


November 2004
No. EBG150E


**S500 EVOLUTION
MICRO INVERTERS**


The Next Generation of Micro Inverters




The world's best
selling Micro Inverter
is now even better with
advanced communication
functions as standard and
lots more features to
improve ease of use

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Now with built-in RS-485 communications capability as standard
- 

Restarts automatically after power failure
- 

Innovative maintenance timer function
- 

Now includes second electronic thermal function

Mitsubishi Electric Corporation Nagoya Works is a factory certified for ISO14001 (standards for environmental management systems) and ISO9001 (standards for quality assurance management systems)



Product Description

Compact and easy inverter Making advances with standard communication functions

New models

Capacity range: 1-phase 200V 4 types from FR-S520SE-0.2 to 1.5K
3-phase 400V 5 types from FR-S540E-0.4 to 3.7K



The following functions have been added to the S500 Series to further increase the application range.

Newly added function

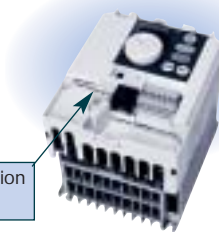
1

Standard RS-485 communication function

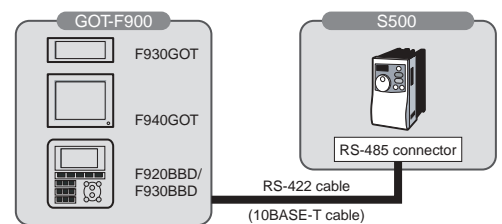
- A parameter unit (option FR-PU04) can be used enabling operations and monitoring on the panel. Direct inputs using a numeric keypad are possible. Parameter set up and copy, etc., can also be carried out. The LCD is compatible with eight languages (Japanese, English, German, French, Spanish, Italian, Swedish, Finnish).
- This inverter can be connected to a Mitsubishi graphic operator terminal, GOT-F900 Series (F930GOT, F930GOTK, F940-GOT, F940WGOT, F940 handy GOT), enabling operation using the GOT. (Note)
- Setup software (option: to be released soon) can be used. This software can be used effectively as a support tool from startup to maintenance of the inverter.
- Compliant standard : EIA Standards RS-485
- Transmission format : Multi-drop link method
- Communication speed : max. 19200bps
- Total length : 500m

(Note) Refer to the GOT manual for details on the connection with the GOT GOT-F900 Series.

RS-485 communication connector



Connection with MELSEC-GOT F900 Series

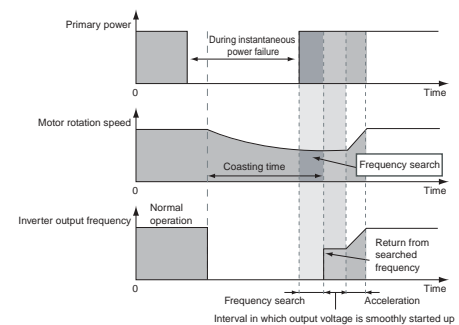


Newly added function

2

"Restart after instantaneous power failure" using frequency search

Even if the motor speed drops because of the machine load when an instantaneous power failure occurs, the motor rotation speed is detected after the power is recovered to enable starting, without stopping the motor rotation.



Newly added function

3

Maintenance timer function

This function can be used as the warning signal for the main circuit capacity life (guide only). Facility maintenance is simplified since when the maintenance timer function is assigned to the output terminal and the replacement time for the capacitor or cooling fan, etc., is set in the parameters, this signal is output when the inverter's power ON time reaches the set time.

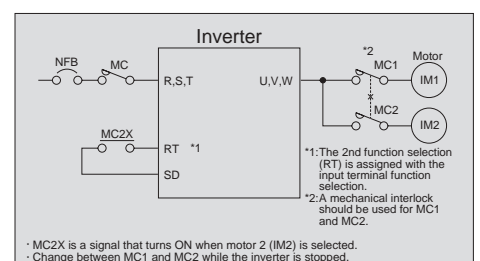
Newly added function

4

Second electronic thermal function

When switching operation between two motors having different characteristics, the electronic thermal matching for the running motor's characteristics can be selected by setting the parameters for each individual motor.

(The electronic thermal and Second electronic thermal are selected with the Second function selection (RT) signal.)



Features

All of the S500 Series functions, including simple operation, powerful torque boost and easy maintenance, are incorporated, making these models interchangeable.

Feature 1 Quick settings with M dial

Frequency and parameters, etc., can be set with ease. Turning the dial quickly changes the value in large increments, and turning the dial slowly enables fine adjustments. Accurate settings are possible with the "notch type clicking" dial.



Feature 2 Simple operations returning to the basics

The parameters that can be set in the default state have been grouped as the twelve basic parameters allowing them to be managed easily. The mode can be changed easily between PU and external operation just by pressing the PU/EXT (operation mode changeover) key. The current operation mode can also be confirmed with the status display LED.

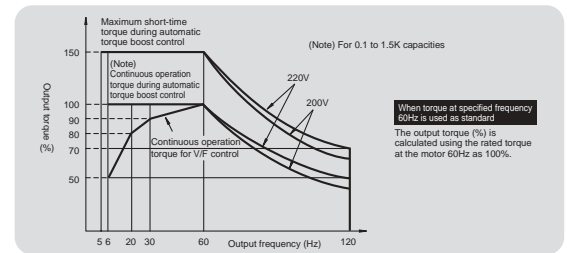


Feature 3 Powerful torque boost

A powerful starting torque and continuous operation torque are realized by incorporating Mitsubishi's original "automatic torque boost".

- A 150% torque can be generated at 5Hz.
- A 100% continuous operation torque is realized in the range of 6Hz to 60Hz with the standard motor. There is no need to set the boost, and the current in the no-load state can be controlled.

(Note) For the 0.1k to 1.5k capacities



Feature 4 Maintenance

The cooling fan can be replaced with a single touch. Furthermore, the cooling fan life can be extended by using the "ON-OFF control". (ON-OFF control is validated as the default.) Wiring space is secured and wiring work efficiency is improved by incorporating an expanding front cover and comb-shaped wiring cover.



Differences Main differences of S500 Evolution and conventional S500 model

✓ : Function available X : Function not available

Model	FREQROL-S500 Evolution		Conventional FREQROL-S500 model	
	FR-S520SE	FR-S540E	FR-S520S	FR-S540
RS-485 communication function	✓		Only products with RS-485 function	
Automatic torque boost function	Maximum torque 150% at 5Hz		Maximum torque 150% at 6Hz	
Maintenance timer function	✓		X	
Restart after instantaneous power failure using frequency search	✓		X	
Second electronic thermal function	✓		X	
Average current value monitor	✓		X	
n6 (communication check cycle) Default state	Communication enabled		Communication disabled	
Long wiring mode (Pr. 70) (Note 1)	✓	Not required	X	Not required

(Note 1) If the 400V Class is set to the long wiring mode, the surge voltage can be suppressed regardless of the wiring length.

Type **FR - S540** **E - 0.4K**

Symbol	Voltage	Symbol	Voltage, No. of phases, etc.	Symbol	Inverter capacity
2	200V class	None	3-phase input	0.2K to 3.7K	Indicates capacity (kW)
4	400V class	S	Single-phase input		

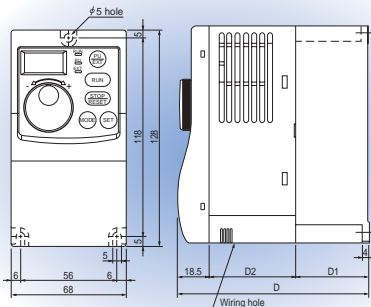
Specifications

Specifications	1-phase 200V				3-phase 400V					
	FR-S520SE-□□				FR-S540E-□□					
Type	0.2K	0.4K	0.75K	1.5K	0.4K	0.75K	1.5K	2.2K	3.7K	
Applicable motor capacity (kW)	0.2	0.4	0.75	1.5	0.4	0.75	1.5	2.2	3.7	
Output	Rated capacity (kVA)	0.5	1.0	1.6	2.8	0.9	1.6	2.7	5.9	
	Rated current (A) (see note 1)	1.4	2.5	4.1	7.0	1.2	2.4	3.9	5.3	8.5
	Overload current rating	150% for 60 seconds, 200% for 0.5 seconds (inverse time characteristics)								
	Voltage	3-phase 200 to 240V 50/60Hz				3-phase 380 to 480V 50/60Hz				
Power	Rated input AC voltage/frequency	Single-phase 200 to 240V 50/60Hz				3-phase 380 to 480V 50/60Hz				
	Tolerable AC voltage fluctuation	170 to 264V 50/60Hz				325 to 528V 50/60Hz				
	Tolerable frequency fluctuation	Within ±5%								
	Power facility capacity (kVA)	0.9	1.5	2.5	4.4	1.5	2.5	4.5	5.5	9.5
Protective structure (JEM1030)	Enclosed type (IP20)									
Cooling method	Natural cooling				Forced cooling	Natural cooling			Forced cooling	
Approximate weight (kg)	0.6	0.8	1.0	1.5	1.5	1.5	1.5	1.6	1.7	

Note 1: The values in brackets indicate the values for an ambient temperature up to 40° without restriction of PWM.

External Dimensions

FR-S520SE-0.2K, 0.4K, 0.75K

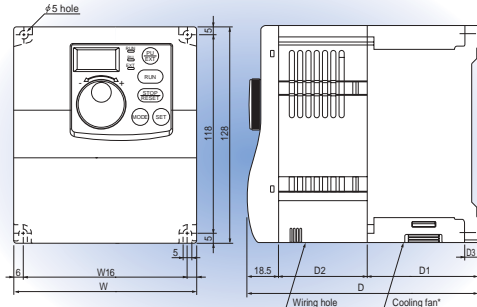


FR-S520SE

Capacity	D	D1	D2
0.1/0.2K	80.5	10	52
0.4K	142.5	42	82
0.75K	162.5	62	82

For FR-S520SE-1.5K see opposite.

FR-S540E-0.4K, 0.75K, 1.5K, 2.2K, 3.7K
FR-S520SE-1.5K



FR-S540E

Capacity	W	W1	D	D1	D2	D3
0.4/0.75K	108	96	129.5	59	52	5
1.5K	108	96	135.5	65	52	8
2.2K	108	96	155.5	65	72	8
3.7K	108	96	165.5	65	82	8

FR-S520SE-1.5K

Capacity	W	W1	D	D1	D2	D3
1.5K	108	96	155.5	65	72	8

The FR-S510WE-0.75K and FR-S540E-0.4K and 0.75K capacities do not have a cooling fan.

The external dimensions are the same as the conventional FR-S540, FR-S520S

Units: mm



MITSUBISHI ELECTRIC EUROPE B.V.

Factory Automation, European Business Group, Gothaer Straße 8, 40880 Ratingen