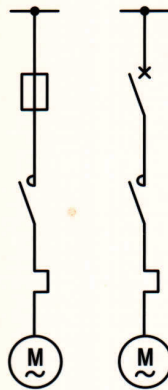


0.06	0.09	0.12	0.18	0.25	0.37	0.55	0.75	1.1	1.5	2.2	3	3.7	4	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110	132	160	200	250	315	355	400	450
1/2	1/8	1/6	1/4	1/3	1/2	3/4	1	1 1/2	2	3	4	5	5 1/2	7 1/2	10	15	20	25	30	40	50	60	75	100	125	150	180	220	270	340	420	480	540	600
0.5	0.7	0.8	1.2	1.5	2.1	2.7	3.5	4.5	6.1	8.7	11.5	14.2	20	26.5	39	50	62	75	100	124	148	182	245	295	350	420	510	630	—	—	—	—	—	
T10, T12	T10, T12	T10, T12	T10, T12	T10, T12	T10, T12	T10, T12	T10, T12	T10, T12	T10, T12	T10, T12	T12	T20	T20	T21	N35	N35	N50	N65	N80	N95	N125	N150	N180	N220	N300	N400	S-N600	S-N600	S-N800	—	—	—	—	—
T18	T18	T18	T18	T18	T18	T18	T18	T18	T18	T18	T18	T18	T18	T25	N20TA	N20TA	N60	N60	N60TA	N60TA	N120TA	N120TA	N220RH	N220RH	N400RH	N400RH	N600	N600	N600	—	—	—	—	—
0.5	0.7	0.9	1.3	1.7	2.1	2.5	3.6	5	6.6	9	11	15	15	22	29	35	54	54	82	95	125	125	180	210	250	300	500	500	660	—	—	—	—	—
2	2	4	4	6	6	10	16	16	20	25	35	50	50	50	80	80	160	160	200	200	315	315	400	500	800	800	1000	1250	—	—	—	—	—	
32-SV	32-SV	32-SV	32-SV	32-SV	32-SV	32-SV	32-SV	32-SV	32-SV	32-SV	32-SV	32-SV	32-SV	32-SV	63-SV	63-SV	125-SV	125-SV	125-SV	250-SV	250-SV	250-SV	400-SV	400-SV	630-SV	630-SV	800-SEN	1000-SV	—	—	—	—	—	
(3)	(3)	(3)	3	4	6	6	10	10	16	20	25	32	32	50	63	50	63	80	100	150	200	225	300	350	500	500	630	600	1000	—	—	—	—	—
1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	2.5	4	4	6	10	16	25	25	35	50	50	70	95	150	150	185	240	—	—	—	—	—	—	—
0.25	0.35	0.45	0.65	0.85	1.2	1.6	2.0	2.7	3.6	5.1	6.8	8.5	8.7	11.8	16	22	30	37	43	57	72	86	105	140	168	205	245	290	360	475	580	636	710	800
T10, T12	T10, T12	T10, T12	T10, T12	T10, T12	T10, T12	T10, T12	T10, T12	T10, T12	T10, T12	T10, T12	T12	T20	T20	T21	N35	N35	N50	N65	N80	N80	N95	N150	N180	N220	N220	N300	N400	S-N600	S-N600	S-N800	S-N800	S-N800	S-N800	S-N800
T18	T18	T18	T18	T18	T18	T18	T18	T18	T18	T18	T18	T18	T18	T18	T25	N20TA	N20TA	N60	N60	N60TA	N60TA	N120TA	N120TA	N220RH	N220RH	N400RH	N400RH	N600	N600	N600	N600	N600	N600	N600
0.24	0.35	0.5	0.7	0.9	1.3	1.7	2.1	2.5	3.6	5	6.6	9	9	11	15	22	29	35	42	54	67	82	95	125	150	180	210	250	330	500	500	660	660	660
※2	※2	2	2	4	4	6	6	10	16	16	20	25	25	35	50	50	80	80	125	160	160	200	200	315	315	500	500	800	800	1000	1250	1250	1500	1500
—	—	32-SV	32-SV	32-SV	32-SV	32-SV	32-SV	32-SV	32-SV	32-SV	32-SV	32-SV	32-SV	32-SV	63-SV	63-SV	125-SV	125-SV	125-SV	250-SV	250-SV	250-SV	400-SV	400-SV	630-SV	630-SV	800-SEN	1000-SV	1000-SV	1250-SV	1250-SV	1250-SV		
—	—	(3)	(3)	(3)	3	4	6	6	10	16	20	20	25	32	50	63	50	63	80	100	125	150	225	250	300	350	500	600	700	1000	1250	1200	1200	
1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	2.5	4	6	10	10	16	25	25	35	50	50	70	95	150	185	240	300	300	—	—	—
0.2	0.3	0.4	0.6	0.8	1.1	1.5	1.9	2.6	3.5	5.0	6.3	7.5	8.0	11	15	21	28	35	40	54	67	79	98	130	160	190	230	270	328	435	530	580	650	730
T10, T12	T10, T12	T10, T12	T10, T12	T10, T12	T10, T12	T10, T12	T10, T12	T10, T12	T10, T12	T10, T12	T12	T20	T20	T21	N35	N35	N50	N65	N80	N80	N95	N150	N180	N220	N220	N300	N400	S-N600	S-N600	S-N800	S-N800	S-N800	S-N800	S-N800
T18	T18	T18	T18	T18	T18	T18	T18	T18	T18	T18	T18	T18	T18	T18	T25	N20TA	N20TA	N60	N60	N60TA	N60TA	N120TA	N120TA	N220RH	N220RH	N400RH	N400RH	N600	N600	N600	N600	N600	N600	N600
0.24	0.35	0.5	0.7	0.9	1.3	1.3	1.7	2.5	3.6	5	6.6	6.6	9	11	15	22	29	35	42	54	67	82	95	125	150	180	210	250	330	500	500	660	660	660
※2	※2	※2	2	4	4	6	6	10	16	16	20	20	25	35	50	50	80	80	125	160	160	200	200	315	315	500	500	800	800	1000	1250	1250	—	—
—	—	—	32-SV	32-SV	32-SV	32-SV	32-SV	32-SV	32-SV	32-SV	32-SV	32-SV	32-SV	32-SV	63-SV	63-SV	125-SV	125-SV	125-SV	250-SV	250-SV	250-SV	400-SV	400-SV	630-SV	630-SV	800-SEN	1000-SV	1000-SV	1250-SV	1250-SV	1250-SV		
—	—	—	(3)	(3)	3	3	4	6	10	10	16	16	20	25	32	50	63	50	50	80	100	100	125	200	250	300	350	400	500	630	600	700	1000	1200
1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	2.5	4	6	10	10	16	25	25	35	50	50	70	95	150	185	240	300	300	—	—	—

Selection Guide for Direct-on-Line Motor Starters

Motor rating			
220V 3-phase 50/60Hz	motor full load current	MSO-	kW
	type designation of Magnetic Starter	TH-	HP
	associated thermal overload relay		A
	heater designation		KP
	Fuse (VDE0660 gT time-delay)	NF	KP
	MCCB		A
	rated current(In)		A
	wire size recommended		mm ²
380V 3-phase 50/60Hz	motor full load current	MSO-	A
	type designation of Magnetic Starter	TH-	KP
	associated thermal overload relay		KP
	heater designation		A
	Fuse (VDE0660 gT time-delay)	NF	A
	MCCB		A
	rated current(In)		A
	wire size recommended		mm ²
415V 3-phase 50Hz	motor full load current	MSO-	A
	type designation of Magnetic Starter	TH-	KP
	associated thermal overload relay		KP
	heater designation		A
	Fuse (VDE0660 gT time-delay)	NF	A
	MCCB		A
	rated current(In)		A
	wire size recommended		mm ²



For D.O.L. starting at 3phase 1500rpm or 1800rpm squirrel cage motors under AC-3 operating conditions according to IEC609 47-4-1.

Fuse is valid for this motor full load current and for max.

6xf.l.c. starting current and max.5secs starting time.

The setting current of the heater should be adjusted to the motor full-load current.

Notes for both sides:

1. This selection scale made up depending upon the average rating current of motor.

2. Actual rating current could be high or low for a specific motor. Therefore heater selection on this basis always involves risk. For fully reliable motor protection, select heaters on the basis of full load current rating as show on the motor nameplate.

3. Type MSO-N600KP and N800KP are not available. Use contactor S-N600 or S-N800 and OLR TH-N600KP with suitable CTs.

- Fuse rating marked * indicates VDE0660 gF quick-acting type.
- MCCB rating value in parenthesis requires an overload relay with saturable reactors for better protection coordination.

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE: TOKYO BLDG., 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN

Selection Guide for Star-Delta Starters

2.2	3	3.7	4	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110	132	160	200	250	315	355	400	450
3	4	5	5½	7½	10	15	20	25	30	40	50	60	75	100	125	150	180	220	270	340	420	480	540	600
8.7	11.5	14.2	15.2	20	26.5	39	50	62	75	100	124	148	182	245	295	350	420	510	630	790	990	1100	1230	1380
T12	T12	T12	T12	T12	T20	T25	N35	N35	N50	N65	N80	N80	N125	N150	N180	N220	N300	N300	N400	S-N600	S-N600	S-N600	S-N800	S-N800
T18	T18	T18	T18	T18	T18	T25	N20TA	N20TA	N60	N60	N60TA	N60TA	N120TA	N120TA	N220RH	N220RH	N400RH	N400RH	N400RH	N600	N600	N600	N600	N600
5	6.6	9	9	11	15	22	29	35	42	54	67	82	105	150	180	210	250	250	330	500	500	660	660	660
T12	T12	T12	T12	T12	T20	T25	N35	N35	N50	N65	N80	N80	N125	N150	N180	N220	N300	N300	N400	N600	N600	N600	N800	N800
T10	T10	T10	T10	T10	T10	T10	T10	T12	T20	T21	T25	N35	N35	N50	N65	N80	N95	N95	N125	N150	N220	N220	N220	N300
16	20	32	32	32	40	63	80	100	100	125	160	200	220	315	400	400	500	630	800	1000	1250	1500	1500	2000
32-SV	32-SV	32-SV	63-SV	63-SV	63-SV	125-SV	125-SV	125-SV	160-SV	160-SV	250-SV	250-SV	400-SV	400-SV	630-SV	630-SV	800-SEN	1000-SV	1000-SV	1250-SV	1600-SV	AE1500	AE2000	AE2500
20	32	32	40	50	63	80	100	125	160	200	225	300	400	500	600	600	800	1000	1200	1500	1600	2000	2000	2000
1.5	1.5	1.5	4	6	10	16	25	25	35	50	70	95	150	150	150	185	240	240	240	240	240	240	240	240
1.5	1.5	1.5	1.5	1.5	2.5	4	6	6	10	16	25	25	35	50	70	95	120	185	240	240	240	240	240	240
5.1	6.8	8.5	8.7	11.8	16	22	30	37	43	57	72	86	105	140	168	205	245	290	360	475	580	636	710	800
T12	T12	T12	T12	T20	T20	T20	T20	T21	T25	N35	N50	N50	N65	N80	N95	N125	N150	N180	N220	N300	N400	N400	S-N600	S-N600
T18	T18	T18	T18	T18	T18	T18	T18	T25	T25	N20TA	N60	N60	N60	N60TA	N60TA	N120TA	N120TA	N220RH	N220RH	N400RH	N400RH	N400RH	N400RH	N600
3.6	3.6	5	5	6.6	9	15	15	22	22	29	42	54	54	82	95	105	125	150	180	250	330	330	500	500
T12	T12	T12	T12	T20	T20	T20	T20	T21	T25	N35	N50	N50	N65	N80	N95	N125	N150	N180	N220	N300	N400	N400	N600	N600
T10	T10	T10	T10	T10	T10	T10	T10	T10	T12	T20	T20	T20	T21	T25	N35	N50	N65	N80	N95	N125	N150	N150	N180	N180
12	16	16	16	20	32	32	40	40	63	63	100	100	125	160	200	250	250	310	400	630	630	800	800	1000
32-SV	32-SV	32-SV	32-SV	32-SV	63-SV	63-SV	125-SV	125-SV	125-SV	125-SV	160-SV	160-SV	160-SV	250-SV	400-SV	400-SV	400-SV	630-SV	630-SV	1000-SV	1000-SV	1000-SV	1250-SV	1250-SV
16	16	20	20	32	40	50	63	63	100	125	150	160	225	300	350	400	500	600	700	900	1000	1200	1200	1200
1.5	1.5	1.5	1.5	2.5	4	6	10	10	16	25	25	35	50	50	70	95	150	150	185	240	240	240	240	240
1.5	1.5	1.5	1.5	1.5	1.5	1.5	2.5	2.5	4	6	6	10	16	25	35	50	70	95	150	185	240	240	240	240
5.0	6.3	7.5	8	11	15	21	28	35	40	54	67	79	98	130	160	190	230	270	328	435	530	580	650	730
T12	T12	T12	T12	T12	T20	T20	T20	T21	T25	N35	N50	N50	N65	N80	N95	N125	N150	N180	N220	N300	N400	N400	N400	S-N600
T18	T18	T18	T18	T18	T18	T18	T18	T25	T25	N20TA	N60	N60	N60	N60TA	N60TA	N120TA	N120TA	N220RH	N220RH	N400RH	N400RH	N400RH	N400RH	N600
3.6	3.6	5	5	6.6	9	11	15	22	22	29	42	54	54	82	95	105	125	150	180	250	330	330	500	500
T12	T12	T12	T12	T12	T20	T20	T20	T21	T25	N35	N50	N50	N65	N80	N95	N125	N150	N180	N220	N300	N400	N400	N400	N600
T10	T10	T10	T10	T10	T10	T10	T10	T10	T12	T20	T20	T20	T21	T25	N35	N50	N65	N80	N95	N125	N150	N150	N180	N180
12	16	16	16	20	32	32	40	40	63	63	100	100	125	160	200	250	250	310	400	630	630	800	800	1000
32-SV	32-SV	32-SV	32-SV	32-SV	63-SV	63-SV	125-SV	125-SV	125-SV	125-SV	160-SV	160-SV	160-SV	250-SV	400-SV	400-SV	400-SV	630-SV	630-SV	1000-SV	1000-SV	1000-SV	1250-SV	1250-SV
16	16	16	20	25	32	50	40	50	63	80	100	125	150	225	300	350	400	500	600	500	800	900	1000	1200
1.5	1.5	1.5	1.5	2.5	4	6	10	16	25	25	35	50	50	70	95	150	150	185	240	240	240	240	240	240
1.5	1.5	1.5	1.5	1.5	1.5	1.5	2.5	2.5	4	6	6	10	16	25	35	50	70	95	150	185	240	240	240	240

GEN 1301 (MEE)

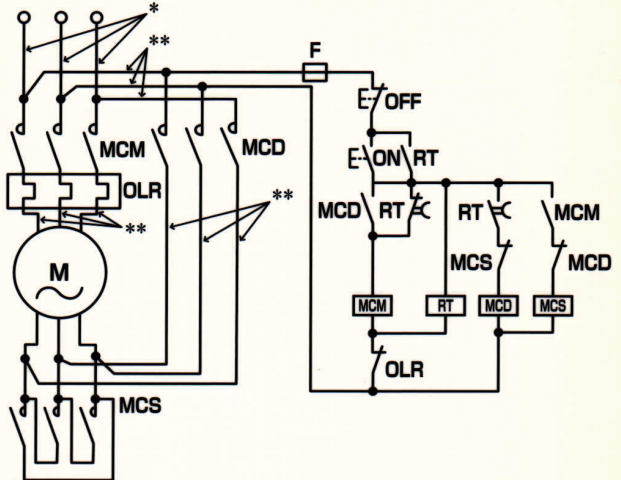
Z633804H07

Motor rating

220V 3-phase 50/60Hz	motor full load current	
	type designation of Magnetic Starter MCM+OLR	MSO-
	type designation of OLR	TH-
	heater designation	
	type designation of Contactor MCD	S-
380V 3-phase 50/60Hz	type designation of Contactor MCS	S-
	Fuse (VDE0660 gT time-delay)	
	MCCB	NF
	rated current(In)	
	wire size recommended (*)	
415V 3-phase 50Hz	wire size recommended (**)	
	motor full load current	
	type designation of Magnetic Starter MCM+OLR	MSO-
	type designation of OLR	TH-
	heater designation	
50Hz	type designation of Contactor MCD	S-
	type designation of Contactor MCS	S-
	Fuse (VDE0660 gT time-delay)	
	MCCB	NF
	rated current(In)	
	wire size recommended (*)	
	wire size recommended (**)	

kW
HP
A
KP
KP
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mm ²
mm ²
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KP
KP
A
A
mm ²
mm ²
mm ²

Connect a MCCB
or Fuses



For star-delta starting at 1500rpm or 1800rpm 3phase squirrel cage motors. The selection of contactor MCS can be applied only to this diagram. Fuse is valid for this motor full load current and for max. 2xf.l.c. starting current and max. 15secs starting time. The setting current of the heater should be adjusted to $1/\sqrt{3} \times f.l.c$

*Recommendable size to be connected Line Terminal of MCM to Sorce.

**Recommendable size to be connected OLR or MCD.

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