

### 11.3 Molded Case Circuit Breaker (MCCB), Residual-current-operated Protective Device (RCD)/Earth Leakage Circuit Breaker (ELCB) and Magnetic Contactor (MC)

Table 11.3-1 Rated Current of Molded Case Circuit Breaker (MCCB), Residual-Current-Operated Protective Device (RCD)/ Earth Leakage Circuit Breaker (ELCB) and Magnetic Contactor (MC)

ND mode

Power supply voltage	Nominal applied motor (kW)	Inverter type	MCCB, RCD/ELCB rated current (A)		Magnetic contactor (MC)		
			DC reactors (DCRs)		Input circuit		Output circuit
			w/ DCR	w/o DCR	w/ DCR	w/o DCR	
Three-phase 400V	30	FRN0059E2S-4□	75	125	SC-N2	SC-N3	SC-N2
	37	FRN0072E2S-4□	100		SC-N2S	SC-N4	SC-N2S
	45	FRN0085E2S-4□		150	SC-N3		SC-N3
	55	FRN0105E2S-4□	125	200	SC-N4	SC-N4	
	75	FRN0139E2S-4□	175	-		SC-N4	-
	90	FRN0168E2S-4□	200		SC-N8	SC-N7	
	110	FRN0203E2S-4□	250		SC-N8	SC-N8	

HD mode

Power supply voltage	Nominal applied motor (kW)	Inverter type	MCCB, RCD/ELCB rated current (A)		Magnetic contactor (MC)		
			DC reactors (DCRs)		Input circuit		Output circuit
			w/ DCR	w/o DCR	w/ DCR	w/o DCR	
Three-phase 400V	22	FRN0059E2S-4□	50	100	SC-N1	SC-N2S	SC-N1
	30	FRN0072E2S-4□	75	125	SC-N2	SC-N3	SC-N2
	37	FRN0085E2S-4□	100		SC-N2S	SC-N4	SC-N2S
	45	FRN0105E2S-4□		150	SC-N3		SC-N3
	55	FRN0139E2S-4□	125	200	SC-N4	SC-N5	SC-N4
	75	FRN0168E2S-4□	175	-		SC-N4	-
	90	FRN0203E2S-4□	200		SC-N7	SC-N7	

HND mode

Power supply voltage	Nominal applied motor (kW)	Inverter type	MCCB, RCD/ELCB rated current (A)		Magnetic contactor (MC)		
			DC reactors (DCRs)		Input circuit		Output circuit
			w/ DCR	w/o DCR	w/ DCR	w/o DCR	
Three-phase 400V	22	FRN0059E2S-4□	50	100	SC-N1	SC-N2S	SC-N1
	30	FRN0072E2S-4□	75	125	SC-N2	SC-N3	SC-N2
	37	FRN0085E2S-4□	100		SC-N2S	SC-N4	SC-N2S
	45	FRN0105E2S-4□		150	SC-N3		SC-N3
	55	FRN0139E2S-4□	125	200	SC-N4	SC-N5	SC-N4
	75	FRN0168E2S-4□	175	-		SC-N4	-
	90	FRN0203E2S-4□	200		SC-N7	SC-N7	

- Install the MCCB or RCD/ELCB at the input side of the inverter. They cannot be installed at the output side of the inverter.
- The above table lists the rated current of MCCBs and RCD/ELCBs to be used in the power control panel with an internal temperature of lower than 50°C. The rated current is factored by a correction coefficient of 0.85 as the RCDs'/MCCBs' and ELCBs' original rated current is specified when using them in a surrounding temperature of 40°C or lower. Select an MCCB and/or RCD/ELCB suitable for the actual short-circuit breaking capacity needed for your power systems.
- For the selection of the MC type, it is assumed that HIV (allowable surrounding temperature: 75°C) wires for the power input/output of the inverter are used. If an MC type for another class of wires is selected, the wire size suitable for the terminal size of both the inverter and the MC type should be taken into account.
- Use ELCBs with overcurrent protection.
- To protect your power systems from secondary accidents caused by the broken inverter, use an MCCB and/or RCD/ELCB with the rated current listed in the above table. Do not use an MCCB or RCD/ELCB with a rating higher than that listed.

### 11.3 Molded Case Circuit Breaker (MCCB), Residual-current-operated Protective Device (RCD)/Earth Leakage Circuit Breaker (ELCB) and Magnetic Contactor (MC)

Table 11.3-1 Rated Current of Molded Case Circuit Breaker (MCCB), Residual-Current-Operated Protective Device (RCD)/ Earth Leakage Circuit Breaker (ELCB) and Magnetic Contactor (MC) (continued)

HHD mode

Power supply voltage	Nominal applied motor (kW)	Inverter type	MCCB, RCD/ELCB rated current (A)		Magnetic contactor (MC)		
			DC reactors (DCRs)		Input circuit		Output circuit
			w/ DCR	w/o DCR	w/ DCR	w/o DCR	
Three-phase 400V	18.5	FRN0059E2S-4□	40	75	SC-N1	SC-N2	SC-N1
	22	FRN0072E2S-4□	50	100		SC-N2S	
	30	FRN0085E2S-4□	75	125	SC-N2	SC-N3	SC-N2
	37	FRN0105E2S-4□	100		SC-N2S	SC-N4	SC-N2S
	45	FRN0139E2S-4□		150	SC-N3		SC-N3
	55	FRN0168E2S-4□	125	200	SC-N3	SC-N5	SC-N4
	75	FRN0203E2S-4□	175	-		SC-N4	-

- Install the MCCB or RCD/ELCB at the input side of the inverter. They cannot be installed at the output side of the inverter.
- The above table lists the rated current of MCCBs and RCD/ELCBs to be used in the power control panel with an internal temperature of lower than 50°C. The rated current is factored by a correction coefficient of 0.85 as the RCDs'/MCCBs' and ELCBs' original rated current is specified when using them in a surrounding temperature of 40°C or lower. Select an MCCB and/or RCD/ELCB suitable for the actual short-circuit breaking capacity needed for your power systems.
- For the selection of the MC type, it is assumed that the 600 V HIV (allowable surrounding temperature: 75°C) wires for the power input/output of the inverter are used. If an MC type for another class of wires is selected, the wire size suitable for the terminal size of both the inverter and the MC type should be taken into account.
- Use ELCBs with overcurrent protection.
- To protect your power systems from secondary accidents caused by the broken inverter, use an MCCB and/or RCD/ELCB with the rated current listed in the above table. Do not use an MCCB or RCD/ELCB with a rating higher than that listed.