

Inverter
FR-A800



World-class FA Products



**Unparalleled Performance.
Uncompromising Quality.**

Channeling inherited techniques to deliver the ultimate in inverter technology.



- LEADING DRIVE PERFORMANCE ■**
- SECURITY & SAFETY ■**
- EASY SETUP & EASY TO USE ■**
- ECO-FRIENDLY ■**
- SYSTEM SUPPORT ■**
- ENVIRONMENTAL ADAPTABILITY ■**

01
LEADING DRIVE PERFORMANCE
 The enhanced Real sensorless vector control and vector control serve the needs of all machinery types.

02
SECURITY & SAFETY
 Rapid response is obtained when an unexpected trouble occurs.

03
EASY SETUP & EASY TO USE
 Fully supported with a variety of simple functions and equipment to improve work efficiency.

04
ECO-FRIENDLY FACTORIES
 Save energy while increasing factory production.

05
SYSTEM SUPPORT
 Numerous functions and the advanced lineup of models are ready to support various systems.

06
ENVIRONMENTAL ADAPTABILITY
 The PS-A800 series complies with various standards and is suitable in different scenes.



A800

01
 Excellent Drive Performance

LEADING DRIVE PERFORMANCE

The new series is equipped with the new state-of-the-art high-speed processor developed by Mitsubishi. With better control performance and response level, safe and accurate operation is assured in a diverse range of applications.

Swift, Smooth, yet Robust

The enhanced Real sensorless vector control and vector control serve the needs of all machinery types.

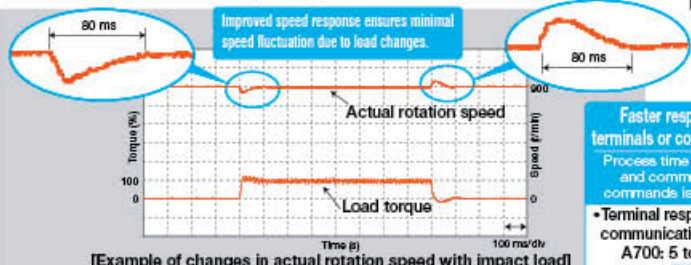
Vector control is also valid when equipped with optional FR-A8AP.

(1) For high-quality products

High response

[Response speed] Real sensorless vector control 50 Hz*1 A700: 20 Hz
 Vector control 130 Hz A700: 50 Hz

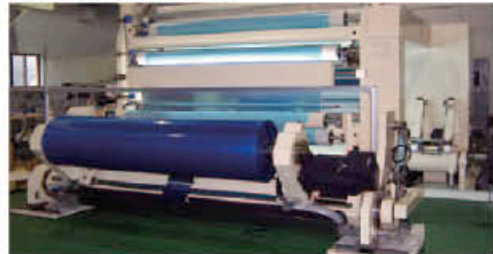
*1: At 3.7 kW with no load. Differs depending on the load conditions and motor capacity.



*2: The communication response is 2 to 5 ms when using communication options.

Line control

Line control is necessary for the machining of elongated products such as paper, thread, wires, all kinds of sheet, and tape. This will respond rapidly to changes in line speed and suppress the occurrences of winding unevenness. This contributes to a steady supply of high-quality products.



(2) For accurate and stable transport between machines

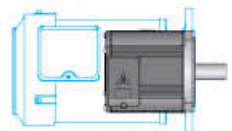
PM sensorless vector control

• What is a permanent magnet (PM) motor?

A PM motor is a synchronous motor with strong permanent magnets embedded in its rotor. The two major PM motor types are: the interior permanent magnet (IPM) motor with its magnets embedded inside the rotor, and the surface permanent magnet (SPM) motor with its permanent magnets attached on the rotor surface.

• Easy maintenance for sensor (encoder)-less motor

- No additional cables means less wiring space required.
- Improved reliability is obtained in unfavorable operating environments. (e.g. high vibration)
- PM motors are usually smaller and lighter than induction motors.

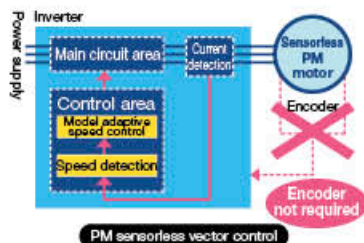


Comparison of SF-PRF 1.5 kW 4P and MM-CF152

What is PM sensorless vector control?

The speed and magnetic pole positions, the two essential bits of information to control a PM motor, are detected without a sensor (encoder). The speed detection internally-performed in an inverter enables highly accurate control of a PM motor, almost as accurate as an AC servo system, without the need of a sensor (encoder)^{*3}.

Combining with Mitsubishi MM-CF series IPM motors facilitates aspects of high-level control with no encoder such as "simple positioning"^{*4} and "zero speed torque".



Transfer of circuit boards

The Simple positioning control delivers a precision workpiece, such as a printed substrate, to a precise position. Transfer of fragile glass substrates can be performed with a highly accurate driving system.



*3: Speed fluctuation ratio: ±0.05% (digital input)

*4: Positional accuracy (with no load) of 1.5K and lower: ±1.8°, 2K and higher: ±3.6°

(3) Perform ultra-fine processing

High-speed rotation

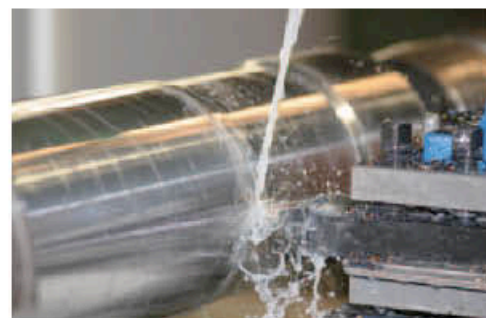
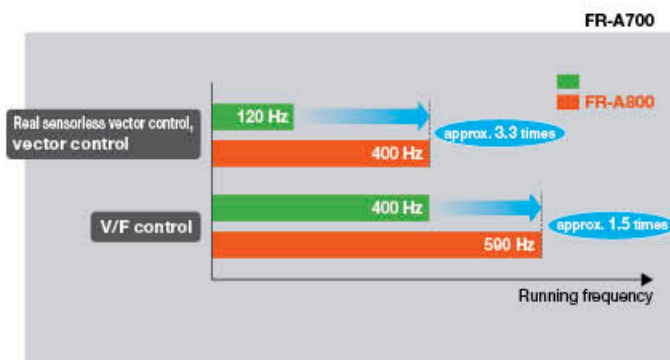
[Operating frequency]

Real sensorless vector control and vector control **400 Hz** A700: 120 Hz

V/F control **590 Hz** A700: 400 Hz

Machine tool

Cutting-edge machine tools are harder and thinner than ever before to be applicable to diverse new materials. High-speed rotation is required more than ever before in order to be applicable for fine and precise cutting on hard and difficult-to-grind materials.



(4) Swiftly move heavy weights

High torque at low speed

[Starting torque]

Real sensorless vector control **200%** (ND rating)

(When at 0.3 Hz)

Vector control **200%** (ND rating)

(150% of initial setting for 5.5K and higher)

[Zero-speed torque]

Vector control **200%**. (Select HD rating.)

[Speed control range]

V/F control **1:10** (6 to 60 Hz: Driving)

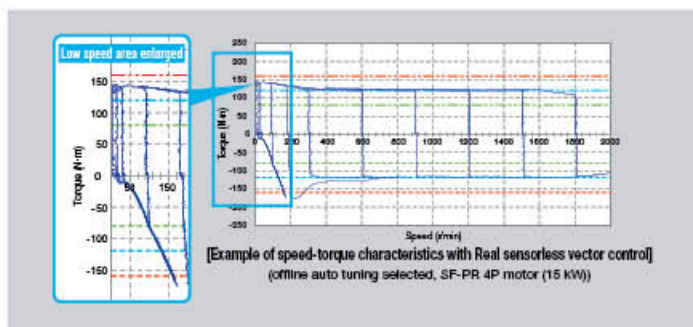
Advanced magnetic flux vector control **1:120** (0.5 to 60 Hz: Driving)

Real sensorless vector control **1:200** (0.3 to 60 Hz: Driving)

Vector control **1:1500** (1 to 1500 r/min: Both driving/regeneration)

Cranes

Cranes are in operation daily at ports carrying fully-laden containers in response to strong demand from all over the world. Our new inverter realizes smooth cargo handling work at low speed and high torque for the slow and stable movements required for heavy objects.





SECURITY & SAFETY

Swift recovery ensured by preventing trouble beforehand. The FR-A800 has been developed with reliability and safety foremost in mind.

For Improved Equipment Reliability

Rapid response is obtained when an unexpected trouble occurs.

(1) Improved system safety

Safety standards compliance **NEW**

Controls with safety functions can be easily performed.

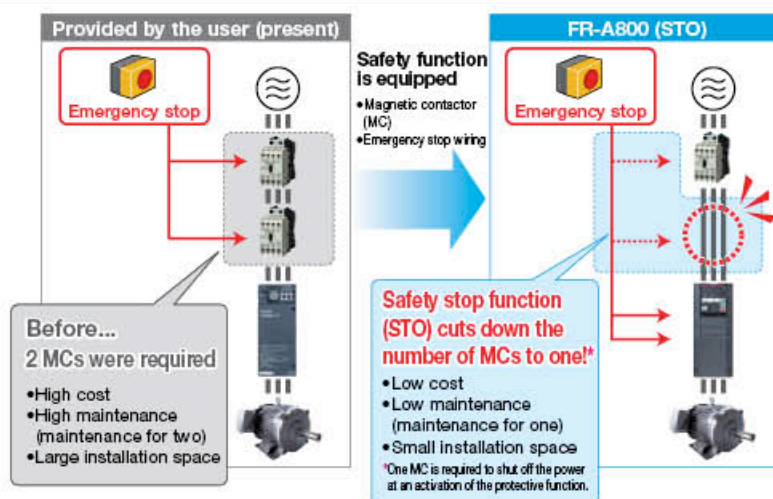
- PLd and SIL2 are supported as standard. (STO)
 - EN ISO 13849-1 PLd / Cat.3
 - EN 61508, EN 61800-5-2 SIL2
- Compatible with PLe and SIL3 using a built-in option.
 - EN ISO 13849-1 PLe / Cat.4 (to be supported soon)
 - EN 61508, EN 61800-5-2 SIL3

In addition to STO, also compatible with SS1, SS2, SLS, and SOS by using an option (to be released soon).

Functions for IEC/EN 61800-5-2:2007

STO (Safe Torque Off)	SOS (Safe Operating Stop)
SS1 (Safe Stop 1)	SLS (Safely-Limited Speed)
SS2 (Safe Stop 2)	

- Safety communication networks will be also supported by using an option (to be released soon).
 - CC-Link IE Safety communication function
 - PROFI-safe



EASY SETUP & EASY TO USE

A range of equipment and functions are prepared allowing work to be performed anywhere to suit product life cycles.

From Startup to Maintenance

Fully equipped with a variety of simple functions and equipment to improve work efficiency.

(1) Streamlining the startup process

Parameter copying with USB memory **NEW**

- A USB host connector (A type), which allows external device connections, has been added. Parameters can be copied to commercial USB memory devices.



(2) Easy-to-follow display improves the operability

Easy operation with GOT (to be released soon) **NEW**

- Automatic communication is possible without specifying any parameter settings simply by connecting to the GOT2000 series.
- The PLC function device monitor can be displayed at the GOT2000 series. Batch control of multiple inverter device monitors is possible with a single GOT unit.
- The sample screen data for the A800 can be found in the screen design software of the GOT2000 series. The newest version of the screen design software can be downloaded from the Mitsubishi Electric FA Global Website.





ECO-FRIENDLY FACTORIES

The power consumption by motors is said to amount about the half of all power consumption made by the Japanese manufacturing industry. Factories can save more energy without dropping their production. Less energy and more production—the FR-A800 series will help you to get the both.

The Next Step — Go Green

Save energy while increasing factory production.

(1) PM motor contributes to the energy saving in factories

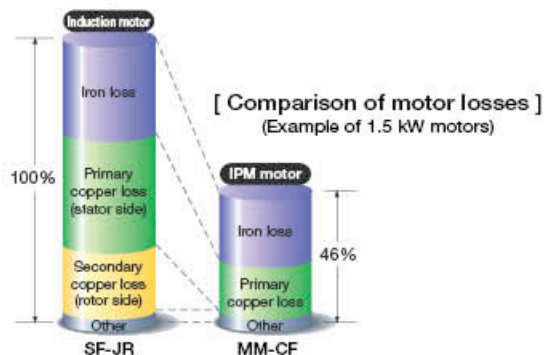
PM motor

If the inverter is being used for an application requiring constant-torque, such as a conveyor, factory energy savings can be achieved by replacing your current induction motors with permanent magnet motors (PM motors).

(Tuning is required for an IPM motor other than MM-CF, and for the PM motors of other manufacturers. Please contact your sales representative.)

• Why is a PM motor so efficient?

- The current does not flow to the rotor (secondary side), so there is no secondary copper loss.
- Magnetic flux is generated by permanent magnets, so less current is required to drive a motor.



Conveyor

A conveyor transports different goods and products according to its application. A PM motor can keep the carrying speed constant while saving energy.



SYSTEM SUPPORT

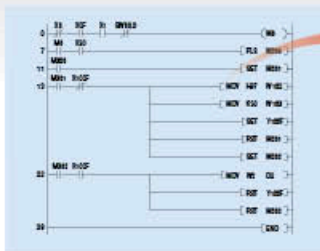
High Equipment Functionality —

Numerous functions and the extensive lineup of models are ready to support various systems.

(1) Various network compatibility brings all the control in your hand

Compatibility to various open networks

- A controller can control and monitor an inverter via networks. RS-485 communication (Mitsubishi inverter protocol, Modbus-RTU protocol), which is supported as standard, conveys data up to 115200 bps.
- A function block (FB) programming for CC-Link communication is available for the MELSEC-Q/L series. Inverter control sequence programs can be created easily. (An FB library (FB part library) can be downloaded from the Mitsubishi Electric FA Global Website.)



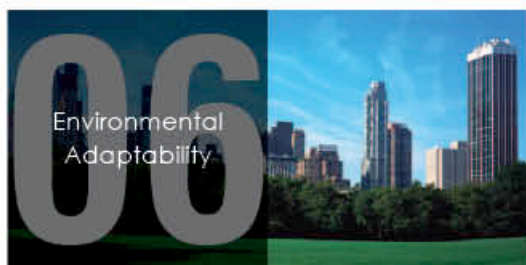
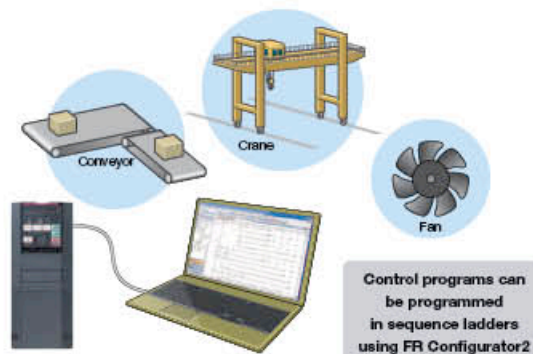
- Communication options are also available for the major network protocols such as CC-Link and SSCNET III/H (to be released soon) as well as DeviceNet™, PROFIBUS-DPV0, and LonWorks® (to be released soon). Other Ethernet networks are also supported.
 - CC-Link IE Field
 - FL-net remote I/O (to be released soon)

LonWorks® is a registered trademark of Echelon Corporation, DeviceNet™ is a trademark of ODVA, and PROFIBUS® is a registered trademark of the PROFIBUS User Organization. Other company and product names herein are the trademarks and registered trademarks of their respective owners.

(2) PLC control with an inverter

PLC function NEW

- Parameters and setting frequency can be changed at the program.
- Inverter control such as inverter operations triggered by input signals, signal output based on inverter operation status, and monitor output can be freely customized based on the machine specifications.
- All machines can be controlled by the inverter alone, and control can also be dispersed.
- Time-based operation is possible by using in combination with the real-time clock function (when using optional FR-LU08).



ENVIRONMENTAL ADAPTABILITY

Installation Anywhere

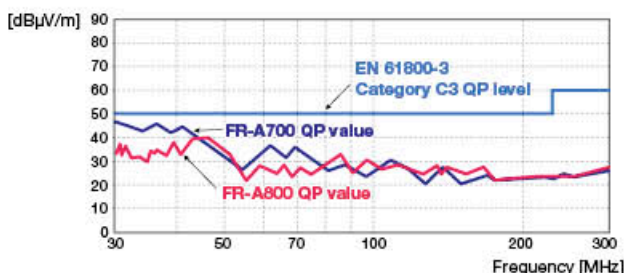
The FR-A800 series complies with various standards and is usable in different scenes.

(1) Comprehensive noise countermeasures

Compliance with EU EMC Directive with inverter alone

Troublesome acquisition of standards is unnecessary.

- The FR-A800 series is equipped with an EMC filter as standard for compliance with EMC Directive with the inverter alone. (EN 61800-3 2nd Environment Category C3)
- The newly developed drive technology and the power supply technology minimize the EMI emitted from inverters.



	Capacitive filter (radio noise filter)	Input-side common mode choke (line noise filter)	DC reactor
55K or lower	Standard (built-in)	Standard (built-in)	Option (sold separately)
75K or higher	Standard (built-in)	Option (sold separately)	Option (sold separately)

(2) Global compatibility

Compliance with a variety of standards

- Complies with UL, cUL, and EC Directives (CE marking), and Korean safety certification (KC marking).
- Being RoHS compliant, the FR-A800 series inverters are friendly to people and to the environment.
- Class NK and CCS compliance allows use on ship equipment (to be supported soon).



(3) Protected in hazardous environment

Circuit board coating

Special-purpose inverters with PCB coating (IEC60721-3-3 3C2) and conductive plating are available for improved environmental resistance. Please contact your sales representative for details.

Standard specifications

Series : FR-A840 - **K - 2-60			FR- A 840 - XXXXX - 2-60											
			00023	00038	00052	00083	00126	00170	00250	00310	00380	00470	00620	00770
Output	Rated Motor Capacity (Kw)*1	120% Overload Capacity	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37
		150% Overload Capacity	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37
		200% Overload Capacity	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30
	Rated Current*3	120% Overload Capacity	2.3	3.8	5.2	8.3	12.6	17	25	31	38	47	62	77
		150% Overload Capacity	2.1	3.5	4.8	7.6	11.5	16	23	29	35	43	57	70
		200% Overload Capacity	1.5	2.5	4	6	9	12	17	23	31	38	44	57
	Out Put Capacity (KVA)*2	120% Overload Capacity	1.8	2.9	4	6.3	10	13	19	24	29	36	47	59
		150% Overload Capacity	1.6	2.7	3.7	5.8	8.8	12	18	22	27	33	43	53
		200% Overload Capacity	1.1	1.9	3	4.6	6.8	9.1	13	18	24	29	34	43
	Overload current rating.*4	120% Overload Capacity	110% of rated current capacity for 60 s; 120% for 3 s											
		150% Overload Capacity	120% of rated current capacity for 60 s; 150% for 3 s											
200% Overload Capacity	150% of rated current capacity for 60 s; 200% for 3 s													
	Voltage*5	Three-phase 380 to 500V 50Hz/60Hz												
Frequency Range	50Hz/60Hz, ± 5%													
Control Method	Soft-PWM control, high carrier frequency PWM control (selectable among V/F control, Advanced magnetic flux vector control, Real sensorless vector control), vector control and PM sensorless vector control													
Brake transistor	Built-in													
Regenerative braking torque	100% torque/10%ED(external resistor),100% torque/2%ED (built in resistor)						100% torque/6%ED							
Power supply	Rated Input AC voltage/frequency	Three-phase 380 to 500V 50Hz/60Hz *8												
	Permissible AC voltage fluctuation	323 to 550V 50Hz/60Hz												
	Power supply frequency	50Hz/60Hz												
	Power supply*6 capacity (kVA)	120% Overload Capacity	2.5	4.1	5.9	8.3	12	18	24	31	37	44	59	74
150% Overload Capacity		2.3	3.7	5.5	7.7	12	17	22	29	34	41	54	68	
200% Overload Capacity		1.7	2.8	4.7	6.3	9.4	13	17	24	31	37	43	57	
Cooling system	Self-cooling					Forced air cooling								
Protective structure (IEC 60529)*7						Enclose type (IP20)								IP00
Dimension in mm	(W'H'D)	150X260X140					220X260X170			220X300X190		250X400X190		325X550X195
Approx. mass (kg)		2.8	2.8	2.8	3.3	3.3	6.7	6.7	8.3	8.3	15	15	23	
Series : FR-A840 - **K - 2-60			FR- A 840 - XXXXX - 2-60											
			00930	01160	01800	02160	02800	03250	03610	04320	04810	05470	06100	06830
Output	Rated Motor Capacity (Kw)*1	120% Overload Capacity	45	55	75/90	110	132	160	185	220	250	280	315	355
		150% Overload Capacity	45	55	75	90	110	132	160	185	220	250	280	315
		200% Overload Capacity	37	45	55	75	90	110	132	160	185	220	250	280
	Rated Current*3	120% Overload Capacity	93	116	180	216	260	325	361	432	481	547	610	683
		150% Overload Capacity	85	106	144	180	216	260	325	361	432	481	547	610
		200% Overload Capacity	71	86	110	144	180	216	260	325	361	432	481	547
	Out Put Capacity (KVA)*2	120% Overload Capacity	71	88	137	165	198	248	275	329	367	417	465	521
		150% Overload Capacity	65	81	110	137	165	198	248	275	329	367	417	465
		200% Overload Capacity	54	66	84	110	137	165	198	248	275	329	367	417
	Overload current rating.*4	120% Overload Capacity	110% of rated current capacity for 60 s; 120% for 3 s											
		150% Overload Capacity	120% of rated current capacity for 60 s; 150% for 3 s											
200% Overload Capacity	150% of rated current capacity for 60 s; 200% for 3 s													
	Voltage	Three-phase 380 to 500V 50Hz/60Hz												
Frequency Range	50Hz/60Hz, ± 5%													
Control Method	Soft-PWM control, high carrier frequency PWM control (selectable among V/F control, Advanced magnetic flux vector control, Real sensorless vector control), vector control and PM sensorless vector control													
Brake transistor	Built-in					FR-BU2- OPTIONAL								
Regenerative braking torque	-													
Power supply	Rated Input AC voltage/frequency	Three-phase 380 to 500V 50Hz/60Hz *8												
	Permissible AC voltage fluctuation	323 to 550V 50Hz/60Hz												
	Power supply frequency	50Hz/60Hz												
	Power supply*6 capacity (kVA)	120% Overload Capacity	88	107	137	165	198	248	275	329	367	417	465	521
150% Overload Capacity		81	99	110	137	165	198	248	275	329	367	417	465	
200% Overload Capacity		69	83	102	110	137	165	198	248	275	329	367	417	
Cooling system	Forced air cooling													
Protective structure (IEC 60529)*6	Open type (IP00)													
Dimension in mm	(W'H'D)	435X550X250			465X820X300			465X740X360			498X1010X380		680X1010X380	
Approx. mass (kg)		41	41	43	52	55	71	78	117	117	166	166	52	

FR-A800 Built-in Braking Rating (Up to 55kW) Resistor Ohmic Value

Mitsubishi FR-A840							
VFD kW	Module Code	Brake Unit	Resistor Ohm				
0.4	FR-A840-00023-2-60	Built in	371	11	FR-A840-00310-2-60	Built in	34
0.75	FR-A840-00038-2-60	Built in	236	15	FR-A840-00380-2-60	Built in	34
1.5	FR-A840-00052-2-60	Built in	190	18.5	FR-A840-00470-2-60	Built in	21
2.2	FR-A840-00083-2-60	Built in	130	22	FR-A840-00620-2-60	Built in	21
3.7	FR-A840-00126-2-60	Built in	83	30	FR-A840-00770-2-60	Built in	13.5
5.5	FR-A840-00170-2-60	Built in	75	37	FR-A840-00930-2-60	Built in	13.5
7.5	FR-A840-00250-2-60	Built in	52	45	FR-A840-01160-2-60	Built in	13.5
				55	FR-A840-01800-2-60	Built in	13.5

* For selecting Braking Resistor Wattage rating check/consult how much braking duty required.

* 1. The applicable motor capacity indicated is the maximum capacity applicable for use of the Mitsubishi 4-pole standard motor. * 2. The rated output capacity indicated assumes that the output voltage is 440 V for 400 V class. * 3. When an operation is performed with the carrier frequency set to 3 kHz or more, and the inverter output current reaches the value indicated in the parenthesis of the rated current, the carrier frequency is automatically lowered. The motor noise becomes louder accordingly. * 4. The % value of the overload current rating indicated is 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. * 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 maximum point of the voltage waveform at the inverter output side is the power supply voltage multiplied by about . * 6. The power supply capacity is the value when at the rated output current. It varies by the impedance at the power supply side (including those of the input reactor and cables). * 7. FR-DU08: IP40 (except for the PU connector section) * 8. For the power voltage exceeding 480 V, set Pr.977 Input voltage mode selection.)

Note : For type code -2 AM Out put, & -60 for coated boards as per (IEC60721-3-3 3C2)

Common specifications

Control specifications	Control method		Soft-PWM control, high carrier frequency PWM control (selectable among V/F control, Advanced magnetic flux vector control, Real sensorless vector control), vector control-1, and PM sensorless vector control
	Output frequency range		0.2 to 590 Hz (400 Hz or less under Advanced magnetic flux vector control-1, Real sensorless vector control, and vector control. 200 Hz or less under PM sensorless vector control.)
	Frequency setting resolution	Analog input	0.015 Hz/60 Hz (0 to 10 V/12 bits for terminals 2 and 4) 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)
		Digital input	0.01 Hz
	Frequency accuracy	Analog input	Within ±0.2% of the max. output frequency (25°C ± 10°C)
		Digital input	Within 0.01% of the set output frequency
	Voltage/frequency characteristics		Base frequency can be set from 0 to 590 Hz. Constant-torque/variable-torque pattern or adjustable 5 points V/F can be selected.
	Starting torque *6		SLD Rating:120% 0.3 Hz, LD Rating:150% 0.3 Hz, ND Rating:200% 0.3 Hz*7, HD Rating:250% 0.3 Hz (Real sensorless vector control, vector control-1)
	Torque boost		Manual torque boost
	Acceleration/deceleration time setting		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.
	DC injection brake (induction motor)		Operation frequency (0 to 120 Hz), operation time (0 to 10 s), operation voltage (0 to 30%) variable
Stall prevention operation level		Operation current level can be set (0 to 220% variable), whether to use the function or not can be set. SLD Rating:0 to 120%, LD Rating:0 to 150%, ND Rating:0 to 220%, HD Rating:0 to 280%	
Torque limit level		Torque limit value can be set (0 to 400% variable).	
Operation specifications	Frequency setting signal	Analog input	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.
		Digital input	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)
	Start signal		Forward and reverse rotation or start signal automatic self-holding input (3-wire input) can be selected.
	Input signals (twelve terminals)		Low-speed operation command, Middle-speed operation command, High-speed operation command, Second function selection, Terminal 4 input selection, Jog operation selection, Electronic bypass function, Output stop, Start self-holding selection, Forward rotation command, Reverse rotation command, Inverter reset
	Pulse train input		100 kpps
	Operational functions		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, DC feeding, frequency jump, rotation display, automatic restart after instantaneous power failure, electronic bypass sequence, remote setting, automatic acceleration/deceleration, intelligent mode, retry function, carrier frequency selection, fast-response current limit, forward/reverse rotation prevention, operation mode selection, slip compensation, droop control, load torque high-speed frequency control, speed smoothing control, traverse, auto tuning, 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), power-failure deceleration stop function, 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
	Output signal Open collector output (five terminals) Relay output (two terminals)		Inverter running, Up to frequency, Instantaneous power failure/undervoltage, Overload warning, Output frequency detection, Fault Fault codes of the inverter can be output (4 bits) from the open collector.
Pulse train output		50 kpps	
Indication	For meter	Current output (CA type)	Max. 20 mADC: one terminal (output current) The monitored item can be changed using Pr.54 FM/CA terminal function selection.
		Voltage output	Max. 10 VDC: one terminal (output voltage) The monitored item can be changed using Pr.158 AM terminal function selection.
	Operation panel (FR-DU08)	Operating status	Output frequency, Output current, Output voltage, Frequency setting value The monitored item can be changed using Pr.52 Operation panel main monitor selection.
		Fault record	A 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.
Protective/warning function	Protective function		Overcurrent trip during acceleration, Overcurrent trip during constant speed, Overcurrent trip during deceleration or stop, Regenerative overvoltage trip during acceleration, Regenerative overvoltage trip during constant speed, Regenerative overvoltage trip during deceleration or stop, Inverter overload trip, Motor overload trip, Heatsink overheat, Instantaneous power failure, Undervoltage, Input phase loss*5, Stall prevention stop, Loss of synchronism detection*5, Brake transistor alarm detection, 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, Retry count excess*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, Inrush current limit circuit fault, 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, Encoder phase fault*1*5, 4 mA input fault*5, Pre-charge fault*5, PID signal fault*5, Option fault, Opposite rotation deceleration fault*5, Internal circuit fault, Abnormal internal temperature*8
	Warning function		Fan alarm, Stall prevention (overcurrent), Stall prevention (overvoltage), Regenerative brake pre-alarm*5, Electronic thermal relay function pre-alarm, PU stop, Speed limit indication*5, Parameter copy, Safety stop, Maintenance signal output*5, USB host error, Home position return setting error*5, Home position return uncompleted*5, Home position return parameter setting error*5, Operation panel lock*5, Password locked*5, Parameter write error, Copy operation error, 24 V external power supply operation, Internal fan alarm*8



Environment	Surrounding air temperature	-10°C to +50°C (non-freezing)
	Surrounding air humidity	95% RH or less (non-condensing) (With circuit board coating, IP55 compatible model) 90% RH or less (non-condensing) (Without circuit board coating)
	Storage temperature*2	-20°C to +65°C
	Atmosphere	Indoors (without corrosive gas, flammable gas, oil mist, dust and dirt, etc.)
	Altitude/vibration	Maximum 1000 m above sea level *3, 5.9 m/s ² *4 or less at 10 to 55 Hz (directions of X, Y, Z axes)

- *1 Available only when the option (FR-A8AP) is mounted.
- *2 Temperature applicable for a short time, e.g. in transit.
- *3 For the installation at an altitude above 1,000 m up to 2,500 m, derate the rated current 3% per 500 m.
- *4 2.9m/s² or less for the FR-A840-04320(160K) or higher.
- *5 This protective function is not available in the initial status.
- *6 For PM sensorless vector control, refer to page 167.
- *7 The initial value is 150% for the FR-A820-00340(5.5K) or higher and the FR-A840-00170(5.5K) or higher.
- *8 Available for the IP55 compatible model only.

● PLC function specifications

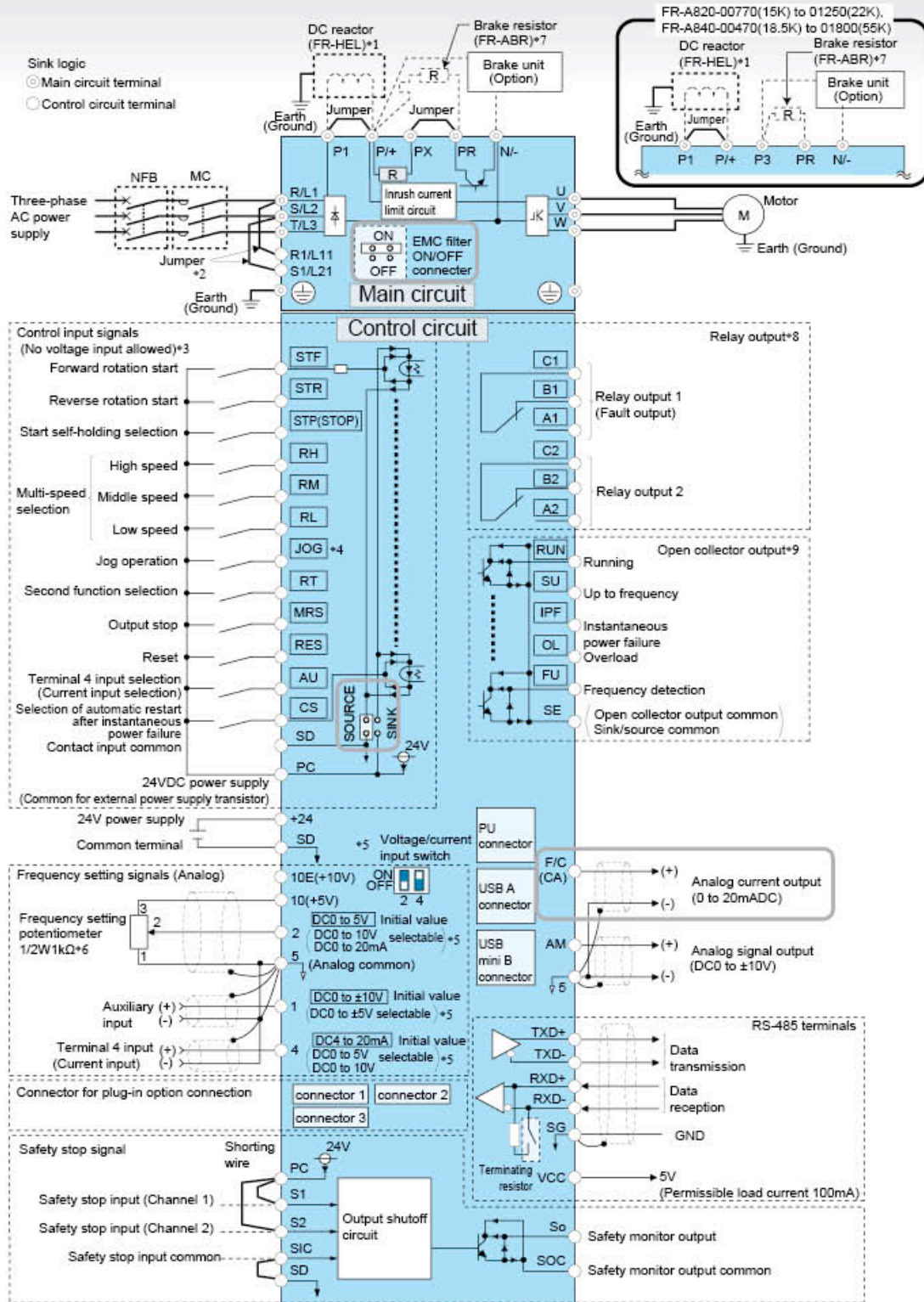
Item		A800 PLC function specifications	
Control method		Repeated operation (by stored program)	
I/O control mode		Refresh	
Programming language		Relay symbolic language (ladder) Function block	
No. of instructions	Sequence instructions	25	
	Basic instructions	84	
	Application instructions	37	
Processing speed		Sequence instructions 1.9 μs to 12 μs/step*1	
Number of I/O points		128 (input: 64 points, output: 64 points) 19 points built-in (input: 12 points, output: 7 points)*2 FR-A8AX (input: 16 points) FR-A8AY (output: 6 points) FR-A8AR (output: 3 points)	
Number of analog I/O points		19 points built-in (input: 12 points, output: 7 points) FR-A8AX (input: 16 points) FR-A8AY (output: 6 points) FR-A8AR (output: 3 points)	
Pulse train I/O	Input	Terminal JOG maximum input pulse: 100k pulses/s *3	
	Output	Terminal FM maximum output pulse: 50k pulses/s *3	
Watchdog timer		10 to 2000 (ms)	
Memory capacity		6k bytes for sequence programs and parameters.	
Program capacity		6K steps (0 to 6144 steps can be set)	
Device	Internal relay (M)		128 (M0 to M127)
	Latch relay (L)		Not used (Can be set with parameters but will not latch)*4
	Timer (T)	Number of points	16
		Specifications	100 ms timer: 0.1 to 3276.7 s (T0 to T15) can be set 10 ms timer: 0.01 to 327.67 s can be set 100 ms retentive timer: 0.1 to 3276.7 s can be set
	Counter (C)	Number of points	16
		Specifications	Normal counter: Setting range 1 to 32767 (C0 to C15) Interrupt program counter: Not used
	Data register (D)		256 (D0 to D255)
	Special relay (SM)		2048 (SM0 to SM2047) with limited functions
Special register (SD)		2048 (SD0 to SD2047) with limited functions	

- *1 The scan time is approximately 40 ms for 1K steps as inverter control is also performed in actual operations.
- *2 The signals same as the ones assigned to the inverter I/O terminals are used.
One point is always required for a sequence start (RUN/STOP).
- *3 Pr.291 Pulse train I/O selection must be set.
- *4 There is no device latch function for power failures.
Use the Pr.1150 to Pr.1199 PLC function user parameters 1 to 50 (D206 to D255) to store device values in the EEPROM.

NOTE

- There is no buffer memory.


CA type - Terminal Scheme



- *1 FR-A820-03800(75K) or higher and FR-A840-02160(75K) or higher, always connect an optional DC reactor (FR-HEL). (To select a DC reactor, refer to page 22, and select one according to the applicable motor capacity.) When connecting a DC reactor to the FR-A820-03160(55K) or lower or the FR-A840-01800(55K) or lower, remove the jumper across the terminals P1 and P/+ before connecting the DC reactor. The IP55 compatible model has a built-in DC reactor.
- *2 When using separate power supply for the control circuit, remove the jumper between R1/L11 and S1/L21.
- *3 The function of these terminals can be changed with the input terminal assignment (Pr.178 to Pr.189)
- *4 Terminal JOG is also used as a pulse train input terminal. Use Pr.291 to choose JOG or pulse.
- *5 Terminal input specifications can be changed by analog input specification switchover (Pr.73, Pr.267). To input a voltage (0 to 5 V/0 to 10 V), set the voltage/current input switch OFF. To input a current (4 to 20 mA), set the voltage/current input switch ON.
- *6 It is recommended to use 2W1kΩ when the frequency setting signal is changed frequently.
- *7 Remove the jumper between PR and PX to connect the brake resistor. (FR-A820-00490(7.5K) or lower and FR-A840-00250(7.5K) or lower). The terminal PR is equipped in the FR-A820-01250(22K) or lower and FR-A840-01800(55K) or lower. Install a thermal relay to prevent overheating and damage of discharging resistors. (Refer to the Instruction Manual (Detailed).)
- *8 The function of these terminals can be changed with the output terminal assignment (Pr.195, Pr.196).
- *9 The function of these terminals can be changed with the output terminal assignment (Pr.190 to Pr.194).

Terminal Specification Explanation

indicates that terminal functions can be selected from Pr.178 to Pr.196 (I/O terminal function selection)
Terminal names and terminal functions are those of the factory set.

Type	Terminal Symbol	Terminal Name	Description		
Main circuit	R/L1, S/L2, T/L3	AC power input	Connect to the commercial power supply.		
	U, V, W	Inverter output	Connect a three-phase squirrel-cage motor or PM motor.		
	R1/L11, S1/L21	Power supply for control circuit	Connected to the AC power supply terminals R/L1 and S/L2. To retain alarm display and alarm output, apply external power to this terminal.		
	P/+, PR	Brake resistor connection	Connect an optional brake resistor across the terminals P/+ and PR. Remove the jumper across the terminals PR and PX for the inverter capacity that has the terminal PX. (FR-A820-00630(11K) or lower, FR-A840-00380(15K) or lower)		
	P3, PR	Brake resistor connection	Connect an optional brake resistor across the terminals P3 and PR. (FR-A820-00770(15K) to 01250(22K), FR-A840-00470(18.5K) to 01800(55K))		
	P/+, N/-	Brake unit connection	Connect the brake unit (FR-BU2), power regeneration common converter (FR-CV) or regeneration common converter (MT-RC) and high power factor converter (FR-HC2).		
	P/+, P1	DC reactor connection	Remove the jumper across terminals P/+-P1 and connect a DC reactor. For the FR-A820-03800(75K) or higher and FR-A840-02160(75K) or higher, always connect an optional DC reactor.		
	PR, PX	Built-in brake circuit connection	When the jumper is connected across terminals PX and PR (initial status), the built-in brake circuit is valid. The built-in brake circuit is equipped in the FR-A820-00490(7.5K) or lower and FR-A840-00250(7.5K) or lower.		
		Earth (Ground)	For earthing (grounding) the inverter chassis. Must be earthed (grounded).		
Contact input	STF	Forward rotation start	Turn on the STF signal to start forward rotation and turn it off to stop.	When the STF and STR signals are turned on simultaneously, the stop command is given.	
	STR	Reverse rotation start	Turn on the STR signal to start reverse rotation and turn it off to stop.		
	STOP	Start self-holding selection	Turn on the STOP signal to self-hold the start signal.		
	RH, RM, RL	Multi-speed selection	Multi-speed can be selected according to the combination of RH, RM and RL signals.		
	JOG		Jog mode selection	Turn on the JOG signal to select Jog operation (initial setting) and turn on the start signal (STF or STR) to start Jog operation.	
			Pulse train input	JOG terminal can be used as pulse train input terminal. To use as pulse train input terminal, the Pr.291 setting needs to be changed. (maximum input pulse: 100kpulses/s)	
	RT	Second function selection	Turn on the RT signal to select second function selection When the second function such as "Second torque boost" and "Second V/F (base frequency)" are set, turning on the RT signal selects these functions.		
	MRS	Output stop	Turn on the MRS signal (2ms or more) to stop the inverter output. Use to shut off the inverter output when stopping the motor by electromagnetic brake.		
	RES	Reset	Used to reset alarm output provided when protective circuit is activated. Turn on the RES signal for more than 0.1s, then turn it off. Recover about 1s after reset is cancelled.		
	AU	Terminal 4 input selection	Terminal 4 is made valid only when the AU signal is turned on. Turning the AU signal on makes terminal 2 invalid.		
	CS	Selection of automatic restart after instantaneous power failure	When the CS signal is left on, the inverter restarts automatically at power restoration. Note that restart setting is necessary for this operation. In the initial setting, a restart is disabled.		
	SD		Contact input common (sink)+1	Common terminal for the contact input terminal (sink logic) and terminal FM.	
			External transistor common (source)+2	Connect this terminal to the power supply common terminal of a transistor output (open collector output) device, such as a programmable controller, in the source logic to avoid malfunction by undesirable current.	
			24 VDC power supply common	Common terminal for the 24 VDC power supply (terminal PC, terminal +24) Isolated from terminals 5 and SE.	
PC		External transistor common (sink)+1	Connect this terminal to the power supply common terminal of a transistor output (open collector output) device, such as a programmable controller, in the sink logic to avoid malfunction by undesirable currents.		
		Contact input common (source)-2	Common terminal for contact input terminal (source logic).		
		24 VDC power supply	Can be used as 24 VDC 0.1 A power supply.		
10E		Frequency setting power supply	When connecting a frequency setting potentiometer at an initial status, connect it to terminal 10.	10VDC, permissible load current 10mA	
			Change the input specifications of terminal 2 when connecting it to terminal 10E.	5VDC, permissible load current 10mA	
		2	Frequency setting (voltage)	Inputting 0 to 5VDC (or 0 to 10V, 4 to 20mA) provides the maximum output frequency at 5V (10V, 20mA) and makes input and output proportional. Use Pr.73 to switch from among input 0 to 5VDC (initial setting), 0 to 10VDC, and 4 to 20mA. Set the voltage/current input switch in the ON position to select current input (0 to 20mA).	Voltage input: Input resistance 10kΩ ± 1kΩ Maximum permissible voltage 20VDC
				Inputting 4 to 20mADC (or 0 to 5V, 0 to 10V) provides the maximum output frequency at 20mA and makes input and output proportional. This input signal is valid only when the AU signal is on (terminal 2 input is invalid). Use Pr.267 to switch from among input 4 to 20mA (initial setting), 0 to 5VDC, and 0 to 10VDC. Set the voltage/current input switch in the OFF position to select voltage input (0 to 5V/0 to 10V). Use Pr.858 to switch terminal functions.	Current input: Input resistance 245Ω ± 5Ω Maximum permissible current 30mA
		1	Frequency setting auxiliary	Inputting 0 to ±5VDC or 0 to ±10VDC adds this signal to terminal 2 or 4 frequency setting signal. Use Pr.73 to switch between input 0 to ±5VDC and 0 to ±10VDC (initial setting) input.	Input resistance 10kΩ ± 1kΩ Maximum permissible voltage ±20VDC
		5	Frequency setting common	Common terminal for frequency setting signal (terminal 2, 1 or 4) and analog output terminal AM, CA. Do not earth (ground).	
Thermistor	10	PTC thermistor input	For receiving PTC thermistor outputs.	Applicable PTC thermistor specification Overheat detection resistance:500Ω to 30 kΩ (Set by Pr.561)	
	2		When PTC thermistor is valid (Pr.561 ≠ "9999"), the terminal 2 is not available for frequency setting.		
Power supply input	+24	24 V external power supply input	For connecting 24 V external power supply. If the 24 V external power supply is connected, power is supplied to the control circuit while the main power circuit is OFF.	Input voltage 23 to 25.5 VDC Input current 1.4 A or less	

Type	Terminal Symbol	Terminal Name	Description			
Control circuit/output signal	Relay	A1, B1, C1	Relay output 1 (alarm output)	1 changeover contact output indicates that the inverter protective function has activated and the output stopped. Alarm: discontinuity across B-C (continuity across A-C), Normal: continuity across B-C (discontinuity across A-C)	Contact capacity 230VAC 0.3A (power factor =0.4) 30VDC 0.3A	
		A2, B2, C2	Relay output 2	1 changeover contact output		
	Open collector	RUN	Inverter running	Switched low when the inverter output frequency is equal to or higher than the starting frequency (initial value 0.5Hz). Switched high during stop or DC injection brake operation.	Alarm code (4bit) output	Permissible load 24 VDC (maximum 27 VDC) 0.1 A (A voltage drop is 2.8 V at maximum while the signal is ON.) LOW is when the open collector output transistor is ON (conducted).HIGH is when the transistor is OFF (not conducted).
		SU	Up to frequency	Switched low when the output frequency reaches within the range of $\pm 10\%$ (initial value) of the set frequency. Switched high during acceleration/ deceleration and at a stop.		
		OL	Overload alarm	Switched low when stall prevention is activated by the stall prevention function. Switched high when stall prevention is cancelled.		
		IPF	Instantaneous power failure	Switched low when an instantaneous power failure and under voltage protections are activated.		
		FU	Frequency detection	Switched low when the inverter output frequency is equal to or higher than the preset detected frequency and high when less than the preset detected frequency.		
		SE	Open collector output common	Common terminal for terminals RUN, SU, OL, IPF, FU		
	Analog	AM	Analog voltage output	Select one e.g. output frequency from monitor items. (The signal is not output during an inverter reset.) The output signal is proportional to the magnitude of the corresponding monitoring item. The output signal is proportional to the magnitude of the corresponding monitoring item. Use Pr.55, Pr.56, and Pr.866 to set full scales for the monitored output frequency, output current, and torque.	Output item: output frequency (initial setting), output signal 0 to ± 10 VDC, permissible load current 1mA(load impedance 10k Ω or more), resolution 8 bit	
		CA *3	Analog current output		Output item: output frequency (initial setting), Load impedance 200 Ω to 450 Ω Output signal 0 to 20 mADC	
Communication	-----	PU connector	With the PU connector, communication can be made through RS-485. (1:1 connection only)	• Conforming standard: EIA-485(RS-485) • Communication speed: 4800 to 115200bps • Overall extension: 500m		
	RS-485 terminals	TXD+, TXD-	Inverter transmission terminal	With the RS-485 terminals, communication can be made through RS-485.		
		RXD+, RXD-	Inverter reception terminal	• Conforming standard: EIA-485(RS-485) • Transmission format: Multi-drop link	• Communication speed: 300 to 115200bps • Overall extension: 500m	
		SG	Earth (Ground)			
	-----	USB A connector	A connector (receptacle). A USB memory device enables parameter copies and the trace function.	Interface: Conforms to USB1.1 (USB2.0 full-speed compatible). Transmission speed: 12 Mbps		
	-----	USB B connector	Mini B connector (receptacle). Connected to a personal computer via USB to enable setting, monitoring, test operations of the inverter by FR Configurator2.			
Safety stop signal	S1	Safety stop input (Channel 1)	The terminals S1 and S2 are used for the safety stop input signal for the safety relay module. The terminals S1 and S2 are used at the same time (dual channel). Inverter output is shutoff by shortening/opening between terminals S1 and SIC, or between S2 and SIC.	Input resistance 4.7k Ω Input current 4 to 6 mADC (with 24 VDC input)		
	S2	Safety stop input (Channel 2)	In the initial status, terminals S1 and S2 are shorted with the terminal PC by shorting wires. The terminal SIC is shorted with the terminal SD. Remove the shorting wires and connect the safety relay module when using the safety stop function.			
	SIC	Safety stop input terminal common	Common terminal for terminals S1 and S2.			
	SO	Safety monitor output (open collector output)	Indicates the safety stop input signal status. Switched to LOW when the status is other than the internal safety circuit failure. Switched to HIGH during the internal safety circuit failure status. (LOW is when the open collector output transistor is ON (conducted). HIGH is when the transistor is OFF (not conducted).) Refer to the Safety stop function instruction manual (BCN-A23228-001) when the signal is switched to HIGH while both terminals S1 and S2 are open.	Permissible load 24 VDC (27 VDC at maximum), 0.1 A (A voltage drop is 3.4 V at maximum while the signal is ON.) (A voltage drop is 3.4 V at maximum while the signal is ON.)		
	SOC	Safety stop input terminal common	Common terminal for terminal SO.			

- *1 The sink logic is initially set for the FM-type inverter.
*2 The source logic is initially set for the CA-type inverter.
*3 Terminal CA is provided in the CA-type inverter.

Faults history and the list of fault displays

If the displayed message does not correspond to any of the following or if you have any other problem, please contact your sales representative .

(1) Error message

A message regarding operational fault and setting fault by the operation panel (FR-DU08) and parameter unit (FR-PU07) is displayed. The inverter does not trip

Operation panel indication	Name
<i>E----</i>	Faults History
<i>HOLD</i>	Operational panel lock
<i>LOCd</i>	Password locked
<i>Er 1 to Er 4 Er 8</i>	Parameter write error
<i>rE 1 to rE 4 rE 8 to rE 8</i>	Copy operation error
<i>Err</i>	Error

(2) Warning

The inverter does not trip even when a warning is displayed. However, failure to take appropriate measures will lead to a fault.

Operation panel indication	Name
<i>OL</i>	Stall prevention (overcurrent)
<i>oL</i>	Stall prevention (overvoltage)
<i>Rb</i>	Regenerative brake pre-alarm
<i>ΓH</i>	Electronic thermal relay function pre-alarm
<i>PS</i>	PU stop
<i>SL</i>	Speed limit indication
<i>CP</i>	Parameter Copy
<i>SA</i>	Safety stop
<i>MΓ 1 to MΓ 3</i>	Maintenance signal output
<i>UF</i>	USB host error
<i>HP 1</i>	Home position return setting error
<i>HP2</i>	Home position return uncompleted
<i>HP3</i>	Home position return parameter setting error
<i>EΓ</i>	24 V external power supply operation

(3) Alarm

The inverter does not trip. An Alarm (LF) signal can also be output with a parameter setting.

Operation panel indication	Name
<i>FN</i>	Fan alarm
<i>FN2</i>	Internal-circulation fan alarm

(4) Fault

* A protective function trips the inverter and outputs a fault (ALM) Signal.
* The data code is used for checking the fault detail via communication or with Pr.997 Fault initiation.

Operation panel indication	Name	Data code
<i>E. OC 1</i>	Overcurrent trip during acceleration	16 (H10)
<i>E. OC2</i>	Overcurrent trip during constant speed	17 (H11)
<i>E. OC3</i>	Overcurrent trip during deceleration or stop	18 (H12)
<i>E. OV 1</i>	Regenerative overvoltage trip during acceleration	32 (H20)
<i>E. OV2</i>	Regenerative overvoltage trip during constant speed	33 (H21)
<i>E. OV3</i>	Regenerative overvoltage trip during deceleration or stop	34 (H22)
<i>E. ΓHF</i>	Inverter overload trip (electronic thermal relay function)	48 (H30)
<i>E. ΓHM</i>	Motor overload trip (electronic thermal relay function)	49 (H31)
<i>E. FIN</i>	Heatsink overheat	64 (H40)
<i>E. I PF</i>	Instantaneous power failure	80 (H50)
<i>E. UVΓ</i>	Undervoltage	81 (H51)
<i>E. I LF</i>	Input phase loss	82 (H52)
<i>E. OLG</i>	stall prevention stop	96 (H60)
<i>E. SOΓ</i>	Loss of synchronism detection	97 (H61)
<i>E. bE</i>	Brake transistor alarm detection	112 (H70)
<i>E. GF</i>	Output side earth (ground) fault overcurrent	128 (H80)
<i>E. LF</i>	Output phase loss	129 (H81)

Faults history and the list of fault displays

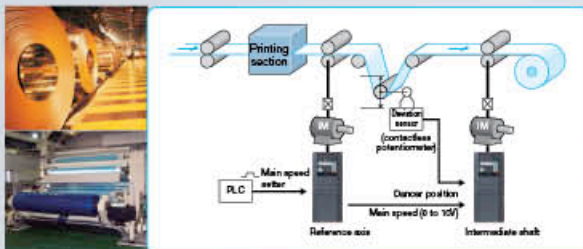
Operation panel indication	Name	Data code
E. OHT	External thermal relay operation	144 (H90)
E. PTC	PTC thermistor operation	145 (H91)
E. OPF	Option fault	160 (HA0)
E. OP1	Communication option fault	161 (HA1)
E. 16	User definition error by the PLC function	164 (HA4)
E. 17		165 (HA5)
E. 18		166 (HA6)
E. 19		167 (HA7)
E. 20		168 (HA8)
E. PE		Parameter storage device fault
E. PUE	PU disconnection	177 (HB1)
E. REF	Retry count excess	178 (HB2)
E. PE2	Parameter storage device fault	179 (HB3)
E. CPU	CPU fault	192 (HC0)
E. 5		245 (HF5)
E. 6		246 (HF6)
E. 7		247 (HF7)
E. CTE	Operation panel power supply short circuit RS-485 terminals power supply short circuit	193 (HC1)
E. P24	24 VDC power fault	194 (HC2)
E. CdO	Abnormal output current detection	196 (HC4)
E. IDH	Inrush current limit circuit fault	197 (HC5)
E. SER	Communication fault (inverter)	198 (HC6)
E. RI E	Analog input fault	199 (HC7)
E. USB	USB communication fault	200 (HC8)
E. SAF	Safety circuit fault	201 (HC9)
E. Pbf	Internal circuit fault	202 (HCA)
E. 13		253 (HFD)

Operation panel indication	Name	Data code
E. OS	Overspeed occurrence	208 (HD0)
E. OSd	Speed deviation excess detection	209 (HD1)
E. ECF	Signal loss detection	210 (HD2)
E. Od	Excessive position fault	211 (HD3)
E. Mb1	Brake sequence fault	213 (HD5)
E. Mb2		214 (HD6)
E. Mb3		215 (HD7)
E. Mb4		216 (HD8)
E. Mb5		217 (HD9)
E. Mb6		218 (HDA)
E. Mb7		219 (HDB)
E. EP		Encoder phase fault
E. IAH	Abnormal internal temperature	225 (HE1)
E. LCI	4 mA input fault	228 (HE4)
E. PCH	Pre-charge fault	229 (HE5)
E. Pid	PID signal fault	230 (HE6)
E. 1	Option fault	241 (HF1)
E. 2		242 (HF2)
E. 3		243 (HF3)
E. 11	Opposite rotation deceleration fault	251 (HFB)



BEST SUITED FOR EVERY MACHINE

Line Control (Winding and Unwinding)



Material tension is kept constant by employing speed control and torque control to eliminate slack and uneven winding. By using a motor with the speed ratio most appropriate for the machine, the inverter capacity can be downsized.

Dancer control **NEW**

The dancer control detects the dancer roll positions and performs PID operation to keep the sheet tension constant.

Traverse function **NEW**

The traverse function works for a winding drum in a spinning machine. It prevents winding from being uneven or off-balanced.

Typical industries

Textile industry

Steel industry

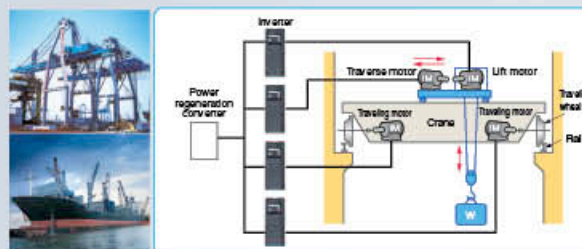
Pulp, paper, paper products manufacturing industries

Torque accuracy

	Real sensorless vector control	Vector control
Torque control range	1 : 20	1 : 50
Absolute torque accuracy	±20%	±10% ^{*1}
Repetitive torque accuracy	±10%	±5% ^{*1}

*1: When online auto tuning (adaptive magnetic flux observer) enabled

Cranes



Relentless operation is possible with HD rating when lifting. And when traveling, vibrations applied to objects being conveyed are suppressed with vibration control, facilitating efficient operation.

Typical industries

Lumber, wood product manufacturing industries

Warehousing

Textile industry

Steel industry

Water transportation

Metal products manufacturing

High torque at low speed

[Starting torque] ■ Real sensorless vector control 200% (NO rating)
 ■ Vector control 200% (NO rating)
 (150% of initial setting for the 5.5K and higher)
 [Zero-speed torque] ■ Vector control: 200% (Select HD rating)

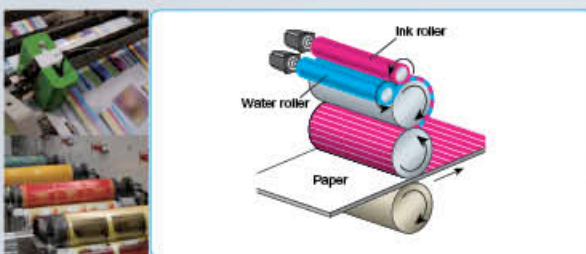
PLC function **NEW**

By employing synchronous operation for gate-type cranes, positional displacement of both axes is corrected during travel, eliminating the need for external control, and leading to a reduction in system costs.

Vibration control

An object moved by a crane vibrates when it is forced to stop. Vibration control can suppress such vibration on the crane's traveling axis. This control cuts down the tact time and facilitates efficient operation.

Printing Machines



The highly-accurate speed control minimizes color unevenness and displaced prints.

Typical industries

Printing and related industries

PM sensorless vector control

The speed fluctuations of the ink roller axis and water roller axis are minimized to eliminate print unevenness. [Speed fluctuation ratio] ±0.05% (Digital input) "No encoder" means less trouble and higher reliability.

Speed control

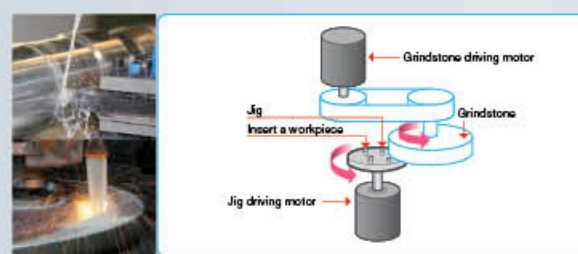
	Real sensorless vector control	Vector control	PM sensorless vector control
Speed response	50 Hz ^{*1}	130 Hz	50 Hz
Speed control range	1:200 (when power drive at 0.3 Hz to 60 Hz)	1:1500 (both driving/regeneration ^{*2})	1:1000 ^{*3} (when HD rating selected)

*1: At 3.7 kW with no load. Differs depending on the load conditions and motor capacity.

*2: If using regeneration unit (option) during regeneration

*3: When high frequency superposition control selected in combination with the MM-CF

Machine Tools



The rotation speed can be set according to the material being processed. Stable high-speed rotation is also possible.

Typical industries

Metal products manufacturing

High-speed operation

[Operating frequency] ■ V/F control 500 Hz
 ■ Vector control 400 Hz
 ■ Real sensorless vector control 400 Hz

Torque limit function

This is effective in preventing machine damage (tool damage prevention, etc.) due to sudden disturbance torque.

Orientation control (vector control)

The inverter can adjust the stop position (Orientation control) using a position detector (encoder) attached to a place such as the main shaft of the machine.

 **Safety Warning**

To ensure proper use of the products listed in this catalog, please be sure to read the instruction manual prior to use.

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