

Information for Replacement of **FR-HC Series and MT-HC(-S) Series**

Replacement model
FR-HC2 Series

Size, connection, parameters, options concerning replacement are stated on the following pages.

1. SIZE

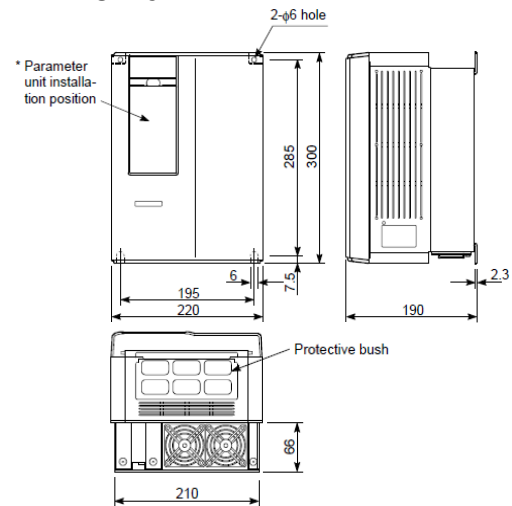
The following table shows the installation size required when replacing an FR-HC/MT-HC(-S) series converter by an FR-HC2 series converter. For details of the sizes, refer to the outline dimension drawings on the following pages.

Power supply voltage	Existing high power factor converter	Replacing high power factor converter	Installation size			
			High power factor converter FR-HC[] MT-HC	Reactor1 FR-HCL[]1 MT-HCL[]1	Reactor2 FR-HCL[]2 MT-HCL[]2	Outside Box FR-HCB[] MT-HCB[]
Three-phase 200 V	FR-HC-7.5K	FR-HC2-7.5K	Different size	Different size	Same	Same
	FR-HC-15K	FR-HC2-15K	Same	Different size	Different size	Same
	FR-HC-30K	FR-HC2-30K	Same	Different size	Different size	Same
	FR-HC-55K	FR-HC2-55K	Different size	Different size	Different size	Same
	MT-HC-75K	FR-HC2-75K	Different size	Different size	Different size	Same
Three-phase 400 V	FR-HC-H7.5K	FR-HC2-H7.5K	Same	Different size	Different size	Same
	FR-HC-H15K	FR-HC2-H15K	Different size	Different size	Different size	Same
	FR-HC-H30K	FR-HC2-H30K	Same	Different size	Different size	Different size
	FR-HC-H55K	FR-HC2-H55K	Different size	Different size	Different size	Same
	MT-HC-H75K(-S)	FR-HC2-H75K	Different size	Different size	Different size	Same
	MT-HC-H110K(-S)	FR-HC2-H110K	Different size	Different size	Different size	Same
	MT-HC-H150K(-S)	FR-HC2-H160K	Different size	Different size	Different size	Same
	MT-HC-H220K(-S)	FR-HC2-H220K	Different size	Different size	Different size	Different size
MT-HC-H375K-S	FR-HC2-H400K	Different size	Different size	Different size	-	

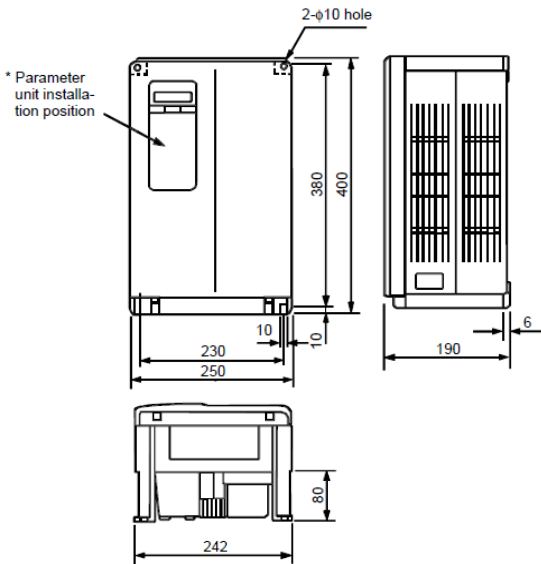
Outline dimension drawings (Unit: mm)

[High power factor converter: 200 V class]

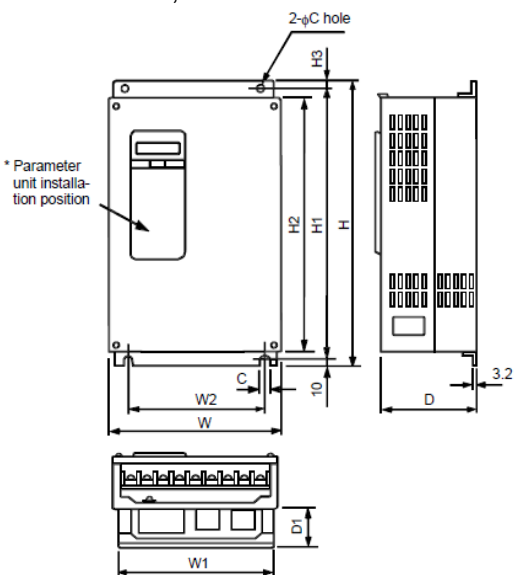
■FR-HC-7.5K



■FR-HC-15K

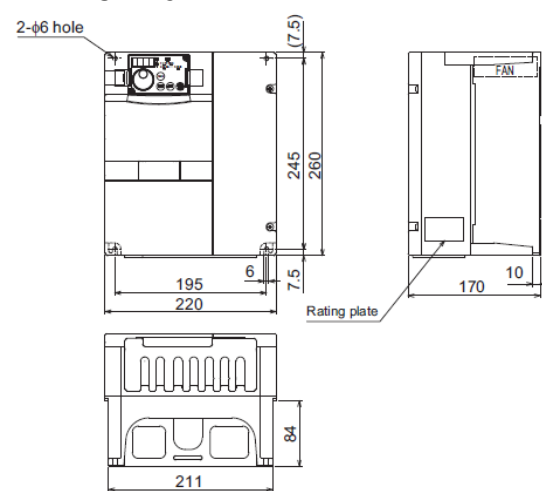


■FR-HC-30K, 55K

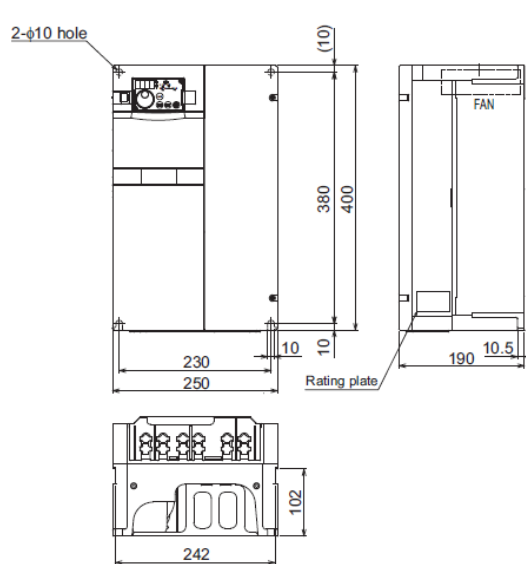


Model	W	W1	W2	H	H1	H2	H3	D	D1	C
FR-HC-30K	340	324	270	550	530	510	10	195	78	10
FR-HC-55K	480	464	410	700	675	645	15	250	130	12

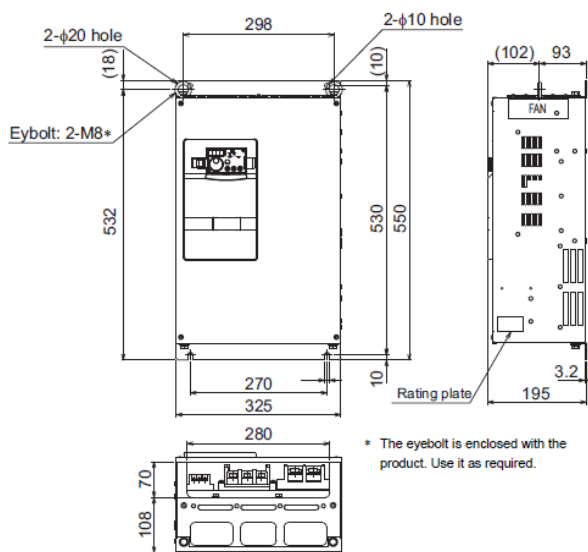
■FR-HC2-7.5K



■FR-HC2-15K



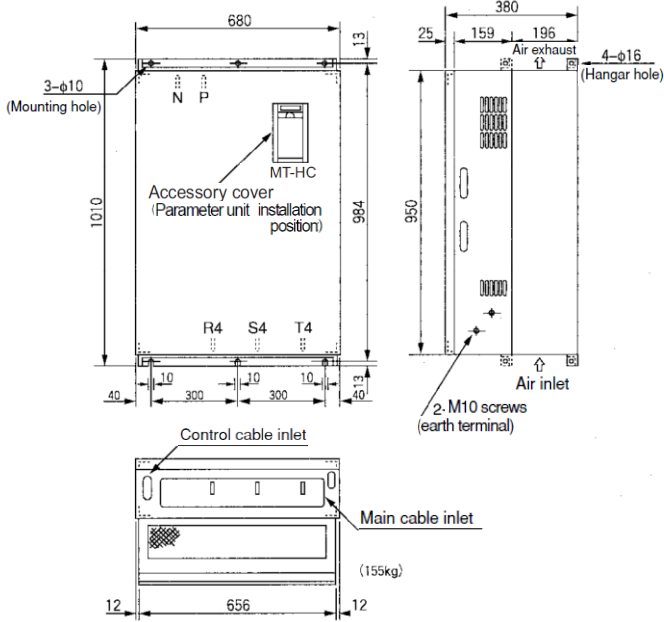
■FR-HC2-30K



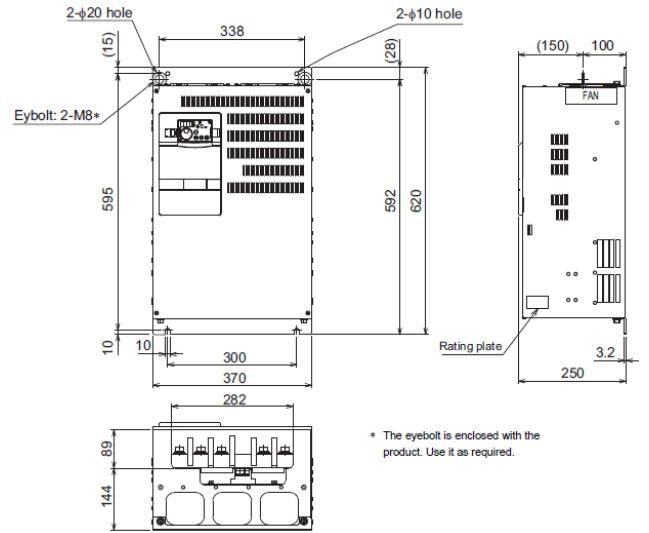
* The eyebolt is enclosed with the product. Use it as required.

Refer to the outline dimension drawing on the previous page.

■MT-HC-75K

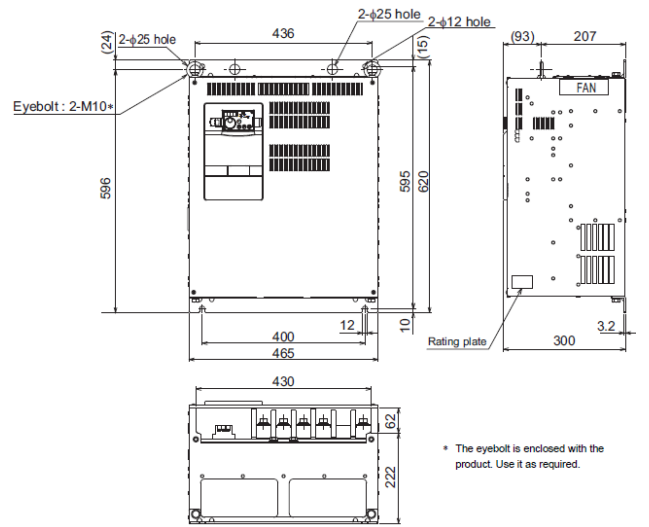


■FR-HC2-55K



* The eyebolt is enclosed with the product. Use it as required.

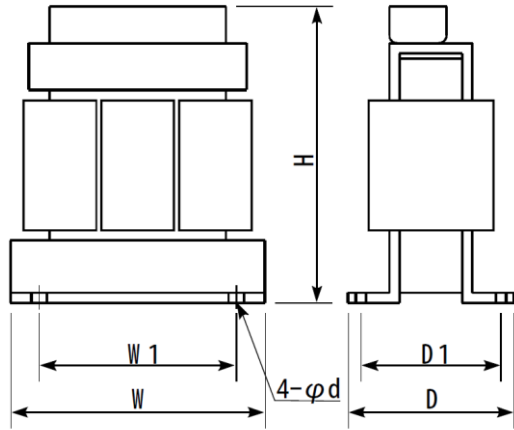
■FR-HC2-75K



* The eyebolt is enclosed with the product. Use it as required.

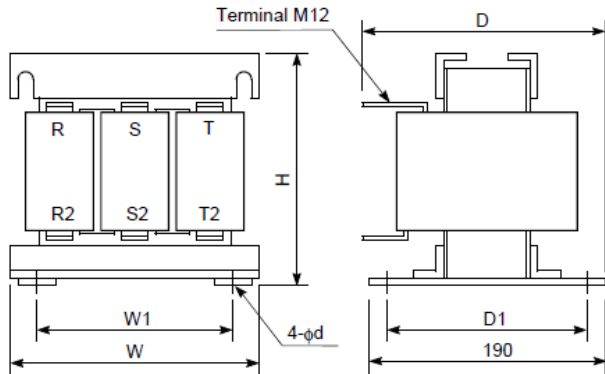
[Reactor1: 200 V class]

■FR-HCL01-7.5K, 15K, 30K



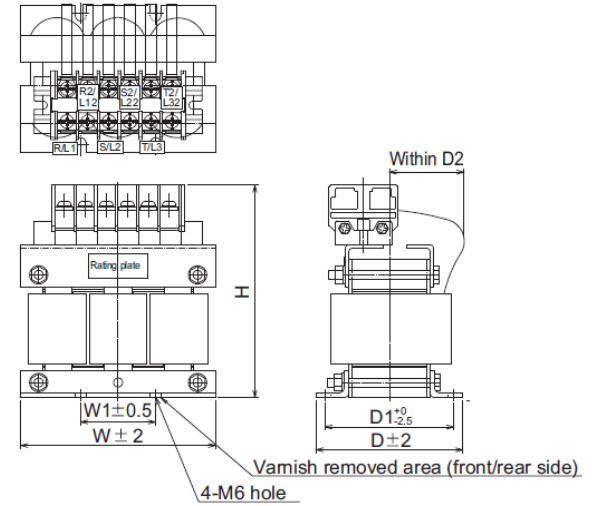
Model	H	W	W1	D	D1	d
FR-HCL01-7.5K	155	160	145	100	58	5
FR-HCL01-15K	205	190	170	130	73	6
FR-HCL01-30K	230	220	200	170	88	6

■FR-HCL01-55K



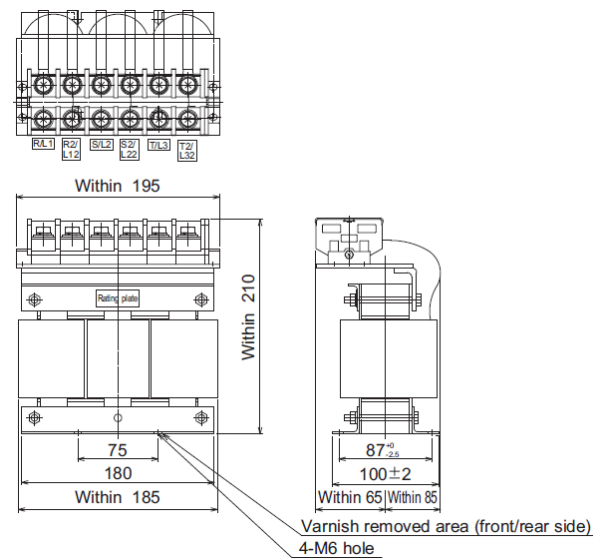
Model	H	W	W1	D	D1	d
FR-HCL01-55K	260	210	165	225	160	8

■FR-HCL21-7.5K, 15K

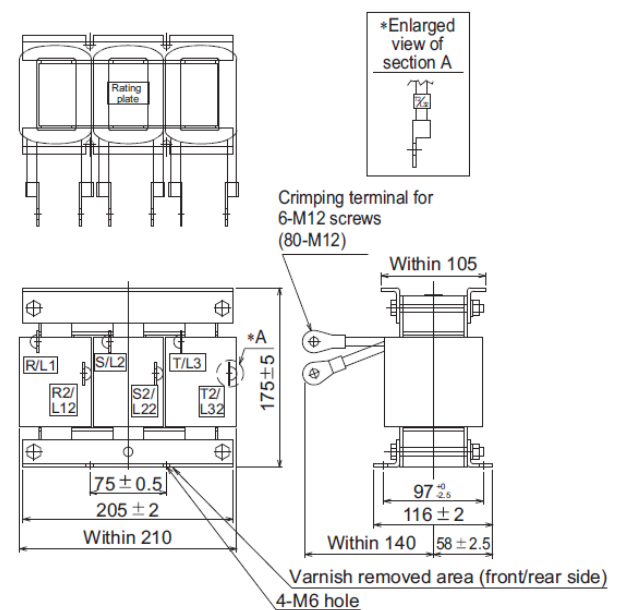


Model	W	W1	H	D	D1	D2
FR-HCL21-7.5K	130	50	Within 150	98	86	50
FR-HCL21-15K	160	75	167±5	124	107	60

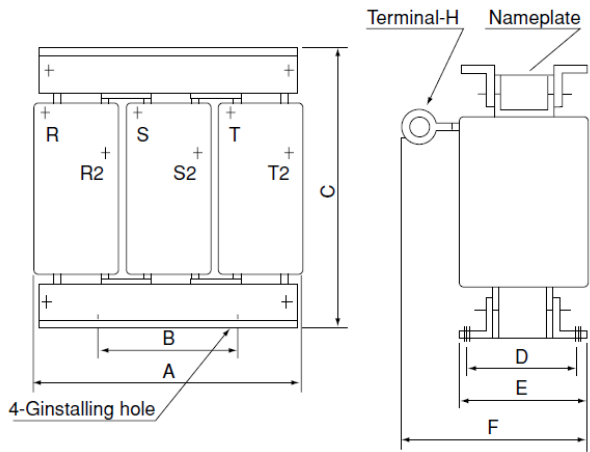
■FR-HCL21-30K



■FR-HCL21-55K

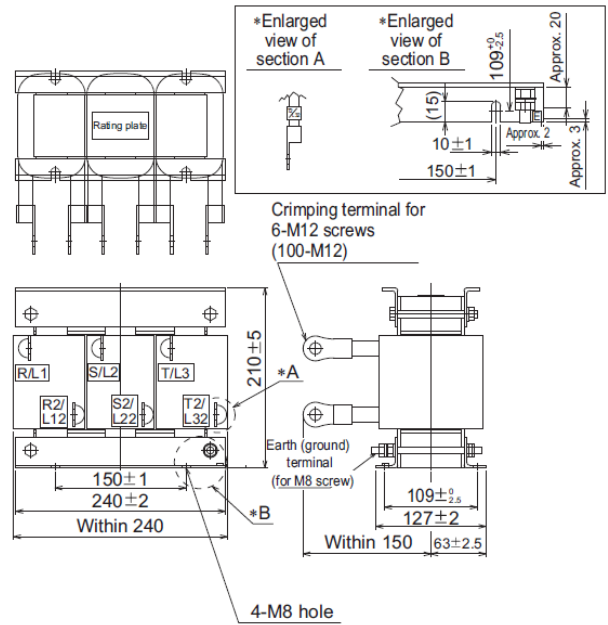


■MT-HCL01-75K



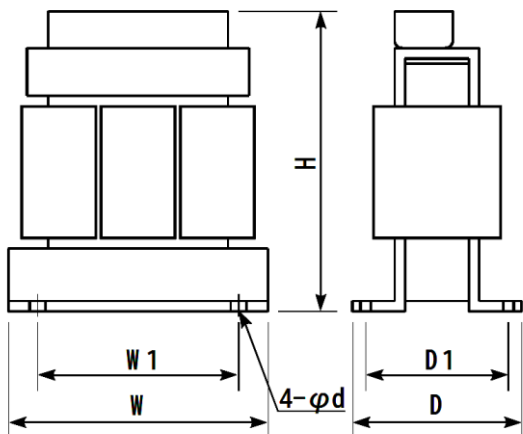
Model	A	B	C	D	E	F	G	H
MT-HCL01-75K	240	150	225	120	136	233	M8	M12

■FR-HCL21-75K



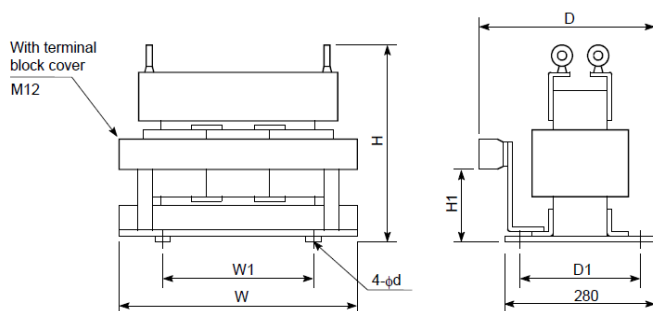
[Reactor2: 200 V class]

■FR-HCL02-7.5K, 15K, 30K



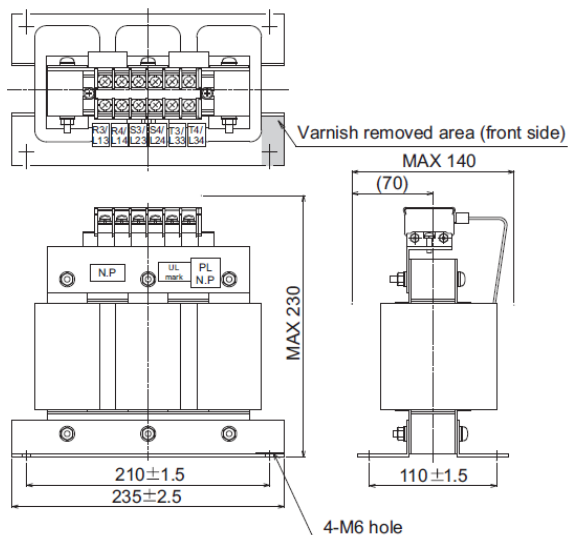
Model	H	W	W1	D	D1	d
FR-HCL02-7.5K	230	240	210	160	110	7
FR-HCL02-15K	270	260	230	170	120	7
FR-HCL02-30K	320	340	310	180	130	10

■FR-HCL02-55K

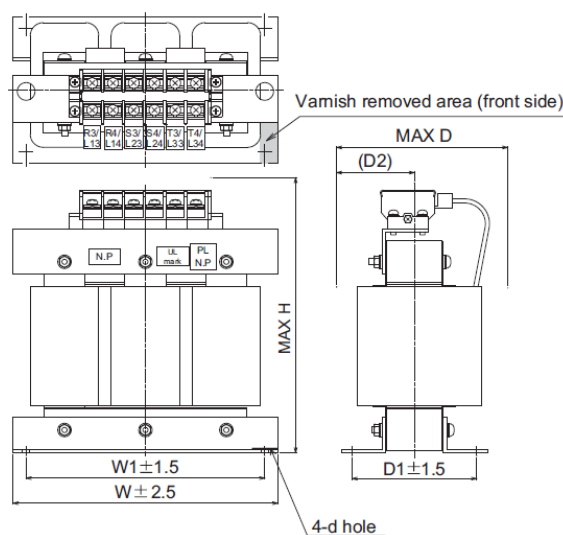


Model	H	H1	W	W1	D	D1	d
FR-HCL02-55K	470	240	430	270	360	240	10

■FR-HCL22-7.5K

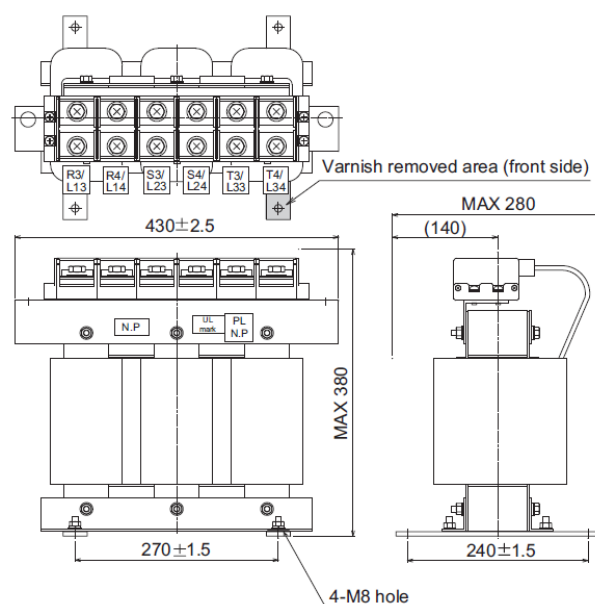


■FR-HCL22-15, 30K

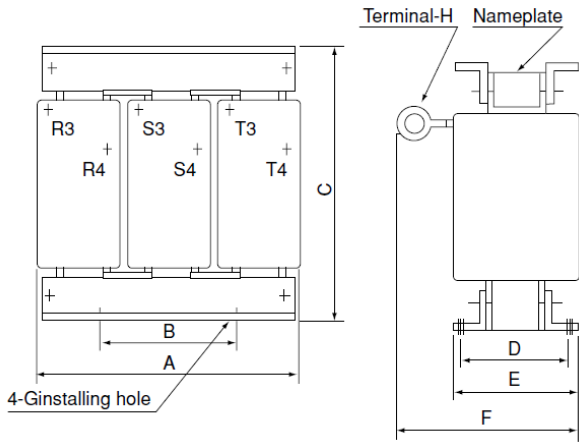


Model	W	W1	H	D	D1	D2	d
FR-HCL22-15K	255	230	260	165	120	75	M6
FR-HCL22-30K	340	310	305	180	130	80	M8

■FR-HCL22-55K

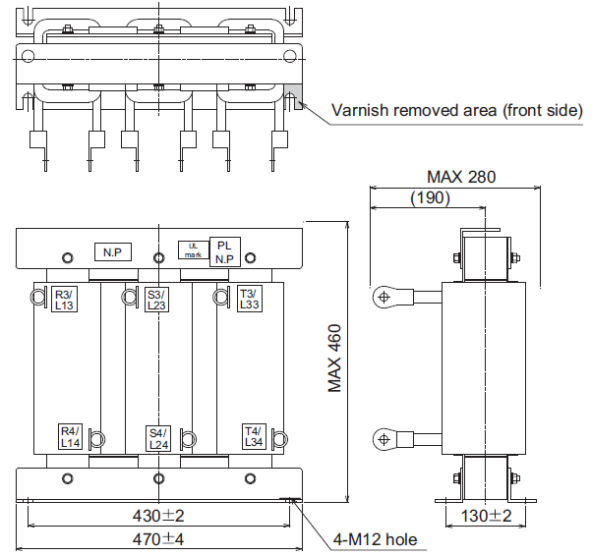


■MT-HCL02-75K



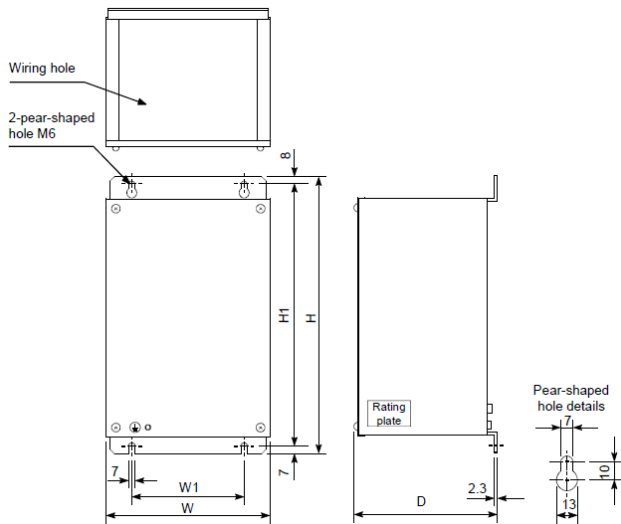
Model	A	B	C	D	E	F	G	H
MT-HCL02-75K	380	250	440	170	220	300	M12	M12

■FR-HCL22-75K



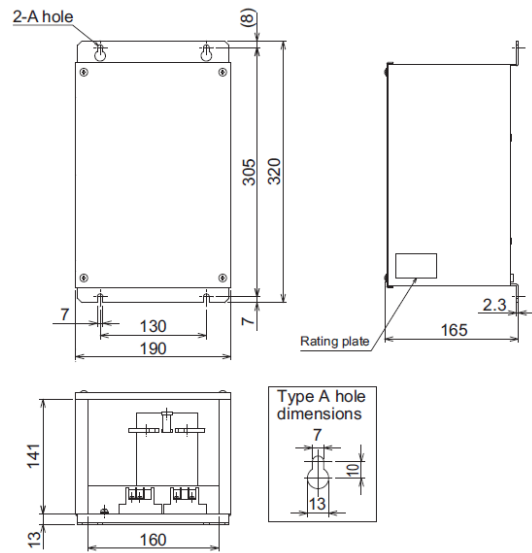
[Outside Box: 200 V class]

■FR-HCB-7.5K, 15K, 30K, 55K

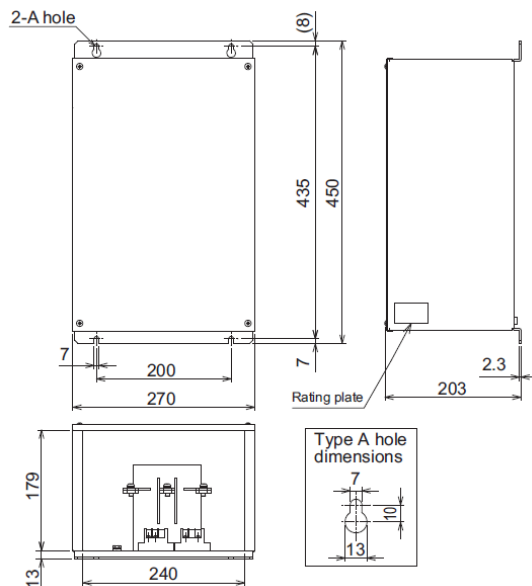


Model	H	H1	W	W1	D
FR-HCB-7.5K	320	305	190	130	165
FR-HCB-15K					
FR-HCB-30K	450	435	270	200	203
FR-HCB-55K					

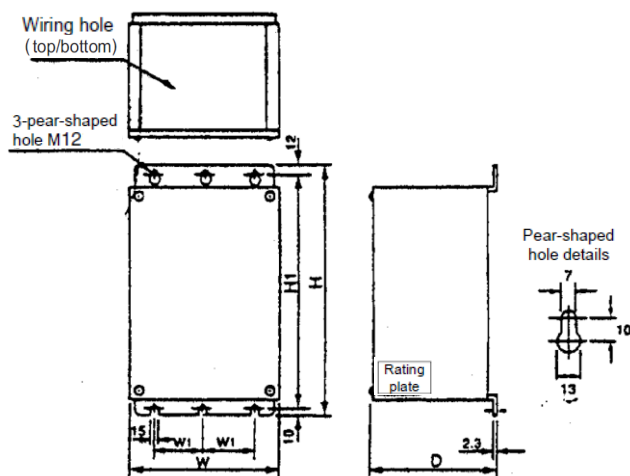
■FR-HCB2-7.5K, 15K



■FR-HCB2-30K, 55K

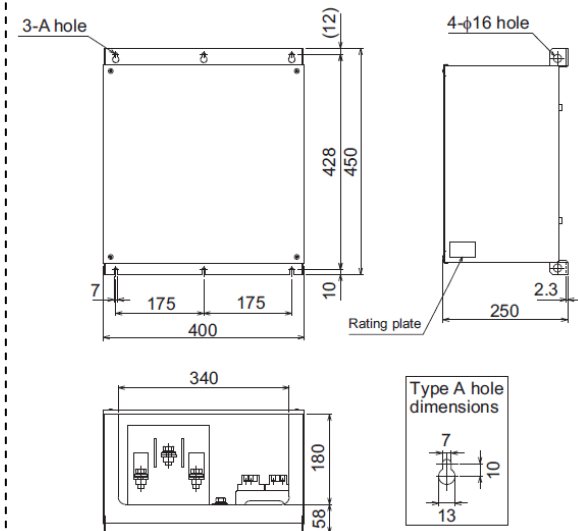


■MT-HCB-75K

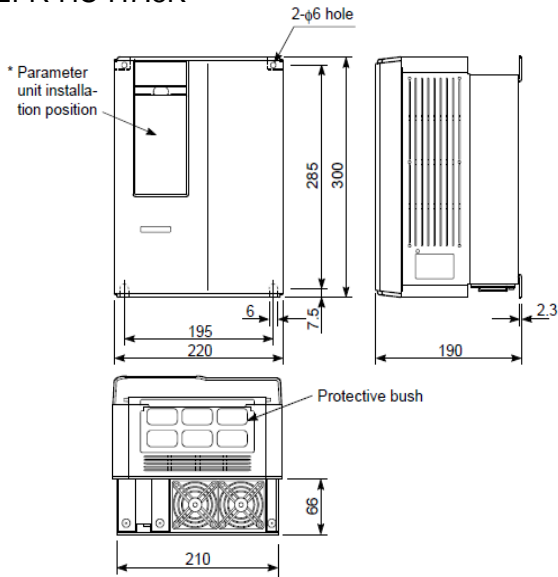


Model	W	H	D	W1	H1
MT-HCB-75K	400	450	480	175	428

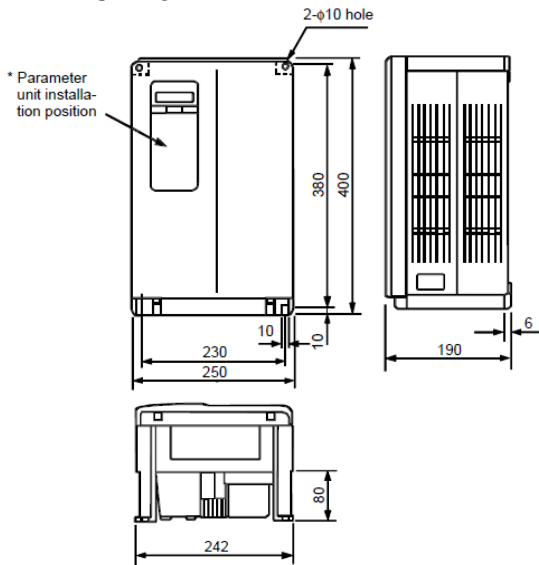
■FR-HCB2-75K



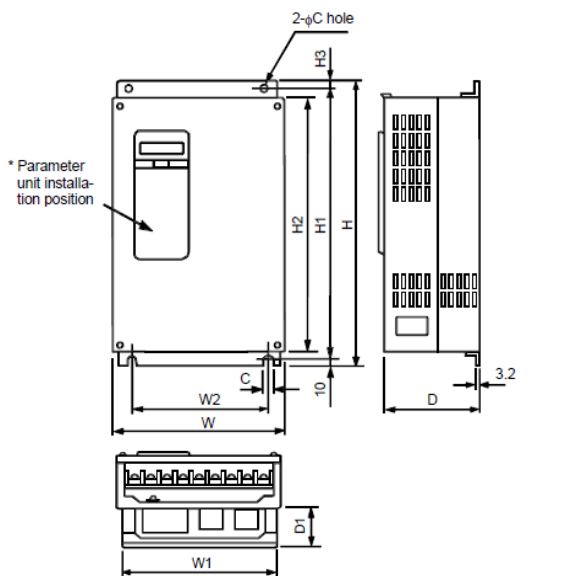
■FR-HC-H7.5K



■FR-HC-H15K

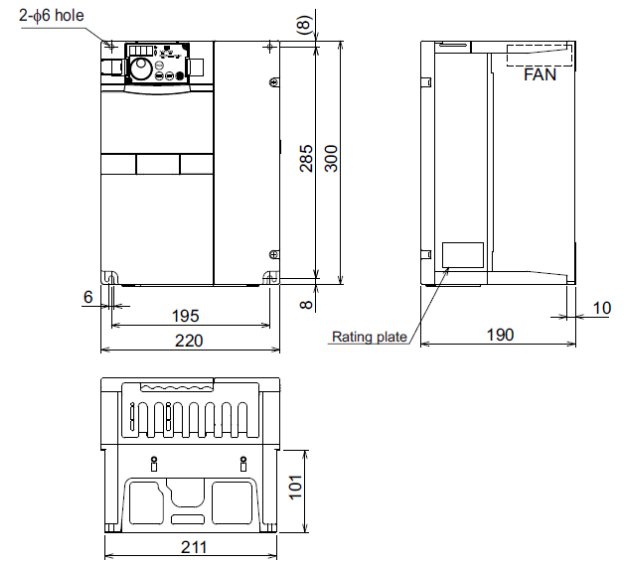


■FR-HC-H30K, H55K

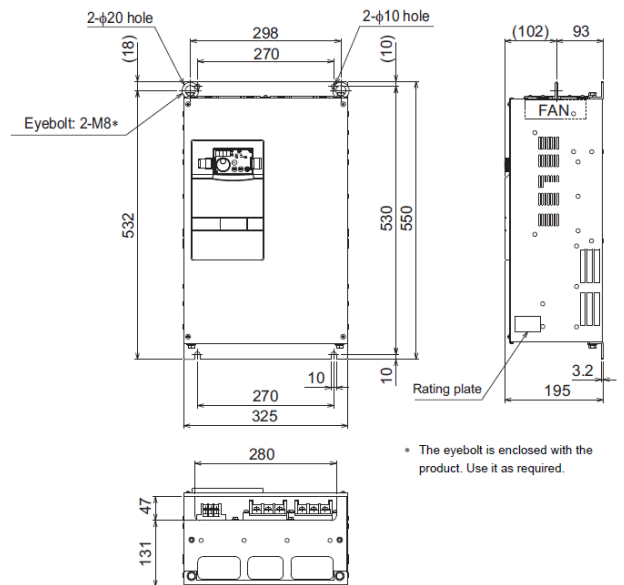


Model	W	W1	W2	H	H1	H2	H3	D	D1	C
FR-HC-H30K	340	324	270	550	530	510	10	195	78	10
FR-HC-H55K	480	464	410	700	675	645	15	250	130	12

■FR-HC2-H7.5K, H15K



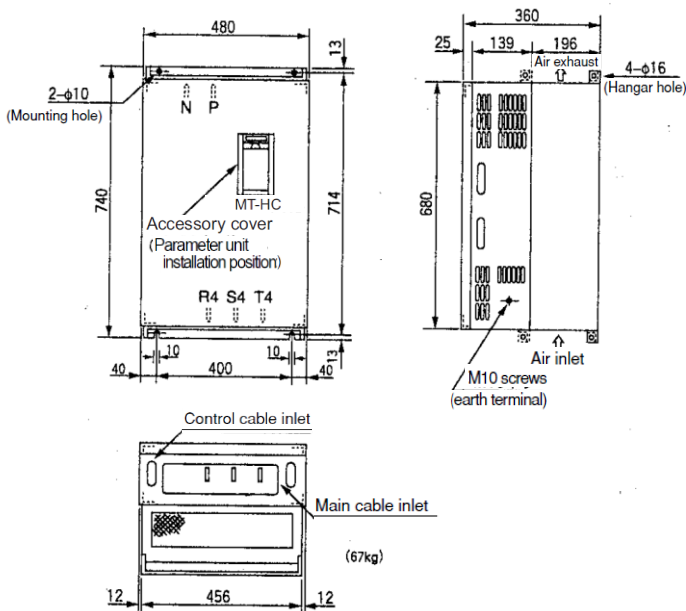
■FR-HC2-H30K



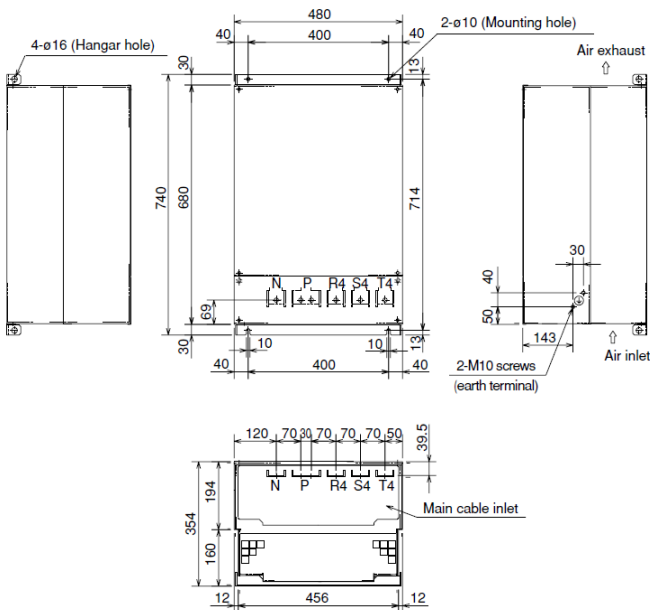
* The eyebolt is enclosed with the product. Use it as required.

Refer to the outline dimension drawing on the previous page.

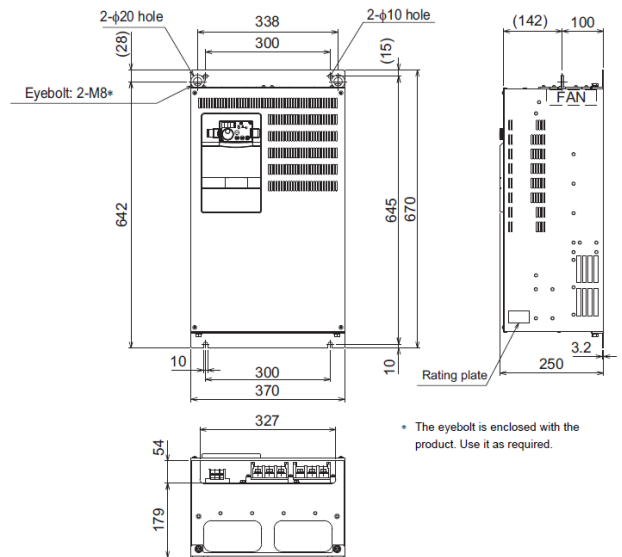
■MT-HC-H75K



■MT-HC-H75K-S

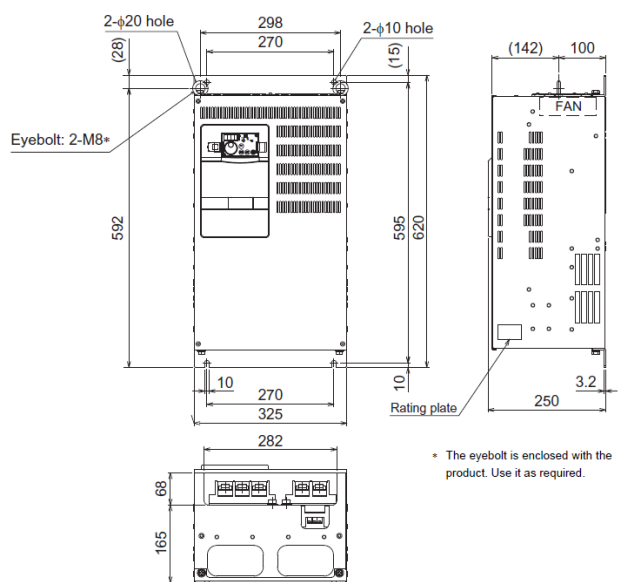


■FR-HC2-H55K



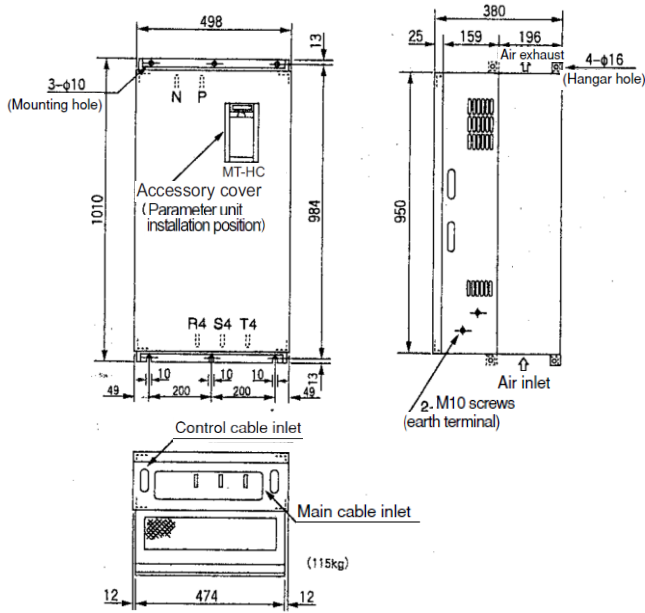
* The eyebolt is enclosed with the product. Use it as required.

■FR-HC2-H75K

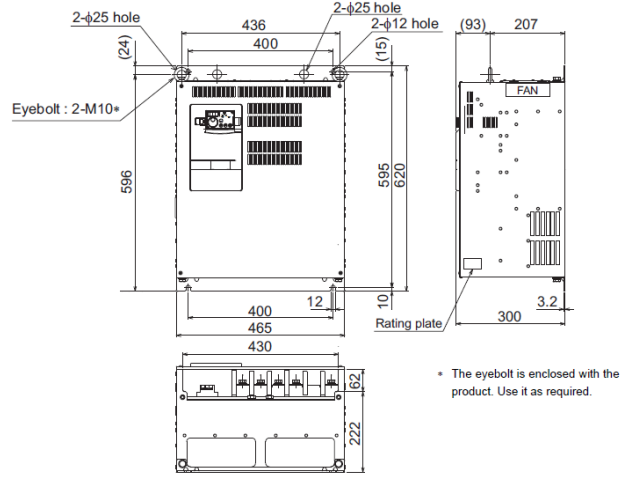


* The eyebolt is enclosed with the product. Use it as required.

■MT-HC-H110K

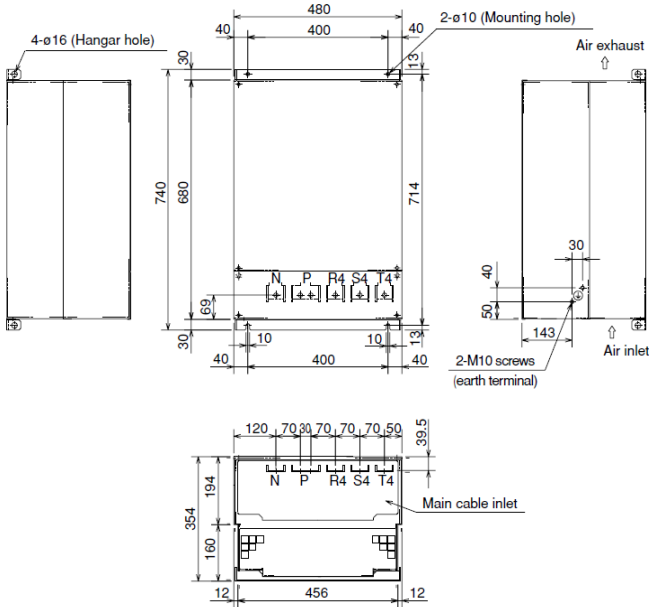


■FR-HC2-H110K

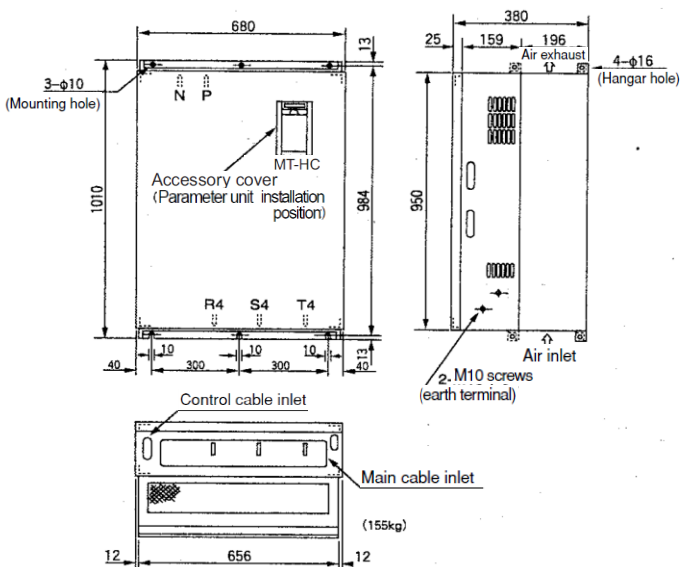


* The eyebolt is enclosed with the product. Use it as required.

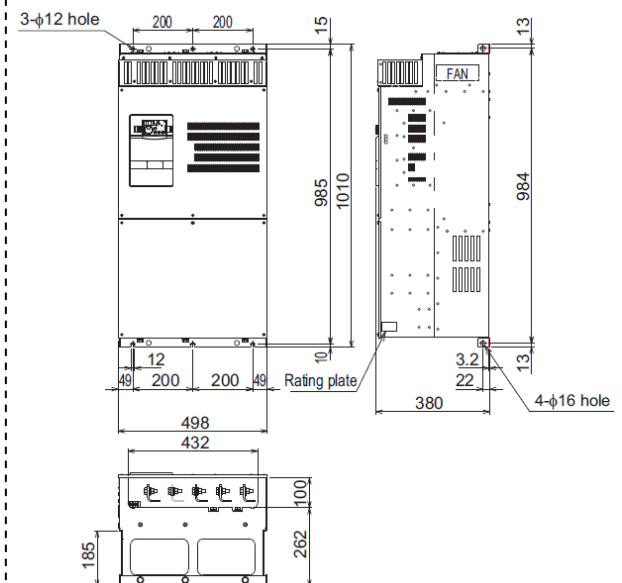
■MT-HC-H110K-S



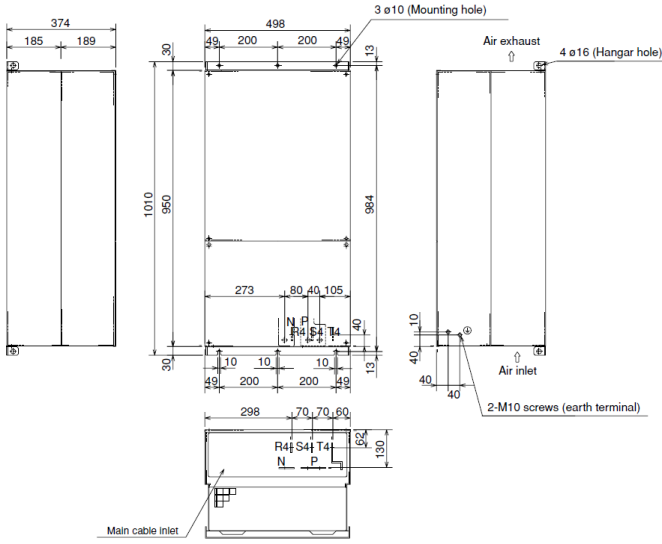
■MT-HC-H150K



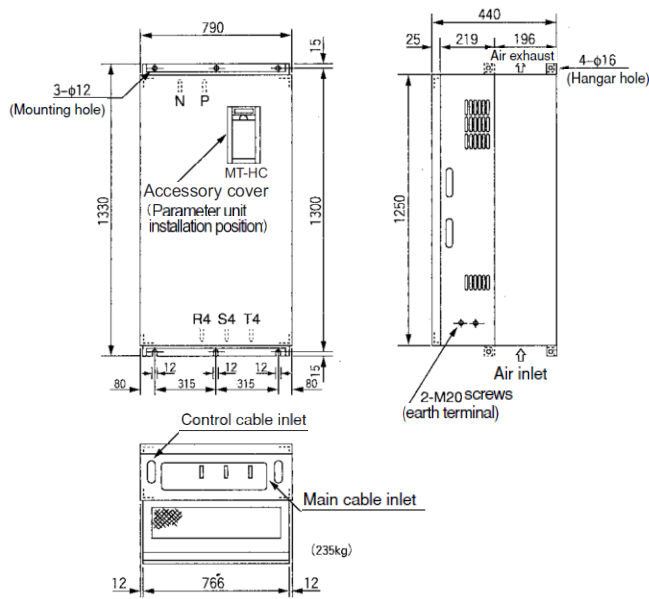
■FR-HC2-H160K, H220K



■MT-HC-H150K-S

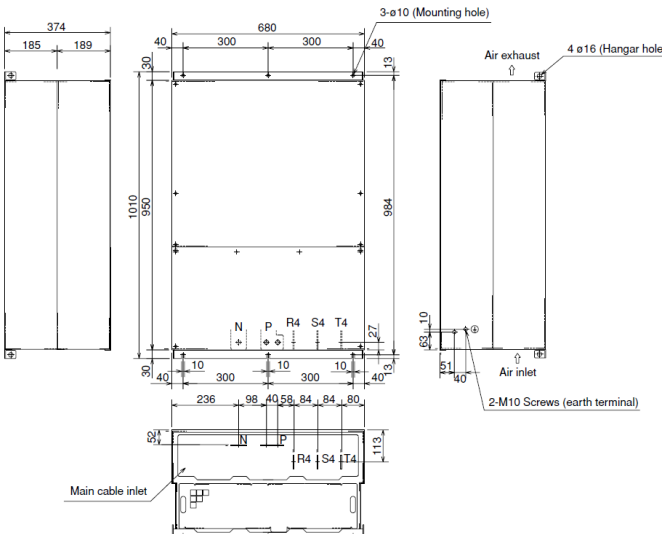


■MT-HC-H220K

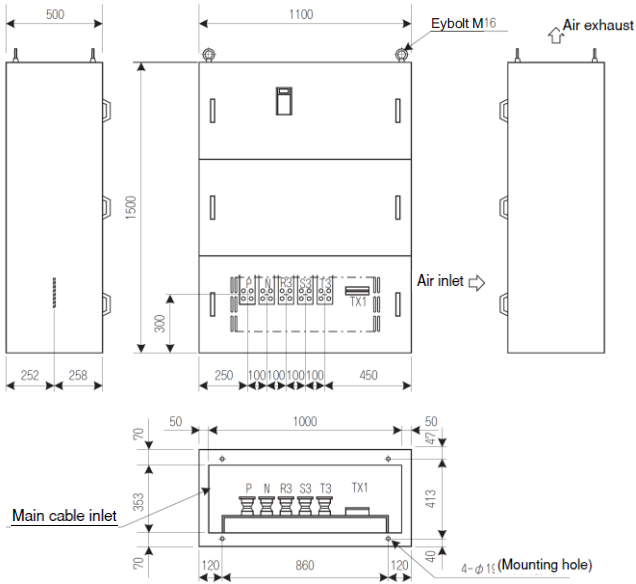


Refer to the outline dimension drawing on the previous page.

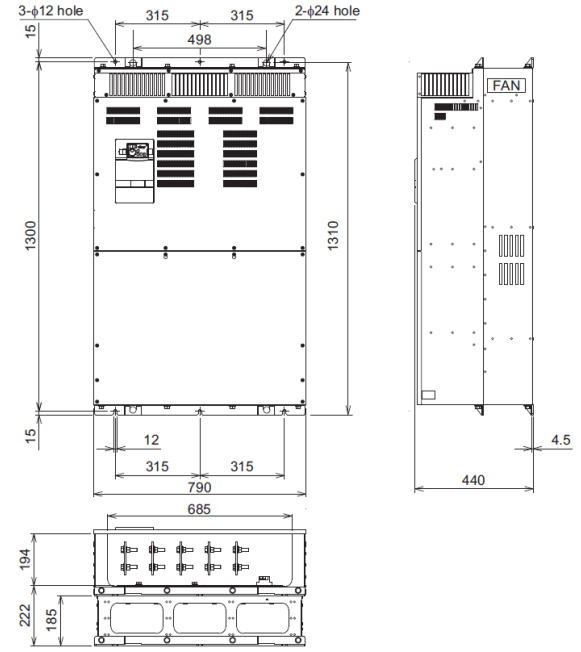
■MT-HC-H220K-S



■MT-HC-H375K-S

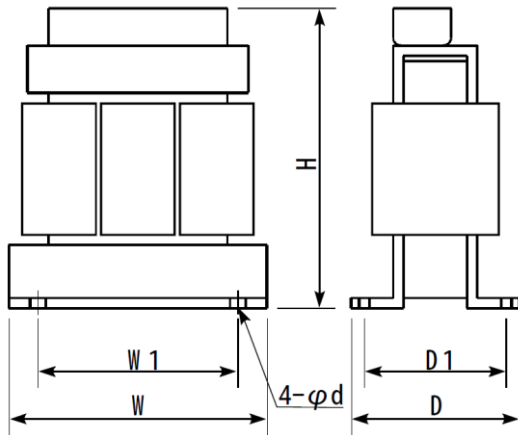


■FR-HC2-H400K



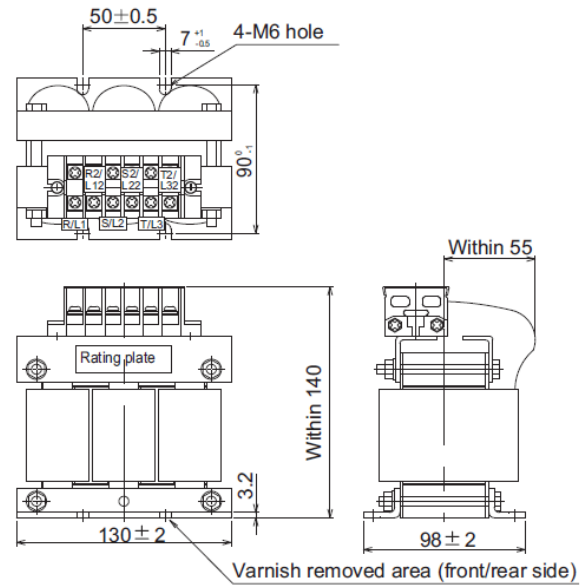
[Reactor1: 400 V class]

■FR-HCL01-H7.5K, H15K, H30K, H55K

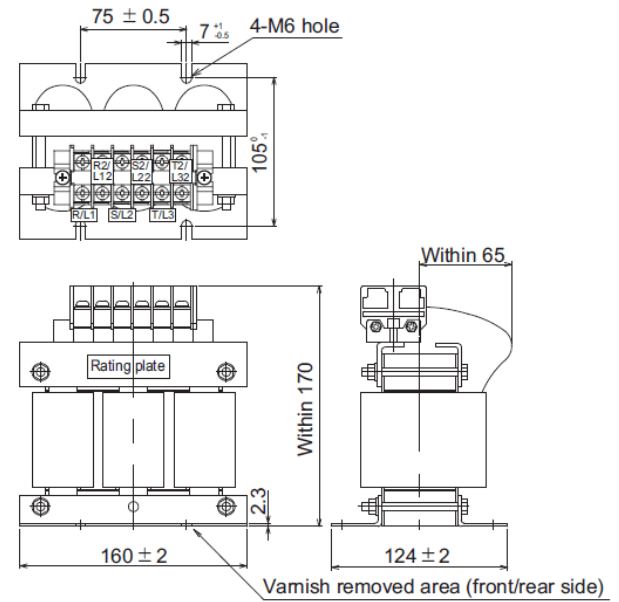


Model	H	W	W1	D	D1	d
FR-HCL01-H7.5K	150	160	145	100	65	5
FR-HCL01-H15K	195	190	170	130	80	6
FR-HCL01-H30K	215	220	200	140	90	6
FR-HCL01-H55K	255	280	255	190	112	8

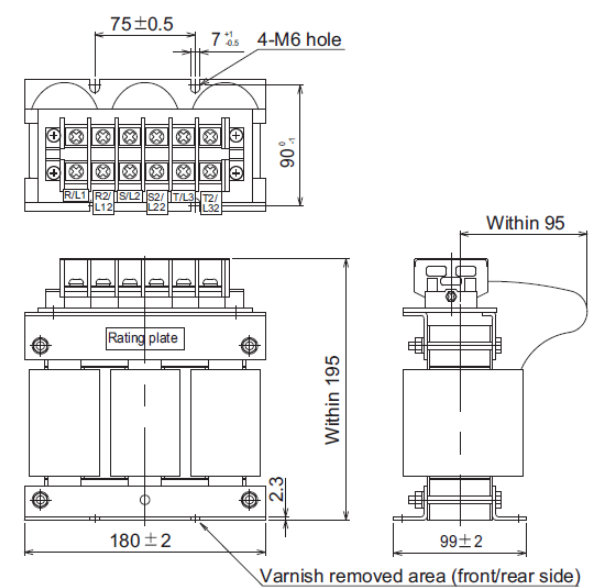
■FR-HCL21-H7.5K



■FR-HCL21-H15K

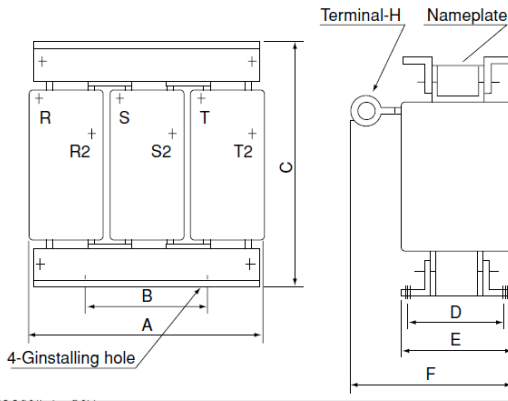


■FR-HCL21-H30K



Refer to the outline dimension drawing on the previous page.

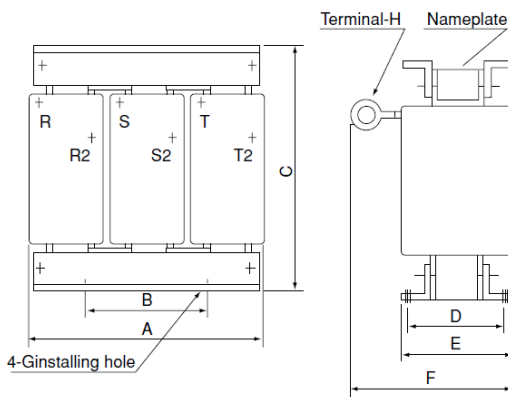
■MT-HCL01-H75K(-S)



Model	A	B	C	D	E	F	G	H
MT-HCL01-H75K	330	150	285	185	216	318	M10	M10

Model	A	B	C	D	E	F	G	H
MT-HCL01-H75K-S	240	150	215	120	136	223	M8	M10

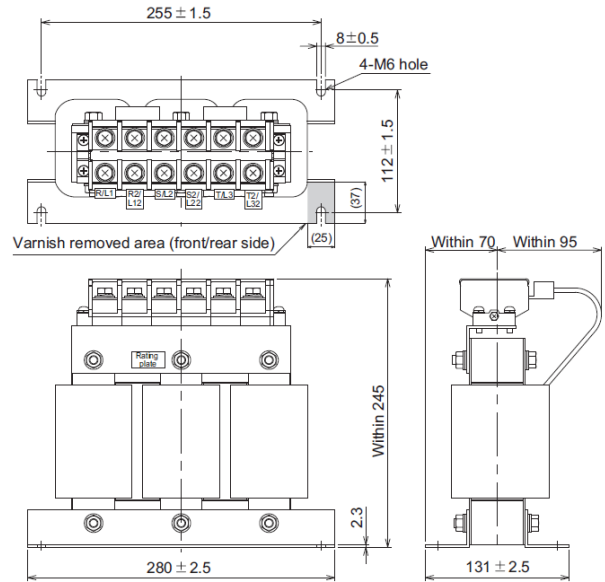
■MT-HCL01-H110K(-S)



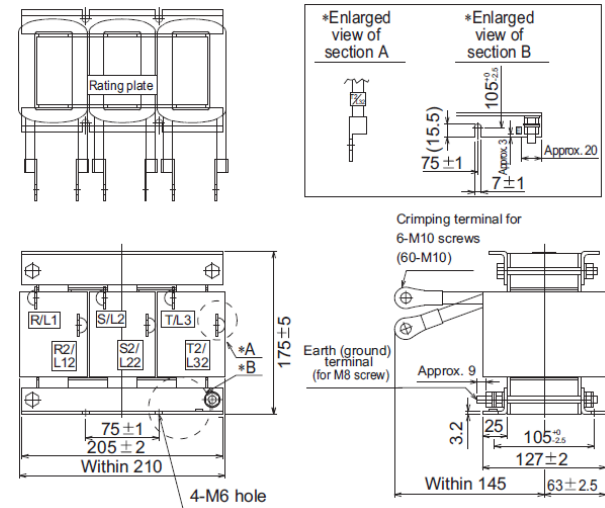
Model	A	B	C	D	E	F	G	H
MT-HCL01-H110K	390	150	340	195	235	368	M12	M12

Model	A	B	C	D	E	F	G	H
MT-HCL01-H110K-S	270	150	255	130	162	246	M8	M10

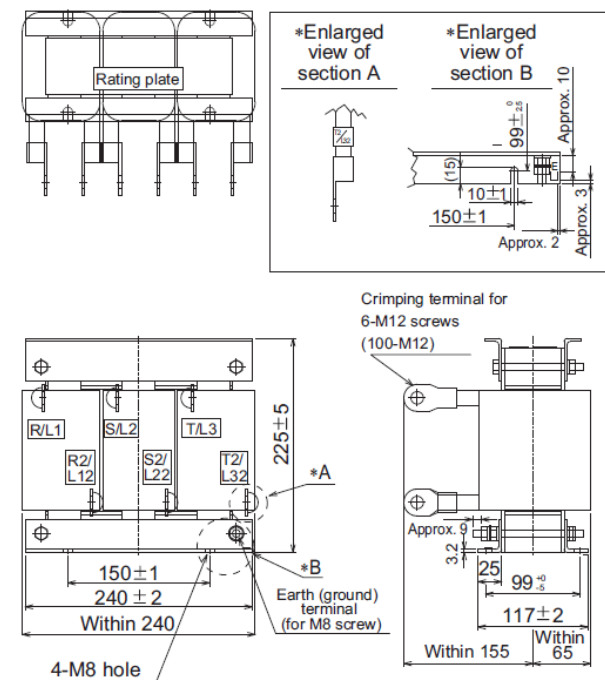
■FR-HCL21-H55K



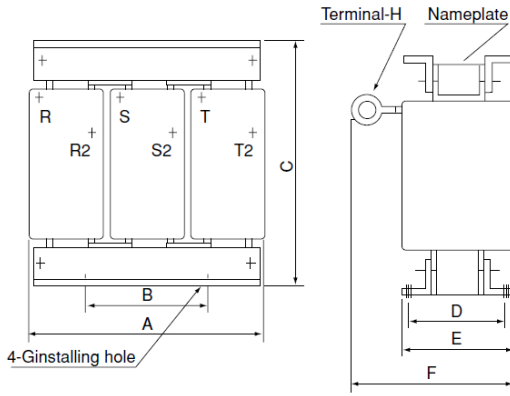
■FR-HCL21-H75K



■FR-HCL21-H110K



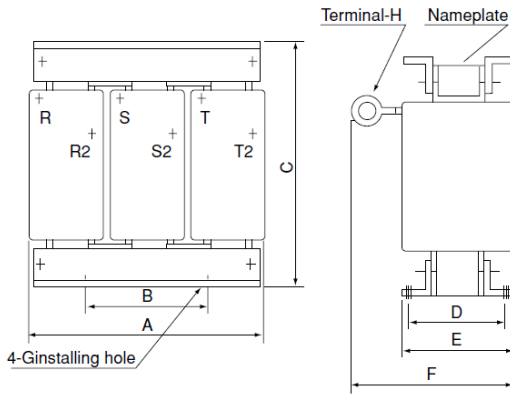
■MT-HCL01-H150K(-S)



Model	A	B	C	D	E	F	G	H
MT-HCL01-H150K	455	200	397	200	240	380	M12	M12

Model	A	B	C	D	E	F	G	H
MT-HCL01-H150K-S	330	150	275	130	162	266	M10	M12

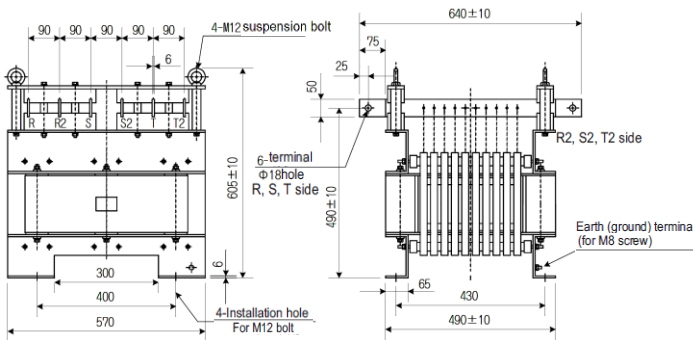
■MT-HCL01-H220K(-S)



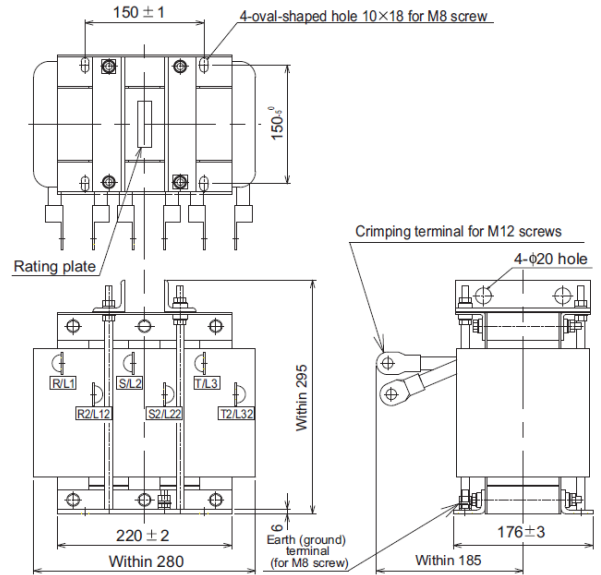
Model	A	B	C	D	E	F	G	H
MT-HCL01-H220K	495	200	405	250	300	420	M12	M12

Model	A	B	C	D	E	F	G	H
MT-HCL01-H220K-S	330	150	292	185	216	318	M10	M12

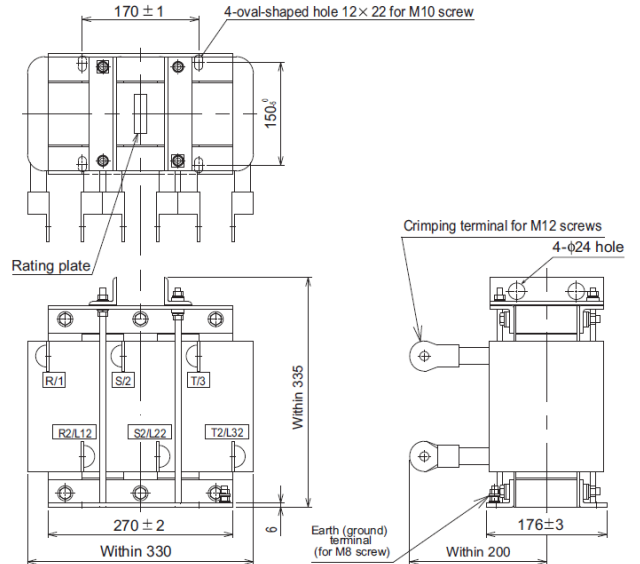
■MT-HCL01-H375K-S



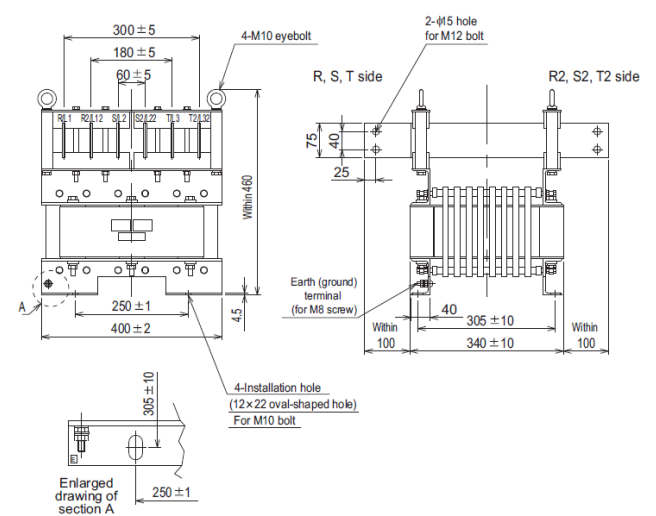
■FR-HCL21-H160K



■FR-HCL21-H220K

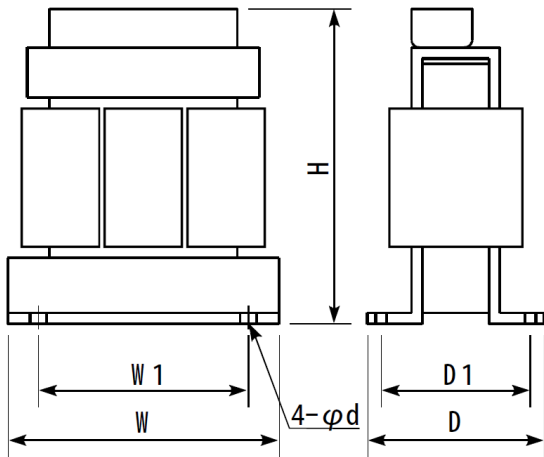


■FR-HCL21-H400K



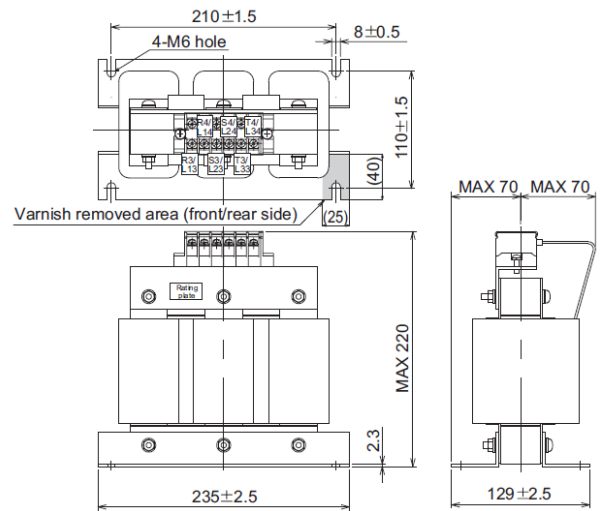
[Reactor2: 400 V class]

■FR-HCL02-H7.5K, H15K, H30K, H55K

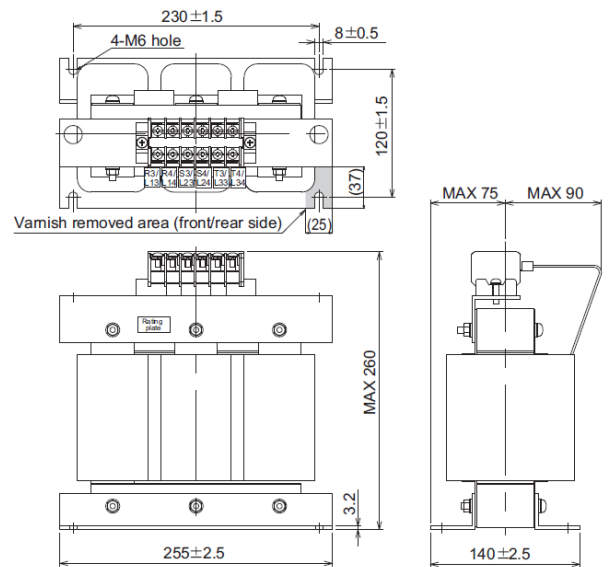


Model	H	W	W1	D	D1	d
FR-HCL02-H7.5K	220	240	210	160	110	7
FR-HCL02-H15K	260	260	230	170	120	7
FR-HCL02-H30K	310	340	310	180	130	10
FR-HCL02-H55K	380	400	270	285	240	10

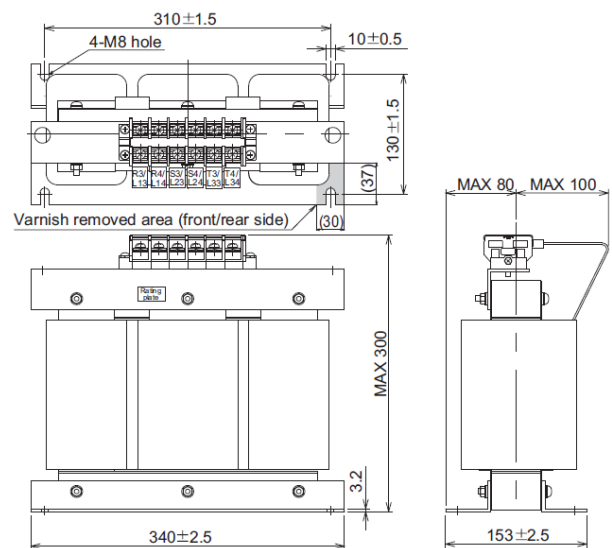
■FR-HCL22-H7.5K



■FR-HCL22-H15K

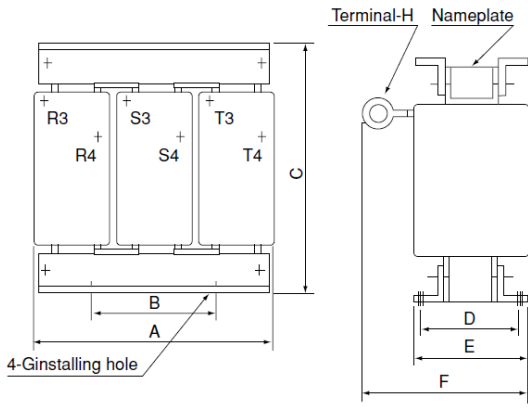


■FR-HCL22-H30K



Refer to the outline dimension drawing on the previous page.

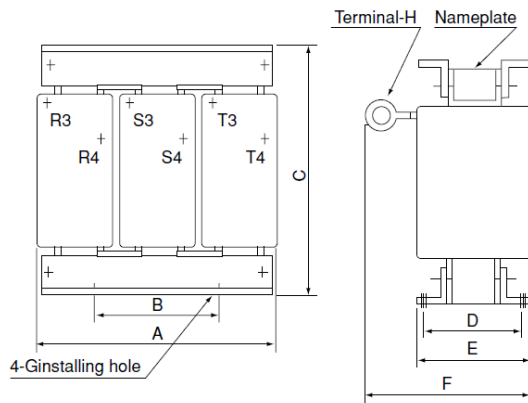
■MT-HCL02-H75K(-S)



Model	A	B	C	D	E	F	G	H
MT-HCL02-H75K	455	200	435	200	240	340	M12	M10

Model	A	B	C	D	E	F	G	H
MT-HCL02-H75K-S	455	200	435	200	240	340	M12	M10

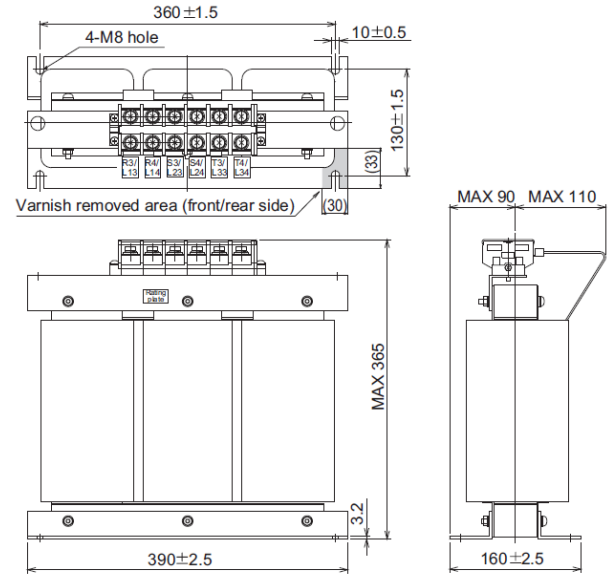
■MT-HCL02-H110K(-S)



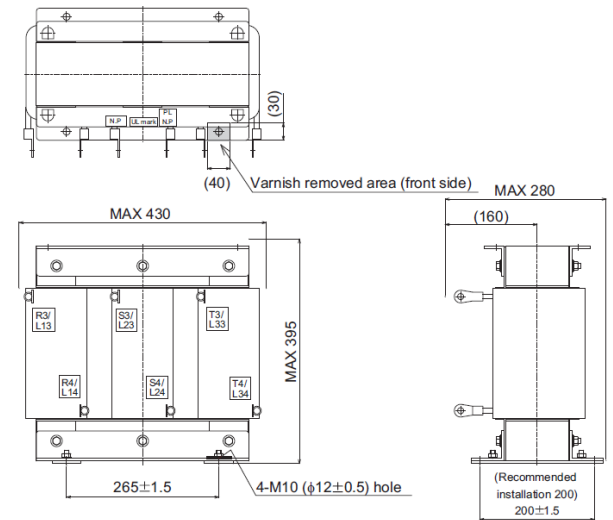
Model	A	B	C	D	E	F	G	H
MT-HCL02-H110K	510	350	580	335	395	455	M12	M12

Model	A	B	C	D	E	F	G	H
MT-HCL02-H110K-S	510	350	580	335	395	455	M12	M12

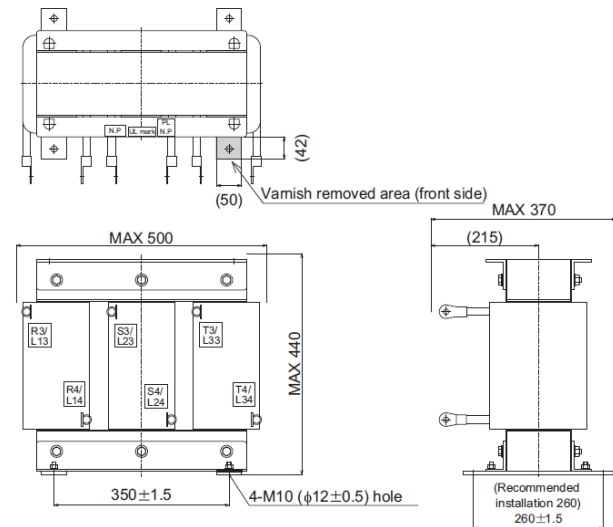
■FR-HCL22-H55K



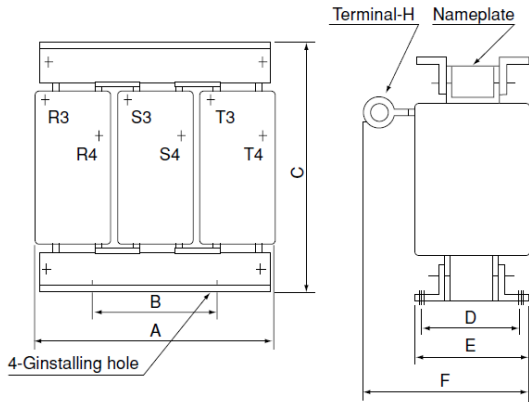
■FR-HCL22-H75K



■FR-HCL22-H110K



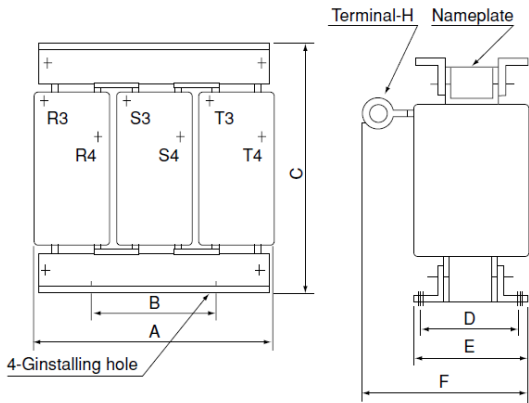
■MT-HCL02-H150K(-S)



Model	A	B	C	D	E	F	G	H
MT-HCL02-H150K	570	400	600	385	445	505	M12	M12

Model	A	B	C	D	E	F	G	H
MT-HCL02-H150K-S	570	400	600	390	450	510	M12	M12

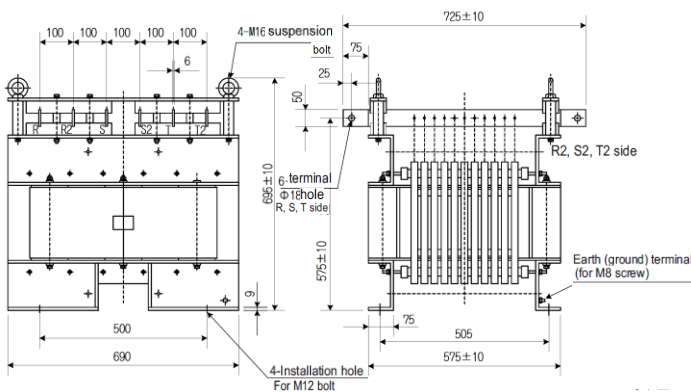
■MT-HCL02-H220K(-S)



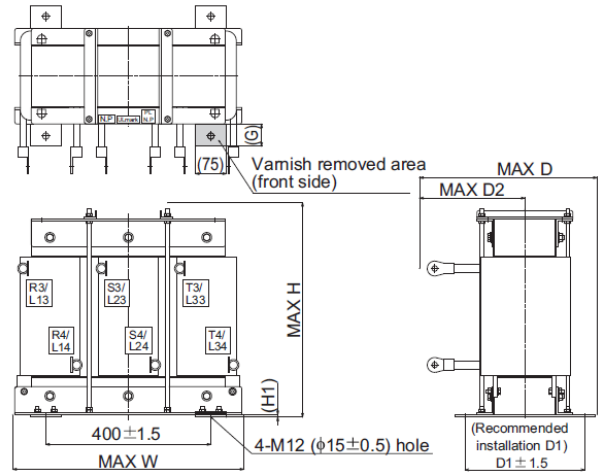
Model	A	B	C	D	E	F	G	H
MT-HCL02-H220K	630	400	665	445	505	565	M12	M12

Model	A	B	C	D	E	F	G	H
MT-HCL02-H220K-S	630	400	665	445	505	565	M12	M12

■MT-HCL02-H375K-S

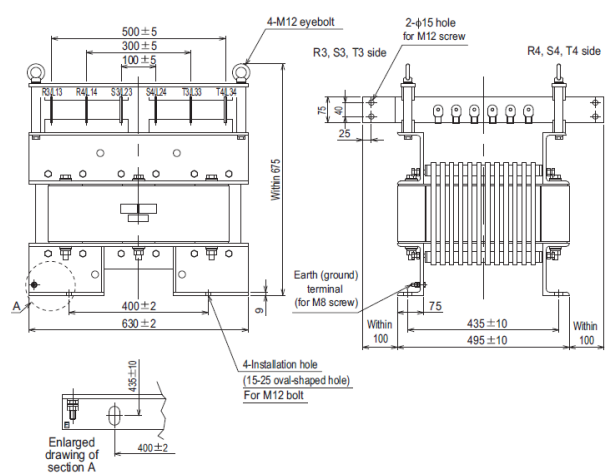


■FR-HCL22-H160K, H220K



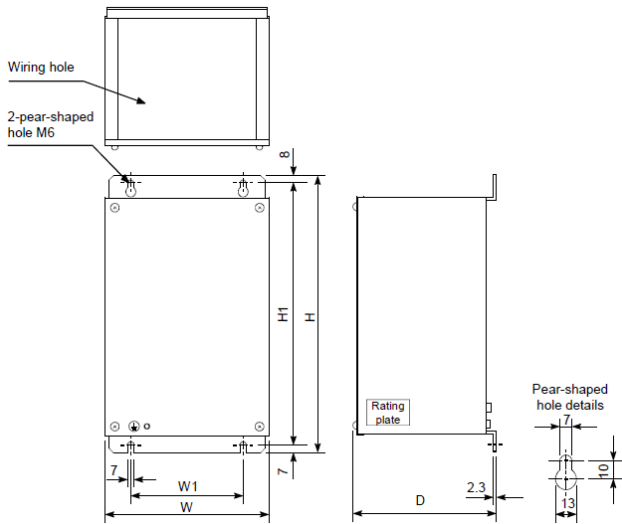
Model	W	H	H1	D	D1	D2	G
FR-HCL22-H160K	560	520	6	430	290	255	52
FR-HCL22-H220K	620	620	9	480	320	290	50

■FR-HCL22-H400K



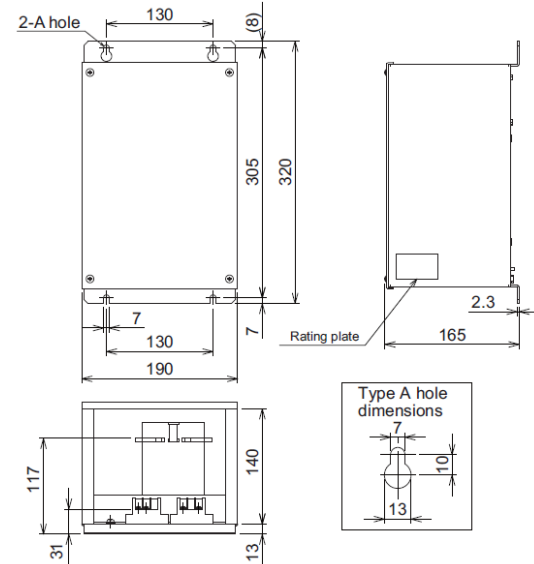
[Outside Box: 400 V class]

■FR-HCB-H7.5K, H15K, H30K, H55K

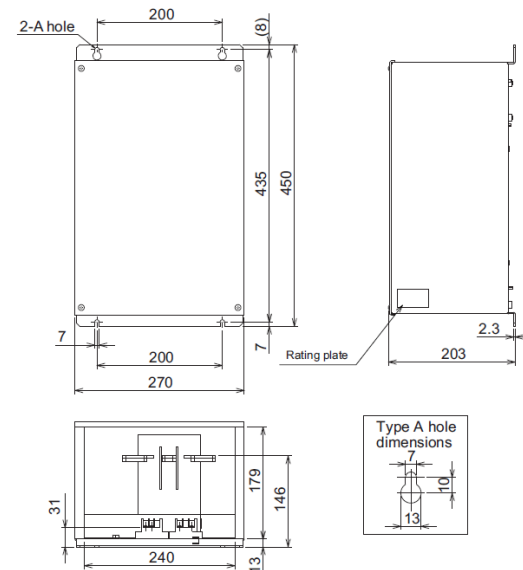


Model	H	H1	W	W1	D
FR-HCB-H7.5K	320	305	190	130	165
FR-HCB-H15K					
FR-HCB-H30K					
FR-HCB-H55K	450	435	270	200	203

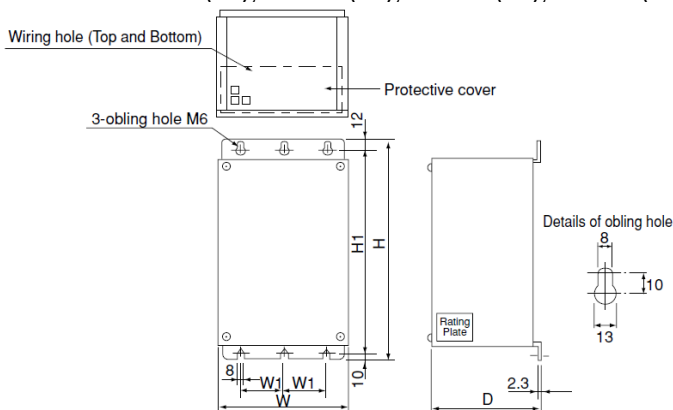
■FR-HCB2-H7.5K, H15K, H30K



■FR-HCB2-H55K



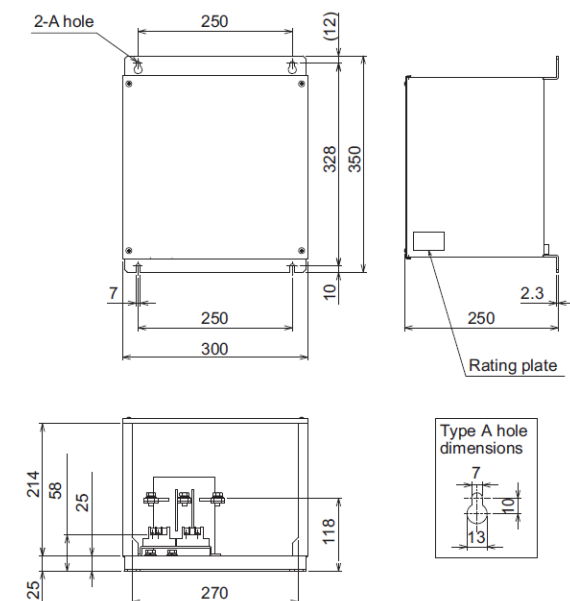
■MT-HCB-H75K(-S), H110K(-S), H150K(-S), H220K(-S)



Model	W	H	D	W1	H1
MT-HCB-H75K	300	350	320	125	328
MT-HCB-H110K	350	450	480	125	428
MT-HCB-H150K	400	450	480	175	428
MT-HCB-H220K	550	500	500	250	478

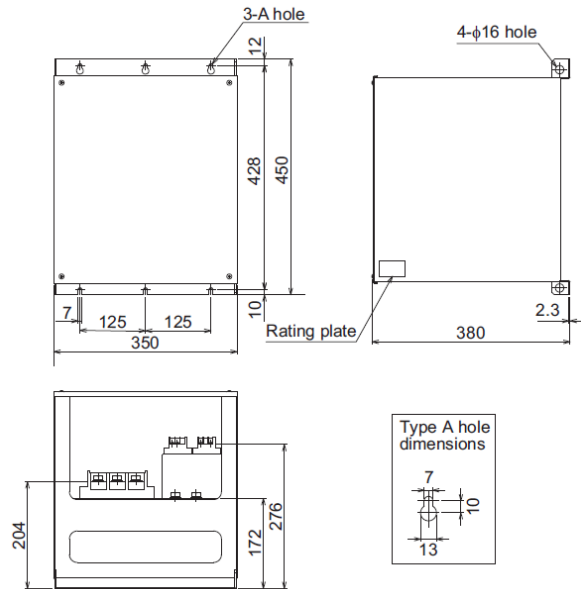
Model	W	H	D	W1	H1
MT-HCB-H75K-S	300	350	320	125	328
MT-HCB-H110K-S	350	450	480	125	428
MT-HCB-H150K-S	400	450	480	175	428
MT-HCB-H220K-S	550	500	500	250	478

■FR-HCB2-H75K

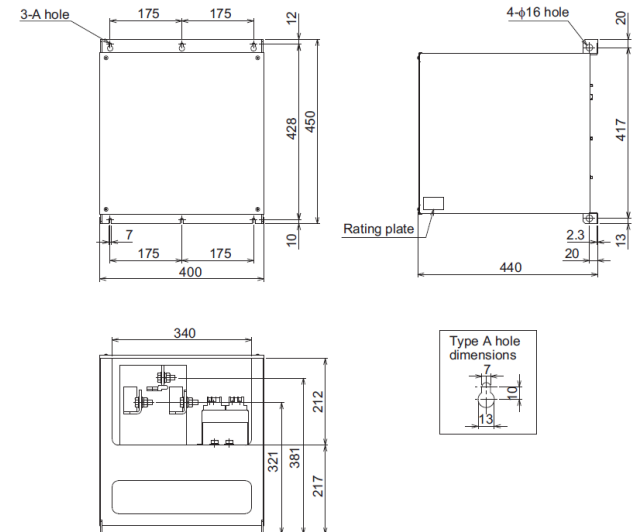


Refer to the outline dimension drawing on the previous page.

■FR-HCB2-H110K



■FR-HCB2-H160K, H220K



2. CONNECTION

The terminal names are basically the same. Connect the terminals according to their names.
For the details of the connection to the FR-HC2 compatible terminals which are not given in the following table (marked with a diagonal line), refer to the remarks.

		Type	FR-HC/MT-HC(-S) terminal name	FR-HC2 compatible terminal name	Remarks			
High power factor converter	Main circuit		R, S, T	R/L1, S/L2, T/L3				
			R4, S4, T4	R4/L14, S4/L24, T4/L34				
			R1, S1	R1/L11, S1/L21	Do not use the terminal R1 and S1 of the FR-HC.			
			P, N	P/+, N/-				
	Control circuit/ input signal	Contact	88R (MC1)	*See output signal side.		For the FR-HC, the terminal names are given in parentheses. For the FR-HC2, use output signal terminal.		
			88S (MC2)					
			RES	RES				
			SOF	SOF				
			/		ROH		The FR-HC and MT-HC(-S) do not have a terminal ROH.	
					X1		X1	
					X2		X2	
					SD		SD	
	/		PC	The FR-HC and MT-HC(-S) do not have a terminal PC.				
			/					
	Control circuit/ output signal	Contact	A, B, C	A, B, C				
			*See input signal side.	88R	For the FR-HC and MT-HC(-S), use input signal terminal.			
		/		88S				
				RDY	RDY			
				CVO	CVO			
				OL	Instead of terminal OL, assign the function of OL signal (overload alarm) in the terminal RSO, CVO, Y1 to Y3, or ABC of the FR-HC2.			
		/		Y1	Y1			
				Y2	Y2	The MT-HC(-S) does not have a terminal Y2.		
				RSO	RSO			
				SE	SE			
				/		Y3	The FR-HC and MT-HC(-S) do not have terminal Y3 and SE2.	
						SE2		
Pulse	FM	FM						
Analog	/		AM	The FR-HC and MT-HC(-S) do not have terminal AM and 5.				
5								
Communication	RS-485	/		PU connector	RS-485 communication is not available on the FR-HC and MT-HC(-S).			
Reactor1	Main circuit		R, S, T	R, S, T				
			R2, S2, T2	R2, S2, T2				
Reactor2	Main circuit		R3, S3, T3	R3, S3, T3				
			R4, S4, T4	R4, S4, T4				
Outside box	Main circuit		R2, S2, T2	R2, S2, T2				
			R3, S3, T3	R3, S3, T3				
			/					
	Control Circuit/ Output signal	Contact	88R (MC1)	88R				
88S (MC2)			88S					
/		R, S	The FR-HC and MT-HC(-S) do not have terminal R and S. (Connection is not required.)					

Main circuit terminal layout

The following shows the main circuit terminal layouts of the FR-HC/MT-HC(-S) series and the FR-HC2 series.

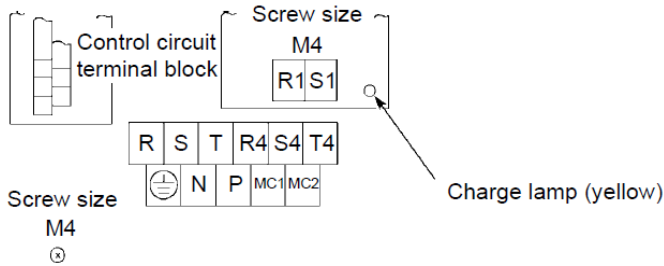
The main circuit terminal layout and the position of the earth (ground) terminal may differ depending on the capacity. Check the terminal names and positions before performing wiring.

When the cable used for the FR-HC/MT-HC(-S) series is too short for the FR-HC2 series, prepare the longer one.

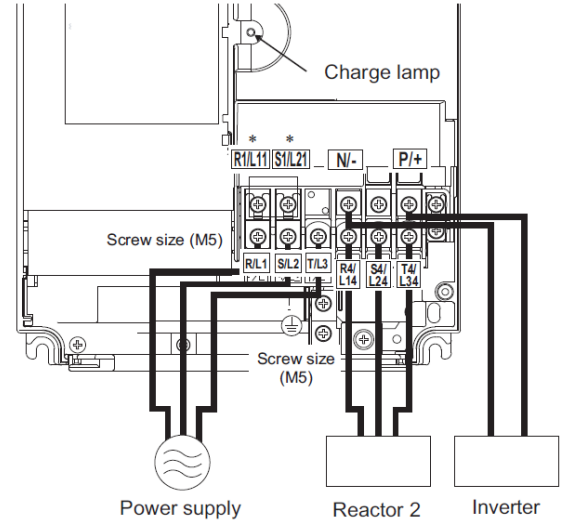
The terminal screw size may differ depending on the capacity. Check the terminal screw size before performing wiring.

[High power factor converter: 200 V class]

■FR-HC-7.5K

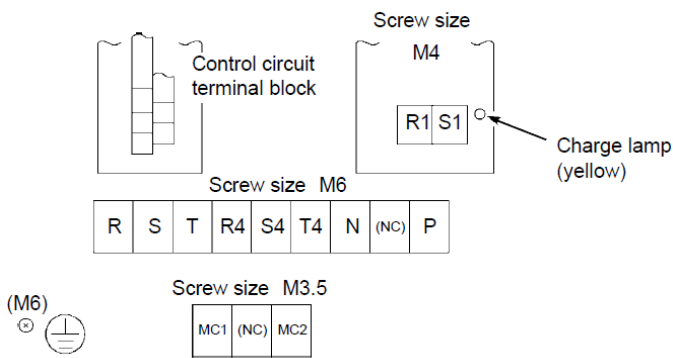


■FR-HC2-7.5K



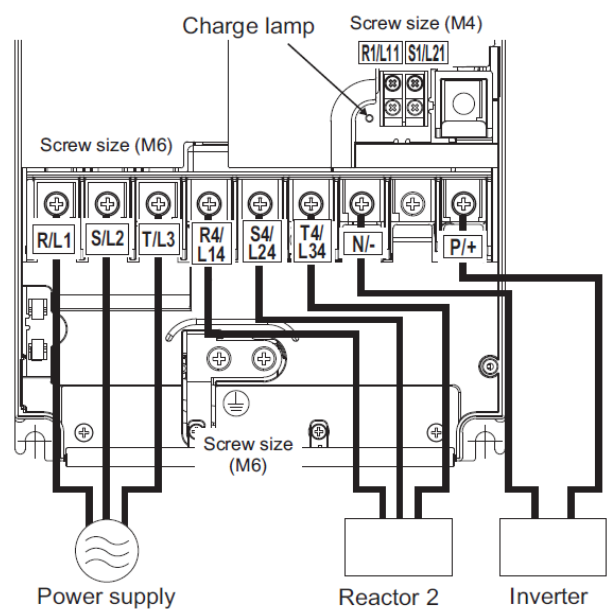
* Screw size for terminals R1/L11 and S1/L21 is M4.

■FR-HC-15K

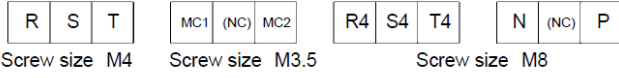
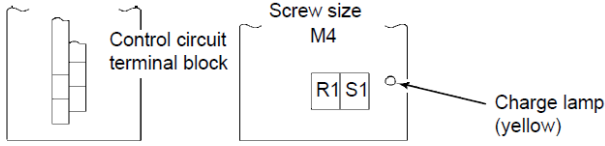


•Terminals MC1, MC2 are located under the terminal symbol cover. Connect terminals MC1, MC2 after removing the terminal symbol cover.

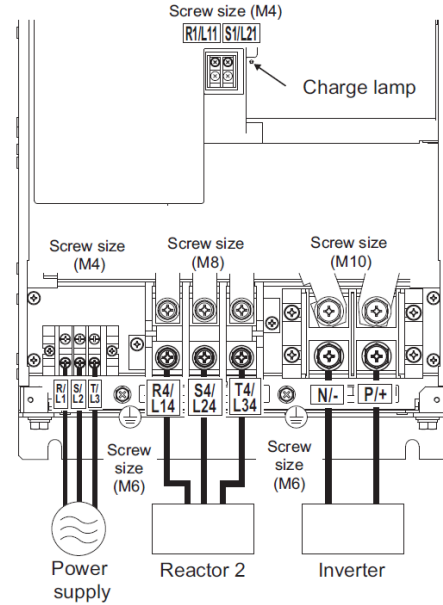
■FR-HC2-15K



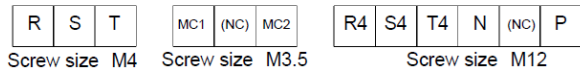
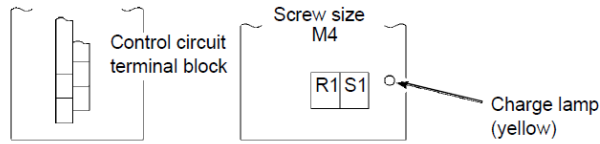
■FR-HC-30K



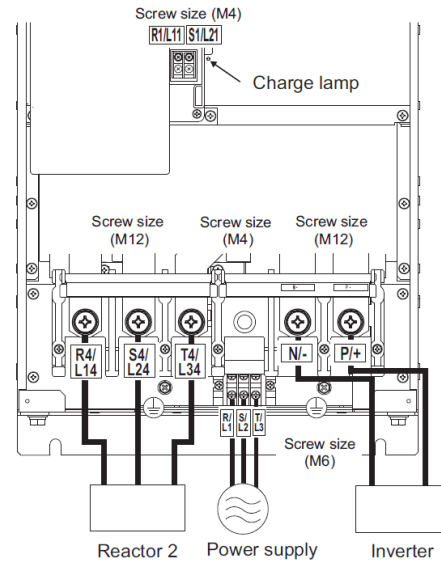
■FR-HC2-30K



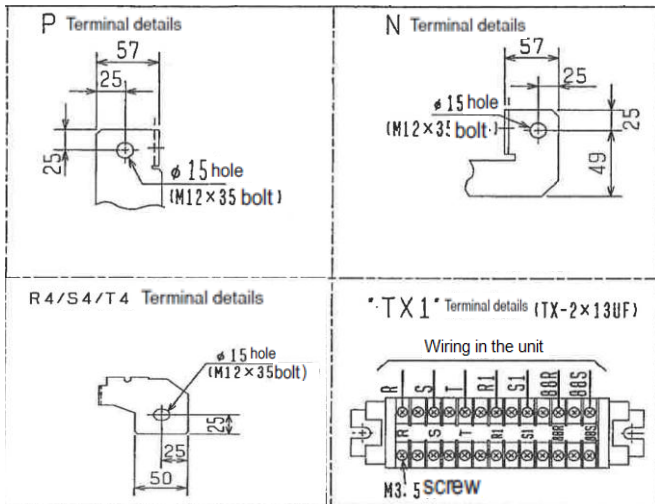
■FR-HC-55K



■FR-HC2-55K

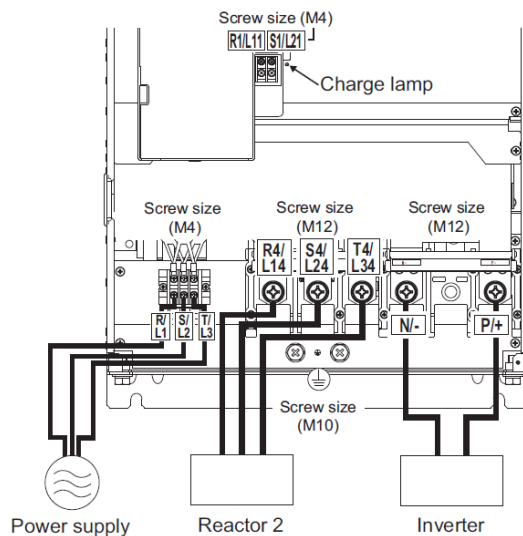


■MT-HC-75K

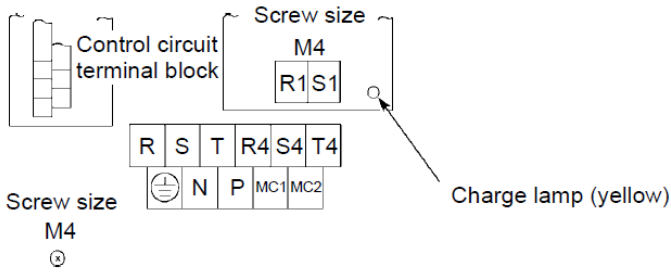


Refer to the outline dimension drawing for terminal layout.

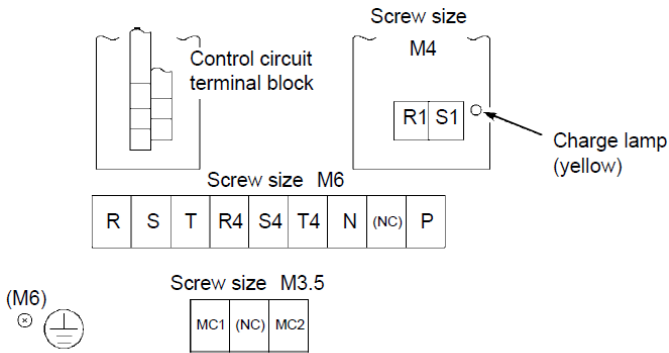
■FR-HC2-75K



■FR-HC-H7.5K

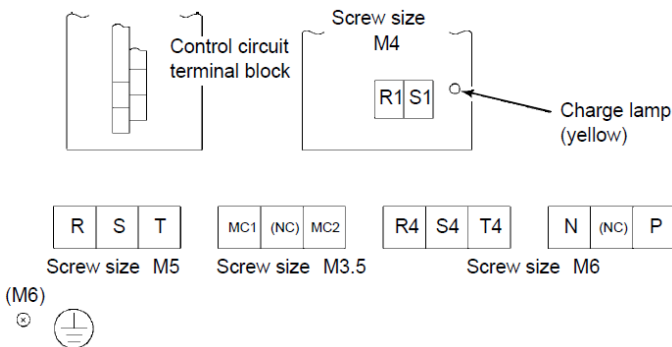


■FR-HC-H15K

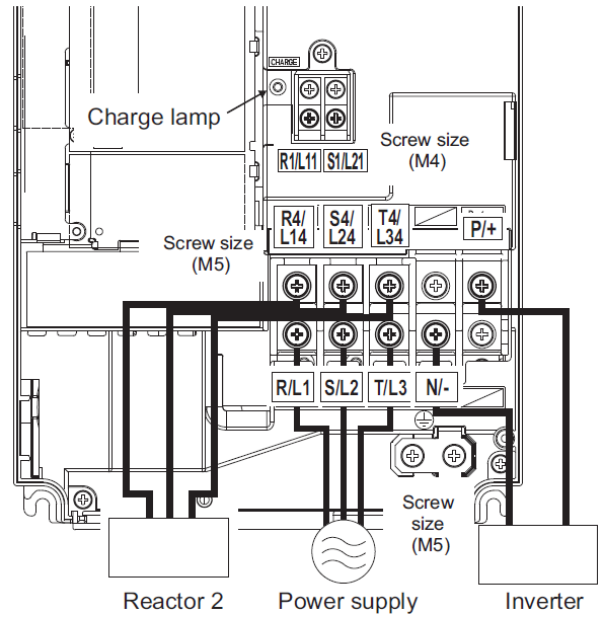


•Terminals MC1, MC2 are located under the terminal symbol cover. Connect terminals MC1, MC2 after removing the terminal symbol cover.

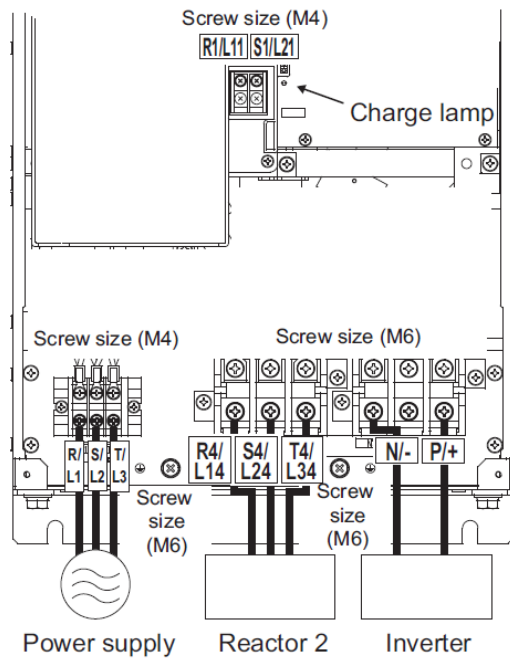
■FR-HC-H30K



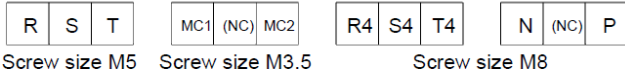
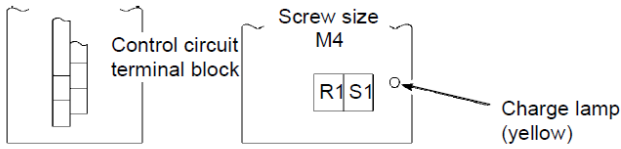
■FR-HC2-H7.5K, H15K



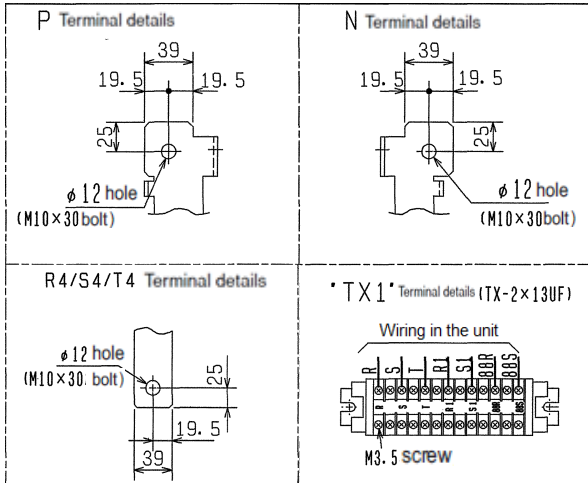
■FR-HC2-H30K



■FR-HC-H55K

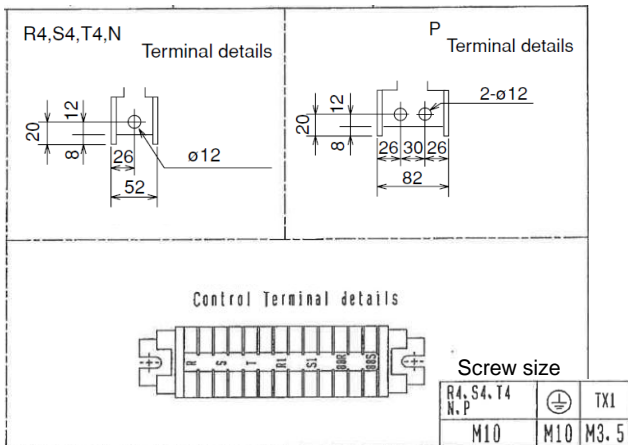


■MT-HC-H75K



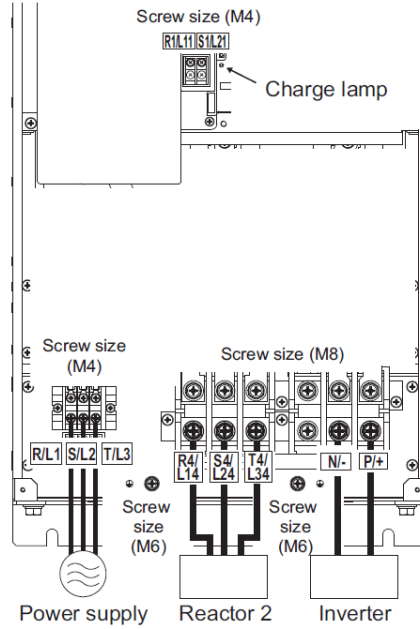
Refer to the outline dimension drawing for terminal layout.

■MT-HC-H75K-S

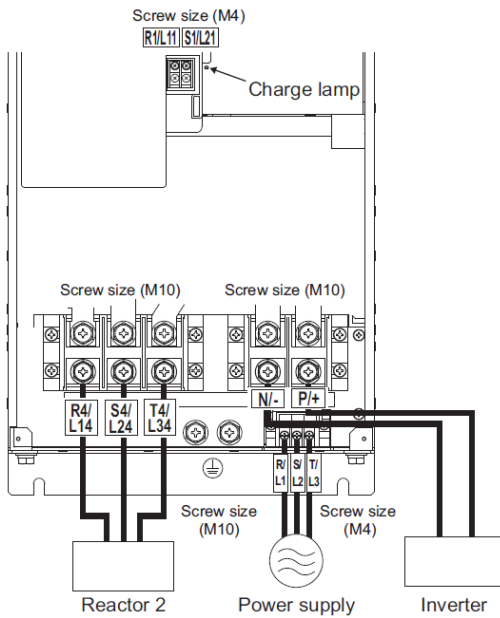


Refer to the outline dimension drawing for terminal layout.

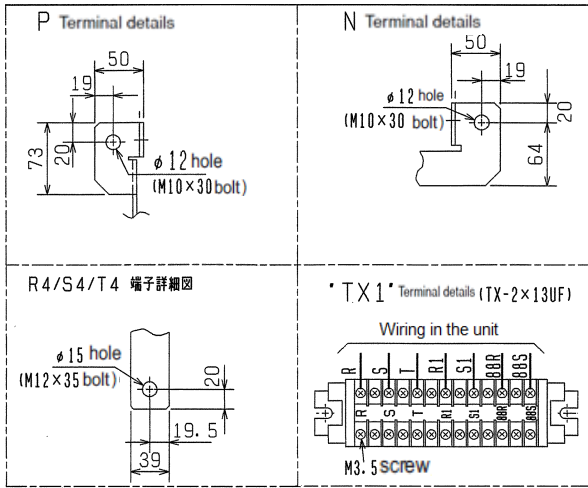
■FR-HC2-H55K



■FR-HC2-H75K

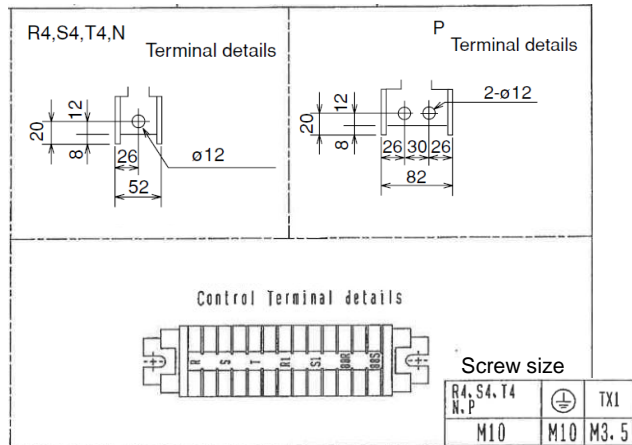


■MT-HC-H110K



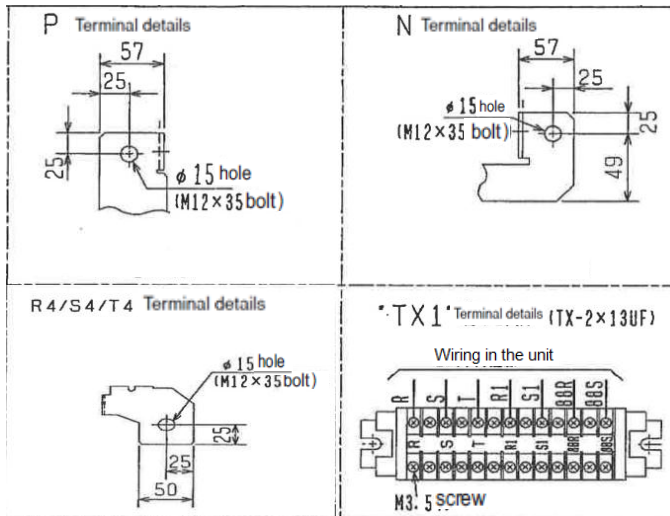
Refer to the outline dimension drawing for terminal layout.

■MT-HC-H110K-S



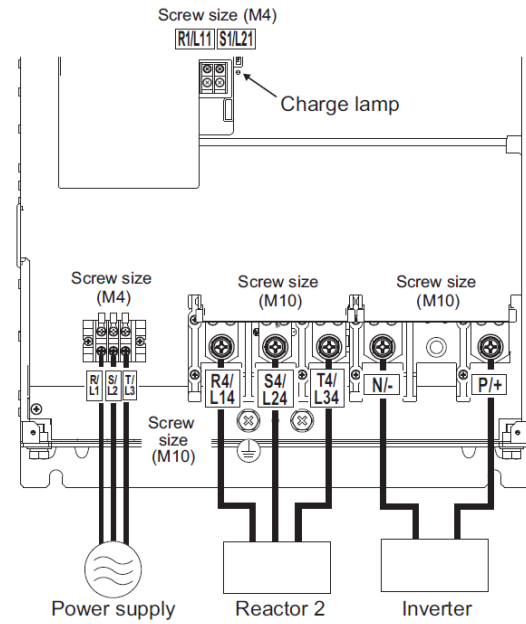
Refer to the outline dimension drawing for terminal layout.

■MT-HC-H150K

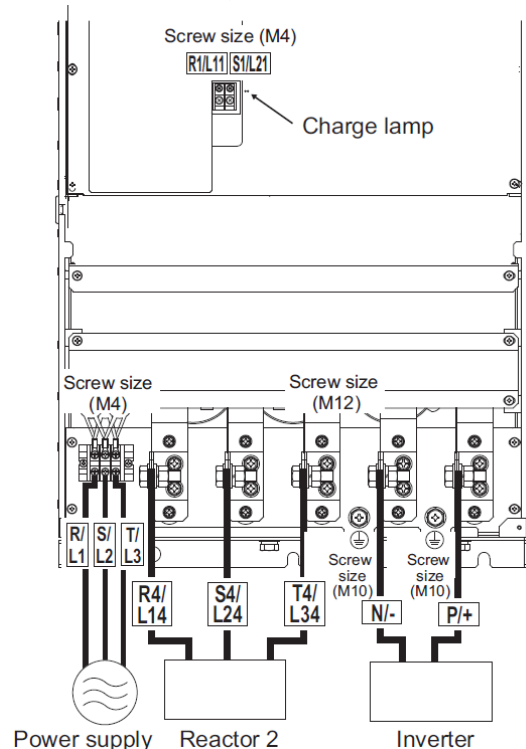


Refer to the outline dimension drawing for terminal layout.

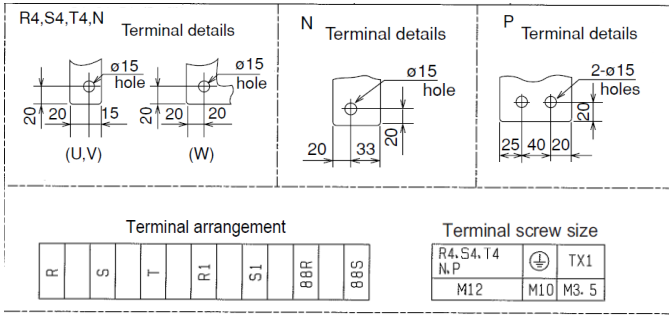
■FR-HC2-H110K



■FR-HC2-H160K, H220K

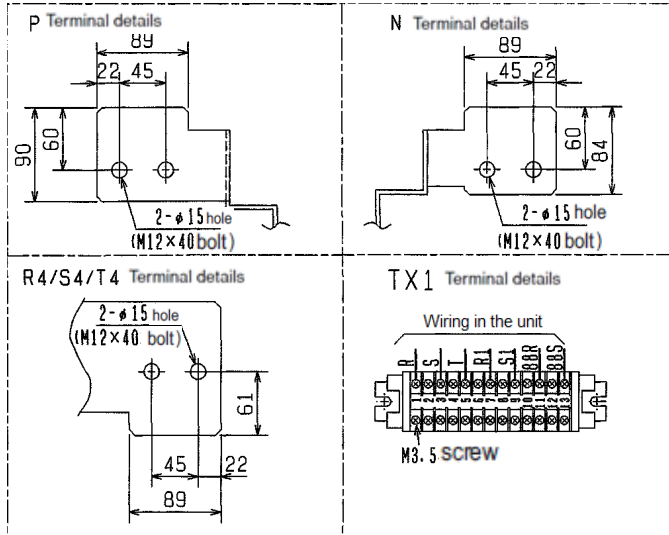


■MT-HC-H150K-S



Refer to the outline dimension drawing for terminal layout.

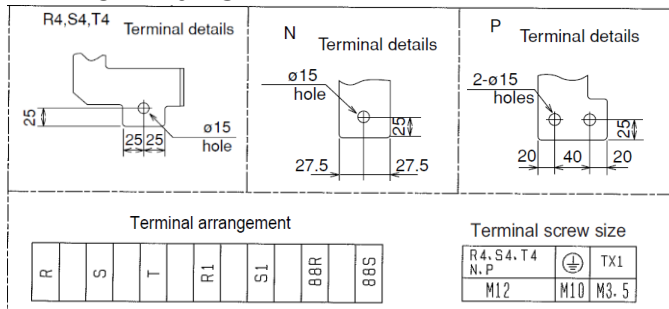
■MT-HC-H220K



Refer to the outline dimension drawing on the previous page.

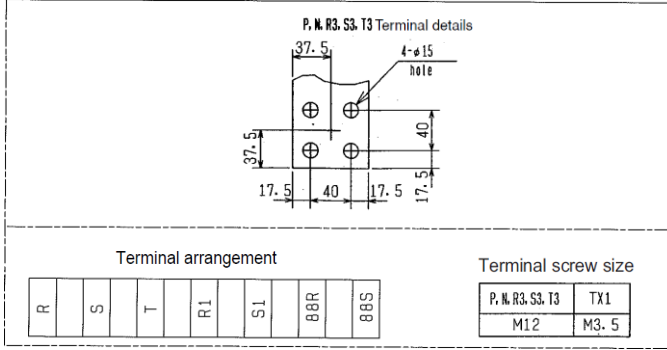
Refer to the outline dimension drawing for terminal layout.

■MT-HC-H220K-S



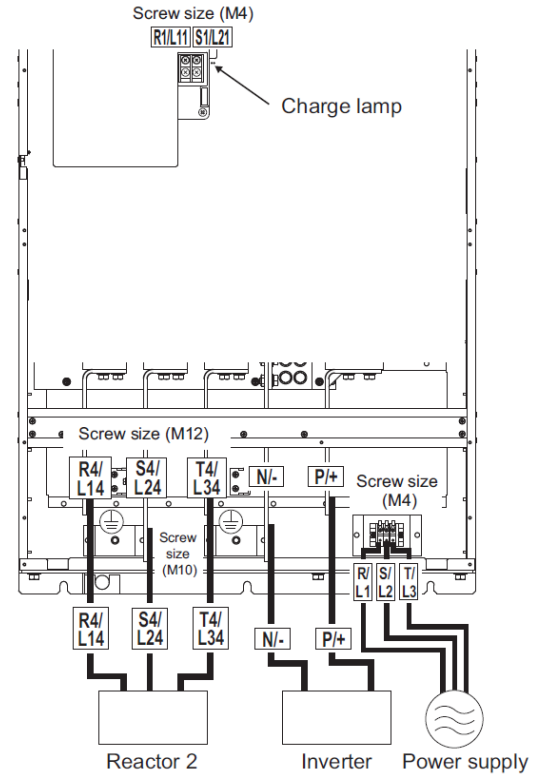
Refer to the outline dimension drawing for terminal layout.

■MT-HC-H375K-S



Refer to the outline dimension drawing for terminal layout.

■FR-HC2-H400K

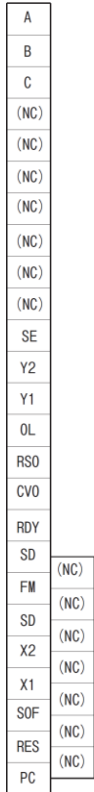


Control circuit terminal layout

The following shows the control circuit terminal layouts of the FR-HC/MT-HC(-S) series and the FR-HC2 series.

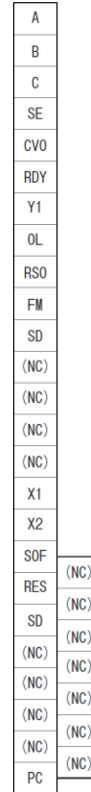
The control circuit terminal layout differs between the FR-HC/MT-HC(-S) series and the FR-HC2 series. Check the terminal names and positions before performing wiring.

■ Control circuit terminal layout of the FR-HC series



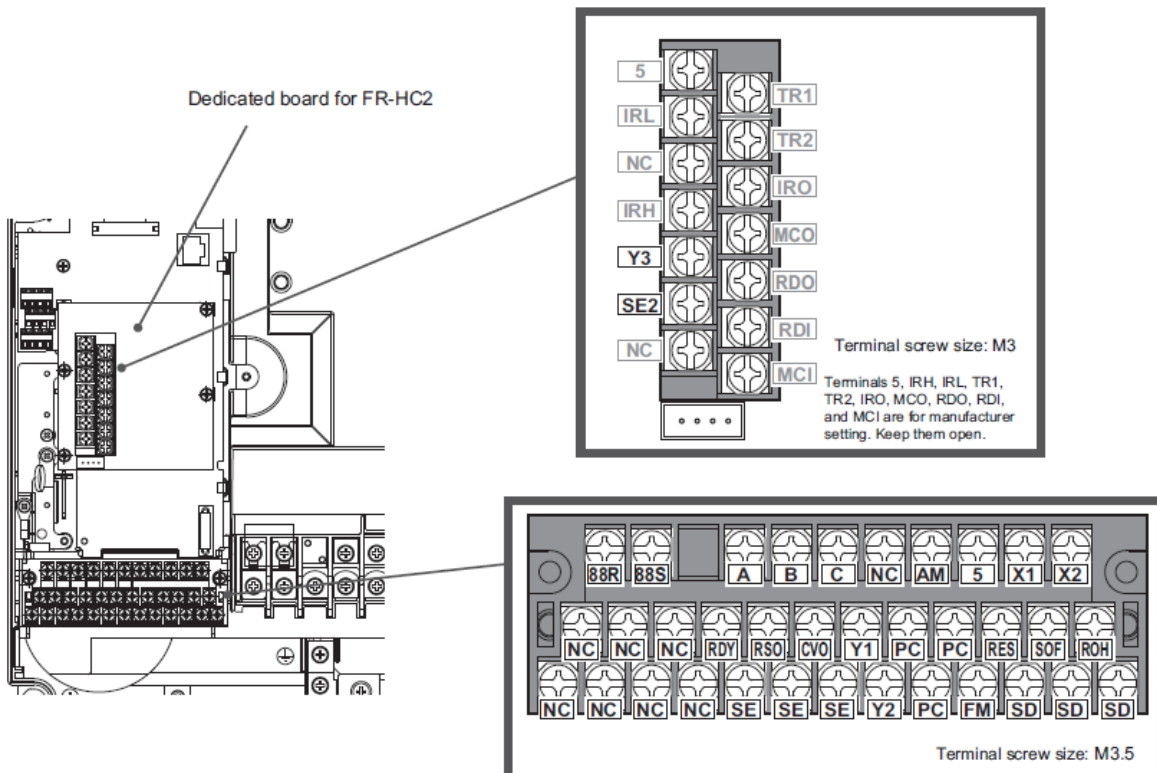
Terminal screw size: M3

■ Control circuit terminal layout of the MT-HC(-S) series



Terminal screw size: M3

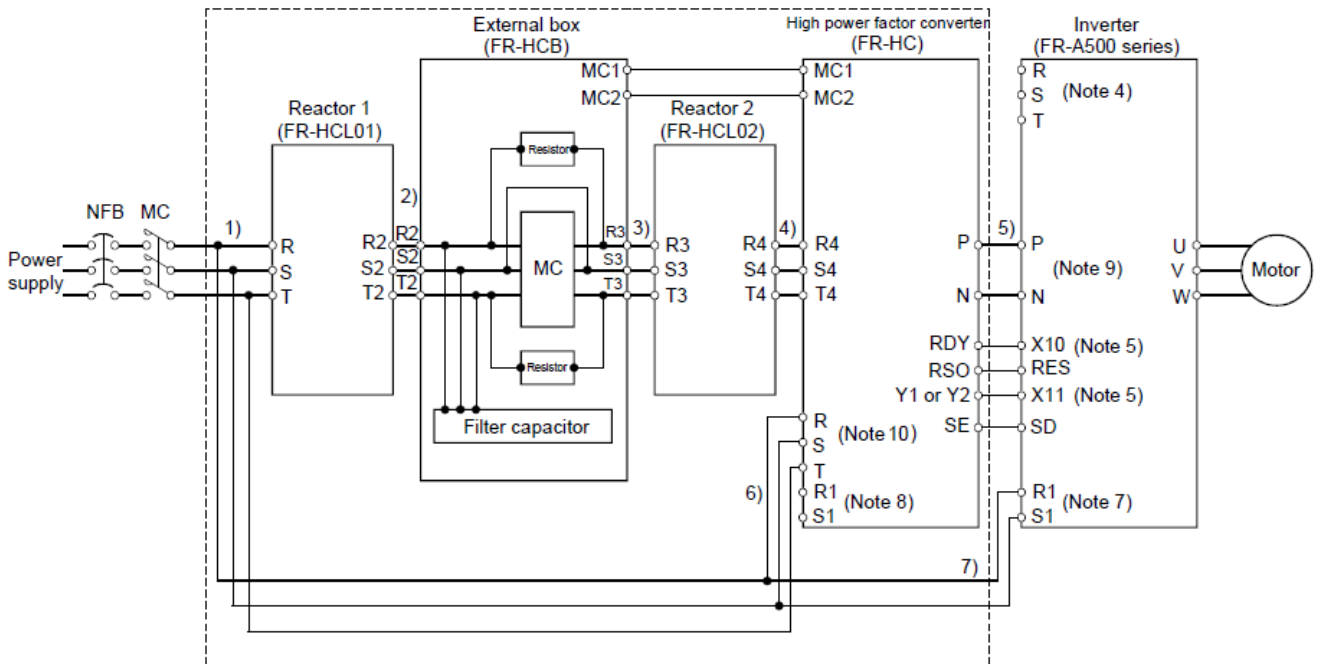
■ Control circuit terminal layout of the FR-HC2 series



Wiring of main circuit

The following shows the connection diagrams of the FR-HC/MT-HC(-S) series and the FR-HC2 series. Since some of the wire connections for the high power factor converter series are different, wire carefully. Additionally, since the connection method also varies depending on the inverter series that is connected, perform the connection by referring to the Instruction Manual of the inverter.

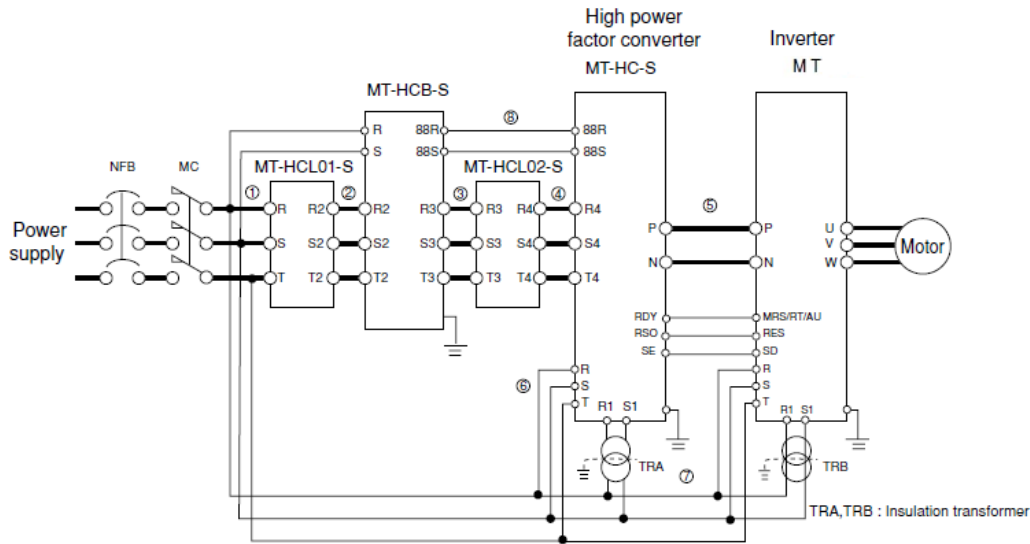
■ Connection diagrams of the FR-HC series



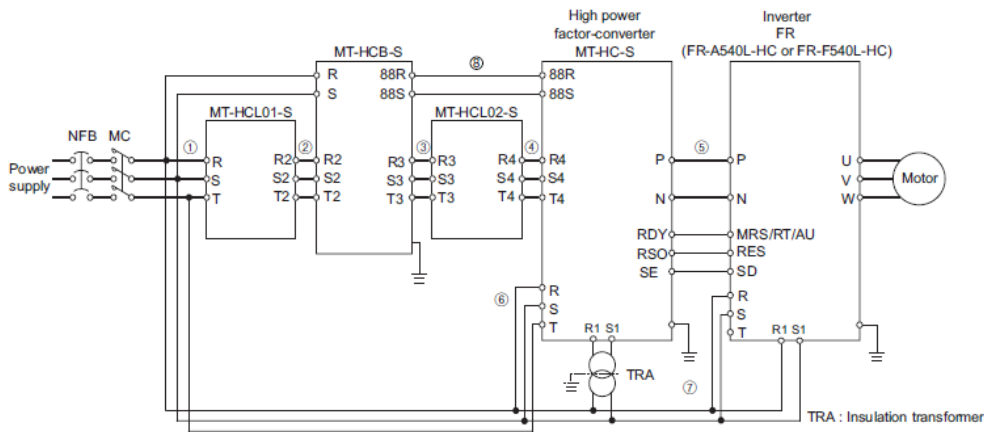
- Note:**
1. Use care to minimize the wiring distance between respective terminals.
 2. Before starting wiring, cover the top ventilation hole to prevent wire offcuts from entering.
 3. Use the ground terminal to ground the equipment securely.
 4. Keep the inverter's power input terminals R, S, T open. The inverter will be damaged if they are connected accidentally. Also, opposite polarity of terminals P, N will damage the high power factor converter and inverter.
 5. Function setting must be made for the terminals used with the X10, X11 signals. (Refer to the inverter instruction manual for details.)
 6. Match the power supply phases before connecting terminals R4, S4, T4 and terminals R, S, T.
 7. A different power supply may be supplied to terminals R1 and S1.
 8. Keep the high power factor converter's terminals R1, S1 unconnected.
 9. Do not insert the NFB between terminals P-N (P-P, N-N)
 10. The R, S, T terminals of the high power factor converter (FR-HC) must be connected to the power supply. Running the inverter without connecting the terminals to the power supply will damage the high power factor converter (FR-HC).
 11. Do not insert an MCCB and MC between the input of terminal R, S, T of the high power factor converter and input of terminal R4, S4, T4 of the high power factor converter in the above connection example. The high power factor converter functions abnormally.

Number	Wiring
(1)	Power supply and reactor 1
(2)	Reactor 1 and outside box
(3)	Outside box and reactor 2
(4)	Reactor 2 and converter
(5)	Converter and inverter
(6)	Reactor 1 and converter
(7)	Power supply and inverter
(8)	Outside box and converter

■ Connection diagrams of the MT-HC(-S) series (except MT-HC-H375K-S)



Combination of MT-HC converter and MT series inverter

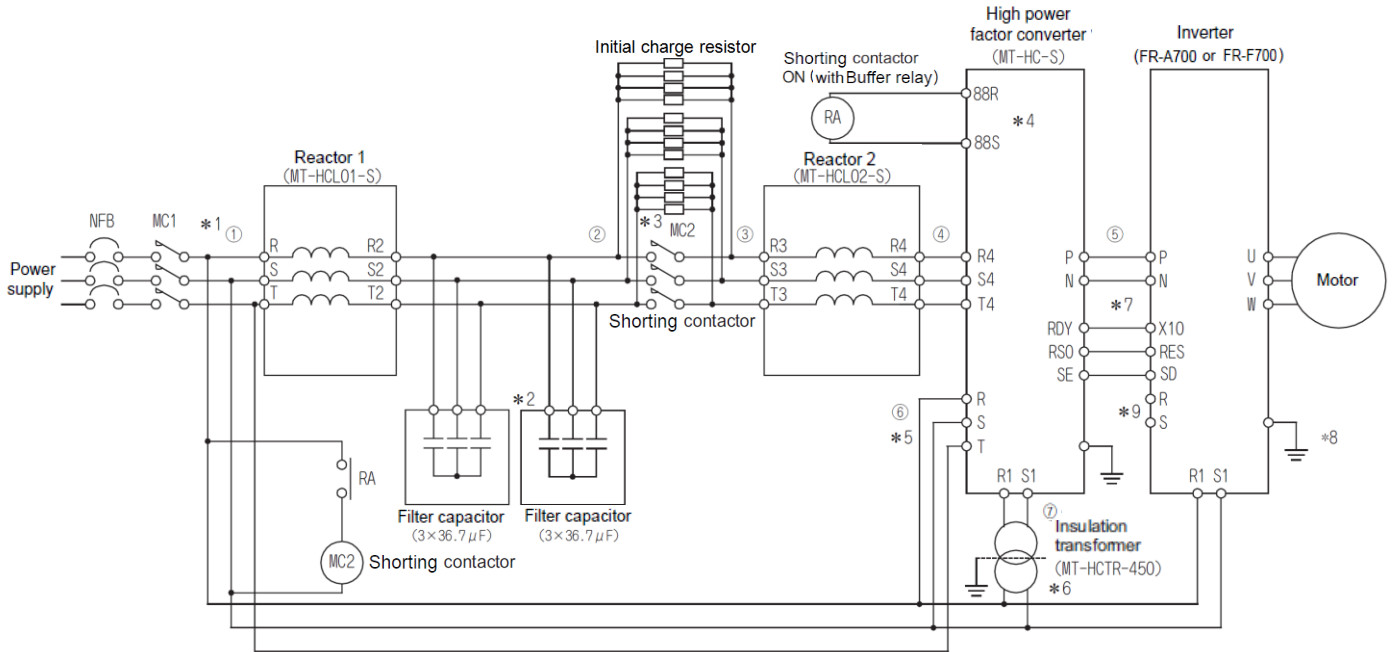


Combination of MT-HC converter and FR series inverter

- Note:
1. Take care to make each terminal-to-terminal wiring as short as possible.
 2. To prevent wire chips from dropping to the inside during wiring work, cover the upper ventilation hole before the work.
 3. Securely wire the device with the ground terminals.
 4. To detect the voltage, the input terminals R, S and T of the inverter are used. Connect them to the same power supply as that for the high power-factor converter input. For this input, it is necessary to modify the input terminal section of the inverter connected to the high power-factor converter. If any existing inverter is used, please consult our company. The inverter delivered under the conditions of the combination is modified. (Combination with the inverter of FR-A540L-HC and FR-F540L-HC)
 5. If any polarity of the terminal P or N is mistaken, the high power-factor converter or inverter may be broken. Properly connect them.
 6. Connect the terminals R4, S4 and T4 to the terminals R, S and T according to the phases of the powersupply.
 7. Connect them to the terminals R1 and S1 through the insulation transformer. (High power-factor converter)
Here, the insulation transformer is supplied as the accessory.
 8. Do not insert an MCCB and MC between the input of terminal R, S, T of the high power factor converter and input of terminal R4, S4, T4 of the high power factor converter in the above connection example. The high power factor converter functions abnormally.

Number	Wiring
(1)	Power supply and reactor 1
(2)	Reactor 1 and outside box
(3)	Outside box and reactor 2
(4)	Reactor 2 and converter
(5)	Converter and inverter
(6)	Reactor 1 and converter
(7)	Power supply and inverter
(8)	Outside box and converter

■ Connection diagrams of the MT-HC-H375K-S



*1 For the following wiring of main circuit, use two cables of 200 mm².

- 1) Power supply and reactor 1
- 2) Reactor 1 and shunting contactor
- 3) Shunting contactor and reactor 2
- 4) Reactor 2 and high power factor converter

*2 For the connection to the filter capacitor, use a cable of 22 mm².

*3 For the connection to the initial charge resistor, use a cable of 14 mm². For the connection of the initial charge resistors in parallel, use the provided cable of 2 mm².

*4 Terminal 88R and 88S of a high power factor converter must be connected to the operation coil of the shunting contactor (cable gauge: 0.75 to 2 mm²). No connection may damage the initial charge resistor. Terminal 88R and 88S are contacts with voltage of 400 to 460 VAC (same as power supply voltage).

*5 For the connection between reactor 1 and the high power factor converter, use a cable of 1.25 mm².

*6 For the connection to the isolation transformer, use a cable of 2 mm² or more.

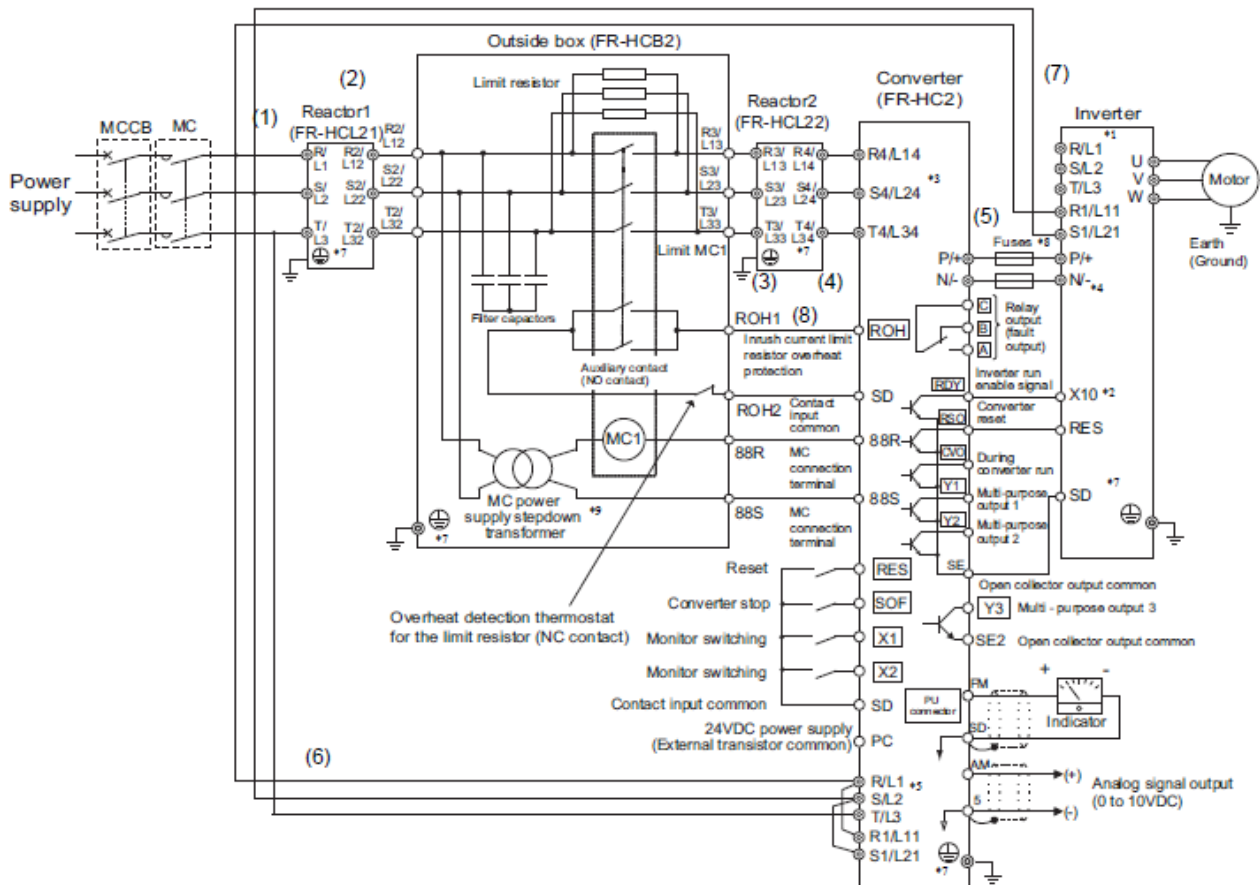
*7 For the connection between the high power factor converter and the inverter, use a cable of 0.75 to 2 mm² for the control signal and cables with the wire gauge of the inverter's power supply side for terminal P and N (refer to the Instruction Manual of the inverter).

*8 Use an earthing (grounding) cable of 100 mm² or more for MT-HC-H375K-S and of 38 mm² or more for the filter capacitor. Use earthing (grounding) cables of 100 mm² or more for reactor 1 and 2.

*9 When connecting to the FR-A540L-HC or the FR-F540L-HC inverter, connect the terminals R or terminals S each other of the inverter and reactor 1.

Number	Wiring
(1)	Power supply and reactor 1
(2)	Reactor 1 and shunting contactor
(3)	Shunting contactor and reactor 2
(4)	Reactor 2 and converter
(5)	Converter and inverter
(6)	Reactor 1 and converter
(7)	Power supply and inverter

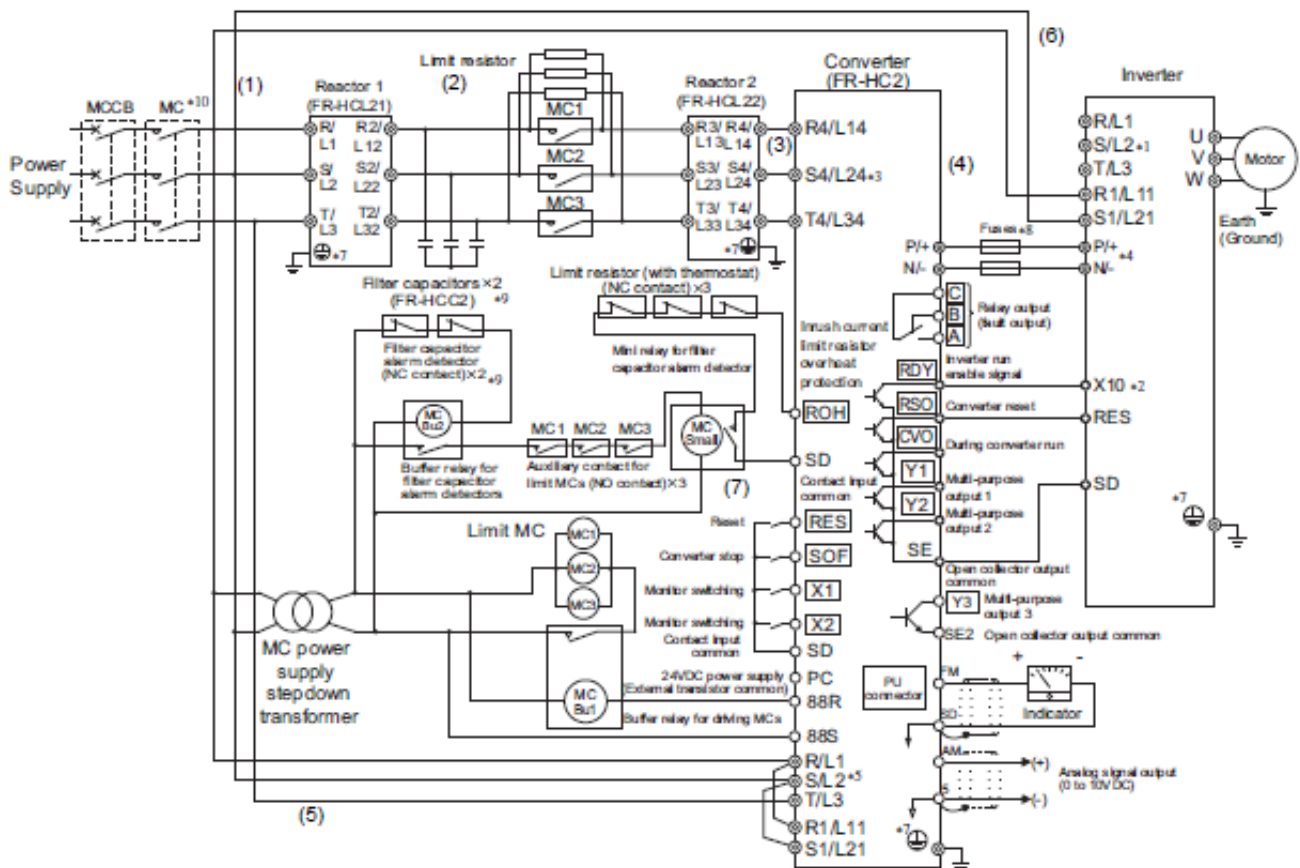
■ Connection diagrams of the FR-HC2 series (except FREQROL-HC2-H400K)



- *1 Do not connect anything to the inverter power input terminals R/L1, S/L2 and T/L3. Incorrect connection will damage the inverter. Connecting opposite polarity of terminals P and N will damage the converter and the inverter.
- *2 Use input terminal function selection to assign the terminal used for X10 signal. (Refer to the Instruction Manual of the inverter.)
- *3 The power phases of the terminals R4/L14, S4/L24, and T4/L34 and the terminals R/L1, S/L2, and T/L3 must be matched.
- *4 Do not insert MCCB between terminals P and N (P and P, N and N).
- *5 Always connect the terminal R/L1, S/L2, T/L3 of the converter to the power supply. If the inverter is operated without connecting the terminals to the power supply, the converter will be damaged.
- *6 Do not insert MCCB or MC between (1) (terminal R/L1, S/L2, and T/L3 input of the Reactor 1) and (4) (terminal R4/L14, S4/L24, and T4/L34 input of the converter) of the above diagram. It will not operate properly.
- *7 Securely perform grounding (earthing) by using the grounding (earthing) terminal.
- *8 Installation of a fuse is recommended. (Refer to page 11)
- *9 The MC power supply stepdown transformer is only equipped in the 400V class models.

Number	Wiring
(1)	Power supply and reactor 1
(2)	Reactor 1 and outside box
(3)	Outside box and reactor 2
(4)	Reactor 2 and converter
(5)	Converter and inverter
(6)	Reactor 1 and converter
(7)	Power supply and inverter
(8)	Outside box and converter

■ Connection diagrams of the FR-HC2-H400K



- *1 Do not connect anything to the inverter power input terminals R/L1, S/L2, and T/L3. Incorrect connection will damage the inverter. Connecting opposite polarity of terminals P and N will damage the converter and the inverter.
- *2 Use input terminal function selection to assign the terminal used for X10 signal. (Refer to the Instruction Manual of the Inverter.)
- *3 The power phases of the terminals R4/L14, S4/L24, and T4/L34 and the terminals R/L1, S/L2, and T/L3 must be matched.
- *4 Do not insert MCCB between terminals P/+ and N/- (P and P, N and N).
- *5 Always connect the terminal R, S, and T of the converter to the power supply. If the inverter is operated without connecting the terminals to the power supply, the converter will be damaged.
- *6 Do not insert MCCB or MC between (1) (terminal R/L1, S/L2, T/L3 input of the converter) and (3) (terminal R4/L14, S4/L24, T4/L34 input of the converter) of the above diagram. It will not operate properly (except for the inrush current limit MC).
- *7 Securely perform grounding (earthing) by using the grounding (earthing) terminal.
- *8 Installation of a fuse is recommended.

Number	Wiring
(1)	Power supply and reactor 1
(2)	Reactor 1 and reactor 2
(3)	Reactor 2 and converter
(4)	Converter and inverter
(5)	Reactor 1 and converter
(6)	Power supply and inverter
(7)	Filter capacitor alarm detector and converter

3. PARAMETER

Some parameter numbers and the setting values differ. Please refer to the remarks in the following table to set the parameters.

The parameter number of the parameters differs from that of the FR-HC/MT-HC(-S) series converter.

Setting ⊙: Set the FR-HC/MT-HC(-S) parameter as it is.

Δ: Change the FR-HC/MT-HC(-S) parameter and set.

×: Adjust or set the FR-HC2 parameter.

FR-HC/MT-HC(-S) parameter list				FR-HC2 compatible parameter				Parameter setting	
Function Number	Name	Setting range	Initial value	Function number	Name	Setting range	Initial value	Setting	Remarks
1	Power supply frequency 1	(Read only)	60.00 Hz/ 70.00 Hz	1	Maximum power supply frequency	(Read only)	60 Hz	⊙	
2	Power supply frequency 2	(Read only)	50.00 Hz/ 45.00 Hz	2	Minimum power supply frequency	(Read only)	50 Hz	⊙	
22	Overload signal detection level	0 to 200%/ 0 to 150%	150%	22	Current limit level	0 to 220%	150%	⊙	
40	Output terminal assignment	0 to 33/ 0 to 3	1	13	Y1 terminal function selection	0 to 16, 98, 99, 100 to 116, 198, 199, 9999	3	Δ	The initial values of terminal assignment are as follows. Terminal OL (FR-HC/MT-HC(-S)) → Terminal Y1 (FR-HC2) Terminal Y1 (FR-HC/MT-HC(-S)) → Terminal Y3 (FR-HC2)
				14	Y2 terminal function selection		4	⊙	
				15	Y3 terminal function selection		5	Δ	
51	Input power monitoring reference	0 to 100 kW / 0 to 400 kW	Rated power	51	Input power monitoring reference	0 to 100 kW / 0 to 3600 kW	Rated power	⊙	
52	PU main display data selection	0 to 3333	123	52	DU/PU main display data selection	0, 5 to 10, 25, 1111 to 4444	1234	⊙	The initial values for both series differ.
53	Input voltage monitoring reference	0 to 500.0 V / 0 to 1000 V	220 V/440 V/ 460 V	53	Input voltage monitoring reference	0 to 500 V	220 V/440 V	×	Setting over 500 V is unavailable. Set within the range.
54	FM terminal function selection	0 to 3333	123	54	FM terminal function selection	1 to 3, 5, 6, 7, 21, 1111 to 4444	1234	⊙	The initial values for both series differ.
55	Bus voltage monitoring reference	0 to 1000.0 V	340 V/680 V	55	Bus voltage monitoring reference	0 to 1000 V	340 V/680 V	⊙	
56	Current monitoring reference	0 to 500.00 A / 0 to 1000 A	Rated current	56	Current monitoring reference	0 to 500 A / 0 to 3600 A	Rated current	⊙	
57	Restart selection	0, 9999	9999	57	Restart selection	0, 9999	9999	⊙	
65	Retry selection	0, 1, 2, 3	0	65	Retry selection	0, 1, 2, 3, 4	0	⊙	
67	Number of retries at alarm occurrence	0 to 10, 101 to 110	0	67	Number of retries at fault occurrence	0 to 10, 101 to 110	0	⊙	
68	Retry waiting time	0.1 to 360.0 s	1.0 s	68	Retry waiting time	0.1 to 360.0	1.0 s	⊙	
69	Retry count display erasure	0	0	69	Retry count display erase	0	0	⊙	
77	Parameter write disable selection	1, 2	2	77	Parameter write selection	1, 2	2	⊙	
145	Parameter unit language switching	0, 1, 2, 3	0	145	PU display language selection	0 to 7	0	⊙	
900	FM terminal calibration	–	–	C0 (900)	FM terminal calibration	–	–	×	Calibrate terminal FM according to the Instruction Manual.

(37/38)

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4. OPTION

The following table shows which FR-HC/MT-HC(-S) series options are compatible with the FR-HC2 series converters and their corresponding FR-HC2 series options.

	Name	Option model	
		FR-HC/MT-HC(-S)	FR-HC2
Stand-alone type	Parameter unit (Japanese)	FR-PU02 ₁ , FR-PU03	FR-PU07, FR-PU07BB, FR-DU07 (attached to the inverter)
	Parameter unit (English)	FR-PU02E ₍₁₎	
	Parameter unit (4 languages)	FR-PU02ER ₍₁₎	
	Parameter copy unit (Japanese)	FR-ARW ₁ , FR-ARW03	
	Parameter copy unit (English)	FR-ARWE ₁ , FR-ARW03E	
	Parameter copy unit (4 languages)	FR-ARWER ₁	
	Parameter unit connection cable	FR-CBL[]	FR-CB201, 203, 205
	Accessory cover	–	–
	heatsink protrusion attachment	FR-ACN[][]	FR-A7CN02, FR-A7CN04, FR-A7CN05, FR-A7CN09
	Totally enclosed structure attachment	FR-ACV[][]	–
	Conduit connection attachment	FR-AFN[][]	–
	Radio noise filter	FR-BIF(-H)	Compatible
	Line noise filter	FR-BLF	Compatible