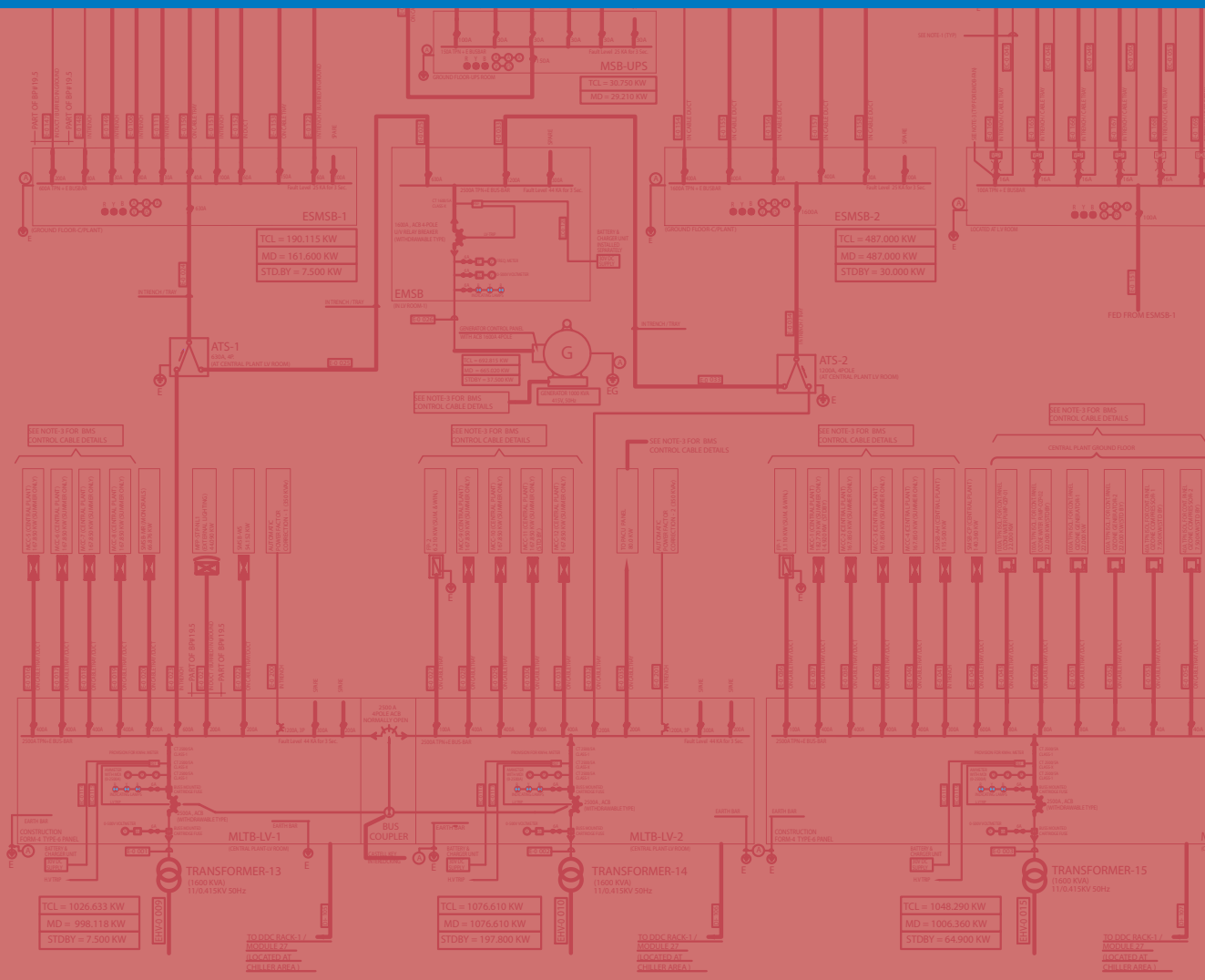
Discrimination and Back-up tables
Technical Data

- Moulded Case Circuit Breakers
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- MCCBs or fuses upstream / MCCBs downstream

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OVERLOAD & SHORT CIRCUIT DISCRIMINATION (SELECTIVITY) – FAULT LEVEL (kA) TO WHICH DISCRIMINATION IS ACHIEVED

Circuit breakers upstream / circuit breakers downstream

Table A

UPSTREAM ⟶ (max.settings)

'T' represents maximum discrimination to kA rating level of the downstream device

DOWNSTREAM ⟶

BREAKER RATING A		EM.S MCB C or D Curve				MCCB NZM…1-A… Series									MCCB NZM…2-A/VE… Series					MCCB NZM…3-A… Series				MCCB NZM…3-AE… Series			MCCB NZM…3-VE…			MCCB NZMLW Series		MCCB NZM…4-AE… Series					MCCB NZM…4-VE… Series				
		63	80	100	125	20	32	40	50	63	80	100	125	160	100	125	160	200	250	250	320	400	500	250	400	630	250	400	630	630	800	630	800	1000	1250	1600	630	800	1000	1250	1600
EATON MCB EMBH / EMCH Series	1	0.63	0.8	1	1.25	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	2	0.63	0.8	1	1.25	2	3	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	4	0.63	0.8	1	1.25	2	3	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	6	0.63	0.8	1	1.25	2	3	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	8	0.63	0.8	1	1.25			T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	10	0.63	0.8	1	1.25			T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	13	0.63	0.8	1	1.25			T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	16	0.63	0.8	1	1.25			T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	20	0.63	0.8	1	1.25			5.7	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	25	0.63	0.8	1	1.25			1.6	T	T	8.6	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	32	0.63	0.8	1	1.25				5.6	2.1	3.8	10	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	40	0.63	0.8	1	1.25					1.7	2.6	4.6	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	50		0.8	1	1.25						1.8	2.6	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	63			1	1.25							2.2	6.7	6.7	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
EATON MCB EMBS / EMCS Series	20							0.4	0.5	0.6	0.8	1	1.25	1.6		1.3	1.8	2.5	3.5	10	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	32								0.5	0.6	0.8	1	1.25	1.6		1.2	1.7	2.3	3.2	10	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	40									0.6	0.8	1	1.25	1.6		1.1	1.5	21	2.9	10	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	50										0.8	1	1.25	1.6		1.1	1.5	2	2.8	10	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	63											1	1.25	1.6		1	1.4	1.8	2.5	10	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	80												1.25	1.6		1	1.4	1.8	2.4	8	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	100													1.6			1.3	1.7	2.3	6	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	125																	1.6	2.1	4	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
Eaton MCCB NZMB/C/N…1-A… Series	16									0.6	0.9	1.0	2.4	2.3	2.6	2.4	2.3	3.6	8.2	8.2	21	T	T	T	T	T	T	T	T	T	20	25	T	T	T	T	T	T	T	T	T	T
	20									0.6	0.9	1.0	2.4	2.3	2.6	2.4	2.3	3.6	8.2	8.2	21	T	T	T	T	T	T	T	T	T	20	25	T	T	T	T	T	T	T	T	T	T
	32									0.6	0.9	1.0	2.4	2.3	2.6	2.4	2.3	3.6	8.2	8.2	21	T	T	T	T	T	T	T	T	T	20	25	T	T	T	T	T	T	T	T	T	T
	40									0.6	0.9	1.0	2.4	2.3	2.6	2.4	2.3	3.6	8.2	8.2	21	T	T	T	T	T	T	T	T	T	20	25	T	T	T	T	T	T	T	T	T	T
	50										0.7	1.0	2.4	2.3	2.6	2.4	2.3	3.6	8.2	8.2	21	T	T	T	T	T	T	T	T	T	20	25	T	T	T	T	T	T	T	T	T	T
	63											1.0	2.1	2.0	2.2	2.1	2.0	2.9	5.3	5.3	9	29	T	46	T	T	T	T	T	15	20	T	T	T	T	T	T	T	T	T	T
	80												1.8	1.8	--	1.8	1.8	2.5	4.0	4.0	6	11	14	12	T	T	T	T	T	15	20	T	T	T	T	T	T	T	T	T	T
	100													1.8			1.8	2.5	4.0	4.0	6	11	14	12	T	T	T	T	T	15	20	T	T	T	T	T	T	T	T	T	T
	125																	2.4	3.8	3.8	5	9	11	10	T	T	47	T	T	15	20	T	T	T	T	T	T	T	T	T	T
	160																	2.3	3.7	3.7	5	8	10	9	T	41	32	T	T	15	20	T	T	T	T	T	T	T	T	T	T
Eaton MCCB NZMB/C/N…2-A… Series	125																	1.8	2.3	3	5.3	9.1	11	10	T	T	47	T	T	15	15	T	T	T	T	T	T	T	T	T	T
	160																		2.3	2.9	5	6.5	8.1	7.1	19	19	25	T	T	10	10	T	T	T	T	T	T	T	T	T	T
	200																					6.3	7.7		17	17		39	39	10	10	T	T	T	T	T	T	T	T	T	T
	250																					6.1	7.5		16	16		34	34	10	10	T	T	T	T	T	T	T	T	T	T
MCCB NZMC/N…3-A/AE… Series	250																								6.0	9.9		16	20	7.5	7.5	T	T	T	T	T	T	T	T	T	T
	320																								6	9.5		15	18	7.5	7.5	T	T	T	T	T	T	T	T	T	T
	400																									9.3			18	7.5	7.5	T	T	T	T	T	T	T	T	T	T
	500																														7.5		T	T	T	T		T	T	T	T
	630																																T	T	T	T		T	T	T	T
MCCB NZMC/N…3-VE…	250																								3.5	4		12	12	7.5	7.5	T	T	T	T	T	T	T	T	T	T
	400																									4			12		7.5	T	T	T	T	T	T	T	T	T	T
	630																																T	T	T	T		T	T	T	T
MCCB NZM…4-AE/VE… Series	630																																10	15	20	20		10	15	20	20
	800																																		20	20				20	20
	1000																																		20	20				20	20
	1250																																			20					20
	1600																																								

OVERLOAD & SHORT CIRCUIT DISCRIMINATION (SELECTIVITY) – FAULT LEVEL (kA) TO WHICH DISCRIMINATION IS ACHIEVED

Fuses upstream / circuit breakers downstream

Table B

UPSTREAM ⟶ BS88 Fuses Eaton SB3 to SH10

'T' represents maximum discrimination to kA rating level of the downstream device

DOWNSTREAM ↓

FUSE RATING (A) / BREAKER RATING (A)		20	25	32	40	50	63	80	100	125	160	200	250	315	355	400	450	500	560	630	710	800
EATON MCB EMBH / EMCH / EMDH Series	1	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	2	.5	1	2.5	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	4	0.16	0.8	1.3	2.3	4.3	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	6	0.16	.7	1.1	2	3.3	4.3	7.6	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	8		0.23	1	1.7	2.6	3.3	5.2	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	10		0.6	0.9	1.5	2.2	2.7	4	9	T	T	T	T	T	T	T	T	T	T	T	T	T
	13		0.6	0.8	1.4	2.1	2.6	3.8	7.9	T	T	T	T	T	T	T	T	T	T	T	T	T
	16		0.5	0.7	1.3	1.9	2.4	3.4	6.4	9.3	T	T	T	T	T	T	T	T	T	T	T	T
	20			0.7	1.3	1.9	2.4	3.3	6	8.7	T	T	T	T	T	T	T	T	T	T	T	T
	25			0.7	1.3	1.9	2.4	3.3	6	8.7	T	T	T	T	T	T	T	T	T	T	T	T
	32				1.2	1.7	2.2	3.1	5.4	7.6	T	T	T	T	T	T	T	T	T	T	T	T
	40						2.1	3	5.1	7.2	T	T	T	T	T	T	T	T	T	T	T	T
	50						1.9	2.8	4.7	6.6	9.5	T	T	T	T	T	T	T	T	T	T	T
	63								4.4	6.3	8.6	T	T	T	T	T	T	T	T	T	T	T
EATON MCB EMBS / EMCS / EMDS Series	20				0.6	0.88	1.75	2.2	6.1	T	T	T	T	T	T	T	T	T	T	T	T	T
	32					0.75	1.5	1.8	4.6	6.2	T	T	T	T	T	T	T	T	T	T	T	T
	40						1.2	1.6	4	5.5	T	T	T	T	T	T	T	T	T	T	T	T
	50							1.4	3.4	4.5	7	T	T	T	T	T	T	T	T	T	T	T
	63								0.5	3	4.3	T	T	T	T	T	T	T	T	T	T	T
	80											3.5	4.5	6	9	22	24	24	T	T	T	T
	100											3.5	4.5	6	9	22	24	24	T	T	T	T
	125													6	9	22	24	24	T	T	T	T
Eaton MCCB NZM…1-A… Series	16				0.45	0.53	1.6	1.6	1.6	1.8	2.3	4.3	8.0	14	22	T	T	T	T	T	T	T
	20					0.55	1.0	1.0	1.6	1.8	2.3	4.3	8.0	14	18	T	T	T	T	T	T	T
	32							0.92	1.6	1.75	2.2	4	6	8.5	13.T	T	T	T	T	T	T	T
	40								1.6	1.75	2.2	3.7	5.25	7.5	11	T	T	T	T	T	T	T
	50									1.7	2.1	3.5	4.9	6.7	9.6	23.5	24	24	T	T	T	T
	63									1.7	2.1	3.5	4.9	6.7	9.6	23.5	24	24	T	T	T	T
	80											3.5	4.5	6	9	22	24	24	T	T	T	T
	100											3.5	4.5	6	9	22	24	24	T	T	T	T
	125													6	9	22	24	24	T	T	T	T
	160														9	19	22	22	T	T	T	T
Eaton MCCB NZM…2-A… Series	125													8	10	22	24	24	25	40	40	40
	160														10	19	22	22	25	40	40	40
	200																		25	40	40	40
	250																			25	25	40
MCCB NZM…3-A/AE… Series	250																	8	10	18	18	40
	320																		9	14	14	40
	400																					35
	500																					
	630																					
MCCB NZMLW Series	630																					
	800																					
MCCB NZM…4-AE/VE… Series	630																					
	800																					
	1000																					
	1250																					
	1600																					

BACKUP PROTECTION – FAULT LEVEL TO WHICH PROTECTION IS ACHIEVED (kA)
MCBs / MCCBs / fuses upstream / MCBs downstream
Table C

UPSTREAM ⟶ (max.settings)

DOWNSTREAM ⟶

BREAKER RATING (A)		EATON MCB EMCS Series								MCCB NZMB1 / C1 / N1 Series										MCCB NZMB2 / C2 Series									MCCB NZMN2 Series									BS88				BS 1361
		20	32	40	50	63	80	100	125	16	20	32	40	50	63	80	100	125	160	20	32	40	50	63	80	100	125	160	20	32	40	50	63	80	100	125	160	<80	100	160	200	100
EATON MCB EMBH / EMCH Series	1	25	25	25	25	25	20	20	15	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	50	50	50	50	50	50	50	50	50	80	40	25	25	33
	2	25	25	25	25	25	20	20	15	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	50	50	50	50	50	50	50	50	50	80	40	25	25	33
	4	25	25	25	25	25	20	20	15	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	50	50	50	50	50	50	50	50	50	80	40	25	25	33
	6	25	25	25	25	25	20	20	15	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	50	50	50	50	50	50	50	50	50	80	40	25	25	33
	8	25	25	25	25	25	20	20	15	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	50	50	50	50	50	50	50	50	50	80	40	25	25	33
	10	25	25	25	25	25	20	20	15	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	50	50	50	50	50	50	50	50	50	80	40	25	25	33
	13	25	25	25	25	25	20	20	15	25	25	25	25	25	25	25	25	25	25	20	20	20	20	20	20	20	20	20	30	30	30	30	30	30	30	30	30	80	50	40	25	33
	16	25	25	25	25	25	20	20	15	25	25	25	25	25	25	25	25	25	25	20	20	20	20	20	20	20	20	20	30	30	30	30	30	30	30	30	30	80	50	40	25	33
	20		25	25	25	25	20	20	15	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	30	30	30	30	30	30	30	30	30	80	50	40	25	33
	25		25	25	25	25	20	20	15	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	30	30	30	30	30	30	30	30	30	80	50	40	25	33
	32			25	25	25	20	20		20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	30	30	30	30	30	30	30	30	30	80	50	40	25	33
	40			25	25	25	20	20		20	20	20	20	20	20	20	20	20	20	15	15	15	15	15	15	15	15	15	20	20	20	20	20	20	20	20	20	80	50	40	25	33
	50				25	25	20	20		15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	20	20	20	20	20	20	20	20	20	80	50	40		33
	63									15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	20	20	20	20	20	20	20	20	20	80	50	40		33

BACKUP PROTECTION* – FAULT LEVEL TO WHICH PROTECTION IS ACHIEVED (kA)

(* Also known as 'series-rating' or 'co-ordination')

MCCBs or fuses upstream / MCCBs downstream

Table D

UPSTREAM ⟶ (max.settings)

DOWNSTREAM ⟶

			MCCB						BS FUSE
			MCCB NZM1 Series		MCCB NZM2 Series		MCCB NZM3 Series		BS88
			36kA	50kA	36kA	50kA	36kA	50kA	80kA
BREAKER RATING A			all current ratings		all current ratings		all current ratings		200A Max
MCCB NZM1 Series	25kA	all current ratings	36kA	50kA	36kA	50kA	36kA	50kA	80kA
	36kA			50kA		50kA		50kA	80kA
MCCB NZM2 Series	36kA	all current ratings				50kA		50kA	80kA
	50kA					50kA		50kA	80kA
MCCB NZM3 Series	36kA	all current ratings						50kA	
	50kA							50kA	

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PowerChain Management solutions help enterprises achieve sustainable and competitive advantages through proactive management of the power system as a strategic, integrated asset throughout its life cycle, resulting in enhanced safety, greater reliability and energy efficiency. For more information, visit www.eaton.com/electrical.

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