



\*\*HISTORICAL\*\*

# **Terminal Blocks - Component**

### COMPANY

## SATO PARTS CO LTD

3-3-8 Sotokanda Chiyoda-Ku, Tokyo 101-0021 Japan

E101073

Cat. No.	Range Type	Wire Type		TQ Nm	v	A	UG	CA
ML-260, -270, -280, followed by -S1 followed by -A, -B, -G or -H, followed by 1, followed by -1P through -8P for X suffix, or -2P through -10P for Y suffix, followed by S.	22-16	Cu	1	0.5	250	10	В	2(120), 3(M3), 5
					150	10	С	
					300	10	D	
ML-260, -270, -280, followed by -S2, followed by -G or -H, followed by 1, followed by -1P through -8P for X suffix, or -2P through -10P for Y suffix, followed by S.	22-16	Cu	1	0.5	250	10	В	2(120), 3(M3), 5
					150	10	с	
					300	10	D	
ML-260, -270, -280, followed by -S3, followed by -A, followed by 1, followed by -1P through -8P for X suffix, or -2P through -10P for Y suffix, followed by S.	22-16	Cu	1	0.5	250	10	В	2(120), 3(M3), 5
					150	10	С	
					300	10	D	

ML-260, -270, -280, followed by -S1 followed by -A, -B, -G or -H, followed by 1, followed by -1P through -8P for X suffix, or -2P through -10P for Y suffix, followed by F.	22-14 (Prepared)	Cu	2	0.5	250	10	В	2(120), 5
					150	10	С	
					300	10	D	
	22-16 (Unprepared)	Cu	2	0.5	250	10	В	2(120), 4
					150	10	С	
					300	10	D	
ML-260, -270, -280, followed by -S2, followed by -G or -H, followed by 1, followed by -1P through -8P for X suffix, or -2P through -10P for Y suffix, followed by F.	22-14 (Prepared)	Cu	2	0.5	250	10	В	2(120), 5
					150	10	С	
					300	10	D	
	22-16 (Unprepared)	Cu	2	0.5	250	10	В	2(120), 4
					150	10	С	
					300	10	D	
ML-260, -270, -280, followed by -S3, followed by -A, followed by 1, followed by -1P through -8P for X suffix, or -2P through -10P for Y suffix, followed by F.	22-14 (Prepared)	Cu	2	0.5	250	10	В	2(120), 5
					150	10	С	
					300	10	D	
	22-16 (Unprepared)	Cu	2	0.5	250	10	В	2(120), 4
					150	10	С	
					300	10	D	
ML-260, -270, -280, followed by S1 or S3, followed by E, followed by 1, followed by -1P through -8P for X suffix, or -2P through -10P for Y suffix, followed by F.	#(2) 22-16 (Unprepared)	Cu	1	0.5	250	10	В	2(120)
					150	10	С	

					300	10	D	
ML-260, -270, -280, followed by -S1 followed by -A, -B, -G or -H, followed by 2, followed by -1P through -8P for X suffix, or -2P through -10P for Y suffix, followed by S.	22-16	Cu	1	0.8	250	15	В	2(120), 3(M3.5),5
					150	15	С	
					300	10	D	
ML-260, -270, -280, followed by -S2, followed by -G or -H, followed by 2, followed by -1P through -8P for X suffix, or -2P through -10P for Y suffix, followed by S.	22-16	Cu	1	0.8	250	15	В	2(120), 3(M3.5), 5
					150	15	С	
					300	10	D	
ML-260, -270, -280, followed by -S3, followed by -A, followed by 2, followed by -1P through -8P for X suffix, or -2P through -10P for Y suffix, followed by S.	22-16	Cu	1	0.8	250	15	В	2(120), 3(M3.5), 5
					150	15	С	
					300	10	D	
ML-260, -270, -280, followed by -S1 followed by -A, -B, -G or -H, followed by 2, followed by -1P through -8P for X suffix, or -2P through -10P for Y suffix, followed by F.	22-14 (Prepared)	Cu	2	0.8	250	15	В	2(120), 5
					150	15	С	
					300	10	D	
	22-16 (Unprepared)	Cu	2	0.8	250	15	В	2(120), 4
					150	15	С	
					300	10	D	
ML-260, -270, -280, followed by -S2, followed by -G or -H, followed by 2, followed by -1P through -8P for X suffix, or -2P through -10P for Y suffix, followed by F.	22-14 (Prepared)	Cu	2	0.8	250	15	В	2(120), 5
					150	15	С	
					300	10	D	
	22-16 (Unprepared)	Cu	2	0.8	250	15	В	2(120), 4

					150	15	С	
					300	10	D	
ML-260, -270, -280, followed by -S3, followed by -A, followed by 2, followed by -1P through -8P for X suffix, or -2P through -10P for Y suffix, followed by F.	22-14 (Prepared)	Cu	2	0.8	250	15	В	2(120), 5
					150	15	С	
					300	10	D	
	22-16 (Unprepared)	Cu	2	0.8	250	15	В	2(120), 4
					150	15	С	
					300	10	D	
ML-260, -270, -280, followed by -S1 or -S3, followed by -E, followed by 2, followed by -1P through -8P for X suffix, or -2P through -10P for Y suffix, followed by F.	#(2)22-16 (Unprepared)	Cu	1	0.8	250	15	В	2(120)
					150	15	С	
					300	10	D	
ML-260, -270, -280, followed by -S1 followed by -A, -B, -G or -H, followed by 3, followed by -1P through -8P for X suffix, or -2P through -10P for Y suffix, followed by S.	22-16	Cu	1	1.2	250	20	В	2(120) 3(M4), 5
					150	20	С	
					300	10	D	
ML-260, -270, -280, followed by -S2, followed by -G or -H, followed by 3, followed by -1P through -8P for X suffix, or -2P through -10P for Y suffix, followed by S.	22-16	Cu	1	1.2	250	20	В	2(120) 3(M4), 5
					150	20	С	
					300	10	D	
ML-260, -270, -280, followed by -S3, followed by -A, followed by 3, followed by -1P through -8P for X suffix, or -2P through -10P for Y suffix, followed by S.	22-16	Cu	1	1.2	250	20	В	2(120) 3(M4), 5
					150	20	С	
					300	10	D	

ML-260, -270, -280, followed by -S1 followed by -A, -B, -G or -H, followed by 3, followed by -1P through -8P for X suffix, or -2P through -10P for Y suffix, followed by F.	22-14 (Prepared)	Cu	2	0.8- 1.2	250	20	В	2(120), 5
					150	20	С	
					300	10	D	
	22-16 (Unprepared)	Cu	2	0.8- 1.2	250	20	В	2(120), 4
					150	20	С	
					300	10	D	
ML-260, -270, -280, followed by -S2, followed by -G or -H, followed by 3, followed by -1P through -8P for X suffix, or -2P through -10P for Y suffix, followed by F.	22-14 (Prepared)	Cu	2	0.8- 1.2	250	20	В	2(120), 5
					150	20	с	
					300	10	D	
	22-16 (Unprepared)	Cu	2	0.8- 1.2	250	20	В	2(120), 4
					150	20	с	
					300	10	D	
ML-260, -270, -280, followed by -S3, followed by -A, followed by 3, followed by -1P through -8P for X suffix, or -2P through -10P for Y suffix, followed by F.	22-14 (Prepared)	Cu	2	0.8- 1.2	250	20	В	2(120), 5
					150	20	С	
					300	10	D	
	22-16 (Unprepared)	Cu	2	0.8- 1.2	250	20	В	2(120), 4
					150	20	с	
					300	10	D	
ML-260, -270, -280, followed by -S1 or -S3, followed by -E, followed by 3, followed by -1P through -8P for X suffix, or -2P through -10P for Y suffix, followed by F.	#(2)22-16 (Unprepared)	Cu	1	0.8- 1.2	250	20	В	2(120)

					150	20	С	
					300	10	D	
ML-1400-S1, ML-1400-S1L, followed by -1P thru -200P. Dashes following the basic construction are optional.	22-14 sol. Unprepared	Cu	2	_	300	10	В	2(65), 4
ML-1400-S2, ML-1400-S2L followed by -1P thru -200P. Dashes following the basic construction are optional.	22-14 sol. Unprepared	Cu	2	_	300	10	B,D	2(65), 4

Cat. No.	Wire Range	Wire Type	FW	TQ Nm	v	Α	UG	CA
ML-36 followed by -3P, thru -100P. Dashes following the basic construction are optional	22-14 sol/str	Cu	1	0.5	250	10	В	2(130)
					150		С	
ML-37 followed by -3P, -5P or -10P. Dashes following the basic construction are optional	22-14 sol/str	Cu	1	0.5	250	10	В	2(130)
					150		с	
ML-500 followed by -AS, -BS, -CS, -AP -P, -AJ, -BJ, -CJ, followed by -4P thru -60P. Dashes following the basic construction are optional	22-12 sol/str	Cu	1	0.8	250	10	В	2(75)
					150		с	

ML-990 followed by -S1 followed by A, B, C, D or E, followed by -1P thru -30P. ML-990 followed by S2 followed by A, B, C, or E, followed by -1P thru -30P. Dashes following the basic construction are optional	22-12 sol, 22-14 str	Cu	1	0.4	250	16	В	2(65)
					300	15	D	
ML-990 followed by -S2 followed by D, followed by -1P thru -30P. Dashes following the basic construction are optional	22-12 sol, 22-14 str	Cu	1	0.4	250	16	В	2(65)
					150	16	С	
					300	15	D	

Cat. No.	Wire Range	Wire Type	FW	TQ Nm	v	Α	UG	СА
(ML-400-Hn-xP, ML-400-Vn-xP) ML-400 followed by -HA, -HB, followed by -1P thru -15P. Dashes following the basic construction are optional.	18-22 sol./str.	Cu	1	_	250	7	В	2(110),
ML-400 followed by -VA, -VB, followed by -1P thru -15P. Dashes following the basic construction are optional.	18-22 sol./str.	Cu	1	—	150	7	с	2(110)
(ML-400-Nn-xP) ML-400 followed by -NH, -NV, followed by -1P thru -15P. Dashes following the basic construction are optional.	18-22 sol.,	Cu	1	_	250	7	В	2(110),
	20-22 str.							
	18-22 sol.,	Cu	1	_	150	7	С	2(110),
	20-22 str.							

(ML-30-nnF-xxP) ML-30-APF, followed by -1P thru -22P. Dashes following the basic construction are optional.	24-14 sol	Cu	2	0.5	250	10	В	2(150),4
	22-14 str						D	2(150),4
ML-30-nnS-xxP) ML-30-APS, followed by -1P thru -22P. Dashes following the basic construction are optional.	24-14 prepared	Cu	1	0.5	250	10	В	2(150), 5
(ML-30-nn-xxP) ML-30-AP, followed by -1P thru -22P. Dashes following the basic construction are optional.	24-16 prepared	Cu	1	0.5	250	10	D	2(150), 5
(ML-1800-S1, -TS1) ML-1800 may be followed by T; followed by -S1, -S2, -S3, may be followed by L; may be followed by -2P thru -200P. Dashes following the basic construction are optional.	14-22 sol Unprepared	Cu	2	_	300	10	B, D	2(65),4
(ML-40-SxnnS-xP) ML-40 followed by -S1, followed by CX, CY, DX, or DY, followed by S followed by-1P thru -20P for Type X or -1P thru -22P for Type Y; ML-40-S2, followed by AX, CX, CY, DX or DY, followed by S followed by -1P thru -20P for Type X or -1P thru -22P for Type Y; ML-40-S3EX, followed by S followed by -1P thru -20P; ML-40-W1BY, followed by S followed by 30P; ML-40-W2, followed by AX or BX followed by S by -30P; ML-40W3BY, followed by S followed by -20P; ML-40-W4, followed by AX or BX followed by S followed by -20P; Dashes following the basic construction are optional.	16-22 sol./str. Prepared	Cu	1	0.5	250	10	В	2(75),5
					150		С	

(ML-40-SxnnF-xP) ML-40 followed by -S1, followed by CX, CY, DX, or DY, followed by F followed by -1P thru -20P for Type X or -1P thru -22P for Type Y; ML-40-S2, followed by AX, CX, CY, DX or DY, followed by F followed by -1P thru -20P for Type X or -1P thru -22P for Type Y; ML-40-S3EX, followed by F followed by -1P thru -20P; ML-40-W1BY, followed by F followed by -30P; ML-40-W2, followed by AX or BX followed by F by -30P; ML-40-W3BY, followed by F followed by -20P; ML-40-W4, followed by AX or BX followed by F, followed by -20P; Dashes following the basic construction are optional.	14-22 sol./str. Prepared/ Unprepared	Cu	1	0.5	250	10	В	2(75)
					150		С	
(ML-41-SxnnS-xP) ML-41-S1, followed by CX, CY, DX, or DY, followed by S followed by -1P thru -20P for Type X or -1P thru -22P for Type Y; ML-41-S2, followed by AX, CX, CY, DX or DY, followed by S followed by -1P thru -20P for Type X or -1P thru -22P for Type Y; ML-41-S3EX, followed by S followed by -1P thru -20P; Dashes following the basic construction are optional.	16-22 sol./str. Prepared	Cu	1	0.5	250	10	В	2(75),5
					150		С	
(ML-41-SxnnF-xP) ML-41-S1, followed by CX, CY, DX, or DY, followed by F followed by -1P thru -20P for Type X or 1P thru 22P for Type Y; ML-41-S2, followed by AX, CX, CY, DX or DY, followed by F followed by -1P thru -20P for Type X or -1P thru -22P for Type Y; ML-41-S3EX, followed by F, followed by -1P thru -20P; Dashes following the basic construction are optional.	14-22 sol./str. Prepared/ Unprepared	Cu	1	0.5	250	10	В	2(75)
					150		С	

(ML-50nxnnSxP) ML-50S1 followed by CX, CY, DX, DY, or FX, followed by S, followed by 1P thru 20P for Type X or 1P thru 22P for Type Y; ML-50S2 followed by AX, CX, CY, DX, DY or FX, followed by S, followed by 1P thru 20P for Type X or 1P thru 22P for Type Y; ML-50S3EX, followed by S, followed by 1P thru 20P; ML-50W1BY, followed by S, followed by 30P; ML-50W3BY, followed by F, followed by 20P; ML-50W4, followed by AX or BX, followed by S, followed by 20P; Dashes following the basic construction are optional .	14-22 sol./str. Prepared	Cu	1	1.2	250	15	В	2(75),5	
					150		С		
(ML-50nxnnFxP) ML-50S1 followed by CX, CY, DX, DY, or FX, followed by F, followed by 1P thru 20P for Type X or 1P thru 22P for Type Y; ML-50S2 followed by AX, CX, CY, DX, DY or FX, followed by F, followed by 1P thru 20P for Type X or 1P thru 22P for Type Y; ML-50S3EX, followed by F, followed by 1P thru 20P; ML-50W1BY, followed by F, followed by 30P ML-50W3BY, followed by F, followed by 20P; ML-50W4, followed by AX or BX, followed by F, followed by 20P; Dashes following the basic construction are optional.	12-20 sol./str. Prepared/ Unprepared	Cu	1	1.2	250	15	В	2(75)	
					150		с		
(ML-51SxnnSxP) ML-51S1, followed by CX, CY, DX, DY, or FX, followed by S followed by 1P thru 20P for Type X or 1 thru 22 for Type Y; ML-51S2, followed by AX, CX, CY, DX, DY or FX, followed by S followed by 1P thru 20P for Type X or 1P thru 22P for Type Y; ML-51S3EX, followed by S, followed by 1P thru 20P; Dashes following the basic construction are optional.	14-22 sol./str. Prepared	Cu	1	1.2	250	15	В	2(75),5	
					150		с		
Note: n is a letter, x is a number.									

(ML-51SxnnFxP) ML-51S1, followed by CX, CY, DX, DY, or FX, followed by F followed by 1P thru 20P for Type X or 1P thru 22P for Type Y; ML-51S2, followed by AX, CX, CY, DX, DY or FX, followed by F followed by 1P thru 20P for Type X or 1P thru 22P for Type Y; ML-51S3EX, followed by F, followed by 1P thru 20P; Dashes following the basic construction are optional.	12-20 sol./str. Prepared/ Unprepared	Cu	1	1.2	250	15	В	2(75)
					150		с	
(ML-70nSxP) ML-70AS, followed by 1P thru 20P; Dashes following the basic construction are optional.	16-22 sol./str. Prepared	Cu	1	0.5	250	10	В	2(75),5
					150		с	
(ML-70nxP) ML-70A, followed by 1P thru 20P; Dashes following the basic construction are optional.	14-22 sol./str. Prepared/ Unprepared	Cu	1	0.5	250	10	В	2(75)
					150		с	
ML-77A-AXF, followed by -1P thru -6P	(Front) 14 - 22, (2)14 - 22, Unprepared	Cu	2	0.5	300	15	B, D	2(130), 4
	(Front) 14 - 22, (2)14 - 22, Prepared	Cu	2	0.5	300	15	B, D	2(130), 5
	(Back) 14 - 22, Unprepared or Prepared	Cu	1	N/A	300	15	B, D	2(130)
ML-77A-AXS, followed by -1P thru -6P	(Front) 14 - 22, (2)14 - 22, Prepared	Cu	2	0.5	300	15	B, D	2(130), 5
	(Back) 14 - 22, Unprepared or Prepared	Cu	1	N/A	300	15	B, D	2(130)

	(5			0.5	200	45		2(120) 4
ML-77A-BYF, followed by -2P thru -8P	(Front) 14 - 22, (2)14 - 22, Unprepared	Cu	2	0.5	300	15	B, D	2(130), 4
		Cu	2	0.5	150	15	С	2(130), 4
	(Front) 14 - 22, (2)14 - 22,	Cu	2	0.5	300	15	B, D	2(130), 5
	Prepared	Cu	2	0.5	150	15	С	2(130), 5
ML-77A-BYS, followed by -2P thru -8P	(Front) 14 - 22, (2)14 - 22,	Cu	2	0.5	300	15	B, D	2(130), 5
	Prepared	Cu	2	0.5	150	15	с	2(130), 5
ML-77B-AXF, followed by -1P thru -6P	(Front) 12 - 22, (2)12 - 22,	Cu	2	1.2	300	25	B, D	2(130), 4
	Sol/Unp	Cu	2	1.2	150	25	С	2(130), 4
(Front) 12	(Front) 12, (2)12, Str/Unp	Cu	2	1.2	300	25	B, D	2(130), 4
		Cu	2	1.2	150	25	С	2(130), 4
	(Front) 12 - 22, (2) 12 - 22,	Cu	2	1.2	300	25	B, D	2(130), 5
	Prepared	Cu	2	1.2	150	25	с	2(130), 5
	(Back) 12 - 22, Unprepared or	Cu	1	N/A	300	25	B, D	2(130)
	Prepared	Cu	1	N/A	150	25	С	2(130)
ML-77B-AXS, followed by -1P thru -6P	(Front) 12 - 22, (2) 12 - 22,	Cu	2	1.2	300	25	B, D	2(130), 5
	Prepared	Cu	2	1.2	150	25	с	2(130), 5
	(Back) 12 - 22, Unprepared or	Cu	1	N/A	300	25	B, D	2(130)
	Prepared	Cu	1	N/A	150	25	с	2(130)

ML-77B-BYF, followed by -2P thru -8P	(Front) 12 - 22, (2)12 - 22,	Cu	2	1.2	300	25	B, D	2(130), 4
	Sol/Unp	Cu	2	1.2	150	25	с	2(130), 4
	(Front) 12, (2)12, Str/Unp	Cu	2	1.2	300	25	B, D	2(130), 4
		Cu	2	1.2	150	25	С	2(130), 4
	(Front) 12 - 22, (2) 12 - 22,	Cu	2	1.2	300	25	B, D	2(130), 5
	Prepared	Cu	2	1.2	150	25	С	2(130), 5
ML-77B-BYS, followed by -2P thru -8P	(Front) 12 - 22, (2) 12 - 22,	Cu	2	1.2	300	25	B, D	2(130), 5
	Prepared	Cu	2	1.2	150	25	С	2(130), 5
(ML-90nnSxP) ML-90, followed by AX, BX, BY or CX, followed by S followed by 1P thru 22P; Dashes following the basic construction are optional.	16-22 sol./str. Prepared	Cu	1	0.5	250	10	В	2(75),5
					150		с	
(ML-90nnFxP) ML-90, followed by AX, BX, BY or CX, followed by 1P thru 22P; Dashes following the basic construction are optional.	14-22 sol./str. Prepared/ Unprepared	Cu	1	0.5	250	10	В	2(75)
					150		С	

Cat. No.	Wire Range	Wire Type	FW	TQ Nm	v	Α	UG	СА
ML-250 followed by -SI, -S2, or -S3, followed by A, B, C, D, E or G, followed by X or Y, followed by S, followed by -1P thru -6P for Type X or -2P thru -8P for Type Y. Dashes following the basic construction are optional.	14-22 sol./str.	Cu	1	0.5	250	10	В	2(75),3(M3),5
					150		С	
ML-250 followed by -SI, -S2, or -S3, followed by A, B, C, D, E or G, followed by X or Y, followed by F, followed by -1P thru -6P for Type X or -2P thru -8P for Type Y. Dashes following the basic construction are optional.	14-20 sol./str.	Cu	2	0.5	250	10	В	2(75),4
					150		С	

ML-50, followed by -S1, followed by AX, BX, BY, or EX, followed S, followed by -1P thru -20P for Type X or -1P	14-22 sol./str.	Cu	1	1.2	250	15	В	2(75),3(M4),5
thru -22P for Type Y. Dashes following the basic construction are optional.						<u> </u>		
					150		C	
ML-50, followed by -S1, followed by AX, BX, BY, or EX, followed by F, followed by -1 thru -20 for Type X or -1 thru -22 for Type Y followed by P. Dashes following the basic construction are optional.	12-20 sol./str.	Cu	1	1.2	250	15	В	2(75)
					150		с	
ML-51, followed by -S1, followed by AX, BX, BY, or EX, followed by S, followed by -1 thru -20 for Type X or -1P thru -22P for Type Y. Dashes following the basic construction are optional.	14-22 sol./str.	Cu	1	1.2	250	15	В	2(75),3(M4),5
					150		С	
ML-51, followed by -S1, followed by AX, BX, BY, or EX, followed F, followed by -1P thru -20P for Type X or -1 thru -22 for Type Y. Dashes following the basic construction are optional.	12-20 sol./str.	Cu	1	1.2	250	15	В	2(75)
					150		с	
ML-1765 followed by -1P thru -20P. Dashes following the basic construction are optional.	14-22 Sol./Str. Prepared	Cu	1	0.5	250	15	В	2(150),5
					150		с	
ML-20S followed by S, followed by -2, -3, -4, -5, -6, -8, -10, -12, -14, -16 or -18, followed by P. Dashes following the basic construction are optional.	14-22, Sol/Str Prepared	Cu	2	1.2	250	20	В	2(150),5
	14-22, Sol/Str Prepared	Cu	2	1.2	150	20	с	2(150),5
ML-20 followed by -2, -3, -4, -5, -6, -8, -10, -12, -14, -16 or -18, followed by P. Dashes following the basic construction are optional.	12-22, Sol/Str Unprepared	Cu	1	1.2	250	20	В	2(150)
ML-20 A37								
	12-22, Sol/Str Unprepared	Cu	1	1.2	150	20	с	2(150)
	12-22, Sol/Str Prepared	Cu	2	1.2	250	20	В	2(150),5
	12-22, Sol/Str Prepared	Cu	2	1.2	150	20	с	2(150),5

1	-						
12-22, Sol Unprepared	Cu	2	1.2	250	20	В	2(150),4
12-22, Sol Unprepared	Cu	2	1.2	150	20	С	2(150),4
12-18, Str Unprepared	Cu	2	1.2	250	20	В	2(150),4
12-18, Str Unprepared	Cu	2	1.2	150	20	с	2(150),4
16-22 sol./str.	Cu	2	0.5	250	10	В	2(75),3(M3),5
				150		с	
14-22 sol./str.	Cu	2	0.5	250	10	В	2(75),4
				150		с	
16-22 sol./str.	Cu	2	0.5	250	10	В	2(75),3(M3),5
				150		с	
14-22 sol./str.	Cu	2	0.5	250	10	В	2(75),4
				150		с	
22-14 sol./str.	Cu	1	0.5	250	7	В	2(75)
				150	7	с	2(75)
14 - 4, Prepared	Cu	2	2.0	600	60	B, C	2(120), 5
	Unprepared         12-22, Sol         Unprepared         12-18, Str         Unprepared         12-18, Str         Unprepared         12-2 sol./str.         14-22 sol./str.         16-22 sol./str.         14-22 sol./str.         14-22 sol./str.         2         14-22 sol./str.         2         14-22 sol./str.	Unprepared12-22, Sol UnpreparedCu12-18, Str UnpreparedCu12-18, Str UnpreparedCu12-18, Str UnpreparedCu16-22 sol./str.Cu14-22 sol./str.Cu14-22 sol./str.Cu14-22 sol./str.Cu14-22 sol./str.Cu214-22 sol./str.Cu14-22 sol./str.Cu2Cu14-22 sol./str.Cu14-22 sol./str.Cu	Unprepared       I         12-22, Sol Unprepared       Cu       2         12-18, Str Unprepared       Cu       2         12-18, Str Unprepared       Cu       2         12-18, Str 	Unprepared       I       I         12-22, Sol Unprepared       Cu       2       1.2         12-18, Str Unprepared       Cu       2       1.2         12-18, Str Unprepared       Cu       2       1.2         12-18, Str Unprepared       Cu       2       1.2         14-22 sol./str.       Cu       2       0.5         12-14 sol./str.       Cu       2       0.5         14-22 sol./str.       Cu       1       0.5         14-22 sol./str.       Cu       1       0.5         12-14 sol./str.       Cu       1       0.5	Unprepared       I       I       I         12-22, Sol Unprepared       Cu       2       1.2       150         12-18, Str Unprepared       Cu       2       1.2       250         12-18, Str Unprepared       Cu       2       1.2       150         12-18, Str Unprepared       Cu       2       1.2       150         16-22 sol./str.       Cu       2       0.5       250         14-22 sol./str.       Cu       2       0.5       250         16-22 sol./str.       Cu       2       0.5       250         14-22 sol./str.       Cu       1       150       150         22-14 sol./str.       Cu       1       0.5       250         150       I       I       I       150         150       I       I	UnpreparedIIII12-22, Sol UnpreparedCu21.21502012-18, Str UnpreparedCu21.22502012-18, Str UnpreparedCu21.21502016-22 sol./str.Cu20.52501014-22 sol./str.Cu20.52501016-22 sol./str.Cu20.52501016-22 sol./str.Cu20.52501014-22 sol./str.Cu20.52501014-22 sol./str.Cu20.52501014-22 sol./str.Cu20.52501022-14 sol./str.Cu10.52501022-14 sol./str.Cu10.5250722-14 sol./str.Cu10.52507	UnpreparedIIIII12-22, Sol UnpreparedCu21.215020212-18, Str UnpreparedCu21.225020212-18, Str UnpreparedCu21.215020216-22 sol./str.Cu20.525010314-22 sol./str.Cu20.525010316-22 sol./str.Cu20.515010314-22 sol./str.Cu3515010314-22 sol./str.Cu3515010314-22 sol./str.Cu3515010314-22 sol./str.Cu3555010314-22 sol./str.Cu3555010314-22 sol./str.Cu3555010314-24 sol./str.Cu3555010314-4, PreparedCu355507314-4, PreparedCu255555

Cat. No.	Wire Range	Wire Type	FW	TQ Nm	v	Α	UG	СА
ML-35 followed by -A or -B, followed by -1 through -15, followed by P. Dashes following the basic construction are optional.	22 - 14, sol./str.	Cu	1	0.4	125	6	В	2(140)
00930-A15 A dash is optional.	22 - 10, sol./str.	Cu	1	-	600	23	В, С	2(150)
ML-6750 followed by -F, followed by 1P through 20P Dashes following the basic construction are optional.	22 - 10, sol./str.	Cu	1	—	250	23	В	2(150)
ML-740-W, followed by , 1, 2, 3 or 4, followed by B, F or R, followed by F, followed by -8P, -12P, -16P, -20P, -24P, -30P, -32P, -36P, -40P, -48P or -60P. Dashes following the basic construction are optional.	22 - 14, sol./str.	Cu	1	0.5	250	10	В	2(75)
					150		с	
ML-750-W followed by 1B, 2B, 3B, 4B, 1R or 2R, followed by F, followed by -8P, -12P, -16P, -20P, -24P, -30P, -32P, -36P, -40P, -48P or -60P. Dashes following the basic construction are optional.	22 - 12, sol./str.	Cu	1	0.8	250	15	В	2(75)
					150		с	
ML-5000 followed by -M6, may be followed by -1P thru -15P, may be followed by 15 digit numbers and/or letters. Dashes following the basic construction are optional.	10 - 3, Prepared	Cu	2	3.0	600	100	В, С	2(140,), 5
ML-5000 followed by -M8, may be followed by -1P thru -15P, may be followed by 15 digit numbers and/or letters. Dashes following the basic construction are optional.	4 - 1, Prepared	Cu	2	6.6	600	150	В, С	2(140), 5
ML-100 followed by -AS, -BS, -CS, -AP, -P, -AJ, -BJ or -CJ, followed by -12P, -20P or -36P. Dashes following the basic construction are optional.	22 - 14, Unprepared/ Prepared	Cu	1	0.5	250	7	В	2(75)
ML-15	14 - 22, Prepared/ Unprepared	Cu	2	0.8	250	15	B, D	2(150), 4
ML-5100-M5	4, Prepared	Cu	1	2.4	600	60	В, С	2(130), 5
ML-5100-M6	3, Prepared	Cu	1	3.0	600	75	В, С	2(130), 5
ML-5200	10, Prepared	Cu	1	1.4	600	30	В, С	2(130), 5
ML-5300, followed by -M4, followed by -1P thru -8P	18 - 14, sol	Cu	2	1.2	300	15	В, С, D	2(105), 4

	20 - 14, str	Cu	2	1.2	300	15	В, С, D	2(105), 4
	22 - 12, Prepared	Cu	2	1.2	300	25	В, С, D	2(105), 5
ML-1, followed by -1P through -18P.	22 - 14, Solid	Cu	2	0.8	300	15	B, D	2(150), 4
	20 - 14, Stranded	Cu	2	0.8	300	15	B, D	2(150), 4
	22 - 14, (2) 22 - 14, Prepared	Cu	2	0.8	300	15	B, D	2(150), 5

Cat. No.	Wire Range	Wire Type	FW	TQ kg cm	v	A	UG	CA
ML-200S1A, ML-200-S1B, ML-200-S1C, ML-200-S1D; may followed by -1P thru -45P	16 - 22, str.	Cu	1	—	250	10	В	2(65)
	14 - 22, sol.							
ML-200S2A, ML-200-S2B, ML-200-S2C, ML-200-S2D; may followed by -1P thru -45P	16 - 22, str.	Cu	1	—	250	10	В	2(65)
	14 - 22, sol.				150		с	
ML-800-S1, followed by V or H, may be followed by -1 thru 100P	16 - 26, sol./ 16 - 24, str.	Cu	2	-	300	10	B, D	2(105), 4
ML-800, followed by -S2 or -S3, followed by V or H, may be followed by -1 thru 100P	16 - 26, sol./ 16 - 24 str.	Cu	2	_	300	10	B, D	2(105), 4
	16 - 26, sol./ 16-24 str.	Cu	2	-	150	10	С	2(105), 4
ML-880-S1, followed by L or H, may be followed by -1 thru 100P	14 - 26, sol.	Cu	2	—	300	15	B, D	2(105), 4

	16 - 22, str.	Cu	2	-	300	15	B, D	2(105), 4
ML-880, followed by -S2, -D1 or -D2, followed by L or H, may be followed by -1 thru 100P	14 - 26, sol.	Cu	2	-	300	15	B, D	2(105), 4
	16 - 22, str.	Cu	2	-	300	15	B, D	2(105), 4
	14 - 26, Sol.	Cu	2	_	150	15	С	2(105), 4
	16 - 22, Str.	Cu	2	-	150	15	с	2(105), 4
ML-820-S1, followed by -BY, -BX or -RX, followed by L or H, may be followed by -1 thru 100P.	26 - 16 sol. / 22 - 16 str	Cu	2	-	300	10	B,D	2(65), 4
ML-820-S2, followed by -BY, -BX or -RX, followed by L or H, may be followed by -1 thru 100P.	26 - 16 sol. / 22 - 16 str	Cu	2	-	300	10	B,D	2(65), 4
	26 - 16 sol. / 22 - 16 str	Cu	2	-	150	10	С	2(65), 4
ML-950, may be followed by -1P thru -100P	26 - 18 sol. / 22 - 20 str.	Cu	1	-	300	7	B, D	2(65)
ML-810, followed by -DP or -DR, may be followed by -1 thru 200P	16 - 26 sol. / 16 - 22 str.	Cu	1	-	300	10	B, D	2(100)
	16 - 26 sol. / 16 - 22 str.	Cu	1	-	150	10	с	2(100)
ML-1700, followed by -A, -B, -C or -D, may be followed by -1 thru -99P. ML-1700, followed by -E or -F, followed by -1 thru -99P. ML-1700, followed by 1 to 9 digit(s) number and/or letter(s).	26 - 16 sol.	Cu	2	N/A	300	10	B, D	2(105), 4
	22 - 16 str.	Cu	2	N/A	300	10	B, D	2(105), 4
ML-700-NV, ML-700-NH; may be followed by -2 thru -99P.	22 - 28	Cu	2	-	150	3	В	2(65), 4,#

ML-1900nXXXP	16 - 26 sol. 20 - 24 str	Cu	2	_	300	7	B, D	2(65)
ML-2100 may be followed by -1P thru -200P	16 - 26 sol.	Cu	2	-	300	7	B, D	2(65), 4
ML-4000; may be followed by a dash, followed by AS, AS2, ASV, ASH, AWSV, AWSH, BWSV, BWSH, CWSV, CWSH, AP, BP, CP, AJ, AJ2, ASJV and ASJH, may be followed by a dash, followed by 2P to 15P, may be followed by any suffix (color code).	16 - 26 sol.	Cu	2	_	300	5	B, D	2(65), 4
	16 - 24 Str	Cu	2	-	300	5	B, D	2(65), 4
ML-3300 followed by -A1, -B1, -B2 or brank, may be followed by -4P thru -200P	16 - 26 sol	Cu	2	-	300	10	B, D	2(65), 4
	16 - 24 str	Cu	2	-	300	10	B, D	2(65), 4
ML-850	16 - 12 sol	Cu	2	-	250	20	В	2(105), 4
ML-4500; may be followed by a dash; followed by AS, ASV, ASH, ASF, AWSV, AWSH, BWSV, BWSH, CWSV, CWSH, AP, BP, CP, AJ, ASJV, ASJH, ASJF, AWJV, AWJH, BWJV, BWJH, CWJV and CWJH; may be followed by a dash; followed by 2P to 15P, may be followed by any suffix (color code)	14 - 26 sol 14 - 24 str	Cu	2	-	300	10	B, D	2(65), 4
ML-2200-S1 may be followed by -P thru -50P; ML-2200-W1S1 may be followed by -P thru -100P.	16 - 26 Sol, 20 - 22 Str	Cu	2	-	300	3	B, D	2(65), 4
ML-7000 may be followed by -A or ME, may be followed by any suffix.	(Front side) 14 - 26 Sol	Cu	2	-	300	10	B, C	2(65), 4
	(Front side) 14 - 24 Str	Cu	2	-	300	10	B, C	2(65), 4
	(Back side) 14 - 26, Sol	Cu	2	-	300	10	B, C	2(65), 4
	(Back side) 14 - 24, Str	Cu	2	-	300	10	B, C	2(65), 4
	(Front side) 12 - 14, Sol	Cu	2	-	300	10	B, C	2(65), 4

	(Back side) 14 - 26, Sol	Cu	2	-	300	10	B, C	2(65), 4
	(Back side) 14 - 24, Str	Cu	2	-	300	10	В, С	2(65), 4
ML-2300, ML-2300H	16 - 26 sol	Cu	2	-	300	5	B, D	2(65), 4
	20 - 24 str	Cu	2	-	300	5	B, D	2(65), 4
ML-1600, may be followed by -1P thru -100P	18 - 26 sol	Cu	2	-	300	7	B, D	2(65), 4
	20 - 24 str	Cu	2	-	300	7	B, D	2(65), 4
SL-6100, followed by -H or -V, followed by -1P thru -40P	26 - 16, sol, Unprepared	Cu	2	-	300	7	B, D	2(105), 4
	24 - 16, str, Unprepared	Cu	2	-	300	7	B, D	2(105), 4
SL-4000, followed by -AS, -AS2, -ASV, -ASH, -AWSV, -AWSH, -CWSV, -CWSH, -AP, -CP, -AJ, -AJ2, -ASJV and - ASJH, followed by -2P thru -15P, may be followed by two digits letter	26 - 16, sol, Unprepared	Cu	2	-	300	5	B, D	2(105), 4
	26 - 14, sol, Unprepared	Cu	2	-	300	5	B, D	2(105), 4
SL-4500, followed by -AS, -ASV, -ASH, -AP, -AJ, - ASJV or -ASJH, followed by -2P thru -5P, may be followed by 1 to 15 digit(s) number and/or letter(s).	26 - 14, sol, Unprepared	Cu	2	-	300	10	B, D	2(105), 4
	24 - 14, str, Unprepared	Cu	2	-	300	10	B, D	2(105), 4
SL-4500, followed by -ASF or -ASJF, followed by -2P or -3P, may be followed by 1 to 15 digit(s) number and/or letter(s).	26 - 14, sol, Unprepared	Cu	2	-	300	10	B, D	2(105), 4
	24 - 14, str, Unprepared	Cu	2	-	300	10	B, D	2(105), 4

ML-350, followed by -2P or -3P. (Note #1)	16 - 10, Str, Unprepared	Cu	2	1.8	600	30	В, С	2(130), 4
	24 - 8, (2)24 - 8, Prepared	Cu	2	1.8	600	40	В, С	2(130), 5

Note: a is A (or none), B or C; b is J, P or 5; cc is 4 thru 60.

Note: n is a letter; x is a number.

Note: u is a letter or number.

# - Live internal parts are exposed through openings in molded base. Spacing measurements are recommended as part of the end product investigation from these live parts to other parts (live or dead metal) within the end-product.

(2) This model is acceptable for use with multiple wire connection. Please refer to the Procedure Report.

Note (#1): Max. 30 A when terminals using with optional short bar (s).

Optional dashes maybe used in these Cat. Nos.

Marking: Company name or trademark "SATO PARTS" or "SATO", and catalog designation (catalog designation may appear on shipping carton).

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このデータベースに企業名や製品が掲載されている場合でも、掲載された製品がULのフォローアップサービスに基づいて製造されたことを保証するものではありません。ULの認証並びにフォローアッ プサービスによる確認を受けているとみなされるのは、ULマークが表示された製品のみです。常に製品にULマークが表示されているかご確認ください。



# **Terminal Blocks - Component**

The devices covered under this category are incomplete in certain constructional features or restricted in performance capabilities and are intended for use as components of complete equipment submitted for investigation rather than for direct separate installation in the field. THE FINAL ACCEPTANCE OF THE COMPONENT IS DEPENDENT UPON ITS INSTALLATION AND USE IN COMPLETE EQUIPMENT SUBMITTED TO UL.

### GENERAL

This category covers assemblies of wiring terminals and supporting blocks intended to provide a means for the connection of wiring. These terminal blocks may employ terminal connectors, wire-binding screws, quick-connect terminals and similar friction fit terminals, which are intended for factory-wiring and/or field-wiring connections.

This category also covers protective conductor terminal blocks (PCTB) intended for connecting protective earthing (grounding) conductors to supports, such as mounting rails and the like. A PCTB is marked with the international symbol for ground, "G,""GR,""GND,""Ground, ""Grounding" or the like. In addition, the insulation of a partially insulated PCTB is colored green or green/yellow.

This category also covers fuse terminal blocks that have a fuse carrier and are intended to accept supplemental fuses (miscellaneous, miniature and micro). Fuse terminal blocks provide supplemental protection in end-use equipment to provide protection for components or internal circuits. They are not suitable for branch or feeder circuit use.

USE

The following performance levels include ratings for voltage, current, wire size and type, torque (if applicable), suitability for factory wiring only or field wiring, and use group in order to facilitate investigation of their use in end-product applications. The following statements explain the tabular information:

Wire Range — The wire size or range of wire sizes for which a terminal block has been investigated. Unless clearly marked "Solid,""SOL,""Stranded" or "STR" for a given wire size, wire range or wire combination, conductors in the range 30-10 AWG are both solid and stranded, and 8 AWG and larger are for stranded wire only. Terminal blocks generally accommodate a single conductor under a clamping mechanism unless otherwise identified, such as with the number of conductors located parenthetically in front of the wire size or range. Some terminal blocks may have a single conductor wire range as well as a multiple conductor wire range. This may be identified by separate line items in the tabular information in the individual Recognitions. Terminal blocks, without insulation displacement connections, that are rated for solid copper conductors may also be used with stranded copper conductors of the same wire gauge when the stranded copper conductors are prepared by termination to a certified bare or covered ferrule.

Wire Type — The conductor material for which the terminal block has been investigated. "CU" represents copper wire only, "AL" represents aluminum wire only. "AL-CU" or "CU-AL" indicates use with aluminum and copper conductors, but not intermixed. The "7" or "9" associated with the wire type represents the temperature rating (75 or 90°C) of the wire connector.

**Factory and/or Field Wiring (FW)** — These terminal blocks are rated for: Code 1, factory wiring only, or Code 2, both factory and field wiring. The suitability of the connections (including spacings between factory connectors) shall be determined in the end-use application.

Unless noted with a "CA 4" in the last column, a terminal connector suitable for field wiring has been investigated to UL 486A-486B, "Wire Connectors."

When Code 1 and Code 2 terminals are intermixed on the same terminal block, both codes will be used with suitable indication for which terminal each code applies, i.e., 1/2.

**Torque (TQ)** — The tightening torque(s) for a field-wiring pressure terminal connector other than a wire-binding screw, stud and nut type, or quick-connect type. If rated for factory wiring, this torque is only the manufacturer's recommended value.

**Voltage (V)** — Terminal blocks have voltage ratings for which they have been found acceptable. A terminal block may have several voltage ratings that relate to the different use groups and spacing levels as tabulated under "Use Group."

Current (A) — A maximum value of per-pole current for which the terminal block has been found acceptable.

**Short-circuit-current Rating (SCCR)** — Terminal blocks are considered suitable for use on a circuit capable of delivering not more than the stated SCCR at the maximum voltage specified when protected by the max ampere and Class of overcurrent protective device noted in the individual Recognitions. Short-circuit-current ratings may be marked on the terminal block or on instructions provided with the terminal block. Short-circuit-current ratings have been determined based on the terminal block's use within the minimum enclosure sizes as specified in Condition of Acceptability #6.

Use Group (UG) — The type of end-use application for which the specified voltage and spacing level applies.

**Conditions of Acceptability (CA)** — The limitations and conditions for end-product use based on the investigation of the terminal block. See additional details under **CONDITIONS OF ACCEPTABILITY** below.

			Spacings <sup>a</sup> , in.					
Use Group	Application	V Rating	Through Air	Over Surface				
А	Service, including dead-front switchboards, panelboards, service equipment, and the like	51 - 150	1/2	3/4				
		151 - 300	3/4	1-1/4				
		301 - 600	1	2				
В	Commercial appliances, including business equipment, electronic data processing equipment,	51 - 150	1/16 <sup>b</sup>	1/16 <sup>b</sup>				
	and the like	151 - 300	3/32 <sup>b</sup>	3/32 <sup>b</sup>				
		301 - 600	3/8	1/2				
С	Industrial, general	51 - 150	1/8 <sup>b</sup>	1/4				
		151 - 300	1/4 <sup>b</sup>	3/8				
		301 - 600	3/8	1/2				
D	Industrial, devices having limited ratings <sup>c</sup>	51 - 300	1/16 <sup>b</sup>	1/8 <sup>b</sup>				
		301 - 600	3/16 <sup>b</sup>	3/8				
E	Greater than 600 V	601 - 1000	0.55	0.85				
		1001 - 1500	0.70	1.20				
F	Industrial, devices using the alternative approach to spacings <sup>d</sup>	51 - 1500	Refer to Condition of <i>i</i> below <sup>b</sup>	Acceptability #7				

G	LED lighting equipment <sup>c</sup>	51 - 300	1/16 <sup>b</sup>	1/8 <sup>b</sup>
		301- 600	1/16 - 3/16 <sup>b, e</sup>	1/8 - 3/8 <sup>e</sup>
f	50 V and less, at field wiring terminals	0 - 50	1/8	1/4
f	50 V and less, at other than field wiring terminals	0 - 50	1/16	1/16

<sup>a</sup> Spacings between:

(1) uninsulated live parts of opposite polarity, and

(2) uninsulated live parts and a grounded part including any mounting surface or exposed metal part.

<sup>b</sup> The spacing between field wiring terminals of opposite polarity and the spacing between a field wiring terminal and a grounded dead-metal part is not less than 1/4 in. where short-circuiting or grounding of such terminals may result from projecting strands of wire.

<sup>c</sup> These spacings are applicable to a terminal block for use only in or with noted equipment types where the load on any single circuit of the terminal block does not exceed 15 A at 51 - 150 V, 10 A at 151 - 300 V, 5 A at 301 - 600 V, or the maximum amp rating, whichever is less.

<sup>d</sup> These spacings are applicable to a terminal block for use only in or with industrial control equipment where an alternative spacing investigation is acceptable in accordance with <u>UL 508</u>, "Industrial Control Equipment," and <u>UL 508C</u>, "Power Conversion Equipment." Through-air and over-surface spacings are determined based on the requirements in these Sections of <u>UL 508</u> and <u>UL 508C</u>, and are specified for each terminal block (refer to Condition of Acceptability #7 below).

e These spacings may be determined by linear interpolation. The spacing range shown in the table represents the range of spacings permitted for voltages between 301 and 600 V.

<sup>f</sup> These spacings are applicable to terminal blocks rated 50 V and less and to any Use Group. These spacings are applicable, provided the insulation and clearances between the circuit and any higher potential circuit are provided in accordance with the requirements that are applicable to the higher potential circuit.

### **CONDITIONS OF ACCEPTABILITY**

Unless specified otherwise in the individual Reports, consideration is to be given to the following Conditions of Acceptability when these components are employed in end-use products. The following Conditions of Acceptability apply when the item number is specified in the last column. The number in parentheses following an item number is used in that Condition of Acceptability statement. Unique Conditions of Acceptability are indicated in the individual Recognition Reports.

1. This terminal block may be used only where steel is acceptable for current-carrying parts.

2. The insulating bodies are molded of materials having a maximum temperature rating of []°C. The use of these materials shall be judged in the end-use application.

3. These terminal blocks use a No. [] wire binding screw. The suitability of this size screw shall be considered during the end-use product investigation.

4. The field-wiring terminals of this terminal block have been investigated to <u>UL 486E</u>, "Equipment Wiring Terminals for Use with Aluminum and/or Copper Conductors." The suitability of these terminals shall be determined in the end-use investigation.

5. The terminal block is intended to be used with certified pressure terminal connectors, such as ring and fork types, on the end of the conductor before attachment to the wiring terminals of the terminal block.

6. The terminal block short-circuit rating was determined based on testing in a minimum size enclosure measuring [] x [] x [] inches. The suitability of smaller enclosures shall be determined in the end-use investigation. Consult the SCCR tables in the individual Recognitions for maximum size and type of overcurrent protection.

7. The terminal block spacing requirements were determined based on use in circuits where an alternative spacing investigation is conducted in accordance with <u>UL 508</u>, "Industrial Control Equipment," and <u>UL 508C</u>, "Power Conversion Equipment." Terminal blocks were investigated for Pollution Degree 3, and Overvoltage Category []. Through-air (clearance) spacings are minimum [/] inches/mm; over-surface (creepage) spacings are minimum [/] inches/mm.

#### **RELATED PRODUCTS**

Power distribution blocks for field installation in a building to separate units, such as apartments, separate heaters and air conditioning, are covered under Power Distribution Blocks (OPOS).

Fuse terminal blocks may also be covered as a fuseholder under Fuseholders, Cartridge Fuse (IZLT2).

See Terminal Blocks Certified to IEC Standards (XCHG2).

#### REQUIREMENTS

The basic standard used to investigate products in this category is one of the following:

<u>UL 1059</u>, "Terminal Blocks." Wire connectors that are an integral part of the terminal block are investigated to <u>UL 486A-486B</u>, "Wire Connectors," or <u>UL 486E</u>, "Equipment Wiring Terminals for Use with Aluminum and/or Copper Conductors."

UL 60947-7-1, "Low-Voltage Switchgear and Controlgear - Part 7-1: Ancillary Equipment - Terminal Blocks for Copper Conductors"

UL 60947-7-2, "Low-Voltage Switchgear and Controlgear - Part 7-2: Ancillary Equipment - Protective Conductor Terminal Blocks for Copper Conductors"

UL 60947-7-3, "Low-Voltage Switchgear and Controlgear - Part 7-3: Ancillary Equipment - Safety Requirements for Fuse Terminal Blocks"

UL 60947-7-4, "Low-Voltage Switchgear and Controlgear - Part 7-4: Ancillary Equipment - PCB Terminal Blocks for Copper Conductors"

The ANSI/UL 60947-7-x Standards are used in conjunction with UL 60947-1, "Low-Voltage Switchgear and Controlgear - Part 1: General Rules."

### **UL MARKING**

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\*\*HISTORICAL\*\*

# **Terminal Blocks Certified for Canada - Component**

## COMPANY

## SATO PARTS CO LTD

3-3-8 Sotokanda Chiyoda-Ku, Tokyo 101-0021 Japan

E101073

		ΤQ					
Cat. No.	Wire Range	Wire Type	N- M	v	А	UG	СА
ML-5000 followed by -M6, may be followed by -1P thru -15P, may be followed by 15 digit numbers and/or letters. Dashes following the basic construction are optional.	10 - 3, Prepared	Cu	3.0	600	100	B, C	2(140), 5
ML-5000 followed by -M8, may be followed by -1P thru -15P, may be followed by 15 digit numbers and/or letters. Dashes following the basic construction are optional.	4 - 1, Prepared	Cu	6.6	600	150	B, C	2(140), 5
ML-900 followed by -2P through -5P, or ML-900, followed by - maximum 15 digit numbers and/or letters. Dashes following the basic construction are optional.	14 - 4, Prepared	Cu	2.0	600	60	B, C	2(120), 5

			ΤQ				
	Wire	Wire	-				
Cat. No.	Range	Туре	cm	V	Α	UG	CA
ML-3300 followed by -A1, -B1, -B2 or brank, may be followed by -4P thru -200P	16 - 26 sol	Cu	—	300	10	B, D	2(65)

	16 - 24 str	Cu	-	300	10	B, D	2(65)
ML-850	16 - 12 sol	Cu	—	250	20	В	2(105)
ML-2100 may be followed by -1P thru -200P	16 - 26 sol.	Cu	-	300	7	B, D	2(65)
ML-2200, S1 may be followed by -2P thru -50P; ML-2200-W1S1 may be followed by -4P thru -100P	16 - 26 Sol 20 - 22 Str	Cu	-	300	3	B, D	2(65)
ML-7000 may be followed by -A or ME, may be followed by any suffix.	(Front side) 14 - 26 Sol	Cu	-	300	10	B, C	2(65)
	(Front side) 14 - 24, Str	Cu	-	300	10	B, C	2(65)
	(Back side) 14 - 26, Sol	Cu	-	300	10	B, C	2(65)
	(Back side) 14 - 24, Str	Cu	-	300	10	B, C	2(65)
	(Front side) 12 - 14, Sol	Cu	-	300	10	B, C	2(65)
	(Back side) 14 - 26, Sol	Cu	-	300	10	B, C	2(65)
	(Back side) 14 - 24, Str	Cu	-	300	10	B, C	2(65)
ML-4000 may be followed by a dash, followed by AS, AS2, ASV, ASH, AWSV, AWSH, BWSV, BWSH, CWSV, CWSH, AP, BP, CP, AJ, AJ2, ASJV and ASJH , may be followed by a dash, followed by 2P to 15P may be followed by any suffix (color code)	16 - 26 sol.	Cu	-	300	5	B, D	2(65)
	16 - 24 str,	Cu	-	300	5	B, D	2(65)
ML-4500; may be followed by a dash; followed by AS, ASV, ASH, ASF, AWSV, AWSH, BWSV, BWSH, CWSV, CWSH, AP, BP, CP, AJ, ASJV, ASJH, ASJF, AWJV, AWJH, BWJV, BWJH, CWJV and CWJH; may be followed by a dash; followed by 2P to 15P, may be followed by any suffix (color code)	14 - 26 sol 14 - 24 str	Cu	-	300	10	B, D	2(65)

ML-2300, ML-2300H	16 - 26 sol	Cu	-	300	5	B, D	2(65)
	20 - 24 str	Cu	-	300	5	B, D	2(65)
SL-6100, followed by -H or -V, followed by -1P thru -40P	26 - 16, sol, Unprepared	Cu	-	300	7	B, D	2(105)
	24 - 16, str, Unprepared	Cu	-	300	7	B, D	2(105)
SL-4000, followed by -AS, -AS2, -ASV, -ASH, -AWSV, -AWSH, -CWSV, -CWSH, -AP, -CP, -AJ, -AJ2, -ASJV and -ASJH, followed by -2P thru -15P, may be followed by two digits letters.	26 - 16, sol, Unprepared	Cu	-	300	5	B, D	2(105)
	24 - 16, str, Unprepared	Cu	-	300	5	B, D	2(105)
SL-4500, followed by -AS, -ASV, -ASH, -AP, -AJ, - ASJV or -ASJH, followed by -2P thru -5P, may be followed by 1 to 15 digit(s) number and/or letter(s).	26 - 14, sol, Unprepared	Cu	-	300	10	B, D	2(105)
	24 - 14, str, Unprepared	Cu	-	300	10	B, D	2(105)
SL-4500, followed by -ASF or -ASJF, followed by -2P or -3P, may be followed by 1 to 15 digit(s) number and/or letter(s).	26 - 14, sol, Unprepared	Cu	-	300	10	B, D	2(105)
	24 - 14, str, Unprepared	Cu	-	300	10	B, D	2(105)
ML-350, followed by -2P or -3P. (Note #1)	16 - 10, Str, Unprepared	Cu	1.8	600	30	B, C	2(130)
	24 - 8, (2)24 - 8, Prepared	Cu	1.8	600	40	B, C	2(130), 5

Note (#1): Max. 30 A when terminals using with optional short bar (s).

# - Unique Conditions of Acceptability - This terminal block is intended for use with miscellaneous fuses.



ampere rating appear on the device or, in or on the carton.

Last Updated on 2023-02-27

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# Terminal Blocks Certified for Canada - Component

The devices covered under this category are incomplete in certain constructional features or restricted in performance capabilities and are intended for use as components of complete equipment submitted for investigation rather than for direct separate installation in the field. THE FINAL ACCEPTANCE OF THE COMPONENT IS DEPENDENT UPON ITS INSTALLATION AND USE IN COMPLETE EQUIPMENT SUBMITTED TO UL.

# **GENERAL**

This category covers assemblies of wiring terminals and supporting blocks intended to provide a means for the connection of wiring. These terminal blocks may employ terminal connectors, wire-binding screws, quick-connect terminals and similar friction-fit terminals.

This category also covers protective conductor terminal blocks (PCTB) intended for connecting protective earthing (grounding) conductors to supports, such as mounting rails and the like. A PCTB is marked with the international symbol for ground, "G,""GR,""GND,""Ground, ""Grounding" or the like. In addition, the insulation of a partially insulated PCTB is colored green or green/yellow.

This category also covers fuse terminal blocks that have a fuse carrier and are intended to accept supplemental fuses (miscellaneous, miniature and micro). Fuse terminal blocks provide supplemental protection in end-use equipment to provide protection for components or internal circuits. They are not suitable for branch or feeder circuit use.

# USE

The following performance levels include ratings for voltage, current, wire size and type, torque (if applicable), and use group in order to facilitate investigation of their use in end-product applications. The following statements explain the tabular information:

Wire Range — The wire size or range of wire sizes for which a terminal block has been investigated. Unless clearly marked "Solid,""SOL,""Stranded" or "STR" for a given wire size, wire range or wire combination, conductors in the range 30-10 AWG are both solid and stranded, and 8 AWG and larger are for stranded wire only. Terminal blocks generally accommodate a single conductor under a clamping mechanism unless otherwise identified, such as with the number of conductors located parenthetically in front of the wire size or range. Some terminal blocks may have a single conductor wire range as well as a multiple conductor wire range. This may be identified by separate line items in the tabular information in the individual Recognitions. Terminal blocks, without insulation displacement connections, that are rated for solid copper conductors may also be used with stranded copper conductors of the same wire gauge when the stranded copper conductors are prepared by termination to a certified bare or covered ferrule.

**Wire Type** — The conductor material for which the terminal block has been investigated. "CU" represents copper wire only. "AL" represents aluminum wire only. "AL-CU" or "CU-AL" indicates use with aluminum and copper conductors, but not intermixed. The "7" or "9" associated with the wire type represents the temperature rating (75 or 90°C) and ampacity of the wire connector. The suitability of the connections (including spacings between factory connectors) shall be determined in the end-use application.

Torque (TQ) — The tightening torque(s) for the terminal block.

**Voltage (V)** — Terminal blocks have voltage ratings for which they have been found acceptable. A terminal block may have several voltage ratings that relate to the different use groups and spacing levels as tabulated under "Use Group."

Current (A) — A maximum value of per-pole current for which the terminal block has been found acceptable.

**Short-circuit-current Rating (SCCR)** — Terminal blocks are considered suitable for use on a circuit capable of delivering not more than the stated SCCR at the maximum voltage specified when protected by the max ampere and Class of overcurrent protective device noted in the individual Recognitions. Short-circuit-current ratings may be marked on the terminal block or on instructions provided with the terminal block. Short-circuit-current ratings have been determined based on the terminal block's use within the minimum enclosure sizes as specified in Condition of Acceptability #6.

Use Group (UG) — The type of end-use application for which the specified voltage and spacing level applies.

**Conditions of Acceptability (CA)** — The limitations and conditions for end-product use based on the investigation of the terminal block. See additional details under **CONDITIONS OF ACCEPTABILITY** below.

		Max	Spacing* mm		
Use Group	Application	V Rating	Through Air or Oil	Over Surface	
А	Service, including dead-front switchboards, panelboards, service equipment, and the like	150	12.5	19**	
		300	19**	31**	
		600	25	50**	
В	Commercial appliances, including business equipment, electronic data processing equipment, and the like	150	1.6***	1.6***	
		300	2.4***	2.4***	
		600	9.5	12.5	
с	Industrial, general	150	3.2***	6.3	
		300	6.3***	9.5	
		600	9.5	12.5	
		1000	14	21.5	
		1500	17.8	30.5	
D	Industrial, devices having limited ratings+	300	1.5***	3***	
		600	4.6***	9.4	
E	Special Components++	150	1.6***	1.6***	
		300	1.6***	3.2***	
		600	4.7***	9.5	

\* Spacings between (1) uninsulated live parts of opposite polarity and (2) uninsulated live parts and uninsulated grounded parts other than the enclosure or exposed metal parts.

\*\* The spacing through air and over surface between live parts and grounded metal parts including the enclosure is not less than 12.5 mm for 51-250 V and 25 mm for 251-600 V.

\*\*\* The spacing between wiring terminals of opposite polarity and the spacing between a wiring terminal and a grounded dead metal part is not less than 6.3 mm if short-circuiting or grounding of such terminals may result from projecting strands of wire.

+ These spacings are applicable to a terminal block for use only in or with industrial control equipment where the load on any single circuit of the terminal block does not exceed 15 A at 51-150 V, 10 A at 151-300 V, 5 A at 301-600 V, or the maximum amp rating, whichever is less.

++ The special components spacings for Use Group E are applicable to a terminal block for use in equipment of limited rating, as permitted by the applicable Part II Standard covering the end equipment in which the terminal block is used.

# **CONDITIONS OF ACCEPTABILITY**

Unless specified otherwise in the individual Reports, consideration is to be given to the following Conditions of Acceptability when these components are employed in end-use products. The following Conditions of Acceptability apply when the item number is specified in the last column. The number in parentheses following an item number is used in that Condition of Acceptability statement. Unique Conditions of Acceptability are indicated in the individual Recognition Reports.

1. This terminal block may be used only where steel is acceptable for current-carrying parts.

2. The insulating bodies are molded of materials having a temperature index of []°C. The use of these materials shall be judged in the end-use application.

3. These terminal blocks use a No. [] wire binding screw. The suitability of this size screw shall be considered during the end-use product investigation.

4. Reserved for future use.

5. The terminal block is intended to be used with certified pressure terminal connectors, such as ring and fork types, on the end of the conductor before attachment to the terminal block.

6. The terminal block short-circuit rating was determined based on testing in a minimum size enclosure measuring [] x [] x [] mm. The suitability of smaller enclosures shall be determined in the end-use investigation. Consult the SCCR tables in the individual Recognitions for maximum size and type of overcurrent protection.

## **RELATED PRODUCTS**

Power distribution blocks for field installation in a building to separate units, such as apartments, separate heaters and air conditioning, are covered under Power Distribution Blocks Certified for Canada (<u>QPQS7</u>).

Fuse terminal blocks may also be covered as a fuseholder under Fuseholders, Cartridge Fuse Certified for Canada (IZLT8).

Terminal blocks certified to IEC Standards are covered under Terminal Blocks Certified to IEC Standards (XCHG2).

## REQUIREMENTS

The basic standard used to investigate products in this category is is one of the following:

CSA-C22.2 No. 158, "Terminal Blocks"

CAN/CSA-C22.2 No. 60947-7-1, "Low-Voltage Switchgear and Controlgear - Part 7-1: Ancillary Equipment - Terminal Blocks for Copper Conductors"

CAN/CSA-C22.2 No. 60947-7-2, "Low-Voltage Switchgear and Controlgear - Part 7-2: Ancillary Equipment - Protective Conductor Terminal Blocks for Copper Conductors"

CAN/CSA-C22.2 No. 60947-7-3, "Low-Voltage Switchgear and Controlgear - Part 7-3: Ancillary Equipment - Safety Requirements for Fuse Terminal Blocks"

CAN/CSA-C22.2 No. 60947-7-4, "Low-Voltage Switchgear and Controlgear - Part 7-4: Ancillary Equipment - PCB Terminal Blocks for Copper Conductors"

The CAN/CSA-C22.2 No. 60947-7-x Standards are used in conjunction with CAN/CSA-C22.2 No. 60947-1, "Low-Voltage Switchgear and Controlgear - Part 1: General Rules."

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