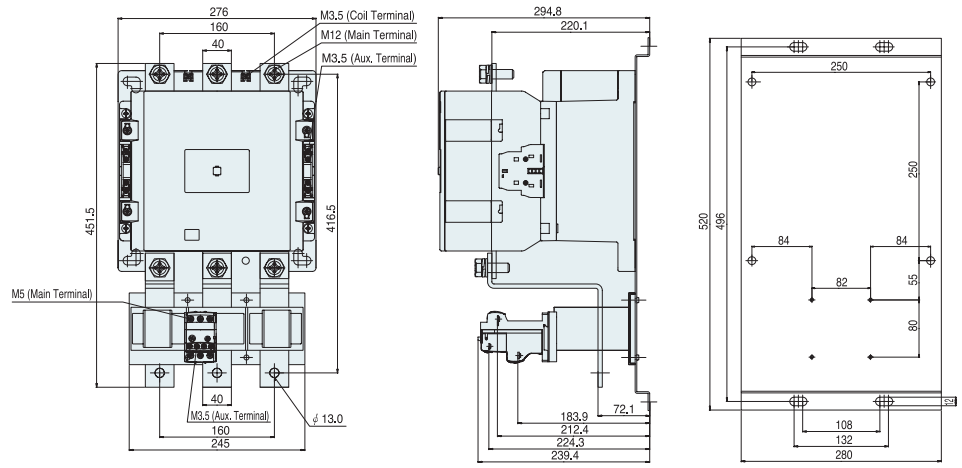
HiMC260 / HiMC300 + HiTH300



HiMC400 / HiMC500 + HiTH500

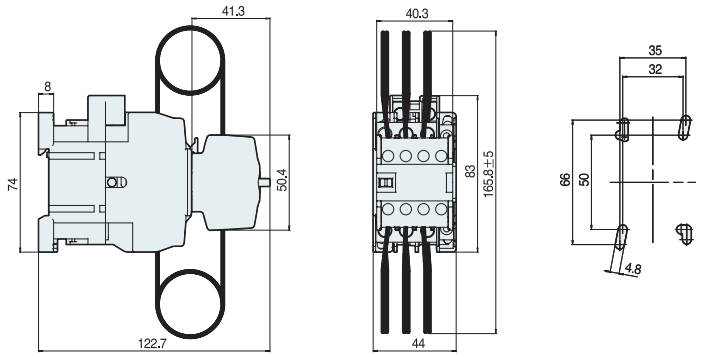


HiMC630 / HiMC800 + HiTH800

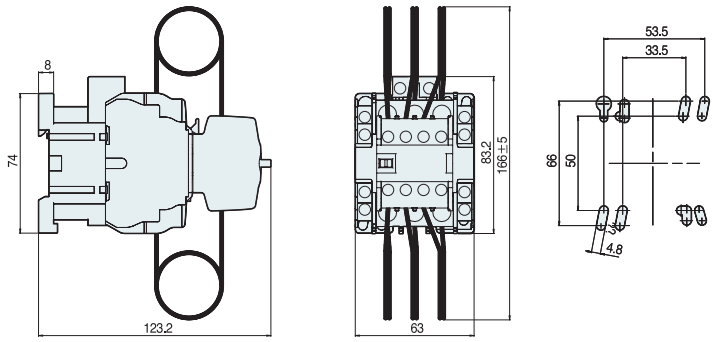


Unit: mm

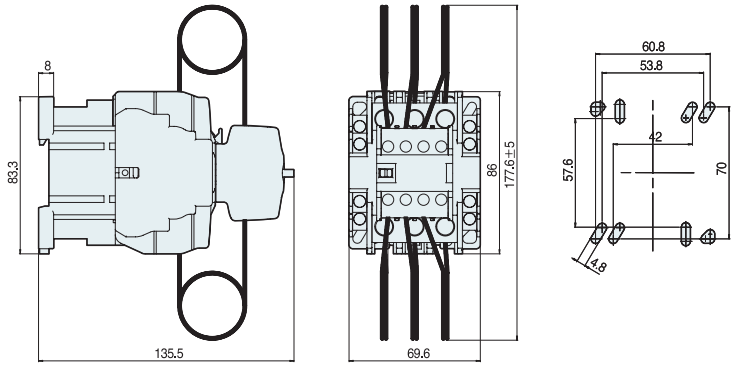
HiMK9 / HiMK12 / HiMK18 / HiMK22



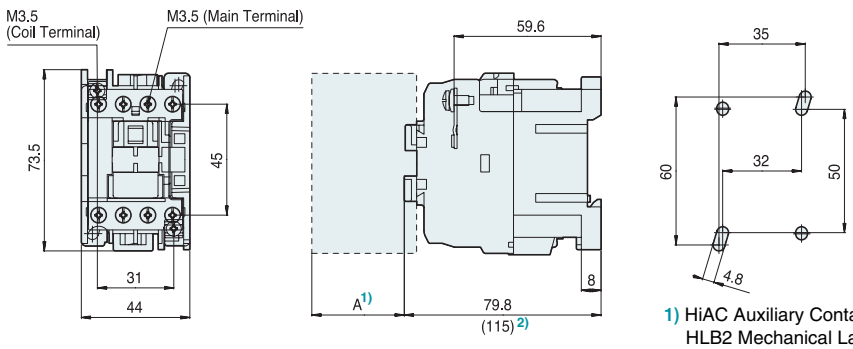
HiMK32 / HiMK40



HiMK50



HMX / HMT



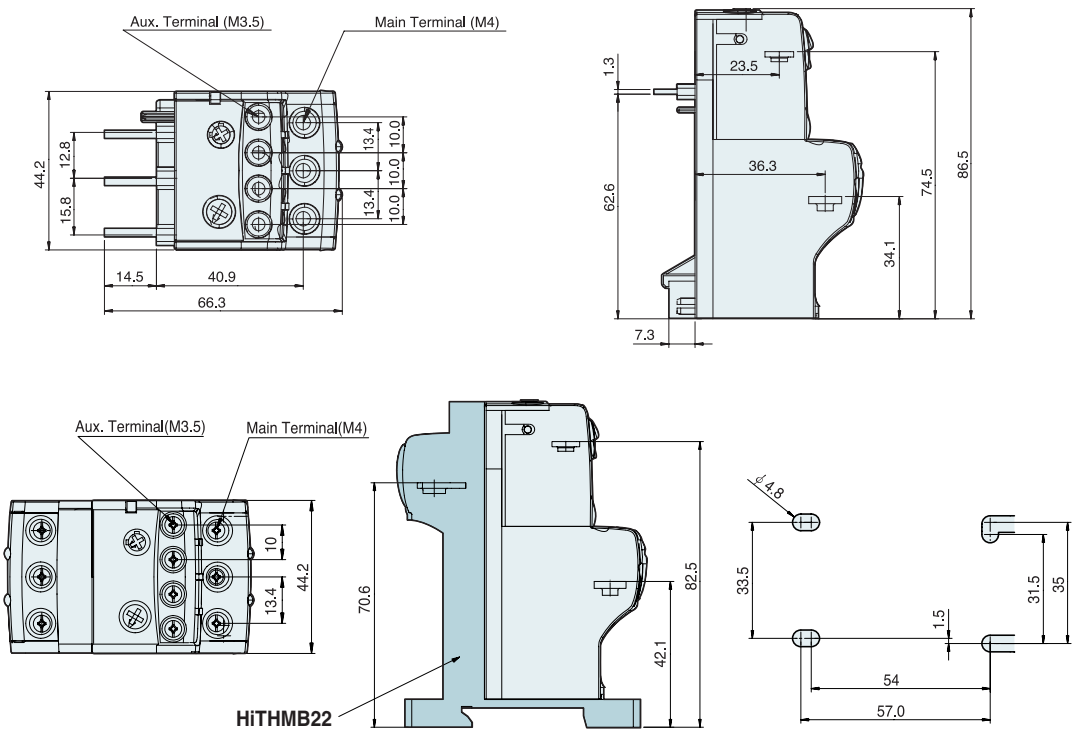
1) HiAC Auxiliary Contact Block: 35
HLB2 Mechanical Latching Block: 42.5
HOKZE Electronic Timer Block: 39

2) Figure for HMT Control Relay.

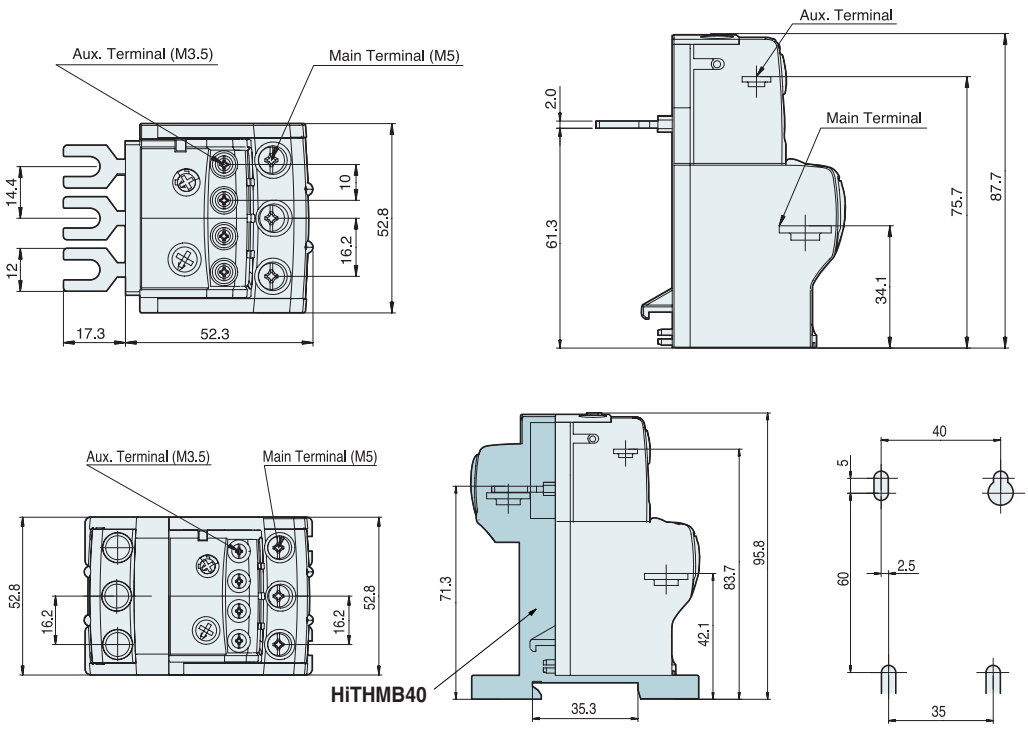
Thermal Overload Relay

Unit: mm

HiTH22

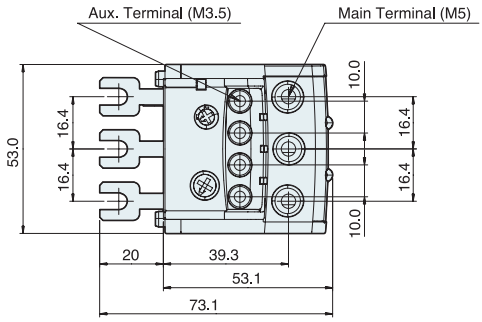


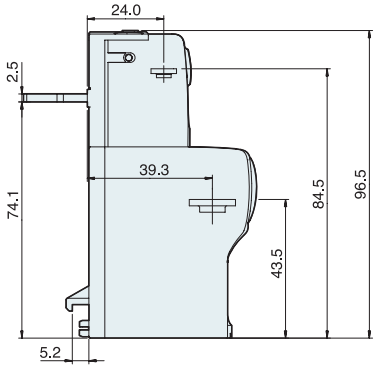
HiTH40

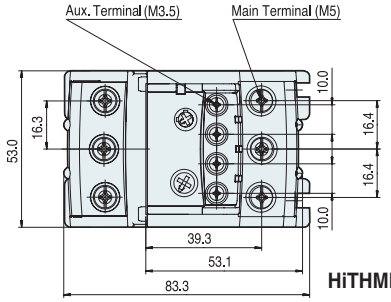


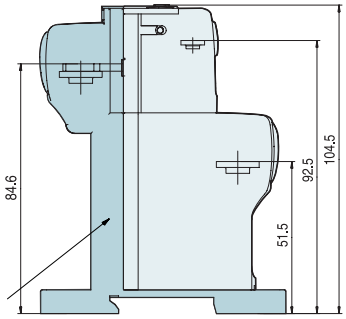
Unit: mm

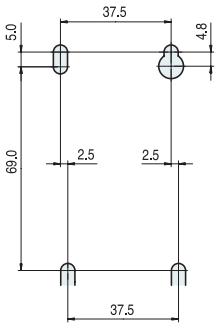
HiTH50



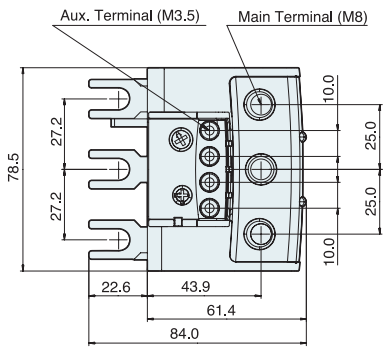


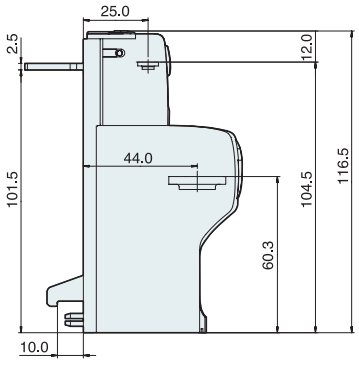


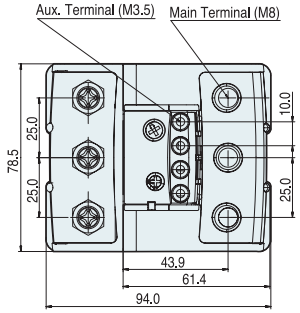


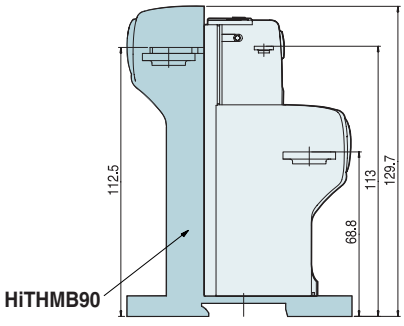


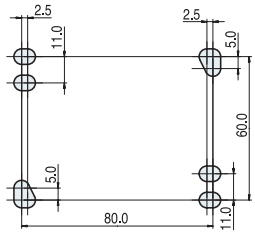
HiTH90







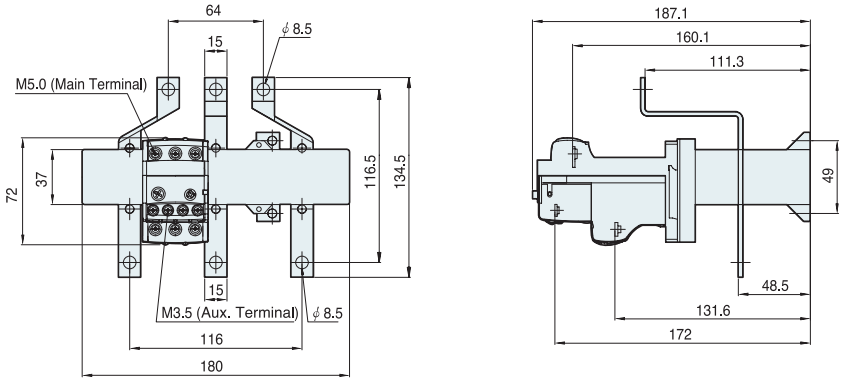




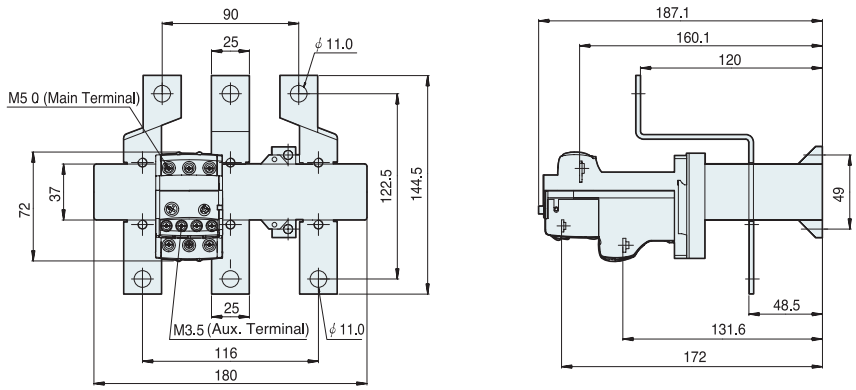
Thermal Overload Relay

Unit: mm

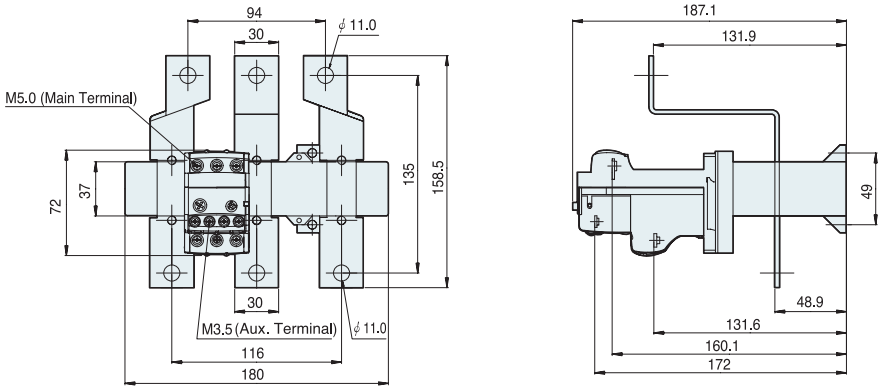
HiTH130



HiTH220

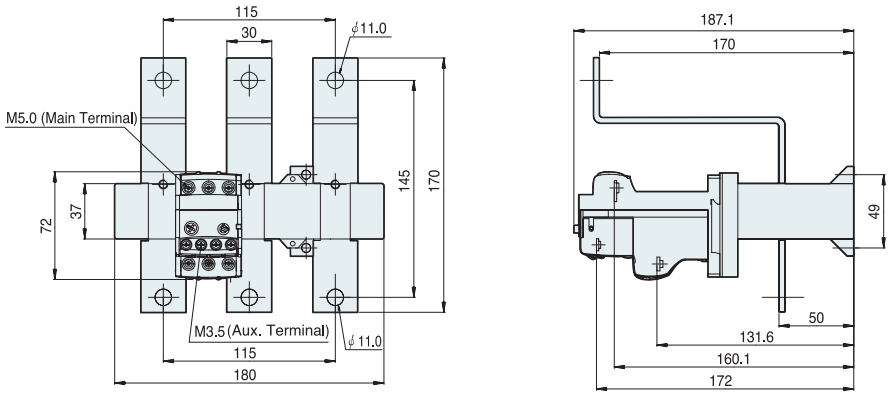


HiTH300

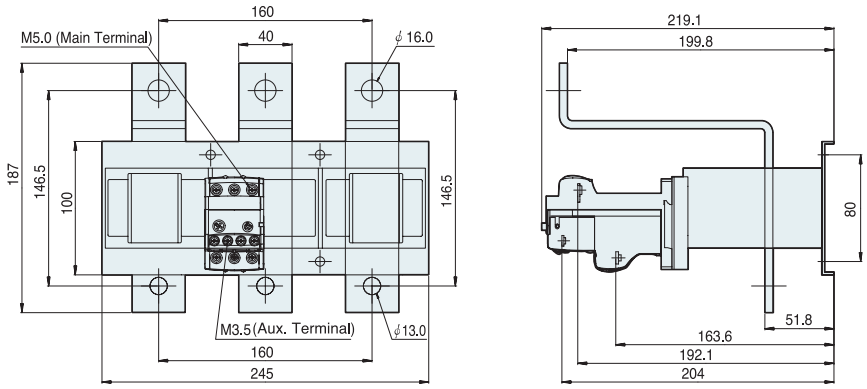


Unit: mm

HiTH500



HiTH800



Digital Motor Protection Relay | Standard Type

Unit: mm

HiMP22/40/50 - Tunnel connection type

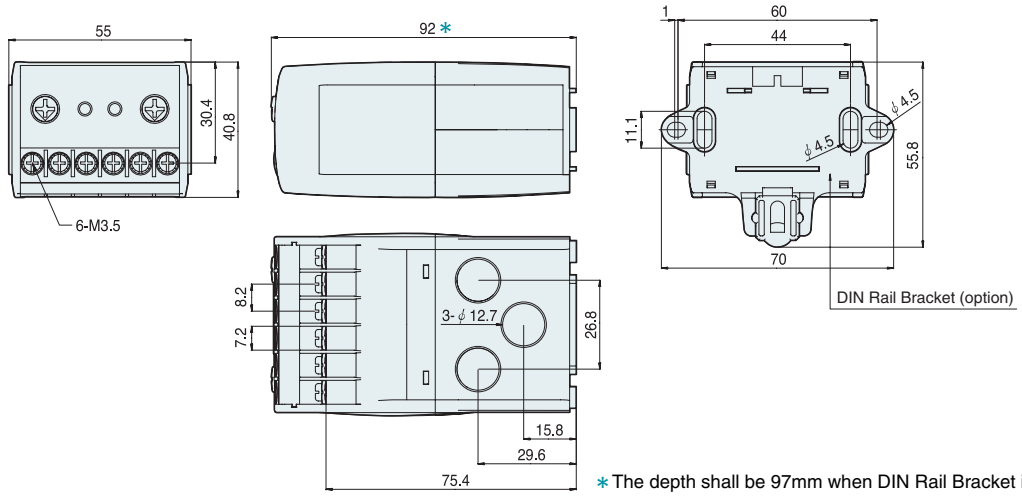


Fig.1

* The depth shall be 97mm when DIN Rail Bracket is installed.

HiMP22 - Screw connection type

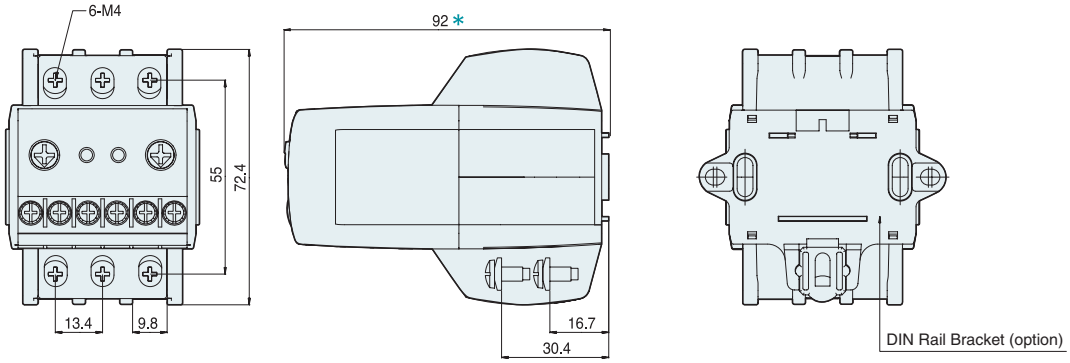


Fig.2 (Refer to Fig.1 for the dimensions not included)

* The depth shall be 97mm when DIN Rail Bracket is installed.

HiMP40/50 - Screw connection type

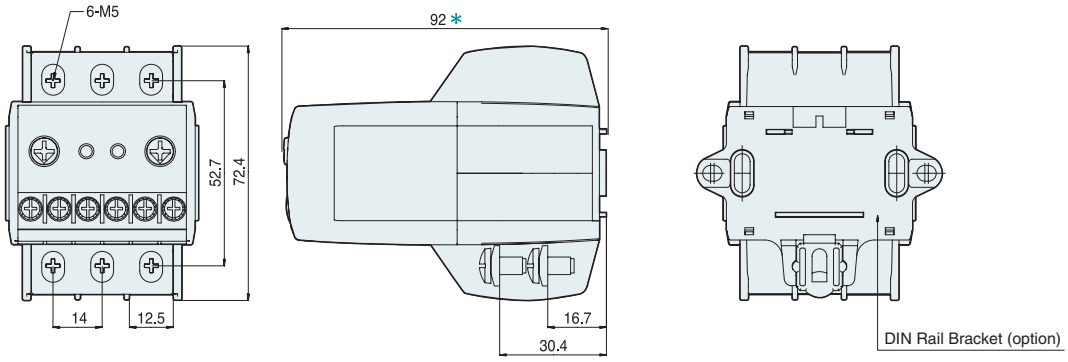


Fig.3 (Refer to Fig.1 for the dimensions not included)

* The depth shall be 97mm when DIN Rail Bracket is installed.

Unit: mm

HiMP22 - Pin connection type

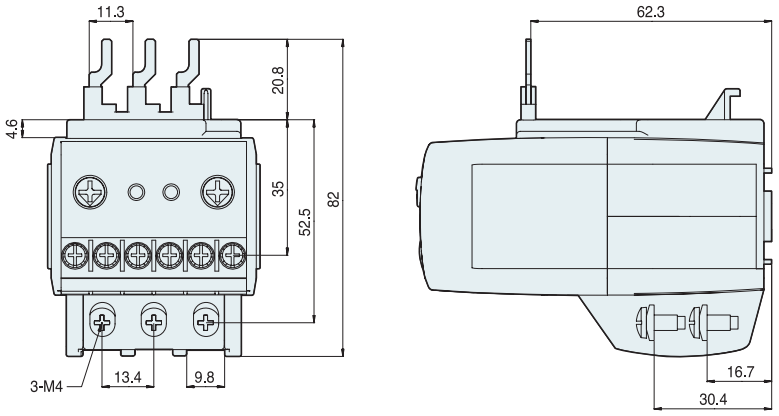


Fig.4 (Refer to Fig.1 for the dimensions not included)

HiMP40 - Pin connection type

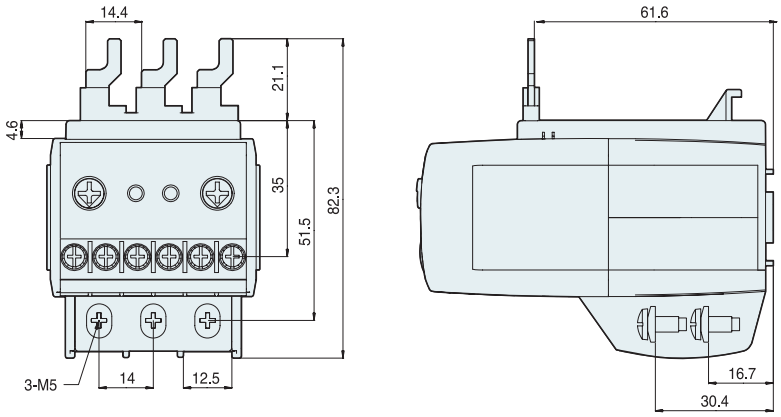


Fig.5 (Refer to Fig.1 for the dimensions not included)

HiMP50 - Pin connection type

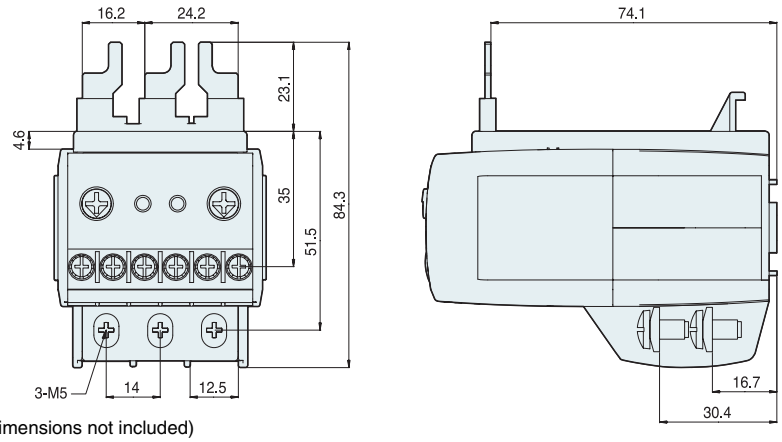
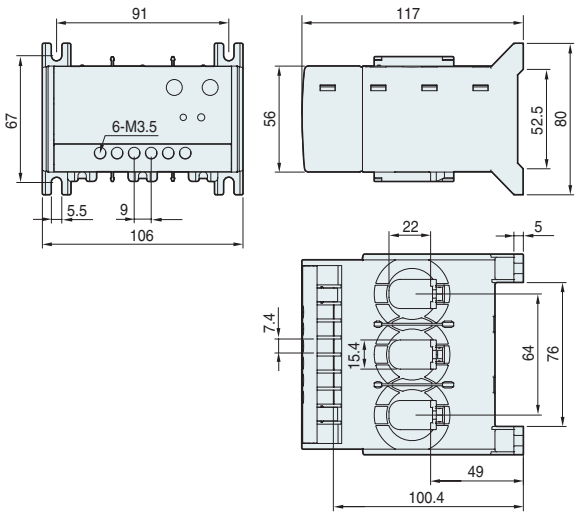


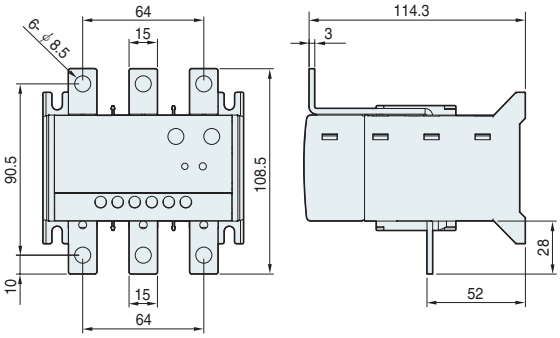
Fig.6 (Refer to Fig.1 for the dimensions not included)

Digital Motor Protection Relay | Standard Type

Unit: mm

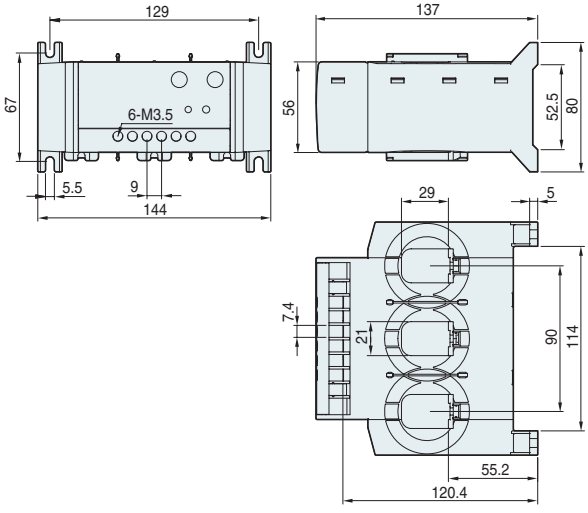
HiMP150 - Tunnel connection type

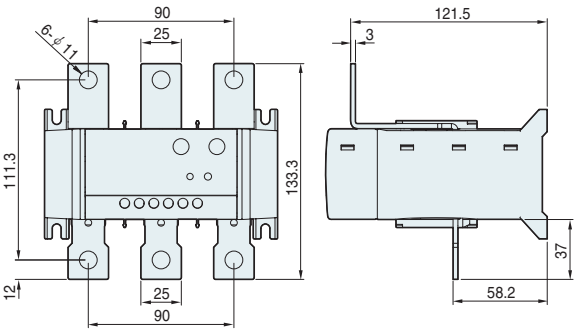




< with Bus bar IMPCN150 >

HiMP300 - Tunnel connection type





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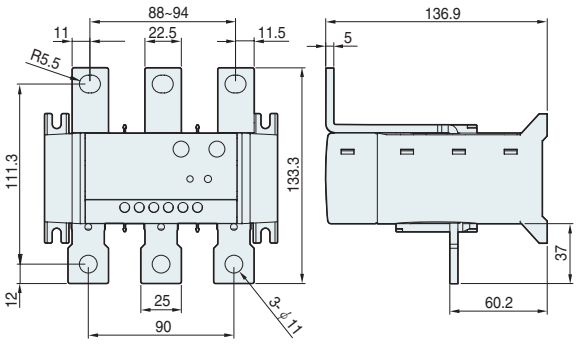


< with Bus bar IMPCN300 >

Unit: mm

CT - IMPCT80-500

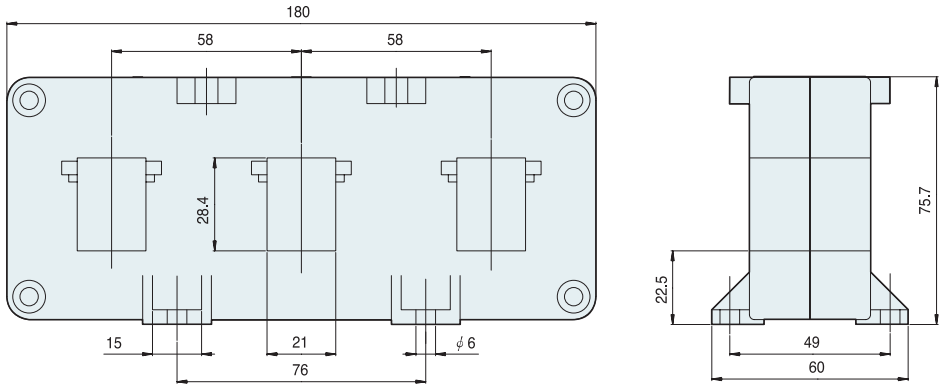


Fig.7

CT - IMPCT630/800

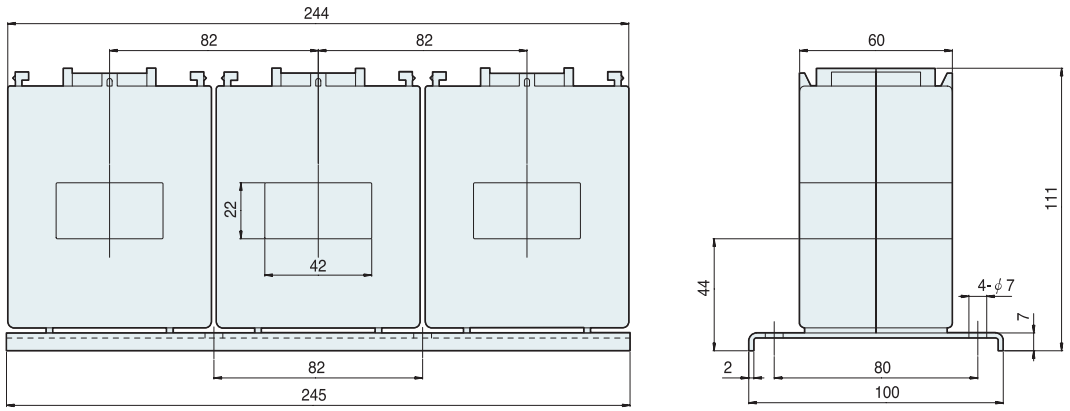
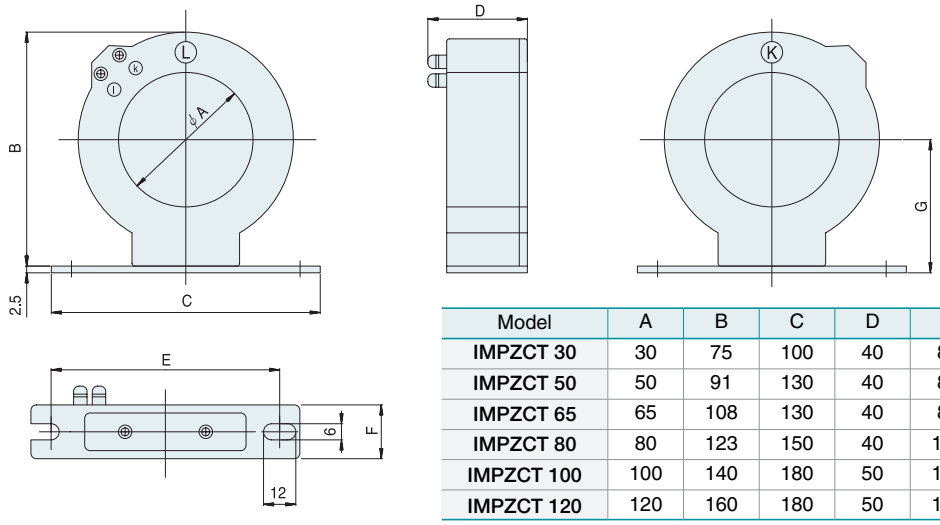


Fig.8

ZCT - IMPZCT30-120

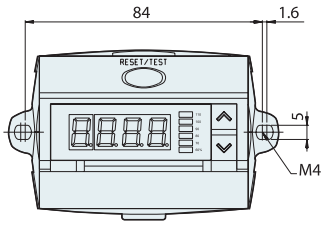


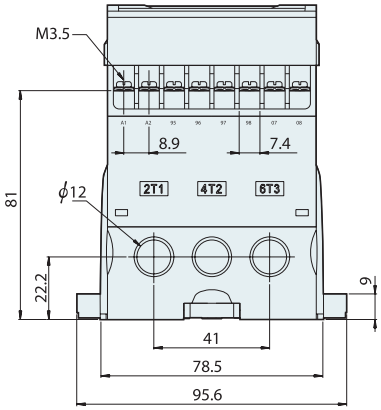
Model	A	B	C	D	E	F	G
IMPZCT 30	30	75	100	40	80	30	40
IMPZCT 50	50	91	130	40	80	30	48
IMPZCT 65	65	108	130	40	80	30	56.5
IMPZCT 80	80	123	150	40	130	30	64
IMPZCT 100	100	140	180	50	160	40	72.5
IMPZCT 120	120	160	180	50	160	40	82.5

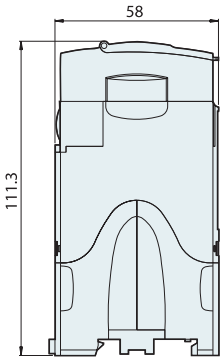
Digital Motor Protection Relay | Deluxe Type

Unit: mm

HiMP60 - Tunnel connection type







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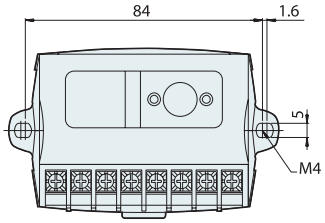

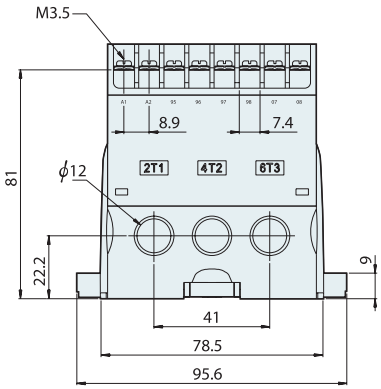

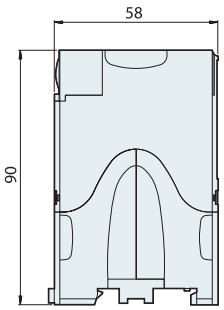

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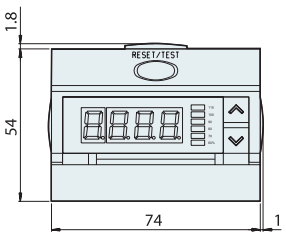

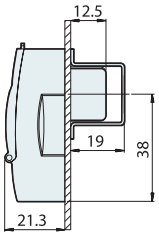

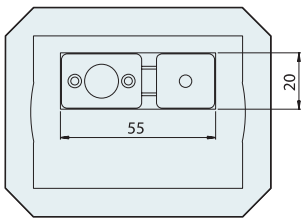

< Panel Cut-out Size >

HHIS-WC-LE-B31-04, 2009.4 Designed by MERMONT

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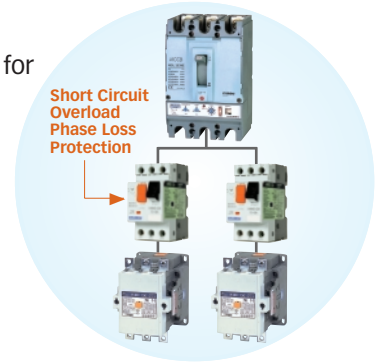
HYUNDAI

Manual Motor Starter

Hyundai Manual Motor Starter, HMMS series, realizes the function of molded case circuit breaker and thermal overload relay in one module. It enables perfect protection for overload, phase loss, short circuit and infrequent start control of 3-phase motors.

HMMS series also can be used for the protection of distribution line as well as satisfied with the international standard IEC60947-2 and IEC60947-4-1.



Ratings

Model	HMMS-32K										HMMS-80K									
Rated Insulation Voltage (Ui)	AC690V										AC690V									
Rated Operation Voltage (Ue)	AC690V										AC690V									
Rated Impulse Withstand Voltage (Uimp)	6kV										6kV									
Electrical/ Mechanical Lifetime	100,000 times										30,000 times									
Rated Current (A)	Setting Range (A)	Rated Breaking Capacity (kA)										Rated Current (A)	Setting Range (A)	Rated Breaking Capacity (kA)									
		AC230/240V		AC400/415V		AC440V		AC500V		AC690V				AC230/240V		AC400/415V		AC440V		AC500V		AC690V	
		Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics			Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics
0.16	0.1-0.16	100	100	100	100	100	100	100	100	100	100												
0.25	0.16-0.25	100	100	100	100	100	100	100	100	100	100												
0.4	0.25-0.4	100	100	100	100	100	100	100	100	100	100	40	25-40	100	100	50	25	50	25	10	5	5	3
0.63	0.4-0.63	100	100	100	100	100	100	100	100	100	100												
1	0.63-1	100	100	100	100	100	100	100	100	100	100												
1.6	1-1.6	100	100	100	100	100	100	100	100	100	100												
2.5	1.6-2.5	100	100	100	100	100	100	100	100	3	2.25												
4	2.5-4	100	100	100	100	100	100	100	100	3	2.25	63	40-63	100	100	50	25	50	25	10	5	5	3
6.3	4-6.3	100	100	100	100	50	50	50	50	3	2.25												
10	6-10	100	100	100	100	15	15	10	10	3	2.25												
14	9-14	100	100	15	7.5	8	4	6	4.5	3	2.25												
18	13-18	100	100	15	7.5	8	4	6	4.5	3	2.25												
23	17-23	50	50	15	6	6	3	4	3	3	2.25	80	56-80	100	100	15	7.5	10	6	4	4	2	2
25	20-25	50	50	15	6	6	3	4	3	3	2.25												
32	24-32	50	50	10	5	6	3	4	3	3	2.25												

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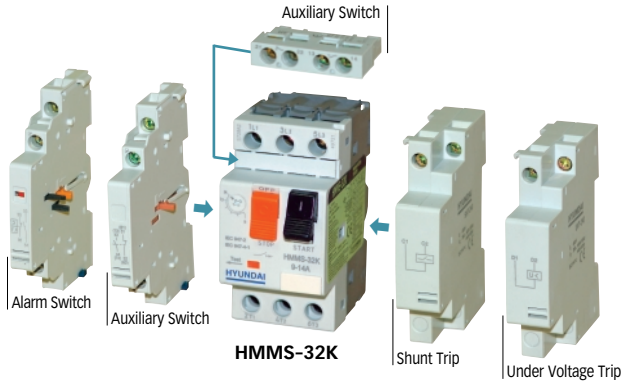
Sales & Marketing
140-2, Gye-dong, Jongno-gu, Seoul, Korea
Te: 82-2-746-7510, 7589 Fax: 82-2-746-7647

Accessories

Item	Order Code	Specification	Mounting	Application
Auxiliary Switch	MMS32K AUX T11	1NO+1NC	Top side	HMMS-32K
	MMS32K AUX S11	1NO+1NC	Left side	
	MMS32K AUX S20	2NO		
	MMS80K AUX S11	1NO+1NC	Left side	HMMS-80K
	MMS80K AUX S20	2NO		
Alarm Switch	MMS32K AXT 1010	1NO (Alarm), 1NO (Aux.)	Left side	HMMS-32K
	MMS32K AXT 1001	1NO (Alarm), 1NC (Aux.)		
	MMS32K AXT 0110	1NC (Alarm), 1NO (Aux.)		
	MMS32K AXT 0101	1NC (Alarm), 1NC (Aux.)		
Shunt Trip	MMS32K SHT 240	AC220/240V	Right side	HMMS-32K
Under Voltage Trip	MMS32K UVT 240	AC220/240V		



Application for 3-phase Motors, AC-3

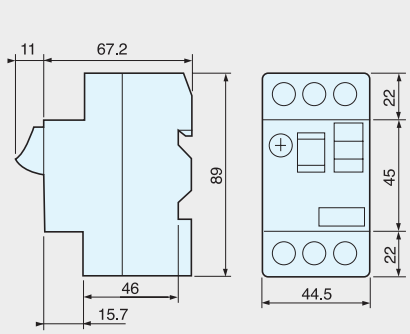
Rated Current (A)	Setting Range (A)	3-Phase [kW] (50/60Hz)					
		AC230/240V	400V	415V	440V	500V	690V
0.16	0.1-0.16	-	-	-	-	-	-
0.25	0.16-0.25	-	0.06	0.06	-	-	-
0.4	0.25-0.4	-	0.09	0.09	-	-	-
0.63	0.4-0.63	-	0.12	0.12	0.2	0.25	0.37
1	0.63-1	-	0.25	0.25	0.5	0.5	0.55
1.6	1-1.6	-	0.37	0.37	0.55	0.75	1.1
2.5	1.6-2.5	0.5	0.75	0.75	1.1	1.1	1.5
4	2.5-4	0.5	1.5	1.5	2	2.2	3
6.3	4-6.3	1.1	2.2	2.2	3	3.7	4
10	6-10	2.2	4	4	5	5.5	7.5
14	9-14	3	5.5	5.5	7.5	7.5	9
18	13-18	5	7.5	7.5	9	9	15
23	17-23	6.5	11	11	11	11	18.5
25	20-25	6.5	11	11	15	15	18.5
32	24-32	10	15	15	18.5	20	22
40	25-40	10	20	20	25	30	30
63	40-63	20	30	35	40	50	60
80	56-80	25	35	40	50	55	60

Order Information

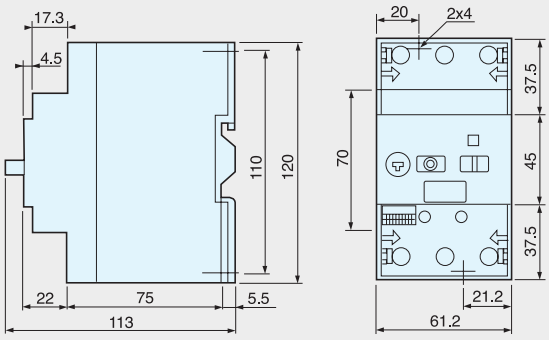
Code	Rated Current Setting Range (A)	Unit (EA)	Category	
MMS32K 0P16	0.1-0.16	50	MMS	CM
MMS32K 0P25	0.16-0.25			
MMS32K 0P40	0.25-0.4			
MMS32K 0P63	0.4-0.63			
MMS32K 1P00	0.63-1			
MMS32K 01P6	1-1.6			
MMS32K 02P5	1.6-2.5			
MMS32K 0004	2.5-4			
MMS32K 06P3	4-6.3			
MMS32K 0010	6-10			
MMS32K 0014	9-14			
MMS32K 0018	13-18			
MMS32K 0023	17-23			
MMS32K 0025	20-25			
MMS32K 0032	24-32			
MMS80K 0040	25-40	14		
MMS80K 0063	40-63			
MMS80K 0080	56-80			

Dimensions

(Unit: mm)



HMMS-32K



HMMS-80K