



# A800

# PARALLEL OPERATION FUNCTION MANUAL

# FR-A842-09620(400K) to 12120(500K)-P

## Parallel Operation Function

This Function Manual explains the functions for a parallel operation. For the functions not found in this Function Manual, refer to the Instruction Manual (Detailed) of the FR-A800 inverter.

In addition to this Function Manual, please read the Instruction Manual (Detailed) of the FR-A800 inverter carefully. Do not use this product until you have a full knowledge of the equipment, safety information and instructions.

Please forward this Function Manual to the end user.

# A800-P

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# 1 INTRODUCTION

## 1.1 FR-A802-P overview

The FR-A802-P inverter is a parallel operation specification model. This function allows one motor having a large capacity to be driven by operating two or three inverters and converter units for parallel operation connected in parallel to the motor.

### ◆ Abbreviations

Abbreviation / generic name	Description
DU	Operation panel (FR-DU08)
Operation panel	Operation panel (FR-DU08) and LCD operation panel (FR-LU08)
Parameter unit	Parameter unit (FR-PU07)
PU	Operation panel and parameter unit
Inverter	Mitsubishi Electric FR-A802-P inverter (separated converter type for parallel operation)
Converter unit	FR-CC2-P converter unit (for parallel operation)
Vector control compatible option	FR-A8AP/FR-A8AL (plug-in option), FR-A8TP (control terminal option)
Pr.	Parameter number (number assigned to function)
PU operation	Operation using the PU (operation panel / parameter unit)
External operation	Operation using the control circuit signals
Combined operation	Combined operation using the PU (operation panel / parameter unit) and External operation

## 2 PARALLEL OPERATION FUNCTION

### 2.1 Parallel operation selection

The master/slave inverters to be operated in parallel can be set.

Pr.	Name	Initial value	Setting range	Description	
				Master/slave station	Number of slave stations
1001 E390	Parallel operation selection	100	1	Slave station 1	—
			2	Slave station 2	—
			100 (initial value)	Master station	0
			200		1
			300		2

#### ◆ Parallel operation selection (Pr.1001)

- To operate two inverters in parallel, set "200" in **Pr.1001 Parallel operation selection** of the master, and "1 or 2" in **Pr.1001** in the slave. (The operation is enabled regardless of the number set for the slave.)
- To operate three inverters in parallel, set "300" in **Pr.1001** of the master, "1" in **Pr.1001** of slave 1, and "2" in **Pr.1001** of slave 2.
- For operating one inverter (when the parallel operation is not performed) in case of an emergency, set "100 (initial value)" in **Pr.1001**.

#### NOTE

- The setting of **Pr.1001** will be applied after next power ON or inverter reset.
- Every time when the slave 1 inverter (**Pr.1001** = "1") is turned ON, the indicator "SLV.1" (parallel operation slave 1) appears on the first monitor screen (of the operation panel). Likewise, the slave 2 inverter (**Pr.1001** = "2") shows "SLV.2" (parallel operation slave 2). (Refer to [page 26](#).)
- While the slave stations are operated, [FWD] indicator on the operation panel is on regardless of forward rotation/reverse rotation.

#### CAUTION

- Be sure to set **Pr.1001** correctly. Operation with incorrect settings may damage the inverters.

#### ◆ Setting procedure (for operating two inverters in parallel)

- 1 Install wiring between the RS-485 terminals on the master inverter and on the slave inverter. (For the details, refer to the FR-A802-P Instruction Manual (Hardware).)
- 2 Set "1 or 2" in **Pr.1001** of the slave inverter, and then reset the inverter.
- 3 Set "200" in **Pr.1001** of the master inverter, and then reset the inverter.
- 4 The communication starts between the master and the slave.

#### ◆ Setting procedure (for operating three inverters in parallel)

- 1 Install wiring between the RS-485 terminals on the master inverter and on the slave inverter. (For the details, refer to the FR-A802-P Instruction Manual (Hardware).)
- 2 Set "1" in **Pr.1001** of the slave 1 inverter, and then reset the inverter.
- 3 Set "2" in **Pr.1001** of the slave 2 inverter, and then reset the inverter.
- 4 Set "300" in **Pr.1001** of the master inverter, and then reset the inverter.
- 5 The communication starts between the master and the slave.

#### NOTE

- For operating three inverters in parallel, it is not important which order steps 2 and 3 are performed in.

### ◆Precautions for parameter setting during the parallel operation

- Set up the slave inverter first before the master inverter by the **Pr.1001** setting and the inverter reset. Otherwise, an error may occur in communication between the converter units.
- Before the parallel operation, set the same values between the master and the slave in **Pr.30, Pr.57, Pr.249, Pr.261, Pr.570, and Pr.598**. If the settings are not correct, the parallel operation will not be performed correctly.

### ◆Resetting the inverter during the parallel operation

- When the RES signal of the master remains ON, the master keeps attempting to perform the inverter reset. However, the slave performs the inverter reset only once and does not keep attempting to perform the reset.
- For the inverter reset, reset the master inverter. The slave inverter will be reset simultaneously.

## 2.2 Parallel operation communication check time (Pr.652)

Pr.	Name	Initial value	Setting range	Description
652 N092	Parallel operation communication check time	1 s	0	Parallel operation communication disabled
			0.1 to 120 s	Set the interval of the communication check (signal loss detection) time. If a no-communication state persists for the permissible time or longer, the inverter will trip.
			9999	No communication check (signal loss detection)

- If the communication between the master and the slave is lost for a certain period, the inverter assumes it is in disconnection state and activates the protective function (E.SER) to shut off the output.
- If the communication for the time set in **Pr.652** is lost while the inverter is stopped, the signal loss detection is assumed and the protective function (E.SER) is activated.
- When the **Pr.652** setting is any of 0.1 to 120 s, the signal loss detection is made.
- When the **Pr.652** setting is "9999", the signal loss detection is not made.
- When the **Pr.652** setting is "0", the parallel operation communication is not possible.

## 2.3 Parallel operation ready (Y227) signal

- After the wiring of the RS-485 terminals and the setting of **Pr.1001** on all inverters are completed, communication between the inverters starts automatically and the inverters are prepared for the parallel operation. When the inverters are ready, the Parallel operation ready (Y227) signal turns ON.
- For the Y227 signal, set "227 (positive logic) or 327 (negative logic)" in any of **Pr.190 to Pr.196 (Output terminal function selection)** to assign the function to the output terminal.

### NOTE

- Changing the terminal assignment using **Pr.190 to Pr.196 (Output terminal function selection)** may affect the other functions. Set parameters after confirming the function of each terminal.

# 3 PARAMETER

## 3.1 Parameter list

The following is the list of parameters of the FR-A802-P (including the availability for the master and the slave).

○ indicates the parameter in which all the settings are valid. △ indicates the parameter in which some settings are invalid. × indicates the parameter in which all the settings are invalid.

The parameter marked with any of the following is available when the corresponding option is installed.

[AP]FR-A8AP, [TP]FR-A8TP, [AR]FR-A8AR, [AX]FR-A8AX, [AY]FR-A8AY, [AZ]FR-A8AZ, [NC]FR-A8NC, [NCE]FR-A8NCE,  
[ND]FR-A8ND, [AL]FR-A8AL, [NP]FR-A8NP, [NS]FR-A8NS, [NF]FR-A8NF

Pr.	Name	Master	Slave	Refer to page
0	Torque boost	○	×	*1
1	Maximum frequency	○	×	*1
2	Minimum frequency	○	×	*1
3	Base frequency	○	×	*1
4	Multi-speed setting (high speed)	○	×	*1
5	Multi-speed setting (middle speed)	○	×	*1
6	Multi-speed setting (low speed)	○	×	*1
7	Acceleration time	○	×	*1
8	Deceleration time	○	×	*1
9	Electronic thermal O/L relay	○	×	*1
10	DC injection brake operation frequency	○	×	*1
11	DC injection brake operation time	○	×	*1
12	DC injection brake operation voltage	○	×	*1
13	Starting frequency	○	×	*1
14	Load pattern selection	○	×	*1
15	Jog frequency	○	×	*1
16	Jog acceleration/ deceleration time	○	×	*1
17	MRS input selection	○	○	*1
18	High speed maximum frequency	△	×	30
19	Base frequency voltage	○	×	*1
20	Acceleration/ deceleration reference frequency	○	×	*1
21	Acceleration/ deceleration time increments	○	×	*1
22	Stall prevention operation level (Torque limit level)	○	×	*1
23	Stall prevention operation level compensation factor at double speed	○	×	*1
24	Multi-speed setting (speed 4)	○	×	*1
25	Multi-speed setting (speed 5)	○	×	*1
26	Multi-speed setting (speed 6)	○	×	*1

Pr.	Name	Master	Slave	Refer to page
27	Multi-speed setting (speed 7)	○	×	*1
28	Multi-speed input compensation selection	○	×	*1
29	Acceleration/ deceleration pattern selection	○	×	*1
30	Regenerative function selection	○	○	*1
31	Frequency jump 1A	○	×	*1
32	Frequency jump 1B	○	×	*1
33	Frequency jump 2A	○	×	*1
34	Frequency jump 2B	○	×	*1
35	Frequency jump 3A	○	×	*1
36	Frequency jump 3B	○	×	*1
37	Speed display	○	○	*1
41	Up-to-frequency sensitivity	○	×	*1
42	Output frequency detection	○	×	*1
43	Output frequency detection for reverse rotation	○	×	*1
44	Second acceleration/ deceleration time	○	×	*1
45	Second deceleration time	○	×	*1
46	Second torque boost	○	×	*1
47	Second V/F (base frequency)	○	×	*1
48	Second stall prevention operation level	○	×	*1
49	Second stall prevention operation frequency	○	×	*1
50	Second output frequency detection	○	×	*1
51	Second electronic thermal O/L relay	○	×	*1
52	Operation panel main monitor selection	○	△	24
54	FM/CA terminal function selection	○	△	24
55	Frequency monitoring reference	○	○	*1
56	Current monitoring reference	○	○	30
57	Restart coasting time	○	○	*1
58	Restart cushion time	○	×	*1

Pr.	Name	Master	Slave	Refer to page
59	Remote function selection	○	×	*1
60	Energy saving control selection	△	×	30
61	Reference current	○	×	30
62	Reference value at acceleration	○	×	*1
63	Reference value at deceleration	○	×	*1
64	Starting frequency for elevator mode	○	×	*1
65	Parameter for manufacturer setting. Do not set.			
66	Stall prevention operation reduction starting frequency	○	×	*1
67	Parameter for manufacturer setting. Do not set.			
68	Parameter for manufacturer setting. Do not set.			
69	Parameter for manufacturer setting. Do not set.			
71	Applied motor	△	×	30
72	Parameter for manufacturer setting. Do not set.			
73	Analog input selection	○	○	*1
74	Input filter time constant	○	×	*1
75	Reset selection/ disconnected PU detection/PU stop selection	○	△	30
76	Fault code output selection	○	○	*1
77	Parameter write selection	○	○	*1
78	Reverse rotation prevention selection	○	×	*1
79	Operation mode selection	○	○	*1
80	Motor capacity	○	×	*1
81	Number of motor poles	○	×	*1
82	Motor excitation current	○	×	*1
83	Rated motor voltage	○	×	*1
84	Rated motor frequency	○	×	*1
85	Excitation current refraction point	○	×	*1
86	Excitation current low speed multiplying factor	○	×	*1
89	Speed control gain (Advanced magnetic flux vector)	○	×	*1
90	Motor constant (R1)	○	×	*1
91	Motor constant (R2)	○	×	*1
92	Motor constant (L1)/d-shaft inductance (Ld)	○	×	*1
93	Motor constant (L2)/q-shaft inductance (Lq)	○	×	*1
94	Motor constant (X)	○	×	*1
95	Online auto tuning selection	○	×	*1
96	Auto tuning setting/status	△	×	30
100	V/F1 (first frequency)	○	×	*1
101	V/F1 (first frequency voltage)	○	×	*1
102	V/F2 (second frequency)	○	×	*1
103	V/F2 (second frequency voltage)	○	×	*1
104	V/F3 (third frequency)	○	×	*1

Pr.	Name	Master	Slave	Refer to page
105	V/F3 (third frequency voltage)	○	×	*1
106	V/F4 (fourth frequency)	○	×	*1
107	V/F4 (fourth frequency voltage)	○	×	*1
108	V/F5 (fifth frequency)	○	×	*1
109	V/F5 (fifth frequency voltage)	○	×	*1
110	Third acceleration/ deceleration time	○	×	*1
111	Third deceleration time	○	×	*1
112	Third torque boost	○	×	*1
113	Third V/F (base frequency)	○	×	*1
114	Third stall prevention operation level	○	×	*1
115	Third stall prevention operation frequency	○	×	*1
116	Third output frequency detection	○	×	*1
117	PU communication station number	○	○	*1
118	PU communication speed	○	○	*1
119	PU communication stop bit length / data length	○	○	*1
120	PU communication parity check	○	○	*1
121	Number of PU communication retries	○	○	*1
122	PU communication check time interval	○	○	*1
123	PU communication waiting time setting	○	○	*1
124	PU communication CR/ LF selection	○	○	*1
125	Terminal 2 frequency setting gain frequency	○	×	*1
126	Terminal 4 frequency setting gain frequency	○	×	*1
127	PID control automatic switchover frequency	○	×	*1
128	PID action selection	○	△	30
129	PID proportional band	○	○	*1
130	PID integral time	○	○	*1
131	PID upper limit	○	○	*1
132	PID lower limit	○	○	*1
133	PID action set point	○	○	*1
134	PID differential time	○	○	*1
135	Electronic bypass sequence selection	○	×	*1
136	MC switchover interlock time	○	×	*1
137	Start waiting time	○	×	*1
138	Bypass selection at a fault	○	×	30
139	Automatic switchover frequency from inverter to bypass operation	○	×	*1
140	Backlash acceleration stopping frequency	○	×	*1
141	Backlash acceleration stopping time	○	×	*1

## Parameter list

Pr.	Name	Master	Slave	Refer to page
142	Backlash deceleration stopping frequency	○	×	*1
143	Backlash deceleration stopping time	○	×	*1
144	Speed setting switchover	○	○	*1
145	PU display language selection	○	○	*1
147	Acceleration/ deceleration time switching frequency	○	×	*1
148	Stall prevention level at 0 V input	○	×	*1
149	Stall prevention level at 10 V input	○	×	*1
150	Output current detection level	○	×	30
151	Output current detection signal delay time	○	×	*1
152	Zero current detection level	○	×	30
153	Zero current detection time	○	×	*1
154	Voltage reduction selection during stall prevention operation	○	×	*1
155	RT signal function validity condition selection	○	×	*1
156	Stall prevention operation selection	○	×	30
157	OL signal output timer	○	×	*1
158	AM terminal function selection	○	△	24
159	Automatic switchover frequency range from bypass to inverter operation	○	×	*1
160	User group read selection	○	○	*1
161	Frequency setting/key lock operation selection	○	△	30
162	Automatic restart after instantaneous power failure selection	△	×	30
163	First cushion time for restart	○	×	*1
164	First cushion voltage for restart	○	×	*1
165	Stall prevention operation level for restart	○	×	*1
166	Output current detection signal retention time	○	×	*1
167	Output current detection operation selection	○	×	*1
168	Parameter for manufacturer setting. Do not set.			
169				
170	Watt-hour meter clear	○	×	*1
171	Operation hour meter clear	○	○	*1
172	User group registered display/batch clear	○	○	*1
173	User group registration	○	○	*1
174	User group clear	○	○	*1
178	STF terminal function selection	○	△	20

Pr.	Name	Master	Slave	Refer to page
179	STR terminal function selection	○	△	20
180	RL terminal function selection	○	△	20
181	RM terminal function selection	○	△	20
182	RH terminal function selection	○	△	20
183	RT terminal function selection	○	△	20
184	AU terminal function selection	○	△	20
185	JOG terminal function selection	○	△	20
186	CS terminal function selection	○	△	20
187	MRS terminal function selection	○	△	20
188	STOP terminal function selection	○	△	20
189	RES terminal function selection	○	△	20
190	RUN terminal function selection	○	△	22
191	SU terminal function selection	○	△	22
192	IPF terminal function selection	○	△	22
193	OL terminal function selection	○	△	22
194	FU terminal function selection	○	△	22
195	ABC1 terminal function selection	○	△	22
196	ABC2 terminal function selection	○	△	22
232	Multi-speed setting (speed 8)	○	×	*1
233	Multi-speed setting (speed 9)	○	×	*1
234	Multi-speed setting (speed 10)	○	×	*1
235	Multi-speed setting (speed 11)	○	×	*1
236	Multi-speed setting (speed 12)	○	×	*1
237	Multi-speed setting (speed 13)	○	×	*1
238	Multi-speed setting (speed 14)	○	×	*1
239	Multi-speed setting (speed 15)	○	×	*1
240	Soft-PWM operation selection	○	×	*1
241	Analog input display unit switchover	○	○	*1
242	Terminal 1 added compensation amount (terminal 2)	○	○	*1
243	Terminal 1 added compensation amount (terminal 4)	○	○	*1
244	Cooling fan operation selection	○	○	*1
245	Rated slip	○	×	30

Pr.	Name	Master	Slave	Refer to page	Pr.	Name	Master	Slave	Refer to page
246	Slip compensation time constant	○	×	30	284	Deceleration detection function selection	○	×	*1
247	Constant-power range slip compensation selection	○	×	30	285	Overspeed detection frequency (Speed deviation excess detection frequency)	○	×	*1
248	Self power management selection	○	×	30	286	Droop gain	○	×	*1
249	Earth (ground) fault detection at start	○	○	*1	287	Droop filter time constant	○	×	*1
250	Stop selection	○	×	*1	288	Droop function activation selection	○	×	*1
251	Output phase loss protection selection	○	○	*1	289	Inverter output terminal filter	○	○	*1
252	Override bias	○	×	*1	290	Monitor negative output selection	○	○	*1
253	Override gain	○	×	*1	291	Pulse train I/O selection	○	○	*1
254	Main circuit power OFF waiting time	○	×	*1	292	Automatic acceleration/deceleration	○	×	*1
255	Life alarm status display	○	○	*1	293	Acceleration/deceleration separate selection	○	×	*1
257	Control circuit capacitor life display	○	○	*1	294	UV avoidance voltage gain	○	×	*1
260	Parameter for manufacturer setting. Do not set.				295	Frequency change increment amount setting	○	○	*1
261	Power failure stop selection	○	○	*1	296	Password lock level	○	○	*1
262	Subtracted frequency at deceleration start	○	×	*1	297	Password lock/unlock	○	○	*1
263	Subtraction starting frequency	○	×	*1	298	Frequency search gain	○	×	*1
264	Power-failure deceleration time 1	○	×	*1	299	Rotation direction detection selection at restarting	○	×	*1
265	Power-failure deceleration time 2	○	×	*1	300	BCD input bias [AX]	○	×	*2
266	Power failure deceleration time switchover frequency	○	×	*1	301	BCD input gain [AX]	○	×	*2
267	Terminal 4 input selection	○	○	*1	302	BIN input bias [AX]	○	×	*2
268	Monitor decimal digits selection	○	○	*1	303	BIN input gain [AX]	○	×	*2
269	Parameter for manufacturer setting. Do not set.				304	Digital input and analog input compensation enable/disable selection [AX]	○	×	*1
270	Stop-on contact/load torque high-speed frequency control selection	○	×	*1	305	Read timing operation selection [AX]	○	×	*1
271	High-speed setting maximum current	○	×	30	306	Analog output signal selection [AY]	○	△	24
272	Middle-speed setting minimum current	○	×	30	307	Setting for zero analog output [AY]	○	○	*1
273	Current averaging range	○	×	*1	308	Setting for maximum analog output [AY]	○	○	*1
274	Current averaging filter time constant	○	×	*1	309	Analog output signal voltage/current switchover [AY]	○	○	*1
275	Stop-on contact excitation current low-speed multiplying factor	○	×	*1	310	Analog meter voltage output selection [AY]	○	△	24
276	Parameter for manufacturer setting. Do not set.				311	Setting for zero analog meter voltage output [AY]	○	○	*1
278	Brake opening frequency	○	×	*1	312	Setting for maximum analog meter voltage output [AY]	○	○	*1
279	Brake opening current	○	×	*1	313	DO0 output selection [AY] [NC] [NCE]	○	△	22
280	Brake opening current detection time	○	×	*1					
281	Brake operation time at start	○	×	*1					
282	Brake operation frequency	○	×	*1					
283	Brake operation time at stop	○	×	*1					

## Parameter list

Pr.	Name	Master	Slave	Refer to page
314	DO1 output selection [AY] [NC] [NCE]	○	△	22
315	DO2 output selection [AY] [NC] [NCE]	○	△	22
316	DO3 output selection [AY]	○	△	22
317	DO4 output selection [AY]	○	△	22
318	DO5 output selection [AY]	○	△	22
319	DO6 output selection [AY]	○	△	22
320	RA1 output selection [AR]	○	△	22
321	RA2 output selection [AR]	○	△	22
322	RA3 output selection [AR]	○	△	22
323	AM0 0V adjustment [AY]	○	○	*2
324	AM1 0mA adjustment [AY]	○	○	*2
326	Motor temperature feedback reference [AZ]	×	×	*2
329	Digital input unit selection [AX]	○	×	*2
331				
332				
333				
334	Parameter for manufacturer setting. Do not set.			
335				
336				
337				
338	Communication operation command source	○	×	*1
339	Communication speed command source	○	×	*1
340	Communication startup mode selection	○	○	*1
341	Parameter for manufacturer setting. Do not set.			
342	Communication EEPROM write selection	○	○	*1
343	Parameter for manufacturer setting. Do not set.			
345	DeviceNet address [ND]	○	○	*2
346	DeviceNet/ControlNet baud rate [ND]	○	○	*2
349	Communication reset selection [NC] [NCE] [ND] [NP] [NS] [NF]	○	○	*2
350	Stop position command selection [AP] [AL] [TP]	○	×	*2
351	Orientation speed [AP] [AL] [TP]	○	×	*2
352	Creep speed [AP] [AL] [TP]	○	×	*2
353	Creep switchover position [AP] [AL] [TP]	○	×	*2
354	Position loop switchover position [AP] [AL] [TP]	○	×	*2

Pr.	Name	Master	Slave	Refer to page
355	DC injection brake start position [AP] [AL] [TP]	○	×	*2
356	Internal stop position command [AP] [AL] [TP]	○	×	*2
357	Orientation in-position zone [AP] [AL] [TP]	○	×	*2
358	Servo torque selection [AP] [AL] [TP]	○	×	*2
359	Encoder rotation direction [AP] [AL]	○	×	*2
360	16-bit data selection [AP] [AL] [TP]	○	×	*2
361	Position shift [AP] [AL] [TP]	○	×	*2
362	Orientation position loop gain [AP] [AL] [TP]	○	×	*2
363	Completion signal output delay time [AP] [AL] [TP]	○	×	*2
364	Encoder stop check time [AP] [AL] [TP]	○	×	*2
365	Orientation limit [AP] [AL] [TP]	○	×	*2
366	Recheck time [AP] [AL] [TP]	○	×	*2
367	Speed feedback range [AP] [AL] [TP]	○	×	*2
368	Feedback gain [AP] [AL] [TP]	○	×	*2
369	Number of encoder pulses [AP] [AL]	○	×	*2
374	Overspeed detection level	○	×	*1
376	Encoder signal loss detection enable/ disable selection [AP] [AL]	○	×	*2
379	SSCNET III/(H) rotation direction selection [NS]	○	×	*2
380	Acceleration S-pattern 1	○	×	*1
381	Deceleration S-pattern 1	○	×	*1
382	Acceleration S-pattern 2	○	×	*1
383	Deceleration S-pattern 2	○	×	*1
384	Input pulse division scaling factor	○	×	*1
385	Frequency for zero input pulse	○	×	*1
386	Frequency for maximum input pulse	○	×	*1
393	Orientation selection [AP] [AL] [TP]	○	×	*2
394	Number of machine side gear teeth [AP] [AL] [TP]	○	×	*2
395	Number of motor side gear teeth [AP] [AL] [TP]	○	×	*2
396	Orientation speed gain (P term) [AP] [AL] [TP]	○	×	*2

Pr.	Name	Master	Slave	Refer to page	Pr.	Name	Master	Slave	Refer to page
397	Orientation speed integral time [AP] [AL] [TP]	○	×	*2	448	Digital torque command gain [AX]	○	×	*2
398	Orientation speed gain (D term) [AP] [AL] [TP]	○	×	*2	449	SSCNET III(/H) input filter setting [NS]	○	×	*2
399	Orientation deceleration ratio [AP] [AL] [TP]	○	×	*2	450	Second applied motor	△	×	30
406	High resolution analog input selection [AZ]	○	×	*2	451	Second motor control method selection	△	×	30
407	Motor temperature detection filter [AZ]	×	×	*2	453	Second motor capacity	○	×	*1
408	Motor thermistor selection [AZ]	×	×	*2	454	Number of second motor poles	○	×	*1
413	Encoder pulse division ratio [AL]	○	×	*2	455	Second motor excitation current	○	×	*1
414	PLC function operation selection	○	○	*1	456	Rated second motor voltage	○	×	*1
415	Inverter operation lock mode setting	○	×	*1	457	Rated second motor frequency	○	×	*1
416	Pre-scale function selection	○	○	*1	458	Second motor constant (R1)	○	×	*1
417	Pre-scale setting value	○	○	*1	459	Second motor constant (R2)	○	×	*1
418	Extension output terminal filter [AY] [AR]	○	○	*2	460	Second motor constant (L1)	○	×	*1
419	Position command source selection	○	×	*1	461	Second motor constant (L2)	○	×	*1
420	Command pulse scaling factor numerator (electronic gear numerator)	○	×	*1	462	Second motor constant (X)	○	×	*1
421	Command pulse multiplication denominator (electronic gear denominator)	○	×	*1	463	Second motor auto tuning setting/status	○	×	*1
422	Position control gain	○	×	*1	464	Digital position control sudden stop deceleration time	○	×	*1
423	Position feed forward gain	○	×	*1	465	First target position lower 4 digits	○	×	*1
424	Position command acceleration/ deceleration time constant	○	×	*1	466	First target position upper 4 digits	○	×	*1
425	Position feed forward command filter	○	×	*1	467	Second target position lower 4 digits	○	×	*1
426	In-position width	○	×	*1	468	Second target position upper 4 digits	○	×	*1
427	Excessive level error	○	×	*1	469	Third target position lower 4 digits	○	×	*1
428	Command pulse selection	○	×	*1	470	Third target position upper 4 digits	○	×	*1
429	Clear signal selection	○	×	*1	471	Fourth target position lower 4 digits	○	×	*1
430	Pulse monitor selection	○	×	*1	472	Fourth target position upper 4 digits	○	×	*1
432	Pulse train torque command bias [AL]	○	×	*2	473	Fifth target position lower 4 digits	○	×	*1
433	Pulse train torque command gain [AL]	○	×	*2	474	Fifth target position upper 4 digits	○	×	*1
434	Network number (CC-Link IE) [NCE]	○	○	*2	475	Sixth target position lower 4 digits	○	×	*1
435	Station number (CC-Link IE) [NCE]	○	○	*2	476	Sixth target position upper 4 digits	○	×	*1
446	Model position control gain	○	×	*1	477	Seventh target position lower 4 digits	○	×	*1
447	Digital torque command bias [AX]	○	×	*2	478	Seventh target position upper 4 digits	○	×	*1
					479	Eighth target position lower 4 digits	○	×	*1
					480	Eighth target position upper 4 digits	○	×	*1

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481	Ninth target position lower 4 digits	○	×	*1
482	Ninth target position upper 4 digits	○	×	*1
483	Tenth target position lower 4 digits	○	×	*1
484	Tenth target position upper 4 digits	○	×	*1
485	Eleventh target position lower 4 digits	○	×	*1
486	Eleventh target position upper 4 digits	○	×	*1
487	Twelfth target position lower 4 digits	○	×	*1
488	Twelfth target position upper 4 digits	○	×	*1
489	Thirteenth target position lower 4 digits	○	×	*1
490	Thirteenth target position upper 4 digits	○	×	*1
491	Fourteenth target position lower 4 digits	○	×	*1
492	Fourteenth target position upper 4 digits	○	×	*1
493	Fifteenth target position lower 4 digits	○	×	*1
494	Fifteenth target position upper 4 digits	○	×	*1
495	Remote output selection	○	○	*1
496	Remote output data 1	○	○	*1
497	Remote output data 2	○	○	*1
498	PLC function flash memory clear	○	○	*1
499	SSCNET III(H) operation selection <small>[NS]</small>	○	×	*2
500	Communication error execution waiting time <small>[NC] [NCE] [ND] [NP] [NS] [NF]</small>	○	○	*2
501	Communication error occurrence count display <small>[NC] [NCE] [ND] [NP] [NS] [NF]</small>	○	○	*2
502	Stop mode selection at communication error	△	×	30
503	Maintenance timer 1	○	○	*1
504	Maintenance timer 1 warning output set time	○	○	*1
505	Speed setting reference	○	○	*1
516	S-pattern time at a start of acceleration	○	×	*1
517	S-pattern time at a completion of acceleration	○	×	*1
518	S-pattern time at a start of deceleration	○	×	*1
519	S-pattern time at a completion of deceleration	○	×	*1
522	Output stop frequency	○	×	*1
539	Parameter for manufacturer setting. Do not set.			
541	Frequency command sign selection <small>[NC] [NCE] [NP]</small>	○	×	*2

Pr.	Name	Master	Slave	Refer to page
542	Communication station number (CC-Link) <small>[NC]</small>	○	○	*2
543	Baud rate selection (CC-Link) <small>[NC]</small>	○	○	*2
544	CC-Link extended setting <small>[NC]</small>	○	○	*2
547	USB communication station number	○	○	*1
548	USB communication check time interval	○	○	*1
549	Parameter for manufacturer setting. Do not set.			
550	Parameter for manufacturer setting. Do not set.			
551	PU mode operation command source selection	△	×	30
552	Frequency jump range	○	×	*1
553	PID deviation limit	○	○	*1
554	PID signal operation selection	○	○	*1
555	Current average time	○	×	*1
556	Data output mask time	○	×	*1
557	Current average value monitor signal output reference current	○	×	*1
560	Second frequency search gain	○	×	*1
561	PTC thermistor protection level	○	○	*1
563	Energization time carrying-over times	○	○	*1
564	Operating time carrying-over times	○	○	*1
565	Second motor excitation current break point	○	×	*1
566	Second motor excitation current low-speed scaling factor	○	×	*1
569	Second motor speed control gain	○	×	*1
570	Multiple rating setting	△	△	30
571	Holding time at a start	○	×	*1
573	4 mA input check selection	○	×	*1
574	Second motor online auto tuning	○	×	*1
575	Output interruption detection time	○	×	*1
576	Output interruption detection level	○	×	*1
577	Output interruption cancel level	○	×	*1
592	Traverse function selection	○	×	*1
593	Maximum amplitude amount	○	×	*1
594	Amplitude compensation amount during deceleration	○	×	*1
595	Amplitude compensation amount during acceleration	○	×	*1
596	Amplitude acceleration time	○	×	*1

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597	Amplitude deceleration time	○	×	*1	650	Second brake opening current selection	○	×	*1
598	Undervoltage level	○	○	*1	651	Second brake operation frequency selection	○	×	*1
599	X10 terminal input selection	○	×	*1	652	Parallel operation communication check time	○	○	5
600	First free thermal reduction frequency 1	○	×	*1	653	Speed smoothing control	○	×	*1
601	First free thermal reduction ratio 1	○	×	*1	654	Speed smoothing cutoff frequency	○	×	*1
602	First free thermal reduction frequency 2	○	×	*1	655	Analog remote output selection	○	○	*1
603	First free thermal reduction ratio 2	○	×	*1	656	Analog remote output 1	○	○	*1
604	First free thermal reduction frequency 3	○	×	*1	657	Analog remote output 2	○	○	*1
606	Power failure stop external signal input selection	○	×	*1	658	Analog remote output 3	○	○	*1
607	Motor permissible load level	○	×	*1	659	Analog remote output 4	○	○	*1
608	Second motor permissible load level	○	×	*1	660	Increased magnetic excitation deceleration operation selection	○	×	*1
609	PID set point/deviation input selection	○	○	*1	661	Magnetic excitation increase rate	○	×	*1
610	PID measured value input selection	○	○	*1	662	Increased magnetic excitation current level	○	×	*1
611	Acceleration time at a restart	○	×	*1	663	Control circuit temperature signal output level	○	○	*1
617	Reverse rotation excitation current low-speed scaling factor	○	×	*1	665	Regeneration avoidance frequency gain	○	×	*1
635	Cumulative pulse clear signal selection [AP] [AL] [TP]	○	×	*2	668	Power failure stop frequency gain	○	×	*1
636	Cumulative pulse division scaling factor [AP] [AL] [TP]	○	×	*2	673	Parameter for manufacturer setting. Do not set.			
637	Control terminal option-Cumulative pulse division scaling factor [AP] [AL] [TP]	○	×	*2	674	Parameter for manufacturer setting. Do not set.			
638	Cumulative pulse storage [AP] [AL] [TP]	○	×	*2	679	Second droop gain	○	×	*1
639	Brake opening current selection	○	×	*1	680	Second droop filter time constant	○	×	*1
640	Brake operation frequency selection	○	×	*1	681	Second droop function activation selection	○	×	*1
641	Second brake sequence operation selection	○	×	*1	682	Second droop break point gain	○	×	*1
642	Second brake opening frequency	○	×	*1	683	Second droop break point torque	○	×	*1
643	Second brake opening current	○	×	*1	684	Tuning data unit switchover	○	○	*1
644	Second brake opening current detection time	○	×	*1	686	Maintenance timer 2	○	○	*1
645	Second brake operation time at start	○	×	*1	687	Maintenance timer 2 warning output set time	○	○	*1
646	Second brake operation frequency	○	×	*1	688	Maintenance timer 3	○	○	*1
647	Second brake operation time at stop	○	×	*1	689	Maintenance timer 3 warning output set time	○	○	*1
648	Second deceleration detection function selection	○	×	*1	690	Deceleration check time	○	×	*1
					692	Second free thermal reduction frequency 1	○	×	*1
					693	Second free thermal reduction ratio 1	○	×	*1
					694	Second free thermal reduction frequency 2	○	×	*1
					695	Second free thermal reduction ratio 2	○	×	*1
					696	Second free thermal reduction frequency 3	○	×	*1
					699	Input terminal filter	○	○	*1
					702	Parameter for manufacturer setting. Do not set.			
					706	Parameter for manufacturer setting. Do not set.			

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707	Motor inertia (integer)	○	×	*1
711	Parameter for manufacturer setting. Do not set.			
712				
717				
721				
724	Motor inertia (exponent)	○	×	*1
725	Parameter for manufacturer setting. Do not set.			
738				
739				
740				
741				
742				
743				
744	Second motor inertia (integer)	○	×	*1
745	Second motor inertia (exponent)	○	×	*1
746	Parameter for manufacturer setting. Do not set.			
747				
750	Motor temperature detection level [AZ]	×	×	*2
751	Reference motor temperature [AZ]	×	×	*2
753	Second PID action selection	○	△	30
754	Second PID control automatic switchover frequency	○	×	*1
755	Second PID action set point	○	○	*1
756	Second PID proportional band	○	○	*1
757	Second PID integral time	○	○	*1
758	Second PID differential time	○	○	*1
759	PID unit selection	○	○	*1
760	Pre-charge fault selection	○	×	*1
761	Pre-charge ending level	○	×	*1
762	Pre-charge ending time	○	×	*1
763	Pre-charge upper detection level	○	×	*1
764	Pre-charge time limit	○	×	*1
765	Second pre-charge fault selection	○	×	*1
766	Second pre-charge ending level	○	×	*1
767	Second pre-charge ending time	○	×	*1
768	Second pre-charge upper detection level	○	×	*1
769	Second pre-charge time limit	○	×	*1
774	Operation panel monitor selection 1	○	×	24
775	Operation panel monitor selection 2	○	△	24
776	Operation panel monitor selection 3	○	△	24
777	4 mA input fault operation frequency	○	×	*1
778	4 mA input check filter	○	×	*1

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779	Operation frequency during communication error	△	×	30
788	Parameter for manufacturer setting. Do not set.			
791				
792				
799	Pulse increment setting for output power	○	×	*1
800	Control method selection	△	×	30
802	Pre-excitation selection	○	×	*1
803	Constant power range torque characteristic selection	○	×	*1
804	Torque command source selection	○	×	*1
805	Torque command value (RAM)	○	×	*1
806	Torque command value (RAM, EEPROM)	○	×	*1
807	Speed limit selection	○	×	*1
808	Forward rotation speed limit/speed limit	○	×	*1
809	Reverse rotation speed limit/reverse-side speed limit	○	×	*1
810	Torque limit input method selection	○	×	*1
811	Set resolution switchover	○	○	*1
812	Torque limit level (regeneration)	○	×	*1
813	Torque limit level (3rd quadrant)	○	×	*1
814	Torque limit level (4th quadrant)	○	×	*1
815	Torque limit level 2	○	×	*1
816	Torque limit level during acceleration	○	×	*1
817	Torque limit level during deceleration	○	×	*1
818	Easy gain tuning response level setting	○	×	*1
819	Easy gain tuning selection	○	×	*1
820	Speed control P gain 1	○	×	*1
821	Speed control integral time 1	○	×	*1
822	Speed setting filter 1	○	×	*1
823	Speed detection filter 1 [AP] [AL] [TP]	○	×	*2
824	Torque control P gain 1 (current loop proportional gain)	○	×	*1
825	Torque control integral time 1 (current loop integral time)	○	×	*1
826	Torque setting filter 1	○	×	*1
827	Torque detection filter 1	○	×	*1
828	Model speed control gain	○	×	*1
829	Number of machine end encoder pulses [AL]	○	×	*2
830	Speed control P gain 2	○	×	*1

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831	Speed control integral time 2	○	×	*1	870	Speed detection hysteresis	○	×	*1
832	Speed setting filter 2	○	×	*1	873	Speed limit <input type="checkbox"/> AP <input type="checkbox"/> AL <input type="checkbox"/> TP	○	×	*2
833	Speed detection filter 2 <input type="checkbox"/> AP <input type="checkbox"/> AL <input type="checkbox"/> TP	○	×	*1	874	OLT level setting	○	×	*1
834	Torque control P gain 2	○	×	*1	875	Fault definition	○	×	*1
835	Torque control integral time 2	○	×	*1	876	Thermal protector input <input type="checkbox"/> TP	○	○	*2
836	Torque setting filter 2	○	×	*1	877	Speed feed forward control/model adaptive speed control selection	○	×	*1
837	Torque detection filter 2	○	×	*1	878	Speed feed forward filter	○	×	*1
838	DA1 terminal function selection <input type="checkbox"/> AZ	○	△	24	879	Speed feed forward torque limit	○	×	*1
839	DA1 output filter <input type="checkbox"/> AZ	○	○	*2	880	Load inertia ratio	○	×	*1
840	Torque bias selection	○	×	*1	881	Speed feed forward gain	○	×	*1
841	Torque bias 1	○	×	*1	882	Regeneration avoidance operation selection	○	×	*1
842	Torque bias 2	○	×	*1	883	Regeneration avoidance operation level	○	×	*1
843	Torque bias 3	○	×	*1	884	Regeneration avoidance at deceleration detection sensitivity	○	×	*1
844	Torque bias filter	○	×	*1	885	Regeneration avoidance compensation frequency limit value	○	×	*1
845	Torque bias operation time	○	×	*1	886	Regeneration avoidance voltage gain	○	×	*1
846	Torque bias balance compensation	○	×	*1	888	Free parameter 1	○	○	*1
847	Fall-time torque bias terminal 1 bias	○	×	*1	889	Free parameter 2	○	○	*1
848	Fall-time torque bias terminal 1 gain	○	×	*1	891	Cumulative power monitor digit shifted times	○	○	*1
849	Analog input offset adjustment	○	×	*1	892	Load factor	○	×	*1
850	Brake operation selection	○	×	*1	893	Energy saving monitor reference (motor capacity)	○	×	*1
851	Control terminal option-Number of encoder pulses <input type="checkbox"/> TP	○	×	*2	894	Control selection during commercial power-supply operation	○	×	*1
852	Control terminal option-Encoder rotation direction <input type="checkbox"/> TP	○	×	*2	895	Power saving rate reference value	○	×	*1
853	Speed deviation time <input type="checkbox"/> AP <input type="checkbox"/> AL <input type="checkbox"/> TP	○	×	*2	896	Power unit cost	○	×	*1
854	Excitation ratio	○	×	*1	897	Power saving monitor average time	○	×	*1
855	Control terminal option-Signal loss detection enable/disable selection <input type="checkbox"/> TP	○	×	*2	898	Power saving cumulative monitor clear	○	×	*1
857	DA1-0V adjustment <input type="checkbox"/> AZ	○	○	*2	899	Operation time rate (estimated value)	○	×	*1
858	Terminal 4 function assignment	○	○	*1	C0 (900)	FM/CA terminal calibration	○	○	*1
859	Torque current	○	×	*1	C1 (901)	AM terminal calibration	○	○	*1
860	Second motor torque current	○	×	*1	C2 (902)	Terminal 2 frequency setting bias frequency	○	×	*1
862	Encoder option selection <input type="checkbox"/> AP <input type="checkbox"/> AL <input type="checkbox"/> TP	○	×	*2	C3 (902)	Terminal 2 frequency setting bias	○	○	*1
863	Control terminal option-Encoder pulse division ratio <input type="checkbox"/> TP	○	×	*2	125 (903)	Terminal 2 frequency setting gain frequency	○	×	*1
864	Torque detection	○	×	*1	C4 (903)	Terminal 2 frequency setting gain	○	○	*1
865	Low speed detection	○	×	*1					
866	Torque monitoring reference	○	×	*1					
867	AM output filter	○	○	*1					
868	Terminal 1 function assignment	○	○	*1					
869	Current output filter	○	○	*1					

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C5 (904)	Terminal 4 frequency setting bias frequency	○	×	*1
C6 (904)	Terminal 4 frequency setting bias	○	○	*1
126 (905)	Terminal 4 frequency setting gain frequency	○	×	*1
C7 (905)	Terminal 4 frequency setting gain	○	○	*1
C12 (917)	Terminal 1 bias frequency (speed)	○	×	*1
C13 (917)	Terminal 1 bias (speed)	○	×	*1
C14 (918)	Terminal 1 gain frequency (speed)	○	×	*1
C15 (918)	Terminal 1 gain (speed)	○	×	*1
C16 (919)	Terminal 1 bias command (torque/magnetic flux)	○	×	*1
C17 (919)	Terminal 1 bias (torque/magnetic flux)	○	×	*1
C18 (920)	Terminal 1 gain command (torque/magnetic flux)	○	×	*1
C19 (920)	Terminal 1 gain (torque/magnetic flux)	○	×	*1
C29 (925)	Motor temperature detection calibration (analog input) [AZ]	×	×	*2
C30 (926)	Terminal 6 bias frequency (speed) [AZ]	○	×	*2
C31 (926)	Terminal 6 bias (speed) [AZ]	○	×	*2
C32 (927)	Terminal 6 gain frequency (speed) [AZ]	○	×	*2
C33 (927)	Terminal 6 gain (speed) [AZ]	○	×	*2
C34 (928)	Terminal 6 bias command (torque) [AZ]	○	×	*2
C35 (928)	Terminal 6 bias (torque) [AZ]	○	×	*2
C36 (929)	Terminal 6 gain command (torque) [AZ]	○	×	*2
C37 (929)	Terminal 6 gain (torque) [AZ]	○	×	*2
C8 (930)	Current output bias signal	○	○	*1
C9 (930)	Current output bias current	○	○	*1
C10 (931)	Current output gain signal	○	○	*1
C11 (931)	Current output gain current	○	○	*1
C38 (932)	Terminal 4 bias command (torque/magnetic flux)	○	×	*1
C39 (932)	Terminal 4 bias (torque/magnetic flux)	○	×	*1

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C40 (933)	Terminal 4 gain command (torque/magnetic flux)	○	×	*1
C41 (933)	Terminal 4 gain (torque/magnetic flux)	○	×	*1
C42 (934)	PID display bias coefficient	○	○	*1
C43 (934)	PID display bias analog value	○	○	*1
C44 (935)	PID display gain coefficient	○	○	*1
C45 (935)	PID display gain analog value	○	○	*1
977	Input voltage mode selection	○	×	*1
989	Parameter copy alarm release	○	○	*1
990	PU buzzer control	○	○	*1
991	PU contrast adjustment	○	○	*1
992	Operation panel setting dial push monitor selection	○	△	24
994	Droop break point gain	○	×	*1
995	Droop break point torque	○	×	*1
997	Fault initiation	○	○	*1
998	Parameter for manufacturer setting. Do not set.			
999	Automatic parameter setting	○	○	*1
1000	Direct setting selection	○	○	*1
1001	Parallel operation selection	○	○	4
1002	Parameter for manufacturer setting. Do not set.			
1003	Notch filter frequency	○	×	*1
1004	Notch filter depth	○	×	*1
1005	Notch filter width	○	×	*1
1006	Clock (year)	○	○	*1
1007	Clock (month, day)	○	○	*1
1008	Clock (hour, minute)	○	○	*1
1015	Integral stop selection at limited frequency	○	○	*1
1016	PTC thermistor protection detection time	○	○	*1
1018	Monitor with sign selection	○	○	*1
1019	Analog meter voltage minus output selection [AY]	○	○	*2
1020	Trace operation selection	○	○	*1
1021	Trace mode selection	○	○	*1
1022	Sampling cycle	○	○	*1
1023	Number of analog channels	○	○	*1
1024	Sampling auto start	○	○	*1
1025	Trigger mode selection	○	○	*1
1026	Number of sampling before trigger	○	○	*1
1027	Analog source selection (1ch)	○	○	24
1028	Analog source selection (2ch)	○	○	24

Pr.	Name	Master	Slave	Refer to page	Pr.	Name	Master	Slave	Refer to page
1029	Analog source selection (3ch)	○	○	24	1113	Speed limit method selection	○	×	*1
1030	Analog source selection (4ch)	○	○	24	1114	Torque command reverse selection	○	×	*1
1031	Analog source selection (5ch)	○	○	24	1115	Speed control integral term clear time	○	×	*1
1032	Analog source selection (6ch)	○	○	24	1116	Constant output range speed control P gain compensation	○	×	*1
1033	Analog source selection (7ch)	○	○	24	1117	Speed control P gain 1 (per-unit system)	○	×	*1
1034	Analog source selection (8ch)	○	○	24	1118	Speed control P gain 2 (per-unit system)	○	×	*1
1035	Analog trigger channel	○	○	*1	1119	Model speed control gain (per-unit system)	○	×	*1
1036	Analog trigger operation selection	○	○	*1	1121	Per-unit speed control reference frequency	○	×	*1
1037	Analog trigger level	○	○	*1	1134	PID upper limit manipulated value	○	×	*1
1038	Digital source selection (1ch)	○	○	*1	1135	PID lower limit manipulated value	○	×	*1
1039	Digital source selection (2ch)	○	○	*1	1136	Second PID display bias coefficient	○	○	*1
1040	Digital source selection (3ch)	○	○	*1	1137	Second PID display bias analog value	○	○	*1
1041	Digital source selection (4ch)	○	○	*1	1138	Second PID display gain coefficient	○	○	*1
1042	Digital source selection (5ch)	○	○	*1	1139	Second PID display gain analog value	○	○	*1
1043	Digital source selection (6ch)	○	○	*1	1140	Second PID set point/deviation input selection	○	○	*1
1044	Digital source selection (7ch)	○	○	*1	1141	Second PID measured value input selection	○	○	*1
1045	Digital source selection (8ch)	○	○	*1	1142	Second PID unit selection	○	○	*1
1046	Digital trigger channel	○	○	*1	1143	Second PID upper limit	○	○	*1
1047	Digital trigger operation selection	○	○	*1	1144	Second PID lower limit	○	○	*1
1048	Display-off waiting time	○	○	*1	1145	Second PID deviation limit	○	○	*1
1049	USB host reset	○	○	*1	1146	Second PID signal operation selection	○	○	*1
1072	DC brake judgment time for vibration control operation	○	×	*1	1147	Second output interruption detection time	○	×	*1
1073	Vibration control operation selection	○	×	*1	1148	Second output interruption detection level	○	×	*1
1074	Vibration suppression frequency	○	×	*1	1149	Second output interruption cancel level	○	×	*1
1075	Vibration suppression depth	○	×	*1	1150	User parameters 1	○	○	*1
1076	Vibration suppression width	○	×	*1	1151	User parameters 2	○	○	*1
1077	Rope length	○	×	*1	1152	User parameters 3	○	○	*1
1078	Trolley weight	○	×	*1	1153	User parameters 4	○	○	*1
1079	Load weight	○	×	*1	1154	User parameters 5	○	○	*1
1103	Deceleration time at emergency stop	○	×	*1	1155	User parameters 6	○	○	*1
1106	Torque monitor filter	○	×	*1	1156	User parameters 7	○	○	*1
1107	Running speed monitor filter	○	×	*1	1157	User parameters 8	○	○	*1
1108	Excitation current monitor filter	○	○	*1	1158	User parameters 9	○	○	*1
1109	PROFIBUS communication command source selection <small>[NP]</small>	○	×	*2	1159	User parameters 10	○	○	*1
1110	PROFIBUS format selection <small>[NP]</small>	○	○	*2	1160	User parameters 11	○	○	*1
					1161	User parameters 12	○	○	*1
					1162	User parameters 13	○	○	*1
					1163	User parameters 14	○	○	*1

## Parameter list

Pr.	Name	Master	Slave	Refer to page
1164	User parameters 15	○	○	*1
1165	User parameters 16	○	○	*1
1166	User parameters 17	○	○	*1
1167	User parameters 18	○	○	*1
1168	User parameters 19	○	○	*1
1169	User parameters 20	○	○	*1
1170	User parameters 21	○	○	*1
1171	User parameters 22	○	○	*1
1172	User parameters 23	○	○	*1
1173	User parameters 24	○	○	*1
1174	User parameters 25	○	○	*1
1175	User parameters 26	○	○	*1
1176	User parameters 27	○	○	*1
1177	User parameters 28	○	○	*1
1178	User parameters 29	○	○	*1
1179	User parameters 30	○	○	*1
1180	User parameters 31	○	○	*1
1181	User parameters 32	○	○	*1
1182	User parameters 33	○	○	*1
1183	User parameters 34	○	○	*1
1184	User parameters 35	○	○	*1
1185	User parameters 36	○	○	*1
1186	User parameters 37	○	○	*1
1187	User parameters 38	○	○	*1
1188	User parameters 39	○	○	*1
1189	User parameters 40	○	○	*1
1190	User parameters 41	○	○	*1
1191	User parameters 42	○	○	*1
1192	User parameters 43	○	○	*1
1193	User parameters 44	○	○	*1
1194	User parameters 45	○	○	*1
1195	User parameters 46	○	○	*1
1196	User parameters 47	○	○	*1
1197	User parameters 48	○	○	*1
1198	User parameters 49	○	○	*1
1199	User parameters 50	○	○	*1
1220	Target position/speed selection	○	×	*1
1221	Start command edge detection selection	○	×	*1
1222	First positioning acceleration time	○	×	*1
1223	First positioning deceleration time	○	×	*1
1224	First positioning dwell time	○	×	*1
1225	First positioning sub-function	○	×	*1
1226	Second positioning acceleration time	○	×	*1
1227	Second positioning deceleration time	○	×	*1
1228	Second positioning dwell time	○	×	*1
1229	Second positioning sub-function	○	×	*1
1230	Third positioning acceleration time	○	×	*1
1231	Third positioning deceleration time	○	×	*1
1232	Third positioning dwell time	○	×	*1

Pr.	Name	Master	Slave	Refer to page
1233	Third positioning sub-function	○	×	*1
1234	Fourth positioning acceleration time	○	×	*1
1235	Fourth positioning deceleration time	○	×	*1
1236	Fourth positioning dwell time	○	×	*1
1237	Fourth positioning sub-function	○	×	*1
1238	Fifth positioning acceleration time	○	×	*1
1239	Fifth positioning deceleration time	○	×	*1
1240	Fifth positioning dwell time	○	×	*1
1241	Fifth positioning sub-function	○	×	*1
1242	Sixth positioning acceleration time	○	×	*1
1243	Sixth positioning deceleration time	○	×	*1
1244	Sixth positioning dwell time	○	×	*1
1245	Sixth positioning sub-function	○	×	*1
1246	Seventh positioning acceleration time	○	×	*1
1247	Seventh positioning deceleration time	○	×	*1
1248	Seventh positioning dwell time	○	×	*1
1249	Seventh positioning sub-function	○	×	*1
1250	Eighth positioning acceleration time	○	×	*1
1251	Eighth positioning deceleration time	○	×	*1
1252	Eighth positioning dwell time	○	×	*1
1253	Eighth positioning sub-function	○	×	*1
1254	Ninth positioning acceleration time	○	×	*1
1255	Ninth positioning deceleration time	○	×	*1
1256	Ninth positioning dwell time	○	×	*1
1257	Ninth positioning sub-function	○	×	*1
1258	Tenth positioning acceleration time	○	×	*1
1259	Tenth positioning deceleration time	○	×	*1
1260	Tenth positioning dwell time	○	×	*1
1261	Tenth positioning sub-function	○	×	*1
1262	Eleventh positioning acceleration time	○	×	*1
1263	Eleventh positioning deceleration time	○	×	*1
1264	Eleventh positioning dwell time	○	×	*1

Pr.	Name	Master	Slave	Refer to page
1265	Eleventh positioning sub-function	○	×	*1
1266	Twelfth positioning acceleration time	○	×	*1
1267	Twelfth positioning deceleration time	○	×	*1
1268	Twelfth positioning dwell time	○	×	*1
1269	Twelfth positioning sub-function	○	×	*1
1270	Thirteenth positioning acceleration time	○	×	*1
1271	Thirteenth positioning deceleration time	○	×	*1
1272	Thirteenth positioning dwell time	○	×	*1
1273	Thirteenth positioning sub-function	○	×	*1
1274	Fourteenth positioning acceleration time	○	×	*1
1275	Fourteenth positioning deceleration time	○	×	*1
1276	Fourteenth positioning dwell time	○	×	*1
1277	Fourteenth positioning sub-function	○	×	*1
1278	Fifteenth positioning acceleration time	○	×	*1
1279	Fifteenth positioning deceleration time	○	×	*1
1280	Fifteenth positioning dwell time	○	×	*1
1281	Fifteenth positioning sub-function	○	×	*1
1282	Home position return method selection	○	×	*1
1283	Home position return speed	○	×	*1
1284	Home position return creep speed	○	×	*1
1285	Home position shift amount lower 4 digits	○	×	*1
1286	Home position shift amount upper 4 digits	○	×	*1
1287	Travel distance after proximity dog ON lower 4 digits	○	×	*1
1288	Travel distance after proximity dog ON upper 4 digits	○	×	*1
1289	Home position return stopper torque	○	×	*1
1290	Home position return stopper waiting time	○	×	*1
1292	Position control terminal input selection	○	×	*1
1293	Roll feeding mode selection	○	×	*1
1294	Position detection lower 4 digits	○	×	*1
1295	Position detection upper 4 digits	○	×	*1
1296	Position detection selection	○	×	*1

Pr.	Name	Master	Slave	Refer to page
1297	Position detection hysteresis width	○	×	*1
1298	Second position control gain	○	×	*1
1299	Second pre-excitation selection	○	×	*1
1410	Starting times lower 4 digits	○	×	*1
1411	Starting times upper 4 digits	○	×	*1
1412	Parameter for manufacturer setting. Do not set.			
1413				
1499				

\*1 For details, refer to the Instruction Manual (Detailed) of the FR-A800 inverter.

\*2 For details, refer to the Instruction Manual of the plug-in option.

## 3.2 Input signal list

The following is the list of input signals of the FR-A802-P (including the availability for the master and the slave during the parallel operation).

○ indicates that the signal is valid. × indicates that the signal is invalid.

Use **Pr.178 to Pr.189 (Input terminal function selection)** to set the functions assigned to the input terminals.

For the details of the input signals, refer to the Instruction Manual (Detailed) of the FR-A800 inverter.

Setting	Signal name	Function	Master	Slave
0	RL	Low-speed operation command	○	×
1	RM	Middle-speed operation command	○	×
2	RH	High-speed operation command	○	×
3	RT	Second function selection	○	×
4	AU	Terminal 4 input selection	○	○
5	JOG	Jog operation selection	○	×
6	CS	Electronic bypass function	○	○
7	OH	External thermal relay input	○	○
8	REX	15-speed selection (Combination with multi-speeds of RL, RM, and RH)	○	×
9	X9	Third function selection	○	×
10	X10	Inverter run enable (FR-CC2 connection)	○	×
11	X11	FR-CC2 connection, instantaneous power failure detection	○	○
12	X12	PU operation external interlock	○	○
13	X13	External DC injection brake operation start	○	×
14	X14	PID control valid	○	○
15	BRI	Brake opening completion	○	×
16	X16	PU/External operation switchover (External operation with X16-ON)	○	○
17	X17	Load pattern selection forward/reverse rotation boost (For constant-torque with X17-ON)	○	×
18	X18	V/F switchover (V/F control with X18-ON)	○	×
19	X19	Load torque high-speed frequency	○	×
20	X20	S-pattern acceleration/deceleration C switchover	○	×
22	X22	Orientation command	○	×
23	LX	Pre-excitation/servo ON	○	×
24	MRS	Output stop	○	○
25	STP (STOP)	Start self-holding selection	○	×
26	MC	Control mode switchover	○	×
27	TL	Torque limit selection	○	×
28	X28	Start-time tuning start external input	○	×
37	X37	Traverse function selection	○	×
42	X42	Torque bias selection 1	○	×
43	X43	Torque bias selection 2	○	×
44	X44	P/PI control switchover (P control with X44-ON)	○	×
45	BRI2	Second brake sequence open completion	○	×
46	TRG	Trace trigger input	○	○
47	TRC	Trace sampling start/end	○	○
48	X48	Power failure stop external	○	×
50	SQ	Sequence start	○	○
51	X51	Fault clear	○	○
52	X52	Cumulative pulse monitor clear	○	×
53	X53	Cumulative pulse monitor clear (control terminal option)	○	×
57	JOGF	JOG forward rotation command	○	×
58	JOGR	JOG reverse rotation command	○	×
59	CLRN	NET position pulse clear	○	×
60	STF	Forward rotation command (Assignable to the STF terminal ( <b>Pr.178</b> ) only)	○	×
61	STR	Reverse rotation command (Assignable to the STR terminal ( <b>Pr.179</b> ) only)	○	×
62	RES	Inverter reset	○	○
64	X64	PID forward/reverse action switchover	○	○

Setting	Signal name	Function	Master	Slave
65	X65	PU/NET operation switchover (PU operation with X65-ON)	○	○
66	X66	External/NET operation switchover (NET operation with X66-ON)	○	○
67	X67	Command source switchover (Command by <b>Pr.338</b> , <b>Pr.339</b> enabled with X67-ON)	○	×
68	NP	Simple position pulse train sign	○	×
69	CLR	Simple position droop pulse clear	○	×
72	X72	PID integral value reset	○	○
73	X73	Second PID P control switchover	○	○
74	X74	Magnetic flux decay output shutoff	○	×
76	X76	Proximity dog	○	×
77	X77	Pre-charge end command	○	×
78	X78	Second pre-charge end command	○	×
79	X79	Second PID forward/reverse action switchover	○	○
80	X80	Second PID control valid terminal	○	○
85	X85	SSCNET III(/H) communication disabled	○	×
87	X87	Sudden stop	○	×
88	LSP	Upper stroke limit	○	×
89	LSN	Lower stroke limit	○	×
92	X92	Emergency stop	○	×
93	X93	Torque limit selection	○	×
94	X94	Control signal input for main circuit power supply MC	○	×
95	X95	Converter unit fault input	○	×
96	X96	Converter unit fault (E.OHT, E.CPU) input	○	×
9999	—	(No function)	○	○

## 3.3 Output signal list

The following is the list of output signals of the FR-A802-P (including the availability for the master and the slave during the parallel operation).

○ indicates that the signal is valid. × indicates that the signal is invalid.

Use **Pr.190 to Pr.196 (Output terminal function selection)** to set the functions assigned to the output terminals.

For the details of the output signals, refer to the Instruction Manual (Detailed) of the FR-A800 inverter.

Setting		Signal name	Function	Master	Slave
Positive logic	Negative logic				
0	100	RUN	Inverter running	○	○*1
1	101	SU	Up to frequency	○	×
3	103	OL	Overload warning	○	×
4	104	FU	Output frequency detection	○	×
5	105	FU2	Second output frequency detection	○	×
6	106	FU3	Third output frequency detection	○	×
8	108	THP	Electronic thermal O/L relay pre-alarm	○	○
10	110	PU	PU operation mode	○	○
11	111	RY	Inverter operation ready	○*2	○*2
12	112	Y12	Output current detection	○	×
13	113	Y13	Zero current detection	○	×
14	114	FDN	PID lower limit	○	○
15	115	FUP	PID upper limit	○	○
16	116	RL	PID forward/reverse rotation output	○	×
17	—	MC1	Electronic bypass MC1	○	×
18	—	MC2	Electronic bypass MC2	○	×
19	—	MC3	Electronic bypass MC3	○	×
20	120	BOF	Brake opening request	○	×
22	122	BOF2	Second brake opening request	○	×
25	125	FAN	Fan fault output	○	○
26	126	FIN	Heatsink overheat pre-alarm	○	○
27	127	ORA	Orientation complete	○	×
28	128	ORM	Orientation fault	○	×
30	130	Y30	Forward rotation output	○	×
31	131	Y31	Reverse rotation output	○	×
32	132	Y32	Regenerative status output	○	×
33	133	RY2	Operation ready 2	○	×
34	134	LS	Low speed detection	○	×
35	135	TU	Torque detection	○	×
36	136	Y36	In-position	○	×
38	138	MEND	Travel completed	○	×
39	139	Y39	Start time tuning completion	○	×
40	140	Y40	Trace status	○	○
41	141	FB	Speed detection	○	×
42	142	FB2	Second speed detection	○	×
43	143	FB3	Third speed detection	○	×
44	144	RUN2	Inverter running 2	○	×
45	145	RUN3	Inverter running and start command is ON	○	×
46	146	Y46	During deceleration at occurrence of power failure	○	×
47	147	PID	During PID control activated	○	○
48	148	Y48	PID deviation limit	○	○
49	149	Y49	During pre-charge operation	○	×
50	150	Y50	During second pre-charge operation	○	×
51	151	Y51	Pre-charge time over	○	×
52	152	Y52	Second pre-charge time over	○	×
53	153	Y53	Pre-charge level over	○	×
54	154	Y54	Second pre-charge level over	○	×

Setting		Signal name	Function	Master	Slave
Positive logic	Negative logic				
55	155	Signal for manufacturer check. Do not set.			
56	156	ZA	Home position return failure	○	×
57	157	Signal for manufacturer check. Do not set.			
60	160	FP	Position detection level	○	×
61	161	PBSY	During position command operation	○	×
63	163	ZP	Home position return completed	○	×
64	164	Signal for manufacturer check. Do not set.			
67	167	Y67	Power failed	○	○
68	168	EV	24 V external power supply operation	○	○
70	170	SLEEP	PID output interruption	○	×
79	179	Y79	Pulse train output of output power	○	×
80	180	SAFE	Safety monitor output	○	○
84	184	RDY	Position control preparation ready	○	×
86	186	Y86	Control circuit capacitor life (For <b>Pr.313 to Pr.322</b> )	○	○
88	188	Y88	Cooling fan life (For <b>Pr.313 to Pr.322</b> )	○	○
90	190	Y90	Life alarm	○	○
91	191	Y91	Fault output 3 (power-OFF signal)	○	○
92	192	Y92	Energy saving average value updated timing	○	×
93	193	Y93	Current average monitor	○	×
94	194	ALM2	Fault output 2	○	○
95	195	Y95	Maintenance timer	○	○
96	196	REM	Remote output	○	○
97	197	ER	Alarm output 2	○	○
98	198	LF	Alarm	○	○
99	199	ALM	Fault	○	○
200	300	FDN2	Second PID lower limit	○	○
201	301	FUP2	Second PID upper limit	○	○
202	302	RL2	Second PID forward/reverse rotation output	○	×
203	303	PID2	Second During PID control activated	○	○
204	304	SLEEP2	During second PID output shutoff	○	×
205	305	Y205	Second PID deviation limit	○	○
206	306	Y206	Cooling fan operation command	○	○
207	307	Y207	Control circuit temperature	○	○
208	308	PS	PU stopped	○	○
227	327	Y227	Parallel operation ready (refer to <a href="#">page 5</a> )	○	○
9999		—	(No function)	○	○

\*1 In the slave, the signal is OFF during operation and ON during stop.

\*2 The signal is OFF when **Pr.1001 Parallel operation selection** ≠ "100" and the Y227 signal is OFF. When the signal is OFF in the slave, it is also OFF in the master.

## 3.4 List of monitor items

The following is the list of monitor items of the FR-A802-P (including the availability for the master and the slave during the parallel operation).

○ indicates that the monitor item is valid in the same way as the FR-A802. Δ indicates that the monitor item is valid item in the different way from the FR-A802. × indicates that the monitor item is invalid ("0" is displayed).

**Pr.52, Pr.54, Pr.158, Pr.774 to Pr.776, Pr.992, and Pr.1027 to Pr.1034** are available to set the monitor item.

For the details of each parameter and each monitor item, refer to the FR-A800 Instruction Manual (Detailed).

Parameter setting for monitor item	Monitor item*1	Master	Slave
1	Output frequency/speed*2	○	×
2	Output current	Δ*3	○
3	Output voltage	○	×
—	Fault display	○	○
5	Frequency setting value/speed setting*2	○	×
6	Running speed	○	×
7	Motor torque	○	×
8	Converter output voltage	○	○
10	Electronic thermal O/L relay load factor	○	○
11	Output current peak value	Δ*4	○
12	Converter output voltage peak value	○	○
13	Input power*5	Δ*6	×
14	Output power*5	Δ*7	×
17	Load meter	○	×
18	Motor excitation current	○	×
19	Position pulse	○	×
20	Cumulative energization time	○	○
21	Reference voltage output	○	○
22	Orientation status	○	×
23	Actual operation time	○	○
24	Motor load factor	Δ*8	○
25	Cumulative power	Δ*9	×
26	Position command	○	×
27	Position command (upper digits)	○	×
28	Current position	○	×
29	Current position (upper digits)	○	×
30	Droop pulse	○	×
31	Droop pulse (upper digits)	○	×
32	Torque command	○	×
33	Torque current command	○	×
34	Motor output	○	×
35	Feedback pulse	○	×
36	Torque monitor (power driving/regenerative driving polarity switching)	○	×
38	Trace status	○	○
39	SSCNET III(/H) communication status	○	×
40	PLC function user monitor 1	○	○
41	PLC function user monitor 2	○	○
42	PLC function user monitor 3	○	○
43	For manufacturer check. Do not set.		
44	Station number (PU)	○	○
45	Station number (CC-Link)	○	○
46	For manufacturer check. Do not set.		
50	Energy saving effect*10	○	×
51	Cumulative energy saving	○	×
52	PID set point	○	○
53	PID measured value	○	○
54	PID deviation	○	○
55	Input terminal status	○	○
	Output terminal status	○	○
56	Option input terminal status	○	○
57	Option output terminal status	○	○
—	Option input terminal status 1 (for communication)	○	○

Parameter setting for monitor item	Monitor item*1	Master	Slave
—	Option input terminal status 2 (for communication)	○	○
—	Option output terminal status (for communication)	○	○
61	Motor thermal load factor	○	×
62	Inverter thermal load factor	○	○
64	PTC thermistor resistance	○	○
67	PID measured value 2	○	○
71	Cumulative pulse	○	×
72	Cumulative pulse overflow times	○	×
73	Cumulative pulse (control terminal option)	○	×
74	Cumulative pulse overflow times (control terminal option)	○	×
—	32-bit cumulative power (lower 16 bits)	△*9	×
—	32-bit cumulative power (upper 16 bits)	△*9	×
—	32-bit cumulative power (lower 16 bits)	△*9	×
—	32-bit cumulative power (upper 16 bits)	△*9	×
87	Remote output value 1	○	○
88	Remote output value 2	○	○
89	Remote output value 3	○	○
90	Remote output value 4	○	○
91	PID manipulated variable	○	○
92	Second PID set point	○	○
93	Second PID measured value	○	○
94	Second PID deviation	○	○
95	Second PID measured value 2	○	○
96	Second PID manipulated variable	○	○
97	Dancer main speed setting	○	×
98	Control circuit temperature	○	○
201	*Output frequency	○	×
202	*U Phase Output Current	△*11	○
203	*V Phase Output Current	△*11	○
204	*W Phase Output Current	△*11	○
205	*Converter Output Voltage	○	○
206	*Output Current (all three phases)	△*11	○
207	*Excitation Current (A)	△*11	×
208	*Torque Current (A)	△*11	×
209	Terminal 2	○	○
210	Terminal 4	○	○
211	Terminal 1	○	○
212	*Excitation Current (%)	○	×
213	*Torque Current (%)	○	×
222	Position command	○	×
223	Position command (upper digits)	○	×
224	Current position	○	×
225	Current position (upper digits)	○	×
226	Droop pulse	○	×
227	Droop pulse (upper digits)	○	×
230	*Output Frequency (signed)	○	×
231	*Motor Speed (signed)	○	×
232	*Speed Command (signed)	○	×
235	*Torque Command	○	×
236	*Motor Torque	○	×
237	*Excitation Current Command	○	×
238	*Torque Current Command	○	×

\*1 "" shows a monitored item with a high-speed sampling cycle.

\*2 The speed is not displayed on a monitoring device connected to terminal FM/CA or AM.

\*3 The total output current from the master and slaves is displayed.

\*4 The total of the output current peak value of the master and slaves is displayed.

\*5 The full scale output via terminal FM/CA or AM for monitoring is twice as large as the total rated power of the master and slaves.

\*6 The total input power to the master and slaves is displayed.

\*7 The total output power from the master and slaves is displayed.

\*8 Monitored value = Monitored output current / (Inverter rated current × Number of the inverters in parallel) × 100%

\*9 The total cumulative power value of the master and slaves is displayed.

\*10 The full scale output via terminal FM/CA or AM for monitoring is the total capacity of the master and slaves.

\*11 The value is displayed in 1 A increments.

# 4 PROTECTIVE FUNCTIONS

## 4.1 Causes and corrective actions

### ◆ Fault

When a protective function is activated, the inverter output is shut off and a fault signal is output.

Operation panel indication	E.OCT	<i>E. OCT</i>	FR-LU08 indication	E.OCT
Name	Overcurrent trip (Data code: 19 (H13))*1			
Description	The output from a slave inverter in parallel operation is shut off if the input current exceeds the specified level.			
Check point	<ul style="list-style-type: none"> <li>• Check for sudden load change.</li> <li>• Check for a short-circuit in the output circuit.</li> <li>• Check that the wiring is performed correctly.</li> <li>• Check that any power supply failure did not occur.</li> </ul>			
Corrective action	<ul style="list-style-type: none"> <li>• Keep the load stable.</li> <li>• Check the wiring to make sure that output short circuit does not occur.</li> <li>• Check the wiring.</li> <li>• Check the power supply.</li> </ul>			

Operation panel indication	E.OVT	<i>E. OVT</i>	FR-LU08 indication	E.OVT
Name	Overvoltage trip (Data code: 35 (H23))*1			
Description	If the DC voltage at the main circuit in a slave inverter in parallel operation reaches or exceeds the specified value, the protective circuit is activated to stop the inverter output. The circuit may also be activated by a surge voltage produced in the power supply system.			
Check point	<ul style="list-style-type: none"> <li>• Check for sudden load change and excessive regeneration.</li> <li>• Check that any power supply failure did not occur.</li> </ul>			
Corrective action	<ul style="list-style-type: none"> <li>• Keep the load stable.</li> <li>• Check the power supply.</li> </ul>			

Operation panel indication	E.PA1	<i>E. PA1</i>	FR-LU08 indication	E.PA1
Name	Parallel operation slave 1 fault (Data code: 169 (HA9))*1			
Description	Appears on the master inverter when a fault occurs in the slave 1 inverter during the parallel operation. Appears on the master inverter even when the RS-485 terminals are incorrectly connected.			
Check point	<ul style="list-style-type: none"> <li>• Check if any protective function is activated in the slave 1.</li> <li>• Check the RS-485 terminal wiring.</li> </ul>			
Corrective action	<ul style="list-style-type: none"> <li>• Remove the fault in the slave 1.</li> <li>• Perform correct wiring of the RS-485 terminals.</li> </ul>			

Operation panel indication	E.PA2	<i>E. PA2</i>	FR-LU08 indication	E.PA2
Name	Parallel operation slave 2 fault (Data code: 170 (HAA))*1			
Description	Appears on the master inverter when a fault occurs in the slave 2 inverter during the parallel operation. Appears on the master inverter even when the RS-485 terminals are incorrectly connected.			
Check point	<ul style="list-style-type: none"> <li>• Check if any protective function is activated in the slave 2.</li> <li>• Check the RS-485 terminal wiring.</li> </ul>			
Corrective action	<ul style="list-style-type: none"> <li>• Remove the fault in the slave 2.</li> <li>• Perform correct wiring of the RS-485 terminals.</li> </ul>			

<b>Operation panel indication</b>	<b>E.SER</b>	<b>E. SER</b>	<b>FR-LU08 indication</b>	<b>Communication fault</b>
<b>Name</b>	Communication fault (inverter) (Data code: 198 (HC6))*1			
<b>Description</b>	A faulty wiring of the RS-485 terminals stops the inverter output. The inverter output is shut off if communication has been cut off for the time set in <b>Pr.652 Parallel operation communication check time</b> while the inverter is stopped.			
<b>Check point</b>	<ul style="list-style-type: none"> <li>• Check the RS-485 terminal wiring.</li> <li>• Check that the time set in <b>Pr.652</b> is appropriate.</li> <li>• Check for excessive noise around the inverter.</li> </ul>			
<b>Corrective action</b>	<ul style="list-style-type: none"> <li>• Perform correct wiring of the RS-485 terminals.</li> <li>• Set the time set in <b>Pr.652</b> longer.</li> <li>• Take measures against noises if there are devices producing excess electrical noises around the inverter.</li> </ul> If the situation does not improve after taking the above measure, contact your sales representative.			

\*1 The data code is used for checking the fault via communication or for setting **Pr.997 Fault initiation**. (Refer to the Instruction Manual (Detailed) of the FR-A800 inverter.)

## ◆Others

The faults history and the operation status of the inverter are displayed. It is not a fault indication.

<b>Operation panel indication</b>	<b>E.0</b>	<b>E. 0</b>	<b>FR-LU08 indication</b>	<b>No Alarm</b>
<b>Name</b>	No fault history			
<b>Description</b>	Appears when no fault records are stored. (Appears when the fault history is cleared after the protective function has been activated.)			

  

<b>Operation panel indication</b>	<b>SLV.1</b>	<b>SLV.1</b>		
<b>Name</b>	Parallel operation slave 1			
<b>Description</b>	Appears on the first monitor screen of the slave 1 inverter ( <b>Pr.1001 Parallel operation selection = "1"</b> ).			

  

<b>Operation panel indication</b>	<b>SLV.2</b>	<b>SLV.2</b>		
<b>Name</b>	Parallel operation slave 2			
<b>Description</b>	Appears on the first monitor screen of the slave 2 inverter ( <b>Pr.1001 Parallel operation selection = "2"</b> ).			

# 5 SPECIFICATIONS

## 5.1 Common specifications

Control specifications	<b>Control method</b>		Soft-PWM control, PWM control (selectable among V/F control, Advanced magnetic flux vector control, Real sensorless vector control), and vector control*1
	<b>Output frequency range</b>		0.2 to 120 Hz
	<b>Frequency setting resolution</b>	<b>Analog input</b>	0.015 Hz/60 Hz (terminal 2, 4: 0 to 10 V/12 bits) 0.03 Hz/60 Hz (0 to 5 V/11 bits or 0 to 20 mA/approx. 11 bits for terminals 2 and 4, 0 to ±10 V/12 bits for terminal 1) 0.06 Hz/60 Hz (0 to ±5 V/11 bits for terminal 1)
		<b>Digital input</b>	0.01 Hz
	<b>Frequency accuracy</b>	<b>Analog input</b>	Within ±0.2% of the max. output frequency (25°C ±10°C)
		<b>Digital input</b>	Within 0.01% of the set output frequency
	<b>Voltage/frequency characteristics</b>		Base frequency can be set from 0 to 120 Hz. Constant-torque/variable-torque pattern or adjustable 5 points V/F can be selected.
	<b>Starting torque</b>		LD rating: 150% 0.3 Hz, ND rating: 200%*2 0.3 Hz (under Real sensorless vector control or vector control*1)
	<b>Torque boost</b>		Manual torque boost
	<b>Acceleration/deceleration time setting</b>		0 to 3600 s (acceleration and deceleration can be set individually), linear or S-pattern acceleration/deceleration mode, backlash countermeasures acceleration/deceleration can be selected.
	<b>DC injection brake (induction motor)</b>		Operation frequency (0 to 120 Hz), operation time (0 to 10 s), operation voltage (0 to 30%) variable
<b>Stall prevention operation level</b>		Activation range of stall prevention operation (LD rating: 0 to 150%, ND rating: 0 to 220%). Whether to use the stall prevention or not can be selected. (V/F control, Advanced magnetic flux vector control)	
<b>Torque limit level</b>		Torque limit value can be set (0 to 400% variable). (Real sensorless vector control, vector control*1)	
Operation specifications	<b>Frequency setting signal</b>	<b>Analog input</b>	Terminals 2 and 4: 0 to 10 V, 0 to 5 V, 4 to 20 mA (0 to 20 mA) are available. Terminal 1: -10 to +10 V, -5 to 5 V are available.
		<b>Digital input</b>	Input using the setting dial of the operation panel or parameter unit Four-digit BCD or 16-bit binary (when used with option FR-A8AX)
	<b>Start signal</b>		Forward and reverse rotation or start signal automatic self-holding input (3-wire input) can be selected.
	<b>Input signals (twelve terminals)</b>		Low-speed operation command, Middle-speed operation command, High-speed operation command, Second function selection, Terminal 4 input selection, Jog operation selection, Selection of automatic restart after instantaneous power failure, flying start, Output stop, Start self-holding selection, Forward rotation command, Reverse rotation command, Inverter reset The input signal can be changed using <b>Pr.178 to Pr.189 (Input terminal function selection)</b> .
	<b>Pulse train input</b>		100k pulses/s
	<b>Operational functions</b>		Maximum and minimum frequency settings, multi-speed operation, acceleration/deceleration pattern, thermal protection, DC injection brake, starting frequency, JOG operation, output stop (MRS), stall prevention, regeneration avoidance, increased magnetic excitation deceleration, frequency jump, rotation display, automatic restart after instantaneous power failure, electronic bypass sequence, remote setting, automatic acceleration/deceleration, forward/reverse rotation prevention, operation mode selection, slip compensation, droop control, load torque high-speed frequency control, speed smoothing control, traverse, applied motor selection, gain tuning, RS-485 communication, PID control, PID pre-charge function, easy dancer control, cooling fan operation selection, stop selection (deceleration stop/coasting), stop-on-contact control, PLC function, life diagnosis, maintenance timer, current average monitor, multiple rating, orientation control*1, speed control, torque control, position control, pre-excitation, torque limit, test run, 24 V power supply input for control circuit, safety stop function, vibration control
	<b>Open collector output (five terminals)</b>		Inverter running, Up to frequency, Overload warning, Output frequency detection, Fault
	<b>Relay output (two terminals)</b>		The output signal can be changed using <b>Pr.190 to Pr.196 (Output terminal function selection)</b> . Fault codes of the inverter can be output (4 bits) from the open collector.
	<b>Pulse train output</b>		50k pulses/s
	Indication	<b>For meter</b>	<b>Pulse train output (FM type)</b>
<b>Current output (CA type)</b>			Max. 20 mADC: one terminal (output current) The monitor item can be changed using <b>Pr.54 FM/CA terminal function selection</b> .
<b>Voltage output</b>			Max. 10 VDC: one terminal (output voltage) The monitor item can be changed using <b>Pr.158 AM terminal function selection</b> .
<b>Operation panel (FR-DU08)</b>		<b>Operating status</b>	Output frequency, output current, output voltage, frequency setting value The monitor item can be changed using <b>Pr.52 Operation panel main monitor selection</b> .
	<b>Fault record</b>	Fault record is displayed when a fault occurs. Past 8 fault records and the conditions immediately before the fault (output voltage/current/frequency/cumulative energization time/year/month/date/time) are saved.	

<b>Protective/warning function</b>	<b>Protective function</b>	Overcurrent trip during acceleration, Overcurrent trip during constant speed, Overcurrent trip during deceleration or stop, Overcurrent trip, Regenerative overvoltage trip during acceleration, Regenerative overvoltage trip during constant speed, Regenerative overvoltage trip during deceleration or stop, Overvoltage trip, Inverter overload trip (electronic thermal relay function), Motor overload trip (electronic thermal relay function), Heatsink overheat, Stall prevention stop, Output side earth (ground) fault overcurrent, Output phase loss, External thermal relay operation*5, PTC thermistor operation*5, Option fault, Communication option fault, Parameter storage device fault, PU disconnection*5, Parameter storage device fault, CPU fault, Operation panel power supply short circuit / RS-485 terminals power supply short circuit, 24 VDC power fault, Abnormal output current detection*5, Communication fault (inverter), Analog input fault, USB communication fault, Safety circuit fault, Overspeed occurrence*5, Speed deviation excess detection*1*5, Signal loss detection*1*5, Excessive position fault*1*5, Brake sequence fault*5, 4 mA input fault*5, Pre-charge fault*5, PID signal fault*5, Opposite rotation deceleration fault*5, Internal circuit fault
	<b>Warning function</b>	Fan alarm, Stall prevention (overcurrent), Stall prevention (overvoltage), Electronic thermal relay function pre-alarm, PU stop, Speed limit indication (output during speed limit)*5, Parameter copy, Safety stop, Maintenance timer 1 to 3*5, USB host error, Home position return setting error*1*5, Home position return uncompleted*1*5, Operation panel lock*5, Password locked*5, Parameter write error, Copy operation error, 24 V external power supply operation, Continuous operation during communication fault*5
<b>Environment</b>	<b>Surrounding air temperature</b>	-10°C to +50°C (non-freezing)
	<b>Surrounding air humidity</b>	95% RH or less (non-condensing) (With circuit board coating (conforming to IEC60721-3-3 3C2/3S2)) 90% RH or less (non-condensing) (Without circuit board coating)
	<b>Storage temperature*3</b>	-20°C to +65°C
	<b>Atmosphere</b>	Indoors (without corrosive gas, flammable gas, oil mist, dust and dirt, etc.)
	<b>Altitude/vibration</b>	2500 m or lower*4, 2.9 m/s <sup>2</sup> or less at 10 to 55 Hz (directions of X, Y, Z axes)

- \*1 Available only when a vector control compatible option is mounted.
- \*2 In the initial setting, it is limited to 150% by the torque limit level.
- \*3 Temperature applicable for a short time, e.g. in transit.
- \*4 For the installation at an altitude above 1000 m, consider a 3% reduction in the rated current per 500 m increase in altitude.
- \*5 This protective function is not available in the initial status.

# 6 APPENDIX

## 6.1 Differences in the functions from the standard inverter

The following functions of the FR-A800 standard inverter are changed in the FR-A802-P.

Function name	Description
FWD and REV keys on the operation panel	The FWD and REV keys on the operation panel of the slave are disabled.
Mitsubishi inverter protocol communication	Since RS-485 terminals are used for RS-485 communication between the master and slave inverters, communication using the Mitsubishi inverter protocol through the RS-485 terminals is not available.
MODBUS RTU protocol communication	The MODBUS RTU protocol communication is not available.
High speed maximum frequency (Pr.18)	The upper limit of the output frequency is 120 Hz. Even if a value higher than 120 Hz is set as a high speed maximum frequency, the setting is fixed to 120 Hz.
Current monitoring reference (Pr.56)	The initial value of <b>Pr.56</b> varies according to the setting in <b>Pr.1001 Parallel operation selection</b> as follows. <ul style="list-style-type: none"> <li>Inverter rated current × Number of the inverters × 0.8 when <b>Pr.1001</b> = "200 or 300"</li> <li>Inverter rated current × 0.8 when <b>Pr.1001</b> = "1 or 2"</li> </ul>
Optimum excitation control (Pr.60)	The Optimum excitation control mode ( <b>Pr.60</b> = "9") is not available.
Reference current (Pr.61)	It is determined by the following formula: Inverter rated current × Number of the inverters × 0.8, when <b>Pr.61</b> = "9999 (initial value)"
Applied motor (Pr.71 (Pr.450))	The electronic thermal relay characteristic when <b>Pr.71 (Pr.450)</b> = "8090, 8093, 8094, 9090, 9093, or 9094" is the same as that of the standard motor.
Carrier frequency (Pr.72)	The carrier frequency is fixed at 2 kHz. It cannot be changed using parameters.
PU stop selection (Pr.75)	The setting for PU stop selection ( <b>Pr.75</b> ) in the slave inverter is invalid. (The setting of <b>Pr.75</b> in the master inverter is applied to the slave inverter.) <ul style="list-style-type: none"> <li>When the STOP/RESET key on PU of the slave inverter is pressed while <b>Pr.75</b> of the master inverter = "14 to 17 or 114 to 117", the motor decelerates to stop regardless of the inverter's operation mode and the warning "PS" (PU stop) indication appears on the slave inverter. The "PS" can be reset on the master inverter.</li> <li>When <b>Pr.75</b> of the master inverter = "0 to 3, 100 to 103", the motor does not stop by pressing the STOP/RESET key on the PU of the slave inverter even if the inverters are in the PU operation mode.</li> </ul>
Auto tuning setting/status (Pr.96)	Tuning is not available although "101" (offline tuning with motor rotation) is set in <b>Pr.96</b> .
PID action selection (Pr.128 (Pr.753))	When <b>Pr.128 (Pr.753)</b> of the slave inverter ≠ "2000, 2001, 2010, or 2011", the PID action selection function of the slave inverter is invalid.
Bypass selection at a fault (Pr.138)	Setting "1" in <b>Pr.138</b> of the master inverter enables automatic switchover to commercial power supply operation when a protective function (E.OHT or E.CPU) is activated in the slave inverter. Install a thermal relay to the master inverter to protect the motor from overheating.
Output current detection level (Pr.150), Zero current detection level (Pr.152)	The result of the following formula corresponds to "100" (100%) of <b>Pr.150</b> (Output current detection level) and <b>Pr.152</b> (Zero current detection level) in the master inverter: Inverter rated current × Number of the inverters × 0.8.
Fast-response current limit (Pr.156)	This function is not available.
Frequency setting / key lock operation selection (Pr.161)	Regardless of the <b>Pr.161</b> setting of the slave inverter, the setting dial frequency setting mode and setting dial potentiometer mode are disabled on the slave inverter. (The function to lock the operation panel keys is available.)
Automatic restart after instantaneous power failure selection (Pr.162)	Even when a value other than "3 or 13" is set in <b>Pr.162</b> , a frequency search (reduced impact restart) is performed.
Slip compensation (Pr.245 to Pr.247)	To use the slip compensation function, set the motor capacity in <b>Pr.80 (Pr.453)</b> of the master in advance.
Self power management selection (Pr.248)	When "2" is set in <b>Pr.248</b> of the master inverter, the MC1 signal turns OFF when the circuit failure protective function or E.PA1/E.PA2 (Parallel operation slave 1 fault / Parallel operation slave 2 fault) is activated.
High-speed setting maximum current (Pr.271), Middle-speed setting minimum current (Pr.272)	During operation with the X19 signal ON, when the average current of the current averaging range becomes equal to or less than the result of the following formula 1: Inverter rated current × Number of the inverters × 0.8 × <b>Pr.271</b> setting (%), the maximum frequency is automatically defined as the setting of <b>Pr.4 Multi-speed setting (high speed)</b> . During operation with the X19 signal ON, when the average current of the current averaging range becomes equal to or more than the result of the following formula 2: Inverter rated current × Number of the inverters × 0.8 × <b>Pr.272</b> setting (%), the maximum frequency is automatically defined as the setting of <b>Pr.5 Multi-speed setting (middle speed)</b> . When the average current is more than the result of the formula 1 and less than the result of the formula 2, linear compensation is performed.

Function name	Description
Stop mode selection at communication error (Pr.502), Operation frequency during communication error (Pr.779)	The settings of Pr.502 and Pr.779 does not affect communication between the inverters via the RS-485 terminals. (The setting affects only communication via the communication option.)
PU mode operation command source selection (Pr.551)	The command source is the PU connector when Pr.551 = "1" and the inverters are in the PU operation mode. When a USB memory device is connected to the USB connector, the command source is the USB connector.
Multiple rating setting (Pr.570)	The SLD and HD ratings are not supported. When "0 or 3" is set in Pr.570, the ND rating is applied.
Control method selection (Pr.800 (Pr.451))	The PM sensorless vector control is not available. When Pr.800 (Pr.451) = "13, 14, 113, or 114", Real sensorless vector control is applied.
Fast-response operation (Pr.800 (Pr.451))	Even if the fast-response operation is selected in Pr.800 (Pr.451), the normal-response operation is applied.

### NOTE

- Functions not mentioned above are the same as those of the FR-A800 standard inverter. (The functions added in and after July 2016 are not supported.)

## 6.2 Compatible options

### ◆ Plug-in option

Availability of the plug-in options for the master and the slave inverters during the parallel operation is as follows.

○ indicates that the option is available, Δ indicates that the option is available but some functions are unavailable, and × indicates that the option is not available.

Name	Model	Master	Slave
Vector control	FR-A8AP	○	×
Vector control / encoder pulse dividing output	FR-A8AL	○	×
16-bit digital input	FR-A8AX	○	Δ*1
Digital output / additional analog output	FR-A8AY	○	Δ*2, *3
Relay output	FR-A8AR	○	Δ*2
Bipolar analog output / high-resolution analog input	FR-A8AZ	Δ*4	Δ*3, *5
CC-Link communication	FR-A8NC	○	Δ*6
CC-Link IE Field Network communication	FR-A8NCE	○	Δ*6
DeviceNet communication	FR-A8ND	○	Δ*6
PROFIBUS-DP communication	FR-A8NP	○	Δ*6
FL remote communication	FR-A8NF	○	Δ*6
SSCNET III(H) communication	FR-A8NS	○	×

- \*1 The speed command and torque command are not executed.
- \*2 Some of the output signals (refer to page 22) are not available.
- \*3 Some of the monitor items (refer to page 24) are not available.
- \*4 The motor thermistor interface is not available.
- \*5 The high-resolution analog input function and the motor thermistor interface are not available.
- \*6 Only the monitoring function is available.

### ◆ Control terminal option

Availability of the control terminal option for the master and the slave inverters during the parallel operation is as follows.

○ indicates that the option is available, and × indicates that the option is not available.

Name	Model	Master	Slave
Vector control terminal block	FR-A8TP	○	×
Screw terminal block	FR-A8TR	○	○

# MEMO

# MEMO

# MEMO



# FR-A842-P

## Instruction Manual Supplement

### ◆ Motor thermistor interface (FR-A8AZ) supported

The motor thermistor interface (FR-A8AZ) is supported.

When using the vector inverter motor equipped with a thermistor (SF-V5RU □□□□□ T/A), the inverter can receive feedback (detected temperature) from the motor-side thermistor. The feedback is used to reduce the fluctuation of output torque. The detected motor temperature can be output as an output signal (Y55 signal) or be displayed on the monitor. For more details, refer to the FR-A8AZ Instruction Manual.

- The availability of the related parameters for the master and the slave is as follows.

Pr.	Pr. group	Name	Master	Slave
326	G062	Motor temperature feedback reference	○	○
407	T620	Motor temperature detection filter	○	○
408	H023	Motor thermistor selection	○	○
750	M061	Motor temperature detection level	○	○
751	M046	Reference motor temperature	○	○
C29(925)	H041	Motor temperature detection calibration (analog input)	○	○

- The availability of the Y55 signal for the master and the slave is as follows.

Setting		Signal name	Function	Master	Slave
Positive logic	Negative logic				
55	155	Y55	Motor temperature detection	○	○

- The availability of the motor temperature monitor for the master and the slave is as follows.

**Pr.52, Pr.54, Pr.158, Pr.774 to Pr.776, Pr.992, and Pr.1027 to Pr.1034** are available to set the monitor item.

Parameter setting for monitor item	Monitor item	Master	Slave
46	Motor temperature	○	○

### ◆ Input voltage mode selection

Although a setting value "2" is added for **Pr.977 Input voltage mode selection**, do not set it as it is for manufacturer setting.

### ◆ Power monitoring reference

**Pr.1387** can be used to set the full-scale value when the monitor values of the following items are output through terminal FM, CA, or AM.

Pr.	Pr. group	Name	Setting range	Minimum setting increments	Initial value	Master	Slave
1387	M047	Power monitoring reference	0 to 3000 kW	0.1 kW	Inverter rated capacity	○	○

Monitor	Full-scale value
Input power	Pr.1387×2
Output power	
Energy saving effect	Pr.1387

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