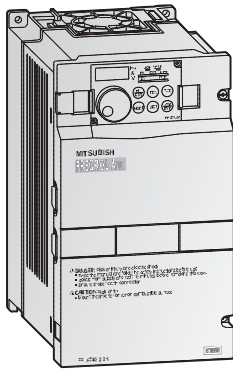


The FR-A700 Series



The FR-A700 series is pure high technology. This new generation of Mitsubishi Electric inverters combine innovative functions and reliable technology with maximum power, economy and flexibility. Among many other features it enables Online Autotuning for outstanding speed constancy, excellent smooth running performance for wear-free operation of a synchronous motors, controlled shut down after emergency stops and a large number of digital inputs and outputs.

The frequency inverter FR-A770 is the first choice for operation under rough environmental conditions like waste water treatment, mining, oil industry or shipping.

It was especially designed for industrial networks with 690 V power supply.

Output range:

FR-A740: 0.4–630 kW, 380–480 V AC
FR-A770: 355–560 kW, 600–690 V AC

Available accessories:

Optional control units, versatile options and useful accessories are available for this frequency inverter.

Please refer to page 38 for details.

Technical Details FR-A740-00023 to -01160

Product line		FR-A740-□-EC/E1															
		00023	00038	00052	00083	00126	00170	00250	00310	00380	00470	00620	00770	00930	01160		
Output	Rated motor capacity [kW] ①	120 % overload capacity (SLD)	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	
		150 % overload capacity (LD)	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	
		200 % overload capacity (ND)	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	
		250 % overload capacity (HD)	0.25	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	
	Rated current [A] ②	120 % overload capacity (SLD)	I rated	2.3	3.8	5.2	8.3	12.6	17	25	31	38	47	62	77	93	116
			I max. 60 s	2.5	4.2	5.7	9.1	13.9	18.7	27.5	34.1	41.8	51.7	68.2	84.7	102.3	127.6
			I max. 3 s	2.8	4.6	6.2	10.0	15.1	20.4	30.0	37.2	45.6	56.4	74.4	92.4	111.6	139.2
		150 % overload capacity (LD)	I rated	2.1	3.5	4.8	7.6	11.5	16	23	29	35	43	57	70	85	106
			I max. 60 s	2.5	4.2	5.8	9.1	13.8	19.2	27.6	34.8	42.0	51.6	68.4	84.0	102.0	127.2
			I max. 3 s	3.2	5.3	7.2	11.4	17.3	24.0	34.5	43.5	52.5	64.5	85.5	105.0	127.5	159.0
		200 % overload capacity (ND)	I rated	1.5	2.5	4	6	9	12	17	23	31	38	44	57	71	86
			I max. 60 s	2.3	3.8	6.0	9.0	13.5	18.0	25.5	34.5	46.5	57.0	66.0	85.5	106.5	129.0
			I max. 3 s	3.0	5.0	8.0	12.0	18.0	24.0	34.0	46.0	62.0	76.0	88.0	114.0	142.0	172.0
		250 % overload capacity (HD)	I rated	0.8	1.5	2.5	4	6	9	12	17	23	31	38	44	57	71
			I max. 60 s	1.6	3.0	5.0	8.0	12.0	18.0	24.0	34.0	46.0	62.0	76.0	88.0	114.0	142.0
			I max. 3 s	2.0	3.8	6.3	10.0	15.0	22.5	30.0	42.5	57.5	77.5	95.0	110.0	142.5	177.5
	Rated output capacity [kVA] ③	SLD	1.8	2.9	4.0	6.3	9.6	13.0	19.1	23.6	29.0	35.8	47.3	58.7	70.9	88.4	
		LD	1.6	2.7	3.7	5.8	8.8	12.2	17.5	22.1	26.7	32.8	43.4	53.3	64.8	80.8	
		ND	1.1	1.9	3.0	4.6	6.9	9.1	13.0	17.5	23.6	29.0	33.5	43.4	54.1	65.5	
		HD	0.6	1.1	1.9	3.0	4.6	6.9	9.1	13.0	17.5	23.6	29.0	33.5	43.4	54.1	
Overload capacity ④	SLD	110 % of rated motor capacity for 60 s; 120 % for 3 s (max. ambient temperature 40 °C) – inverse time characteristics															
	LD	120 % of rated motor capacity for 60 s; 150 % for 3 s (max. ambient temperature 50 °C) – inverse time characteristics															
	ND	150 % of rated motor capacity for 60 s; 200 % for 3 s (max. ambient temperature 50 °C) – inverse time characteristics															
	HD	200 % of rated motor capacity for 60 s; 250 % for 3 s (max. ambient temperature 50 °C) – inverse time characteristics															
Voltage ⑤		3-phase AC, 0 V to power supply voltage															
Frequency range		0.5–400 Hz															
Modulation control		Sine evaluated PWM, Soft PWM															
Regenerative braking torque		100 % torque/2 % ED								20 % torque/continuous ⑥				20 % torque/continuous			

Remarks:

Explanation for ① to ⑤ see next page.

Product line		FR-A740-EC/E1														
		00023	00038	00052	00083	00126	00170	00250	00310	00380	00470	00620	00770	00930	01160	
Input	Power supply voltage	3-phase, 380–480 V AC, -15%/+10%														
	Voltage range	323–528 V AC at 50/60 Hz														
	Power supply frequency	50/60 Hz ±5%														
	Rated input capacity [kVA] ⑤	SLD	2.5	4.5	5.5	9	12	17	20	28	34	41	52	66	80	100
		LD	2.1	4	4.8	8	11.5	16	20	27	32	37	47	60	73	91
ND		1.5	2.5	4.5	5.5	9	12	17	20	28	34	41	52	66	80	
HD		0.8	1.5	2.5	4.5	5.5	9	12	17	20	28	34	41	52	66	
Others	Cooling	Self cooling						Fan cooling								
	Protective structure ⑥	IP20 ⑥											IP00			
	Power loss [kW]	SLD	0.06	0.082	0.98	0.15	0.21	0.28	0.39	0.4	0.55	0.69	0.97	1.18	1.36	1.78
		LD	0.05	0.08	0.09	0.14	0.18	0.22	0.31	0.35	0.44	0.52	0.71	0.93	1.03	1.32
		ND	0.05	0.065	0.075	0.1	0.15	0.2	0.25	0.29	0.4	0.54	0.65	0.81	1.02	1.3
		HD	0.043	0.05	0.06	0.075	0.1	0.146	0.18	0.21	0.29	0.4	0.54	0.65	0.74	1.02
	Weight [kg]	3.8	3.8	3.8	3.8	3.8	7.1	7.1	7.5	7.5	13	13	23	35	35	
Dimensions (WxHxD) [mm]	150x260x140					220x260x170			220x300x190			250x400x190		325x550x195	435x550x250	
Order information Art. no.	Frequency inverters	169826	169797	169798	169799	169800	169801	169802	169803	169804	169805	169806				
	Double painted PCB (-E1)	206810	206811	206812	206813	206844	206845	206846	206847	206848	206849	206850	206851	206852	206853	
	Input power frame												169827	169828	169829	
	Control card FR-CA70-EC												169877	169877	169877	

Remarks:

- ① The applied motor capacity indicated is the maximum capacity applicable for use of the Mitsubishi Electric 4-pole standard motor. The 200 % overload capacity (ND) is the factory default setting.
- ② The rated output capacity indicated assumes that the output voltage is 440 V.
- ③ When operating the inverter of 75 K (type 02160) or more with a value larger than 2 kHz set in Pr. 72 (PWM frequency selection), the rated output current is max. 85 %.
- ④ The % value of the overload capacity indicates the ratio of the overload current to the inverter's rated output current. For repeated duty, allow time for the inverter and motor to return to or below the temperatures under 100 % load. The waiting periods can be calculated using the r.m.s. current method (I²xt), which requires knowledge of the duty.
- ⑤ The maximum output voltage does not exceed the power supply voltage. The maximum output voltage can be changed within the setting range. However, the pulse voltage value of the inverter output side voltage remains unchanged at about $\sqrt{2}$ that of the power supply.
- ⑥ For the 11 K to 22 K capacities (type 00023 to 00250 and 00310 to 00620), using the dedicated external brake resistor (FR-ABR-H) will achieve the performance of 100 % torque/6 % ED.
- ⑦ The rated input capacity varies depending on the impedance values on the power supply side of the inverter (including the cables and input reactor).
- ⑧ When the cable bushing for the optional expansion cards is broken out the unit has an IP00 protection rating.
- ⑨ FR-DU07: IP40 (except for the PU connector)
For overseas types refer to page 78.

Technical Details FR-A740-01800 to -12120

Product line		FR-A740-□-EC																
		01800	02160	02600	03250	03610	04320	04810	05470	06100	06830	07700	08660	09620	10940	12120		
Output	Rated motor capacity [kW] ①	120 % overload capacity (SLD)	90	110	132	160	185	220	250	280	315	355	400	450	500	550	630	
		150 % overload capacity (LD)	75	90	110	132	160	185	220	250	280	315	355	400	450	500	560	
		200 % overload capacity (ND)	55	75	90	110	132	160	185	220	250	280	315	355	400	450	500	
		250 % overload capacity (HD)	45	55	75	90	110	132	160	185	220	250	280	315	355	400	450	
	Rated current [A] ②	120 % overload capacity (SLD)	I rated	180	216	260	325	361	432	481	547	610	683	770	866	962	1094	1212
			I max. 60 s	198	238	286	358	397	475	529	602	671	751	847	953	1058	1203	1333
			I max. 3 s	216	259	312	390	433	518	577	656	732	820	924	1039	1154	1313	1454
		150 % overload capacity (LD)	I rated	144	180	216	260	325	361	432	481	547	610	683	770	866	962	1094
			I max. 60 s	173	216	259	312	390	433	518	577	656	732	820	924	1039	1154	1313
			I max. 3 s	216	270	324	390	488	542	648	722	821	915	1025	1155	1299	1443	1641
		200 % overload capacity (ND)	I rated	110	144	180	216	260	325	361	432	481	547	610	683	770	866	962
			I max. 60 s	165	216	270	324	390	488	542	648	722	821	915	1025	1155	1299	1443
			I max. 3 s	220	288	360	432	520	650	722	864	962	1094	1220	1366	1540	1732	1924
		250 % overload capacity (HD)	I rated	86	110	144	180	216	260	325	361	432	481	547	610	683	770	866
			I max. 60 s	172	220	288	360	432	520	650	722	864	962	1094	1220	1366	1540	1732
			I max. 3 s	215	275	360	450	540	650	813	903	1080	1203	1368	1525	1708	1925	2165
	Rated output capacity [kVA] ③	SLD	137	165	198	248	275	329	367	417	465	521	587	660	733	834	924	
		LD	110	137	165	198	248	275	329	367	417	465	521	587	660	733	834	
		ND	100	110	137	165	198	248	275	329	367	417	465	521	587	660	733	
		HD	80	84	110	137	165	198	248	275	329	367	417	465	521	587	660	
	Overload capacity ④	SLD	110 % of rated motor capacity for 60 s; 120 % for 3 s (max. ambient temperature 40 °C) – inverse time characteristics															
		LD	120 % of rated motor capacity for 60 s; 150 % for 3 s (max. ambient temperature 50 °C) – inverse time characteristics															
		ND	150 % of rated motor capacity for 60 s; 200 % for 3 s (max. ambient temperature 50 °C) – inverse time characteristics															
		HD	200 % of rated motor capacity for 60 s; 250 % for 3 s (max. ambient temperature 50 °C) – inverse time characteristics															
	Voltage ⑤		3-phase AC, 0 V to power supply voltage															
	Frequency range		0.2–400 Hz															
	Control method		V/F control, advanced magnetic flux vector control and real sensorless vector control)/vector control (when used with option FR-A7AP)															
Modulation control		Sine evaluated PWM, Soft PWM																
Regenerative braking torque (max. value/permissible duty)		20 % torque/cont.	10 % torque/continuous															

Remarks:

Explanation for ① to ⑤ see next page.

Product line		FR-A740-□-EC																
		01800	02160	02600	03250	03610	04320	04810	05470	06100	06830	07700	08660	09620	10940	12120		
Input	Power supply voltage	3-phase, 380–480 V AC, -15 %/+10 %																
	Voltage range	323–528 V AC at 50/60 Hz																
	Power supply frequency	50/60 Hz +5 %																
	Rated input capacity [kVA] ⑥	SLD	137	165	198	247	275	329	366	416	464	520	586	660	733	833	924	
		LD	110	137	165	198	247	275	329	366	416	464	520	586	659	733	833	
ND		100	110	137	165	198	248	275	329	367	417	465	521	587	660	733		
HD		80	84	110	137	165	198	248	275	329	367	417	465	521	587	660		
Others	Cooling	Fan cooling																
	Protective structure ⑦	IP00																
	Power loss [kW]	SLD	2.65	2.9	3.57	3.8	4.2	5.02	5.5	6.4	7.2	8.19	8.6	10.37	11.5	13.2	14.94	
		LD	2.0	2.4	2.9	3.0	3.8	4.2	5.1	5.5	6.4	7.2	8.0	8.6	10.2	11.5	13.20	
		ND	1.54	1.9	2.4	2.5	3.0	4.0	4.2	5.0	5.5	6.5	7.0	7.3	8.1	9.3	10.5	
		HD	1.14	1.44	1.9	1.97	2.5	2.57	4.0	4.2	5.0	5.5	6.5	7.0	6.91	8.1	9.3	
	Frequency inverter weight [kg]	37 50 57 72 72 110 110 175 175 175 260 260 370 370 370																
	Reactor weight [kg]	20 22 26 28 29 30 35 38 42 46 50 57 67 85 95																
Dimensions (WxHxD) [mm]	435x550x250		465x620x300			465x740x360			498x1010x380			680x1010x380			790x1330x440		995x1580x440	
Order information	Frequency inverters																	
	Input power frame	169830	169831	169832	169833	169834	169835	169836	169837	169838	169839	169840	169841	169842	169843	169844		
	Control card FR-CA70-ECT	169877	190051	190051	190051	190051	190051	190051	190051	190051	190051	190051	190051	190051	190051	190051		

Remarks:

- ① The applied motor capacity indicated is the maximum capacity applicable for use of the Mitsubishi Electric 4-pole standard motor. The 200 % overload capacity (ND) is the factory default setting.
- ② The rated output capacity indicated assumes that the output voltage is 440 V AC.
- ③ When operating the inverter of 75 K (type 02160) or more with a value larger than 2 kHz set in Pr. 72 (PWM frequency selection), the rated output current is max. 85 %.
- ④ The % value of the overload capacity indicates the ratio of the overload current to the inverter's rated output current. For repeated duty, allow time for the inverter and motor to return to or below the temperatures under 100 % load. The waiting periods can be calculated using the r.m.s. current method (I^2t), which requires knowledge of the duty.
- ⑤ The maximum output voltage does not exceed the power supply voltage. The maximum output voltage can be changed within the setting range. However, the pulse voltage value of the inverter output side voltage remains unchanged at about $\sqrt{2}$ that of the power supply.
- ⑥ The rated input capacity varies depending on the impedance values on the power supply side of the inverter (including the cables and input reactor).
- ⑦ FR-DU07: IP40 (except for the PU connector)
- * For overseas types refer to page 78.

Technical Details FR-A770-355K/560K-79

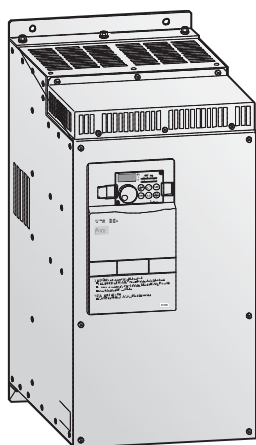
Product line		FR-A770-□K-79			
		355/400K	560/630K		
Output	Rated motor capacity [kW] ^①	150 % overload capacity (LD)	355/400	560/630	
	Rated current [A]	150 % overload capacity (LD)	I rated	401 (344) ^②	611 (545) ^②
			I max. 60 s	481 (413)	733 (654)
			I max. 3 s	602 (516)	917 (818)
	Rated output capacity [kVA]		479 (411)	730 (651)	
	Overload capacity		150 % of rated motor capacity for 60 s		
	Frequency range		0.2–400 Hz		
Modulation control		PPM control with 2 kHz carrier frequency			
Input	Power supply voltage		3-phase, 600–690 V AC, ±10 %		
	Voltage range		540–759 V AC at 50/60 Hz		
	Power supply frequency		50/60 Hz ±5 %		
	Rated input capacity [kVA]		463	730	
Others	Power supply voltage for control circuit ^③		380–480 V AC at 50/60 Hz		
	Cooling		Fan cooling		
	Protective structure		IP00		
	Power loss [kW]		8	12.5	
	Frequency inverter weight [kg]		460	485	
	Reactor weight [kg]		80	105	
Dimensions (WxHxD) [mm]		995x1580x440			
Order information		Art. no.	268859	268860	

Remarks:

- ① Motor capacity derating is required when input voltage is below 660 V.
- ② When operating the vector control using a motor with encoder and a plug-in option FR-A7AP/FR-A7AL, the related output current is the value in parentheses and maximum surrounding air temperature reduces to 40 °C.
- ③ The voltage for separate power supply of the control circuit is 380 to 480 V AC, 50/60 Hz. It is not allowed, to use the 690 V power supply voltage. In factory setting, the control circuit is supplied with the correct voltage by an internal transformer via the jumpers across R1/L11 and S1/L21.

The following functions are not available: Power failure-time deceleration-to-stop function, DC feeding, Regenerative function, Soft-PWM operation selection.

FR-A741 High End Inverters with integrated power regeneration function



The FR-A741 is the latest addition to the high-performance FR-A700 series. It sets new standards with an integrated power regeneration function that also improves braking performance.

Featuring a large number of innovative technologies, this compact frequency inverter delivers exceptional performance and is ideal for hoist drives and high-powered machines with torque that can be used for regenerative braking.

When compared to a frequency inverter with standard braking technology the required space can be reduced by up to 40 %, depending on the power range. An AC reactor is integrated into the the FR-A741 and due to the 100 % regeneration

capability of the FR-A741 no braking resistor or external brake transistor is required.

The output frequency ranges from 0.2 to 400 Hz.

Output range:

5.5–55 kW, 380–480 V AC

Available accessories:

Optional control units, versatile options and useful accessories are available for this frequency inverter.

Please refer to page 38 for details.

Technical Details FR-A741-5.5K–55K

Product line			FR-A741-□										
			5.5K	7.5K	11K	15K	18.5K	22K	30K	37K	45K	55K	
Output	Rated motor capacity [kW] ①	200 % overload capacity (ND)	5.5	7.5	11	15	18.5	22	30	37	45	55	
	Rated current [A] ②	200 % overload capacity (ND)	I rated	12	17	23	31	38	44	57	71	86	110
			I max. 60 s	18	26	35	47	57	66	86	107	129	165
			I max. 3 s	24	34	46	62	76	88	114	142	172	220
	Rated output capacity [kVA] ②		9.1	13	17.5	23.6	29	32.8	43.4	54	65	84	
	Overload capacity ③		150 % of rated motor capacity for 60 s; 200 % for 3 s (max. ambient temperature 50 °C)										
	Voltage ④		3-phase AC, 0 V to power supply voltage										
	Frequency range [Hz]		0.2–400										
Modulation control		Sine evaluated PWM, Soft PWM											
Regenerative braking torque		100 % continuous/150 % for 60 s											
Input	Power supply voltage		3-phase, 380–480 V AC, -15 %/+10 %										
	Voltage range		323–528 V AC at 50/60 Hz										
	Power supply frequency		50/60 Hz ±5 %										
	Rated input capacity [kVA] ⑤		12	17	20	28	34	41	52	66	80	100	
Others	Cooling		Fan cooling										
	Protective structure		IP00										
	Power loss [kW]		0.33	0.44	0.66	0.86	1.1	1.29	1.45	1.95	2.36	2.7	
	Frequency inverter weight [kg]		25	26	37	40	48	49	65	80	83	115	
	Dimensions (WxHxD) [mm]		250x470x270		300x600x294		360x600x320		450x700x340	470x700x368		600x900x405	
Order information			Art. no.	216905	216906	216907	216908	216909	217397	216910	216911	216912	216913

Remarks:

- ① The rated motor capacity indicated is the maximum capacity applicable for use of the Mitsubishi Electric 4-pole standard motor.
- ② The rated output capacity indicated assumes that the output voltage is 440 V.
- ③ The % value of the overload capacity indicates the ratio of the overload current to the inverter's rated output current. For repeated duty, allow time for the inverter and motor to return to or below the temperatures under 100 % load.
- ④ The maximum output voltage does not exceed the power supply voltage. The maximum output voltage can be changed within the setting range. However, the pulse voltage value of the inverter output side voltage remains unchanged at about $\sqrt{2}$ that of the power supply.
- ⑤ The power supply capacity varies with the value of the power supply side inverter impedance (including those of the input reactor and cables).
For overseas types refer to page 78.

Common Specifications FR-A700

Specifications 2

FR-A740		Description	
Control specifications	Frequency setting resolution	Analog input	0.015 Hz/0–50 Hz (terminal 2, 4: 0–10 V/12 bit) 0.03 Hz/0–50 Hz (terminal 2, 4: 0–5 V/11 bit, 0–20 mA/11 bit, terminal 1: –10–+10 V/12 bit) 0.06 Hz/0–50 Hz (terminal 1: 0–+5 V/11 bit)
		Digital input	0.01 Hz
	Frequency accuracy		±0.2 % of the maximum output frequency (temperature range 25° ±10 °C) via analog input; +0.01 % of the set output frequency (via digital input)
	Voltage/frequency characteristics		Base frequency adjustable from 0 to 400 Hz; selection between constant torque, variable torque or optional flexible 5-point V/f characteristics
	Starting torque		200 % 0.3 Hz (0.4 kVA to 3.7 kVA), 150 % 0.3 Hz (5.5 kVA or more) (under real sensorless vector control or vector control)
	Torque boost		Manual torque boost
	Acceleration/deceleration time		0; 0.1–3600 s (can be set individually), linear or S-pattern acceleration/deceleration mode, backlash measures acceleration/deceleration can be selected.
	Acceleration/deceleration characteristics		Linear or S-form course, user selectable
	DC injection brake		Operating frequency (0–120 Hz), operating time (0–10 s) and operating voltage (0–30 %) can be set individually. The DC brake can also be activated via the digital input.
	Stall prevention operation level		Operation current level can be set (0–220 % adjustable), whether to use the function or not can be selected
	Motor protection		Electronic motor protection relay (rated current user adjustable)
	Torque limit level		Torque limit value can be set (0 to 400 % variable)
Control signals for operation	Frequency setting values	Analog input	Terminal 2, 4: 0–5 V DC, 0–10 V DC, 0/4–20 mA Terminal 1: 0–±5 V DC, 0–±10 V DC
		Digital input	Input using the setting dial of the parameter unit Four-digit BCD or 16 bit binary (when used with option FR-A7AX)
	Start signal		Available individually for forward rotation and reverse rotation. Start signal automatic self-holding input (3-wire input) can be selected.
	Input signals	Common	Any of 12 signals can be selected using parameters 178 to 189 (input terminal function selection) from among: multi speed selection, remote setting, stop-on-contact, second function selection, third function selection, terminal 4 input selection, JOG operation selection, selection of automatic restart after instantaneous power failure, flying start, external thermal relay input, inverter operation enable signal (FR-HC/FR-CV connection)Ⓢ, FR-HC connection (instantaneous power failure detection)Ⓢ, PU operation/external inter lock signal, external DC injection brake operation start, PID control enable terminal, brake opening completion signal, PU operation/external operation switchover, load pattern selection forward rotation reverse rotation boost, V/F switching, load torque high-speed frequency, S-pattern acceleration/deceleration C switchover, pre-excitation, output stop, start self-holding selection, control mode changing, torque limit selection, start-time tuning start external input, torque bias selection 1, 2 Ⓣ, P/PI control switchover, traverse function selection, forward rotation command, reverse rotation command, inverter reset, PTC thermistor input, PID forward reverse operation switchover, PU-NET operation switchover, NET-external operation switchover, command source switchover, conditional position pulse train sign Ⓣ, conditional position droop pulse clear Ⓣ, magnetic flux decay output shutoff Ⓢ
		Pulse train input	100 kpps
	Output signals	Operating status	Any of 7 signals can be selected using parameter 190 to 196 (output terminal function selection) from among: inverter running, up-to-frequency, instantaneous power failure/undervoltage, overload warning, output frequency (speed) detection, second output frequency (speed) detection, third output frequency (speed) detection, regenerative brake prealarm Ⓢ, electronic thermal relay function pre-alarm, PU operation mode, inverter operation ready, output current detection, zero current detection, PID lower limit, PID upper limit, PID forward rotation reverse rotation output, commercial power supply-inverter switchover MC1, commercial power supply-inverter switchover MC2, commercial power supply-inverter switchover MC3, orientation completion Ⓣ, orientation error ⓈⓈ, brake opening request, fan fault output, heatsink overheat pre-alarm, inverter running/start command on Ⓢ, deceleration at an instantaneous power failure, PID control activated, during retry, PID output interruption, position control preparation ready Ⓢ, life alarm, alarm output 1, 2, 3 (power-off signal), power savings average value update timing, current average monitor, maintenance timer alarm, remote output, forward rotation output Ⓣ, reverse rotation output Ⓣ, low speed output, torque detection, regenerative status output Ⓣ, start-time tuning completion, in-position completion Ⓣ, minor failure output and alarm output. Open collector output (5 points), relay output (2 points) and alarm code of the inverter can be output (4 bit) from the open collector
		When using the FR-A7AY, FR-A7AR option	In addition to the above operating modes parameters 313 to 319 (function selection for the additional 7 output terminals) can also be used to assign the following four signals: control circuit capacitor life, main circuit capacitor life, cooling fan life, inrush current limit circuit life (Only positive logic can be set for extension terminals of the FR-A7AR)
		Analog output	You can select any signals using Pr. 54 FM terminal function selection (pulse train output) and Pr. 158 AM terminal function selection (analog output) from among output frequency, motor current (steady or peak value), output voltage, frequency setting, operation speed, motor torque, converter output voltage (steady or peak value), electronic thermal relay function load factor, input power, output power, load meter, motor excitation current, reference voltage output, motor load factor, power saving effect, regenerative brake duty Ⓢ, PID set point, PID measured value, PLC function output Ⓢ, motor output, torque command, torque current command, and torque monitor.

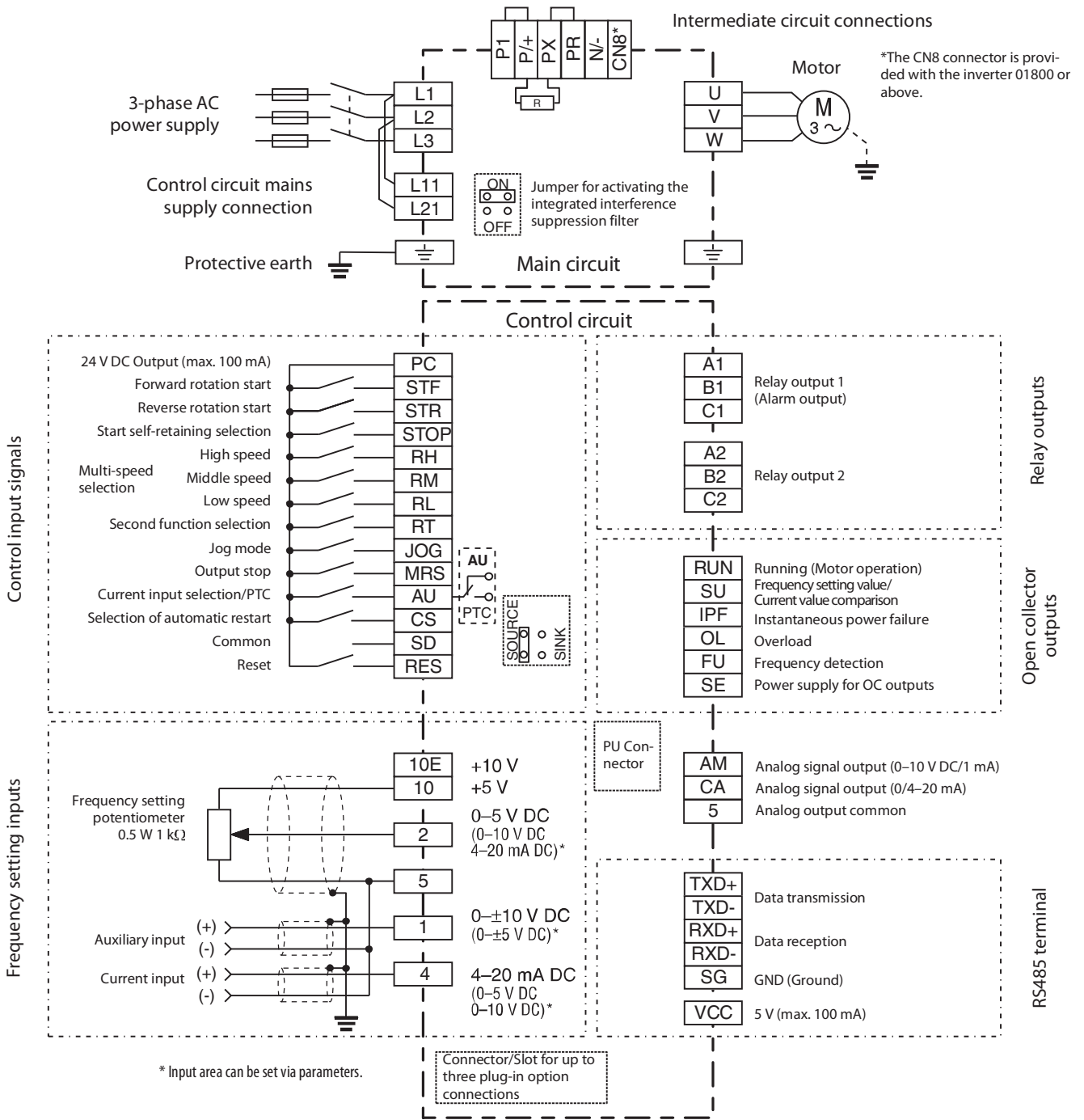
Remarks:
Explanation for Ⓣ to Ⓢ see next page.

FR-A740		Description	
Display	Parameter unit display (FR-PU07/FR-DU07)	Operating status	Output frequency, motor current (steady or peak value), output voltage, frequency setting, running speed, motor torque, overload, converter output voltage (steady or peak value), electronic thermal relay function load factor, input power, output power, load meter, motor excitation current, cumulative energization time, actual operation time, motor load factor, cumulative power, energy saving effect, cumulative saving power, regenerative brake duty ^⑤ , PID set point, PID measured value, PID deviation, inverter I/O terminal monitor, input terminal option monitor ^② , output terminal option monitor ^② , option fitting status ^② , terminal assignment status ^② , torque command, torque current command, feed back pulse ^① , motor output
		Alarm definition	Alarm definition is displayed when the protective function is activated, the output voltage/current/frequency/cumulative energization time right before the protection function was activated and the past 8 alarm definitions are stored.
		Interactive guidance	Operation guide/trouble shooting with a help function ^③
Protection	Protective functions	Overcurrent during acceleration, overcurrent during constant speed, overcurrent during deceleration, overvoltage during acceleration, overvoltage during constant speed, overvoltage during deceleration, inverter protection thermal operation, motor protection thermal operation, heatsink overheat, instantaneous power failure occurrence, undervoltage, input phase failure, motor overload, output side earth (ground) fault overcurrent, output short circuit, main circuit element overheat, output phase failure, external thermal relay operation ^④ , PTC thermistor operation ^④ , option alarm, parameter error, PU disconnection, retry count excess ^④ , CPU alarm, parameter unit power supply short circuit, 24 V DC power output short circuit, output current detection value excess ^④ , inrush current limit circuit alarm, communication alarm (inverter), USB error ^⑥ , opposite rotation deceleration error ^④ , analog input error, fan fault, overcurrent stall prevention, overvoltage stall prevention, regenerative brake prealarm ^⑤ , electronic thermal relay function prealarm, PU stop, maintenance timer alarm ^{②③} , brake transistor alarm ^⑤ , parameter write error, copy operation error, parameter unit lock, parameter copy alarm, speed limit indication, encoder no-signal ^{①④} , speed deviation large ^{①④} , overspeed ^{①④} , position error large ^{①④} , encoder phase error ^{①④} , regeneration converter overcurrent ^⑥ , regeneration converter circuit fault ^⑥ , regeneration converter transistor protection thermal ^⑥ , brake sequence error ^{②⑥}	

Remarks:

- ① Only when the option (FR-A7AP) is mounted
 - ② Can be displayed only on the parameter unit (FR-DU07).
 - ③ Can be displayed only on the parameter unit (FR-PU07).
 - ④ This protective function does not function in the initial status.
 - ⑤ FR-A740 only
 - ⑥ FR-A741 only
- For overseas types refer to page 78.

Block Diagram FR-A740/FR-A741



Assignment of Main Circuit Terminals

Function	Terminal	Designation	Description
Main circuit connection	L1, L2, L3	Mains supply connection	Mains power supply of the inverters (380–480 V AC, 50/60 Hz); (380–480 V for type 01800 and above)
	P/+, PR	Brake resistor connection	An optional brake resistor (FR-ABR) can be connected across these terminals. The PR terminal is provided only for type 00023–00620.
	P/+, N/-	Brake unit connection	Connect the brake unit (FR-BU, BU), power regeneration common converter (FR-CV), harmonic converter (FR-HC and MT-HC) or power regeneration converter (MTRC).
	P/+, P1	DC reactor connection	An optional DC reactor can be connected to the terminals P1 and P/+. The jumper on terminals P1 and P/+ must be removed when this optional choke coil is used on frequency inverter models 01160 and below. The DC reactor supplied with the unit must be installed on frequency inverter models 01800 and above.
	PR, PX	Built-in brake circuit connection	When the jumper is connected across terminals PR and PX (initial status), the built-in brake reactor circuit is valid. The PX terminal is provided only for type 00023–00250.
	U, V, W	Motor connection	Voltage output of the inverter (3-phase, 0 V up to power supply voltage, 0.2–400 Hz)
	L11, L21	Power supply for control circuit	To use external power for the control circuit connect the mains power to L11/L21 (and remove jumpers L1 and L2).
	CN8	Ext. brake transistor control	Control connection for external brake module (type 01800 and above).
PE	Protective earth connection of inverter		