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Technical information

Rating of contactors, Direct starters & Auxiliary contacts

Ratings of Contactors and Direct starters

Type		Rating																AC1 (Ith)
Contactors	Direct Starters	AC3						AC2						AC4				
		200~220V		380~440V		500~550V		200~220V		380~440V		500~550V		200~220V		380~440V		
		kW	A	kW	A	kW	A	kW	A	kW	A	kW	A	kW	A	kW	A	A
GMC - 9	GMS - 9	2.5	11	4	9	4	7	2.5	11	4	9	4	7	1.5	8	2.2	6	20
GMC - 12	GMS - 12	3.5	13	5.5	12	7.5	12	3.5	13	5.5	12	7.5	12	2.2	11	4	9	20
GMC - 18	GMS - 18	4.5	18	7.5	18	7.5	13	4.5	18	7.5	18	7.5	13	3.7	18	4	9	25
GMC - 22	GMS - 22	5.5	22	11	22	15	22	5.5	22	11	22	15	22	3.7	18	5.5	13	32
GMC - 32	GMS - 32	7.5	32	15	32	18.5	28	7.5	32	15	32	18.5	28	4.5	20	7.5	17	50
GMC - 40	GMS - 40	11	40	18.5	40	22	32	11	40	18.5	40	22	32	5.5	25	11	24	60
GMC - 50	GMS - 50	15	55	22	50	30	43	15	55	22	50	30	43	7.5	35	15	32	80
GMC - 65	GMS - 65	18.5	65	30	65	37	60	18.5	65	30	65	37	60	11	50	22	47	100
GMC - 75	GMS - 75	22	75	37	75	45	64	22	75	37	75	45	64	13	55	25	52	110
GMC - 85	GMS - 85	25	85	45	85	45	75	25	85	45	85	45	75	15	65	30	62	135
GMC - 100	GMS - 100	30	105	55	105	55	85	30	105	55	105	55	85	19	80	37	75	150
GMC - 125	GMS - 125	37	125	60	120	60	90	37	125	60	120	60	90	22	93	45	90	150
GMC - 150	GMS - 150	45	150	75	150	90	140	45	150	75	150	90	140	30	125	55	110	200
GMC - 180	GMS - 180	55	180	90	180	110	180	55	180	90	180	110	180	37	150	75	150	230
GMC - 220	GMS - 220	75	220	132	220	132	200	75	220	132	220	132	200	45	180	90	180	260
GMC - 300	GMS - 300	90	300	160	300	160	250	90	300	160	300	160	250	55	220	110	220	350
GMC - 400	GMS - 400	125	400	220	400	225	350	125	400	220	400	225	350	75	300	150	300	420
GMC - 600	GMS - 600	190	630	330	630	330	500	190	630	330	630	330	500	110	400	200	400	660
GMC - 800	GMS - 800	220	800	440	800	500	720	220	800	440	800	500	720	160	630	300	630	800

Ratings of Auxiliary contacts

Type	Rated current (A)																AC1 (Ith)
	AC 15				DC 13				AC 12				DC 12				
	110V	120V	440V	550V	24V	48V	110V	220V	110V	220V	440V	550V	24V	48V	110V	220V	A
GMC(D)-9~22	6	3	1.5	1.2	3	1.5	0.55	0.27	10	8	5	5	5	3	2.5	1	16
GMC(D)-32~85	6	3	1.5	1.2	3	1.5	0.55	0.27	10	8	5	5	5	3	2.5	1	16
GMC-100~800	6	5	3	3	6	3	1.2	0.2	10	10	5	5	5	3	1.5	0.25	16

Contact arrangement

Type	Standard	Option
GMC(D)-9~22	1NO 1NC	4NO, 3NO1NC, 2NO2NC, 1NO3NC
GMC(D)-32~85	2NO 2NC	4NO, 3NO1NC, 2NO2NC, 1NO3NC
GMC-100(/4)~800(/4)	2NO 2NC	2NO 2NC

Rated power of AC4

	Rated power of inching operation (kW)												Rated power of plugging operation (kW)			
Rated voltage(V) in main circuit	200~220V						380~440V						200~220V		380~440V	
Ratio(%) of inching	10%		50%		100%		10%		50%		100%		Plugging 100%		Plugging 100%	
Electrical lifespan (x10,000 operation)	10	50	10	50	10	50	10	50	10	50	10	50	10	50	10	50
GMC-9	2.2	1	1	0.5	0.75	0.3	2.7	1.5	1.5	0.75	1.1	0.5	0.75	0.2	0.75	0.2
GMC-12	2.7	1.5	1.5	0.75	1.1	0.5	4	2.2	3.7	1.5	2.2	1.1	0.75	0.4	1	0.4
GMC-18	3.7	2.7	2.7	1.1	1.5	0.75	4	3.7	4	2.2	3.7	1.5	1.5	0.5	2.2	0.75
GMC-22	4	3.7	3.7	1.5	2.5	1.1	7.5	7.5	7.5	3.7	5.5	2.2	2.2	0.75	3.7	1.5
GMC-32	5.5	4.5	4.5	2.2	4.5	1.8	11	9	9	4.5	7.5	3.7	2.5	1.1	4.5	2.2
GMC-40	7.5	5.5	5.5	3.7	4.5	2.7	15	11	11	5.5	11	3.7	3.7	1.5	4.5	2.2
GMC-50	11	7.5	7.5	3.7	5.5	3.7	22	15	15	7.5	15	5.5	5.5	2.2	7.5	3.7
GMC-65	15	11	11	5.5	7.5	4	30	22	22	11	15	7.5	7.5	3	11	5.5
GMC-75	18.5	15	15	7.5	9	4	37	30	30	15	15	7.5	9	3.7	15	5.5
GMC-85	19	15	15	7.5	11	5.5	37	30	30	15	22	11	9	3.7	18.5	7.5
GMC-100	25	15	19	9	11	5.5	50	37	37	18.5	25	13	11	4.5	22	11
GMC-125	30	22	22	9	15	7.5	60	45	45	22	30	15	15	5.5	30	15
GMC-150	37	25	30	11	19	9	75	55	55	30	45	22	19	7.5	37	19
GMC-180	45	30	37	15	25	11	90	75	75	37	55	25	22	11	45	22
GMC-220	55	37	45	19	30	15	110	90	90	37	60	30	25	13	45	25
GMC-300	75	50	55	25	37	22	150	125	132	50	75	37	37	18.5	55	30
GMC-400	110	65	75	30	45	25	200	132	150	75	110	55	45	22	75	37
GMC-600	160	75	90	37	55	37	300	150	190	90	132	75	55	30	110	45
GMC-800	200	132	150	45	75	45	400	190	220	110	160	90	75	37	150	75

Note)

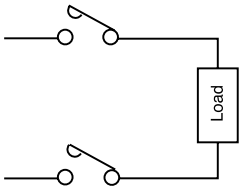
1. $\text{Inching}(\%) = \frac{\text{Times of inching dperation}}{\text{Times of standard obligation + Times of inching operation}} \times 100$

2. The limit of on/off operation frequency in inching is below 10 times based on 1 time/sec.

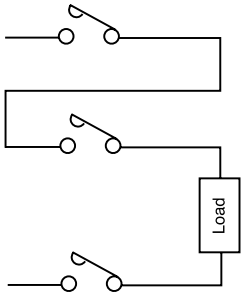
DC Application

Type	Poles in series	Rated current (DC2, DC4) DC motor load (L/R=15ms)				Rated current (DC1) Resistant load (L/R=1ms)				Rated current (DC1) Coil load (L/R=100ms)			
		24V	48V	110V	220V	24V	48V	110V	220V	24V	48V	110V	220V
GMC(D)-9	2	8	4	2.5	0.8	10	10	6	3	8	4	2	0.3
	3	8	6	4	2	10	10	8	8	8	6	3	0.8
GMC(D)-12	2	12	6	4	1.2	12	12	10	7	12	6	3	0.5
	3	12	10	8	4	12	12	12	12	12	10	5	2
GMC(D)-18	2	12	6	4	1.2	18	18	13	8	12	6	3	0.5
	3	12	10	8	4	18	18	18	18	12	10	5	2
GMC(D)-22	2	20	15	8	2	20	20	15	10	20	12	3	1.2
	3	20	20	15	8	20	20	20	20	20	15	10	4
GMC(D)-32	2	25	20	10	3	25	25	25	12	25	15	4	1.2
	3	25	25	20	10	25	25	25	22	25	25	12	4
GMC(D)-40	2	35	20	10	3	35	35	25	12	35	15	4	1.2
	3	35	30	20	10	35	35	35	30	35	25	12	4
GMC(D)-50	2	45	25	15	3.5	50	40	35	15				
	3	50	35	30	12	50	50	50	40				
GMC(D)-65	2	45	25	15	3.5	50	40	35	15				
	3	50	35	30	12	65	65	65	50				
GMC(D)-75	2	65	40	20	5	75	65	50	20				
	3	80	60	50	20	75	75	75	55				
GMC(D)-85	2	65	40	20	5	80	65	50	20				
	3	80	60	50	20	80	80	80	60				
GMC-100	2	100	60	40	30	100	100	80	50				
	3	100	90	80	50	100	100	100	80				
GMC-125	2	120	60	40	30	120	100	80	50				
	3	120	90	80	50	120	120	100	80				
GMC-150	2	150	100	80	60	150	120	100	100				
	3	150	130	120	80	150	150	150	150				
GMC-180	2	180	150	120	80	180	180	150	150				
	3	180	180	150	100	180	180	180	180				
GMC-220	2	220	150	120	80	220	180	150	150				
	3	220	220	150	100	220	220	220	220				
GMC-300	2	300	200	150	90	300	240	200	200				
	3	300	280	200	150	300	300	300	300				
GMC-400	2	400	200	150	90	400	240	200	200				
	3	400	280	200	150	400	400	400	300				
GMC-600	2	630	630	630	630	630	630	630	630				
	3	630	630	630	630	630	630	630	630				
GMC-800	2	800	630	630	630	800	800	630	630				
	3	800	630	630	630	800	800	800	800				

2 poles in series



3 poles in series



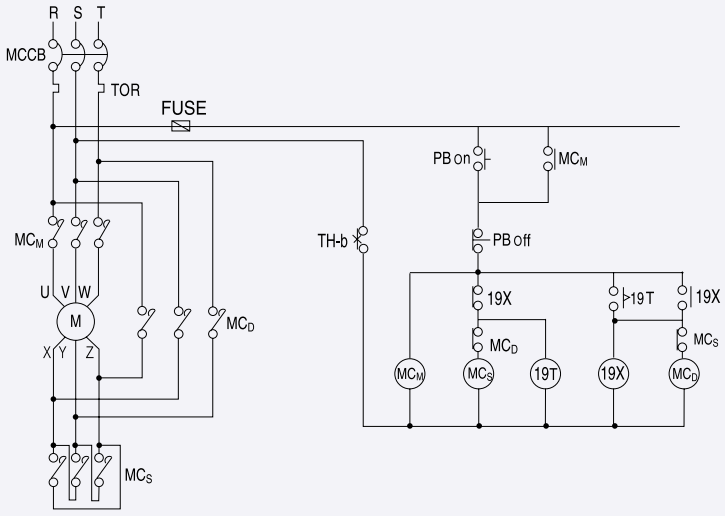
Ratings for star-delta use Contactor

Start method	Start (Star contactors)				Operate (Delta contactor)		
	Start current	Torque	Full load current	Contact voltage	Full load current	Contact current	Contact voltage
Direct	6Im	1.5T	6Im	Em/√3	Im	Im	Em/√3
Star - delta	2Im	0.5T	2Im	Em/√3	Im	Im/√3	Em

Contactor selection for star-delta use

Motor ratings		200~220V			380~480V		
(kW)	(HP)	Start use(MCs)	Operate use(MCD)	Power(MCM)	Start use(MCs)	Operate use(MCD)	Power(MCM)
5.5	7.5	GMC-9	GMC-18	GMC-18	GMC-9	GMC-12	GMC-12
7.5	10	GMC-12	GMC-18	GMC-18	GMC-9	GMC-18	GMC-18
11	10	GMC-18	GMC-32	GMC-32	GMC-12	GMC-18	GMC-18
15	20	GMC-22	GMC-50	GMC-50	GMC-18	GMC-18	GMC-18
18.5	25	GMC-32	GMC-50	GMC-50	GMC-18	GMC-22	GMC-22
22	30	GMC-32	GMC-65	GMC-65	GMC-18	GMC-32	GMC-32
30	40	GMC-65	GMC-85	GMC-85	GMC-22	GMC-50	GMC-50
37	50	GMC-65	GMC-100	GMC-100	GMC-32	GMC-50	GMC-50
45	50	GMC-75	GMC-125	GMC-125	GMC-32	GMC-65	GMC-65
55	60	GMC-85	GMC-150	GMC-150	GMC-50	GMC-85	GMC-85
75	100	GMC-100	GMC-180	GMC-180	GMC-65	GMC-100	GMC-100
90	125	GMC-125	GMC-220	GMC-220	GMC-65	GMC-125	GMC-125
110	125	GMC-150	GMC-300	GMC-300	GMC-85	GMC-150	GMC-150
132	150	GMC-180	GMC-300	GMC-300	GMC-100	GMC-180	GMC-180
160	200	GMC-220	GMC-400	GMC-400	GMC-125	GMC-220	GMC-220
250	300	GMC-300	GMC-600	GMC-600	GMC-150	GMC-300	GMC-300
300	400	GMC-400	GMC-600	GMC-600	GMC-220	GMC-400	GMC-400

Note) 1. Above selection is made under AC3 standard squirrel cage motor use basis.
The selection may be changed according to the motor class or manufacturer
2. The motor start time is within 15sec
3. When you use phase advanced condenser, consider the inrush current for selection.



MCM	Contactor for power use
MCD	Contactor for operate use
MCS	Contactor for start use
19T	Timer
19X	Contactor relay
TOR	Thermal overload relay

(Pig 1) Example of a wiring diagram for star-delta combination

Selection guide for lighting circuit switching

Incandescent

Maximum quantity of lamps per contactor

Type	Consumption	100V								200V							
		100W	150W	200W	250W	300W	500W	1000W	1500W	100W	150W	200W	250W	300W	500W	1000W	1500W
GMC(D)-9		11	7	5	4	3	2	1	-	22	14	11	8	7	4	2	1
GMC(D)-12		13	8	6	5	4	2	1	-	26	17	13	10	8	5	2	1
GMC(D)-18		18	12	9	7	6	3	1	1	36	24	18	14	12	7	3	2
GMC(D)-22		19	12	9	7	6	3	1	1	38	25	19	15	12	7	3	2
GMC(D)-32		26	17	13	10	8	5	2	1	52	34	26	20	17	10	5	3
GMC(D)-40		35	23	17	14	11	7	3	2	70	46	35	28	23	14	7	4
GMC(D)-50		50	33	25	20	15	10	5	3	100	66	50	40	33	20	10	6
GMC(D)-65		65	42	32	26	19	13	6	4	130	85	65	52	42	26	13	8

Fluorescent

Maximum quantity of rapid-start fluorescents per contactor

Type	Consumption	100V							200V							
		40W		60W	80W	110W		220W	40W		60W	80W	110W		220W	
	N° Fluorescent.	1	2	1	1	1	2	1	1	2	1	1	1	2	1	1
	(A)	0.95 (1.2)	0.96 (1.1)	0.92	1.17	1.55	2.5	2.7	0.29 (0.6)	0.48 (0.55)	0.46	0.58	0.78	1.3	1.36	2.5
GMC(D)-9		18 (9)	11 (10)	12	9	7	4	4	37 (18)	22 (20)	23	19	14	8	8	4
GMC(D)-12		22 (10)	13 (11)	14	11	8	5	4	44 (21)	27 (23)	28	22	16	10	9	5
GMC(D)-18		30 (15)	18 (16)	19	15	11	7	6	62 (30)	37 (32)	39	31	23	13	13	7
GMC(D)-22		32 (15)	19 (17)	20	16	12	7	7	65 (31)	39 (34)	41	32	24	14	14	7
GMC(D)-32		44 (21)	27 (23)	28	22	16	10	9	89 (43)	54 (47)	56	44	33	20	19	10
GMC(D)-40		59 (29)	36 (31)	38	29	22	14	13	120 (58)	72 (63)	76	60	44	26	25	14
GMC(D)-50		84 (41)	52 (45)	54	42	32	20	18	172 (83)	104 (90)	108	86	64	38	37	20
GMC(D)-65		110 (54)	67 (59)	70	55	41	26	24	224 (108)	135 (118)	141	112	83	50	48	26

Note) 1. In 1 lamps, ( ) is the number of the lamps with low power factor.
2. In 2 lamps, ( ) is the number of the flickemess type lamps.

Mercury lamp

Maximum quantity of mercury lamps per contactor

Type	Consumption	Low power factor type-High power factor type															
		40W	100W	200W	250W	300W	400W	700W	1000W	40W	100W	200W	250W	300W	400W	700W	1000W
	(A)	1.25	2.6	4.6	5.1	6.0	8.0	14.5	21	0.53	1.0	1.9	2.1	2.5	3.3	5.9	8.5
		0.55	1.4	2.6	3.0	3.7	4.9	8.5	12	-	0.65	1.2	1.5	1.8	2.3	4.1	5.8
GMC(D)-9		8/20	4/7	2/4	2/3	1/2	1/1	-/-	-/-	20/-	11/16	5/9	5/7	4/6	3/4	1/2	1/1
GMC(D)-12		10/23	5/9	2/5	2/4	2/3	1/1	-/1	-/1	24/-	13/20	6/10	6/8	5/7	3/5	2/3	1/2
GMC(D)-18		14/32	6/12	3/6	3/6	3/4	2/3	1/2	-/1	33/-	18/27	9/15	8/12	7/10	5/7	3/3	2/3
GMC(D)-22		15/34	7/13	4/7	3/6	3/5	2/3	1/2	-/1	35/-	19/29	10/15	9/12	7/10	5/8	3/4	2/3
GMC(D)-32		20/47	10/18	5/10	5/8	4/7	3/5	1/3	1/2	49/-	26/40	13/21	12/17	10/14	7/11	4/6	3/4
GMC(D)-40		28/63	13/25	7/13	6/11	5/9	4/7	2/4	1/2	66/-	35/53	18/29	16/23	14/19	10/15	5/8	4/6
GMC(D)-50		40/90	19/35	10/19	9/16	8/13	6/10	3/5	2/4	94/-	50/76	26/41	23/33	20/27	15/21	8/12	6/8
GMC(D)-65		52/118	25/46	14/25	12/21	10/17	8/13	4/7	3/5	122/-	65/100	34/54	30/43	26/36	19/28	11/15	7/11

Direct starters with molded case circuit breakers (50kA-415V · IEC60947)

Motor		MCCB		Contactor	Thermal overload relay	
(kW)	440V(A)	Type	Rating Ir(A)	Type	Type	Settings range (A)
5.5	11	GBH(L)103	16	GMC-32	**GTH(K)-40**	9~13
7.5	15	GBH(L)103	16	GMC-32	**GTH(K)-40**	12~18
10	19	GBH(L)103	25	GMC-32	**GTH(K)-40**	18~26
11	21	GBH(L)103	25	GMC-32	**GTH(K)-40**	18~26
15	28	GBH(L)103	32	GMC-32	**GTH(K)-40**	24~36
18.5	34	GBH(L)103	40	GMC-75	**GTH(K)-85**	28~40
22	39	GBH(L)103	50	GMC-75	**GTH(K)-85**	34~50
30	54	GBH(L)103	63	GMC-75	**GTH(K)-85**	45~65
37	66	GBH(L)103	80	GMC-75	**GTH(K)-85**	54~75
45	80	GBH(L)103	100	GMC-100	**GTH(K)-100**	65~100
55	99	GBH(L)103	100	GMC-100	**GTH(K)-100**	85~125
75	135	GBH(L)203	160	GMC-150	**GTH(K)-150**	100~150
90	160	GBH(L)203	200	GMC-180	**GTH(K)-220**	120~180
110	192	GBH(L)203	200	GMC-180	**GTH(K)-220**	160~240
132	226	GBH(L)203	250	GMC-220	**GTH(K)-220**	160~240
160	265	ABH(L)403b	300	GMC-400	**GTH(K)-400**	200~300
200	330	ABH(L)403b	350	GMC-400	**GTH(K)-400**	260~400
220	353	ABH(L)403b	400	GMC-400	**GTH(K)-400**	260~400
250	400	ABS(L)803b	500	GMC-600	**GTH(K)-600**	260~400
300	480	ABS(L)803b	500	GMC-600	**GTH(K)-600**	400~600

Note) * Magnetic only

Direct starters with molded case circuit breakers (85kA-415V · IEC60947)

Motor		MCCB		Contactor	Thermal overload relay	
(kW)	440V(A)	Type	Rating Ir(A)	Type	Type	Settings range (A)
5.5	11	GBL103	16	GMC-32	**GTH(K)-40**	9~13
7.5	15	GBL103	16	GMC-32	**GTH(K)-40**	12~18
10	19	GBL103	25	GMC-32	**GTH(K)-40**	18~26
11	21	GBL103	25	GMC-32	**GTH(K)-40**	18~26
15	28	GBL103	32	GMC-32	**GTH(K)-40**	24~36
18.5	34	GBL103	40	GMC-75	**GTH(K)-85**	28~40
22	39	GBL103	50	GMC-75	**GTH(K)-85**	34~50
30	54	GBL103	63	GMC-75	**GTH(K)-85**	45~65
37	66	GBL103	80	GMC-75	**GTH(K)-85**	54~75
45	80	GBL103	100	GMC-100	**GTH(K)-100**	65~100
55	99	GBL103	100	GMC-100	**GTH(K)-100**	85~125
75	135	GBL203	160	GMC-150	**GTH(K)-150**	100~150
90	160	GBL203	200	GMC-180	**GTH(K)-220**	120~180
110	192	GBL203	200	GMC-180	**GTH(K)-220**	160~240
132	226	GBL203	250	GMC-220	**GTH(K)-220**	160~240
160	265	ABL403b	300	GMC-400	**GTH(K)-400**	200~300
200	330	ABL403b	350	GMC-400	**GTH(K)-400**	260~400
220	353	ABL403b	400	GMC-400	**GTH(K)-400**	260~400
250	400	ABL803b	500	GMC-600	**GTH(K)-600**	260~400
300	480	ABL803b	500	GMC-600	**GTH(K)-600**	400~600

Note) Tables are based on a combination of tests on a previous range and technical comparison.

Short circuit coordination

Contactors with protection fuses

Type	AC1(A)	690V AC3 Ie(A)	Short-circuit test	
			Fuse available fault current 100,000A	Ue / "r"
GMC-9	20	5	gL/gG 25A	690V/1kA
GMC-12	20	9	gL/gG 32A	690V/1kA
GMC-18	25	9	gL/gG 35A	690V/3kA
GMC-22	32	18	gL/gG 50A	690V/3kA
GMC-32	50	20	gL/gG 63A	690V/3kA
GMC-40	60	23	gL/gG 80A	690V/3kA
GMC-50	80	28	gL/gG 100A	690V/3kA
GMC-65	100	35	gL/gG 100A	690V/3kA
GMC-75	110	42	gL/gG 100A	690V/3kA
GMC-85	135	45	gL/gG 200A	690V/3kA
GMC-100	150	65	gL/gG 150A	690V/5kA
GMC-125	150	70	gL/gG 160A	690V/5kA
GMC-150	200	100	gL/gG 200A	690V/5kA
GMC-180	230	120	gL/gG 225A	690V/5kA
GMC-220	260	150	gL/gG 250A	690V/10kA
GMC-300	350	220	gL/gG 355A	690V/10kA
GMC-400	420	300	gL/gG 400A	690V/10kA
GMC-600	660	420	gL/gG 630A	690V/18kA
GMC-800	800	630	gL/gG 800A	690V/18kA

Note) Tables are based on a combination of tests on a previous range and technical comparison.

Thermal overload relays with protection fuses

Type	AC1(A)	690V AC3 Ie(A)	Short-circuit test	
			Fuse available fault current 100,000A	Ue / "r"
GTH(K)-22	32	1.6	gL/gG 4A	690V/1kA
GTH(K)-22		2.5	gL/gG 6A	690V/1kA
GTH(K)-22		4	gL/gG 10A	690V/1kA
GTH(K)-22		22	gL/gG 50A	690V/3kA
GTH(K)-40	60	6	gL/gG 16A	690V/1kA
GTH(K)-40		8	gL/gG 20A	690V/1kA
GTH(K)-40		9	gL/gG 20A	690V/1kA
GTH(K)-40		40	gL/gG 80A	690V/3kA
GTH(K)-85	135	18	gL/gG 35A	690V/3kA
GTH(K)-85		22	gL/gG 50A	690V/3kA
GTH(K)-85		26	gL/gG 63A	690V/3kA
GTH(K)-85		36	gL/gG 80A	690V/3kA
GTH(K)-85		40	gL/gG 80A	690V/3kA
GTH(K)-85		50	gL/gG 100A	690V/3kA
GTH(K)-85		65	gL/gG 160A	690V/5kA
GTH(K)-85		75	gL/gG 160A	690V/5kA
GTH(K)-85		85	gL/gG 200A	690V/5kA
GTH(K)-100	150	65	gL/gG 150A	690V/5kA
GTH(K)-100		125	gL/gG 225A	690V/5kA
GTH(K)-150	200	100	gL/gG 200A	690V/5kA
GTH(K)-150		150	gL/gG 250A	690V/10kA
GTH(K)-220	260	150	gL/gG 250A	690V/10kA
GTH(K)-220		240	gL/gG 355A	690V/10kA
GTH(K)-400	420	300	gL/gG 400A	690V/10kA
GTH(K)-400		400	gL/gG 630A	690V/18kA
GTH(K)-600	800	400	gL/gG 630A	690V/18kA
GTH(K)-600		630	gL/gG 800A	690V/18kA
GTH(K)-600		800	gL/gG 1400A	690V/30kA

Note) Tables are based on a combination of tests on a previous range and technical comparison.

Coil characteristics

Operating limits

When the operating coil is in the energized state an operating tolerance of between 85~110% of the coil's rated voltage is permitted, at temperatures up to 40℃ at standard operating frequency. Operation out with the above may cause deterioration to electrical insulation and mechanical operation.

Selections of coil

In GMC-9~85 contactors, 50Hz coil and 60Hz coil are separated.
But in GMC-100~800 contactors, the coils are AC/DC common use. (under DC 220V)

Characteristics of AC coil

AC 220V, 60Hz

Type	Coil consumption (VA)		Thermal dissipation (W)	Operational voltage(V)		Coil current (mA)	Operational time (ms)	
	Inrush	Holding		Pick-up	Drop-out		Closing	Opening
GMC-9(/4)~22(/4)	95	9	2	141~156(142~157)*	105~125(112~132)*	41(36)	10~17	6~9
GMC-32(/4), 40(/4)	95	9	2	150~165(151~166)*	110~130(117~137)*	41(36)	11~19	6~10
GMC-50(/4)~85(/4)	220	17	5	145~160(146~161)*	100~120(107~127)*	77(68)	16~25	8~15
GMC-100, 125	298	12.3	4.4	77	48	56	30~34	63~67
GMC-150	298	12.3	4.4	77	48	56	37~41	47~52
GMC-180, 200	380	11.6	4.7	77	48	53	45	45
GMC-100(/4)~220(/4)	380	11.6	4.7	77	48	53	45	45
GMC-300(/4), 400(/4)	571	14	5	77	48	64	45~50	48~52
GMC-600(/4), 800(/4)	1000	29	7.8	150	91	132	66~69	55

Note) 1. Average values. 2. ( )* values for 50Hz.

AC 110V, 60Hz

Type	Coil consumption (VA)		Thermal dissipation (W)	Operational voltage(V)		Coil current (mA)	Operational time (ms)	
	Inrush	Holding		Pick-up	Drop-out		Closing	Opening
GMC-9(/4)~22(/4)	95	9	2	75~85(74~84)*	55~65(54~64)*	73(73)*	11~18	6~9
GMC-32(/4), 40(/4)	95	9	2	75~85(74~84)*	55~65(54~64)*	73(73)*	13~20	6~9
GMC-50(/4)~85(/4)	220	17	5.5	68~78(67~77)*	40~50(39~49)*	154(154)*	16~25	9~16
GMC-100, 125	162	9.8	3.1	77	48	89	46~50	49~53
GMC-150	162	12.2	3	77	48	111	56~60	44~48
GMC-180, 200	220	9.1	3.4	77	48	83	60	41
GMC-100(/4)~220(/4)	220	9.1	3.4	77	48	83	60	41
GMC-300(/4), 400(/4)	393	14	4.4	77	48	128	64~68	43~47
GMC-600(/4), 800(/4)	1000	17	6.3	77	48	155	66~70	45~49

Note) 1. Average values. 2. ( )* values for 50Hz.

Characteristics of DC coil

DC 110V

Type	Coil consumption (VA)		Thermal contact (W)	Operational voltage(V)		Coil current (mA)	Operational time (ms)	
	Inrush	Holding		Pick-up	Drop-out		Closing	Opening
GMD-9(/4)~22(/4)	9	9	50	60~75	15~35	82	45~55	8~15
GMD-32(/4), 40(/4)	9	9	50	60~75	15~35	82	45~55	8~15
GMD-50(/4)~85(/4)	220	5	-	65~80	15~35	46	20~30	13~20

Coil characteristics for GMR series

AC coil (AC 220V, 60Hz)

Type		Coil consumption (VA)		Thermal dissipation (W)	Operation voltage (V)		Operation time (ms)			
		Inrush	Holding		Pick-up	Drop-out	Coil ON → NO contact ON	Coil ON → NC contact OFF	Coil OFF → NO contact OFF	Coil OFF → NC contact ON
GMR - 4	4NO	95	9	2	141~156	105~125	10~17	-	7~13	-
	2NO2NC				138~148	110~130	8~15	6~15	7~13	8~15
GMR - 6	6NO				145~160	100~120	10~17	-	7~13	-
	3NO3NC				140~155	105~125	10~16	5~13	7~13	8~15
GMR - 6	8NO				150~160	90~110	10~18	-	7~13	-
	4NO4NC				148~158	95~115	10~16	5~13	7~13	8~15

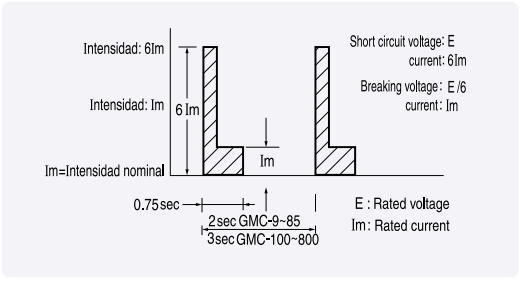
DC coil (DC 110V)

Type		Coil consumption (VA)		Thermal dissipation (W)	Operation voltage (V)		Operation time (ms)			
		Inrush	Holding		Pick-up	Drop-out	Coil ON → NO contact ON	Coil ON → NC contact OFF	Coil OFF → NO contact OFF	Coil OFF → NC contact ON
GMR - 4D	4NO	9	9	50	65~75	15~35	45~55	-	7~13	-
	2NO2NC				63~73	18~38	40~50	20~30	7~13	13~19
GMR - 6D	6NO				68~78	15~35	45~55	-	7~13	-
	3NO3NC				63~73	18~38	40~50	20~30	7~13	8~15
GMR - 6D	8NO				70~80	15~35	45~55	-	7~13	-
	4NO4NC				63~73	18~38	40~50	20~30	7~13	13~19

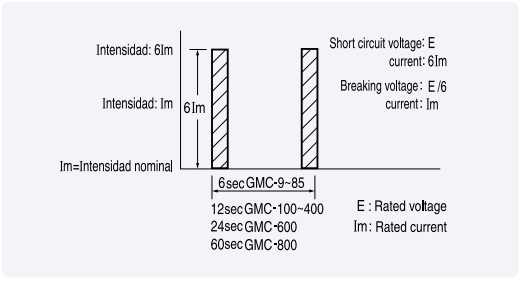
Performance of contactors

Type	Rated voltage (V)	Rated current (A)	Short circuit max. current	Breaking capacity	Cycles per hour at AC3	Endurance (x 10,000 operations)		Performance Indicate
						Mechanical	Electrical	
GMC-9	220	11	132	110	1800	2500	250	AC3 · 1 · 0-0
	440	9	108	90				
GMC-12	220	13	156	130	1800	2500	250	AC3 · 1 · 0-0
	440	12	144	120				
GMC-18	220	18	216	180	1800	2500	250	AC3 · 1 · 0-0
	440	18	216	180				
GMC-22	220	22	264	220	1800	2500	250	AC3 · 1 · 0-0
	440	22	264	220				
GMC-32	220	32	385	320	1800	1500	200	AC3 · 1 · 0-0
	440	32	385	320				
GMC-40	220	40	480	400	1800	1500	200	AC3 · 1 · 0-0
	440	40	480	400				
GMC-50	220	55	660	550	1200	1000	200	AC3 · 1 · 0-0
	440	50	600	500				
GMC-65	220	65	780	650	1200	1000	200	AC3 · 1 · 0-0
	440	65	780	650				
GMC-75	220	75	900	750	1200	1000	200	AC3 · 1 · 0-0
	440	75	900	750				
GMC-85	220	80	960	800	1200	1000	200	AC3 · 1 · 0-0
	440	80	960	800				
GMC-100	220	105	1050	1050	1200	500	100	AC3 · 1 · 1-0
	440	105	1050	1050				
GMC-125	220	125	1250	1250	1200	500	100	AC3 · 1 · 1-0
	440	120	1200	1200				
GMC-150	440	150	1500	1500	1200	500	100	AC3 · 1 · 1-0
	440	150	1500	1500				
GMC-180	220	180	1800	1800	1200	500	100	AC3 · 1 · 1-0
	440	180	1800	1800				
GMC-220	220	220	2200	2200	1200	500	100	ACC3 · 1 · 1-0
	440	220	2200	2200				
GMC-300	220	300	3000	3000	1200	500	100	AC3 · 1 · 1-0
	440	300	3000	3000				
GMC-400	220	400	4000	4000	1200	500	50	AC3 · 1 · 1-1
	440	400	4000	4000				
GMC-600	220	630	6300	6300	1200	500	50	ACC3 · 1 · 1-1
	440	630	6300	6300				
GMC-800	220	800	8000	8000	1200	500	50	AC3 · 1 · 1-1
	440	800	8000	8000				

Test duty of the electrical endurance (AC3)



Test duty of the electrical endurance (AC4)



3-pole Contactors

Type	Cable section			Screw size		Torque(Nm)	
	AWG /MCM	ISOmm²		Contactor terminal	Coil terminal	Principal main	Aux.
		MIN	MAX				
GMC-9	10 AWG	1,5	4	M4	M3.5	2,3	2,3
GMC-12	10 AWG	1,5	4	M4	M3.5	2,3	2,3
GMC-18	10 AWG	1,5	6	M4	M3.5	4	2,3
GMC-22	8 AWG	2,5	10	M4	M3.5	4	2,3
GMC-32	6 AWG	4	16	M5	M3.5	4	2,3
GMC-40	6 AWG	4	16	M5	M3.5	4	2,3
GMC-50	4 AWG	6	25	M6	M3.5	5	2,3
GMC-65	2 AWG	10	35	M8	M3.5	5	2,3
GMC-75	2 AWG	10	35	M8	M3.5	5	2,3
GMC-85	0 AWG	10	50	M8	M3.5	5	2,3
GMC-100	00 AWG	25	70	M8	M4	9	2,3
GMC-125	00 AWG	25	70	M8	M4	9	2,3
GMC-150	0000 AWG	35	95	M8	M4	9	2,3
GMC-180	250 MCM	50	120	M10	M4	15	2,3
GMC-220	300 MCM	70	150	M10	M4	15	2,3
GMC-300	500 MCM	95	240	M12	M4	23	2,3
GMC-400	N°2 30×5	150		M12	M4	23	2,3
GMC-600	N°2 50×5	240		M16	M4	57	2,3
GMC-800	N°2 60×5	240		M16	M4	57	2,3

4-pole Contactors

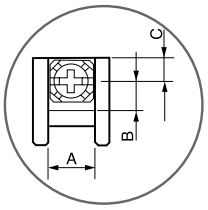
Type	Cable section		Screw size		Torque(Nm)	
	AWG/MCM	ISOmm²	Contactor terminal	Coil terminal	Principal main	Aux.
GMC-9/4	10 AWG	4	M3.5	M3.5	2,3	2,3
GMC-12/4	10 AWG	4	M3.5	M3.5	2,3	2,3
GMC-18/4	8 AWG	6	M4	M3.5	4	2,3
GMC-22/4	8 AWG	10	M4	M3.5	4	2,3
GMC-32/4	6 AWG	16	M5	M3.5	4	2,3
GMC-40/4	6 AWG	16	M5	M3.5	4	2,3
GMC-50/4	4 AWG	25	M6	M3.5	5	2,3
GMC-65/4	2 AWG	35	M8	M3.5	5	2,3
GMC-75/4	2 AWG	35	M8	M3.5	5	2,3
GMC-85/4	0 AWG	50	M8	M3.5	5	2,3
GMC-100/4	00 AWG	70	M8	M4	9	2,3
GMC-125/4	00 AWG	70	M8	M4	9	2,3
GMC-150/4	0000 AWG	95	M8	M4	9	2,3
GMC-180/4	250 MCM	120	M10	M4	15	2,3
GMC-220/4	300 MCM	150	M10	M4	15	2,3
GMC-300/4	500 MCM	240	M12	M4	23	2,3
GMC-400/4	N°2 30×5	150	M12	M4	23	2,3
GMC-600/4	N°2 50×5	240	M16	M4	57	2,3
GMC-800/4	N°2 60×5	240	M16	M4	57	2,3

Thermal overload relays

Type	Setting range	Cable selection		Torque (Nm)	Terminal screw size
		AWG /MCM	ISOmm²		
GTH(K)-22	0.1~0.16	18AWG	1,5	2,3	M4
	0.16~0.25	18AWG	1,5	2,3	M4
	0.25~0.4	18AWG	1,5	2,3	M4
	0.4~0.63	18AWG	1,5	2,3	M4
	0.63~1	18AWG	1,5	2,3	M4
	1~1.6	18AWG	1,5	2,3	M4
	1.6~2.5	18AWG	1,5	2,3	M4
	2.5~4	18AWG	1,5	2,3	M4
	4~6	18AWG	1,5	2,3	M4
	5~8	16AWG	1,5	2,3	M4
	6~9	16AWG	1,5	2,3	M4
	7~10	16AWG	1,5	2,3	M4
	9~13	14AWG	1,5-2,5	2,3	M4
	12~18	12AWG	2,5	2,3	M4
	16~22	10AWG	2,5-4,0	2,3	M4
GTH(K)-40	4~6	18AWG	1,5	4	M5
	5~8	16AWG	1,5	4	M5
	6~9	16AWG	1,5	4	M5
	7~10	16AWG	1,5	4	M5
	9~13	14AWG	1,5-2,5	4	M5
	12~18	12AWG	2,5	4	M5
	16~22	10AWG	2,5-4,0	4	M5
	18~26	10AWG	2,5-6,0	4	M5
	24~36	10AWG	4,0-10	4	M5
	28~40	10AWG	6,0-10	4	M5
GTH(K)-85	7~10	16AWG	1,5	5,1	M6
	9~13	14AWG	1,5-2,5	5,1	M6
	12~18	12AWG	2,5	5,1	M6
	16~22	10AWG	2,5-4,0	5,1	M6
	18~26	10AWG	2,5-6,6	5,1	M6
	24~36	10AWG	4,0-10	5,1	M6
	28~40	10AWG	6,0-10	5,1	M6
	34~50	6AWG	10-16	5,1	M6
	45~65	4AWG	10-25	5,1	M8
	54~75	4AWG	16-25	5,1	M8
	63~85	3AWG	16-35	5,1	M8
	34~50	6AWG	10-16	9	M8
GTH(K)-100	39~57	6AWG	10-16	9	M8
	43~65	4AWG	10-25	9	M8
	54~80	4AWG	16-25	9	M8
	65~100	2AWG	25-35	9	M8
	85~125	1AWG	35-50	9	M8
GTH(K)-150	34~50	6AWG	10-16	9	M8
	39~57	6AWG	10-16	9	M8
	43~65	4AWG	10-25	9	M8
	54~80	4AWG	16-25	9	M8
	65~100	2AWG	25-35	9	M8
	85~125	1AWG	35-50	9	M8
	100~150	00AWG	35-70	9	M8
GTH(K)-220	65~100	2AWG	25-35	15	M10
	85~125	1AWG	35-50	15	M10
	100~160	00AWG	35-70	15	M10
	120~180	000AWG	50-95	15	M10
	160~240	250AWG	70-120	15	M10
GTH(K)-400	85~125	1AWG	35-50	23	M12
	100~160	00AWG	35-70	23	M12
	120~180	000AWG	50-95	23	M12
	160~240	250AWG	70-120	23	M12
	200~300	400AWG	95-185	23	M12
	260~400	500AWG	150-240	23	M12
GTH(K)-600	200~300	400AWG	95-185	57	M16
	260~400	500AWG	150-240	57	M16
	400~600	N°2 40×5	150-185	57	M16
	520~800	N°2 60×5	185-240	57	M16

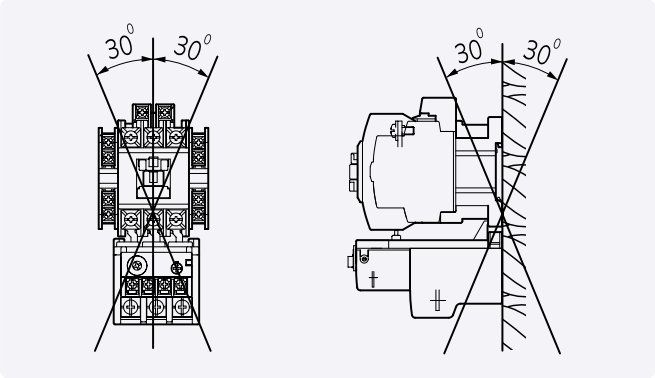
Terminal dimensions

Type	Dimensions of terminal				Type	Dimensions of terminal			
	Main circuit		Auxiliary circuit			Main circuit		Auxiliary circuit	
	Terminal screw	A×B×C (mm)	Terminal screw	A×B×C (mm)		Terminal screw	A×B×C (mm)	Terminal screw	A×B×C (mm)
GMC-9(/4)	M4	9.5×5×4.9	M3.5	8×5×4.9	GTH(K)-22	M4	10×6.5×5	M3.5	7.8×4.3×7.3
GMC-12(/4)	M4	9.5×5×4.9	M3.5	8×5×4.9					
GMC-18(/4)	M4	9.5×5×4.9	M3.5	8×5×4.9					
GMC-22(/4)	M4	9.5×5×4.9	M3.5	8×5×4.9					
GMC-32(/4)	M5	12.4×6.5×6	M3.5	8×5×4.9	GTH(K)-40	M5	12.4×6.2×6.3	M3.5	7.8×4.3×7.3
GMC-40(/4)	M5	12.4×6.5×6	M3.5	8×5×4.9					
GMC-50(/4)	M6	17.5×7×8.7	M3.5	8×5×4.9	GTH(K)-85	M6	19×8.5×9	M3.5	7.8×4.3×7.3
GMC-65(/4)	M8	17.5×7×8.7	M3.5	8×5×4.9					
GMC-75(/4)	M8	17.5×7×8.7	M3.5	8×5×4.9		M8	19×8.5×9	M3.5	7.8×4.3×7.3
GMC-85(/4)	M8	17.5×7×8.7	M3.5	8×5×4.9					
GMC-100(/4)	M8	15×8.5×9.5	M4	10.8×4.1×4.1	GTH(K)-125	M8	15×9.5×9	M4	8.2×4.1×5.2
GMC-125(/4)	M8	15×8.5×9.5	M4	10.8×4.1×4.1					
GMC-150(/4)	M8	20.5×10×9	M4	10.8×4.1×4.1	GTH(K)-150	M8	20×10×10	M4	8.2×4.1×5.2
GMC-180(/4)	M10	25×12.5×15	M4	10.8×4.1×4.1	GTH(K)-220	M10	25×12.5×13.5	M3.5	7.7×5×4.5
GMC-220(/4)	M10	25×12.5×15	M4	10.8×4.1×4.1					
GMC-300(/4)	M12	30×14.5×20	M4	10.8×4.1×4.1	GTH(K)-400	M12	30×15×11	M3.5	7.7×5×4.5
GMC-400(/4)	M12	30×14.5×20	M4	10.8×4.1×4.1					
GMC-600(/4)	M16	40×20×40.5	M4	10.8×4.1×4.1	GTH(K)-600	M16	30×11.2×23.2	M3.5	7.7×5×4.5
GMC-800(/4)	M16	40×20×40.5	M4	10.8×4.1×4.1					

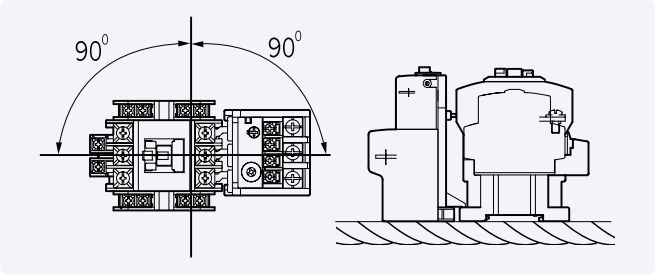


Installation

1) Operating position



Normal installation

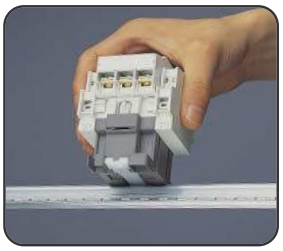


Horizontal or vertical installation

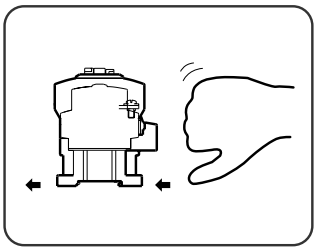
• In special installations, the endurance and other characteristics may be deteriorated.

DIN rail(GMC-9~85)

• 35mm DIN rail



Installation



Un-install

Environment

1) Ambient temperature
   • -25~40℃
2) Storage temperature
   • -30~65℃
3) Altitude : below 2,000m
4) Do not install below freezing point.