

# FR-S500E

## Frequency Inverters

**Enhanced control**  
in a simple, reliable package



**IMPROVED COMMUNICATION**

RS-485 communication as standard, allowing flexible use in standalone or networked applications

**SPEED UP**

Automatic restart after instantaneous power failure allows applications to get back on-line quicker

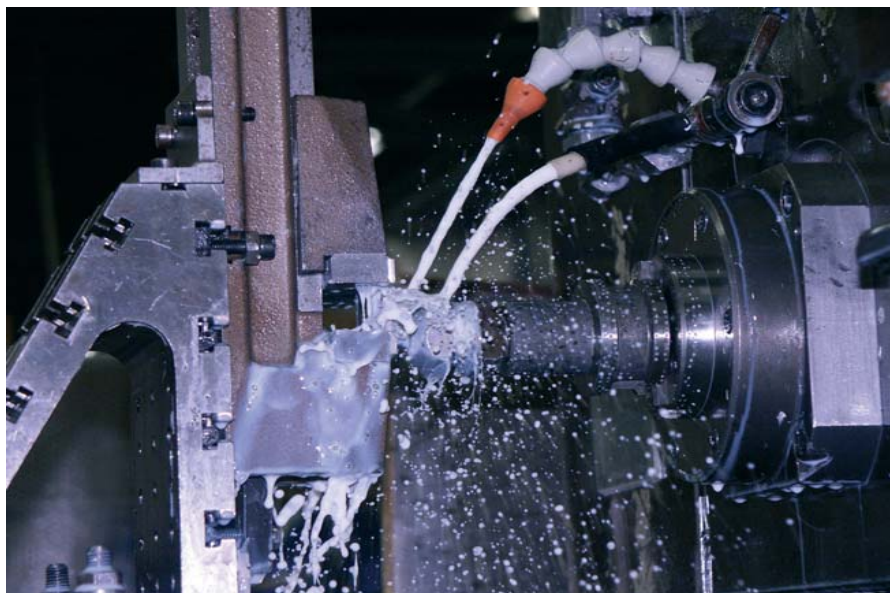
**SIMPLER OPERATION**

Innovative maintenance function helps keep optimum performance due early warning for regular maintenance

**MORE FLEXIBILITY**

Includes two electronic thermal overload functions enabling two motors to be controlled

# Small, easy to use and full of functionality



A typical frequency inverter application is the spindle control

Mitsubishi's reputation for delivering simple, reliable and compact inverters is well known. Building on these strengths the evolution of the ultra compact inverter from the FR-S500 to the FR-S500E brings many benefits.

## Enhanced communications

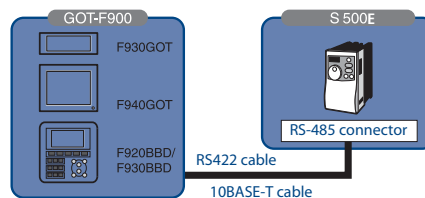
In today's engineering world communication is an important part of many applications. The enhanced FR-S500E has been designed with an RS-485 communication port as standard. This can be used for a host of applications like:

### ■ Networking

Up to 31 FR-S500E micro inverters can communicate with a PC or PLC master device. This means greater control over an application as well as remote monitoring for maintenance purposes.

### ■ Connection to a GOT/HMI

The new RS485 port can be used to connect a Mitsubishi GOT, for example; F930GOT, F940GOT etc. directly to the inverter. This means operators can access and review settings as well as other operational information without having to open an enclosure or be trained on inverter technology.



Connection with MELSEC GOT F900 series

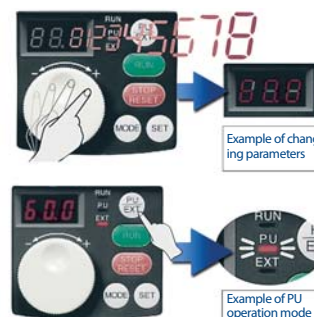
### ■ Optional multilanguage

For export customers, who want to standardise on a common programming tool, the FR-S500E can connect to Mitsubishi's FR-PU04 programmer. This unit offers expanded capabilities enabling programming and monitoring in eight languages (Jp, En, De, Fr, Es, It, Sw and Fn).

In addition, the FR-PU-04's "parameter copy" function is especially useful for production conditions where the same setup is applied to many inverters.

## One finger programming

Parameter settings can also be set directly on the FR-S500E with the built in M dial. Turning the dial quickly changes the displayed value in large increments. Turning the dial slowly enables fine adjustments – what could be easier?



Accurate settings are possible with the "notch type clicking" dial.

## Advanced features

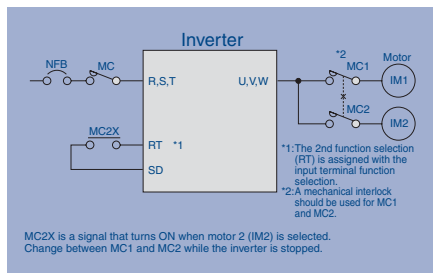
The FR-S500E series delivers easy to use hardware with high performance, for example:

### ■ “Restart after instantaneous power failure” using frequency search

This enhanced inverter can allow applications to automatically restart without completely stopping the motor rotation. This saves time and helps to recover production status as quickly as possible

### ■ Two electronic thermal functions

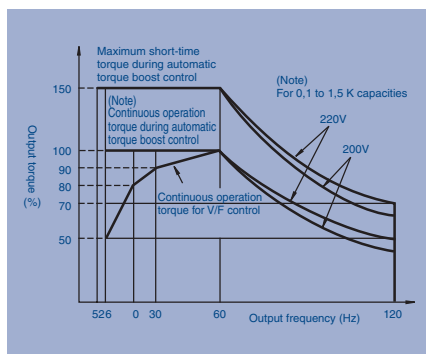
A single FR-S500E can be used to switch operation between two motors even if they have different characteristics. Individual electronic thermal parameters can be set for each motor separately. This could be used for backup motors or simple scheduling/cycling of motor operation.



Electronic thermal function

### ■ Powerful torque boost

Mitsubishi’s original “automatic torque boost” is also incorporated in the FR-S500E. This useful feature allows a powerful starting torque to be applied and a stable, continuous operation torque.



Mitsubishi’s original “automatic torque boost”

- 1) A 150 % torque can be generated at 5 Hz.
- 2) A 100 % continuous operation torque is realized between 6 and 60 Hz with a standard motor.

## Easy maintenance

The FR-S500E has been designed for easy maintenance. The new “Maintenance timer” function can be used as a warning signal for the inverters main circuit capacity life ensuring timely maintenance is carried out.

In addition, wiring has been simplified by using a “comb-shaped” cover and cooling fans (where fitted) can be removed for cleaning and maintenance with a single touch. Furthermore, the cooling fan life can be extended by using “On-Off” control – set as standard.

Model	FR-S500E Evolution		FR-S500 (Conventional 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 5 Hz		Maximum torque 150 % at 6 Hz	
Maintenance timer function	●		—	
Restart after instantaneous power failure using frequency search	●		—	
Second electronic thermal function	●		—	
Average current value monitor	●		—	
n6 (communication check cycle) Default state	Communication enabled		Communication disabled	
Long wiring mode (Pr. 70) ①	●	Not required	—	Not required

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

## FR-S540 E-0.4K

Symbol	Voltage	Symbol	Voltage, No. of phases, e tc.	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		

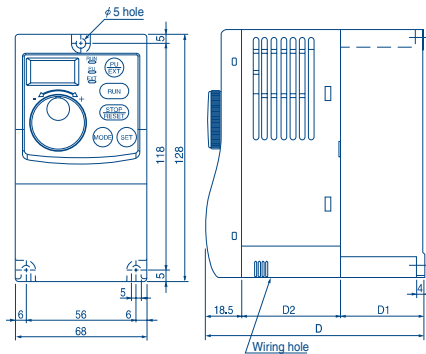
# Specifications ///

Specifications	1-phase 200 V				3-phase 400 V					
	FR-S520SE-□□-EC				FR-S540E-□□-EC					
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] <sup>①</sup>	1.4	2.5	4.1	7.0	1.2 (1.3)	2.3 (2.5)	3.7 (4.1)	7.7 (8.5)	
	Overload current rating	150 % for 60 seconds, 200 % for 0.5 seconds (inverse time characteristics)								
Voltage	3-phase 200 to 240 V 50/60 Hz				3-phase 380 to 480 V 50/60 Hz					
Power	Rated input AC voltage/frequency	Single-phase 200 to 240 V 50/60 Hz				3-phase 380 to 480 V 50/60 Hz				
	Tolerable AC voltage fluctuation	170 to 264 V 50/60 Hz				325 to 528 V 50/60 Hz				
	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		
Weight (kg)	0.6	0.8	1.0	1.5	1.5	1.5	1.5	1.6	1.7	

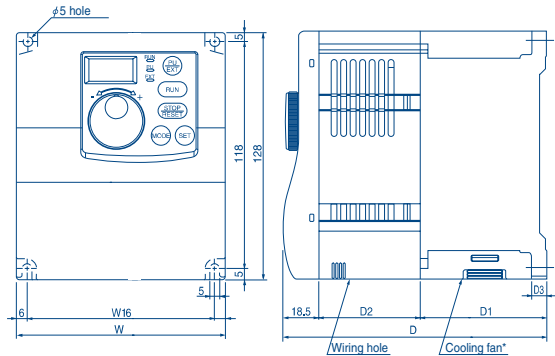
<sup>①</sup> The Values in brackets indicate the values for an ambient temperature up to 40 °C without restriction of PWM.

# Dimensions ///

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



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



Type	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

Type	FR-S520SE-1.5K					
Capacity	W	W1	D	D1	D2	D3
1.5K	108	96	155.5	65	72	8

The FR-S520SE-0.75K, FR-S540E-0.4K and 0.75K capacities do not have a cooling fan.

Type	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

All dimensions in mm

## EUROPEAN BRANCHES

MITSUBISHI ELECTRIC EUROPE B.V. 25, Boulevard des Bouvets F-92741 Nanterre Cedex Phone +33 1 55 68 55 68	FRANCE
MITSUBISHI ELECTRIC EUROPE B.V. Gothaer Straße 8 D-40880 Ratingen Phone +49 (0) 21 02/4 86-0	GERMANY
MITSUBISHI ELECTRIC EUROPE B.V. Westgate Business Park, Ballymount IRL-Dublin 24 Phone +353 (0) 1 / 419 88 00	IRELAND
MITSUBISHI ELECTRIC EUROPE B.V. Via Paracelso 12 I-20041 Agrate Brianza (MI) Phone +39 (0) 3 96 05 31	ITALY
MITSUBISHI ELECTRIC EUROPE B.V. Carretera de Rubi, 76-80 E-08190 Sant Cugat del Vallés Phone +34 9 3/5 63 31 60	SPAIN
MITSUBISHI ELECTRIC EUROPE B.V. Travelers Lane GB-Hatfield Herts. AL10 8 XB Phone +44 (0) 1707/27 61 00	UK

## EUROPEAN REPRESENTATIVES

GEVA GmbH Wiener Straße 89 AT-2500 Baden Phone +43 (0) 2252 / 85 55 20	AUSTRIA	UTU ELEKTROTEHNIKA AS Pärnu mnt. 1601 EE-11317 Tallinn Phone +372 (0) 6 / 51 72 80	ESTONIA	POWEL SIA Lienes iela 28 LV-1009 Riga Phone +37 17 84 / 22 80	LATVIA	Sirius Trad. & Serv. Str. Biharia Nr. 67-77 RO-10391 Bucuresti 1 Phone +40 (0) 21 / 2 01 1146	ROMANIA	ECONOTEC AG Postfach 282 CH-8309 Nürensdorf Phone +41 44 / 8 38 48 11	SWITZERLAND	RPS-AUTOMATIKA Vjatska Str., 63/2, Office 1 RU-344065 Rostov On Don Phone +7 8632 30 42 43	RUSSIA
TEHNIKON Oktjabrskaya 16/5, AP 704 BY-220030 Minsk Phone +375 (0) 17 / 2104626	BELARUS	UTU POWEL OY Box 236 FIN-28101 Pori Phone +358 (0) 2 / 550 800	FINLAND	UJAB UTU POWEL Savanouiu Pr.187 LT-02300 Vilnius Phone +370 (0) 52 32 3-1 01	LITHUANIA	CRAFT Toplicina str.4 lok 6 SCG-1800 Nis Phone +381 (0) 18 / 292-24-4/5	SERBIA AND MONTENEGRO	GTS Darulaceze Cad.No.43A KAT.2 TR-34384 Olmeydani-Istanbul Phone +90 (0) 212 / 3 20 16 40	TURKEY	STC Drive Technique Poslannikov per., 9, str.1 RU-105005 Moscow Phone +7 495 / 786 2100	RUSSIA
Koning & Hartman b.v. Pontbeeklaan 43 BE-1731 Brussels Phone +32 (0) 2 / 467 17 51	BELGIUM	UTEKO A.B.E.E. S. Mavrogenous Str. GR-18542 Piraeus Phone +30 210 / 42 10 050	GREECE	INTEHSIS SRL bld. Traian 23/1 MD-2060 Kishinev Phone +373 (0) 22 / 66 4242	MOLDOVA	INEA Serbia d.o.o. Karadjordjeva 12/260 SCG-113000 Smederevo Phone +381 (0) 26 / 617 163	SERBIA AND MONTENEGRO	CONSYS Promyshlennaya St. 42 RU-198099 St Petersburg Phone +7 812 / 325 3653	RUSSIA	CSC Automation Ltd 15, M. Raskova St., Fl. 10, Off. 1010 UA-02002 Kiev Phone +380 (0) 44 / 494 3355	UKRAINE
AKHMATON 4.A. Ljapchev Blvd. BG-1756 Sofia Phone +359 (0) 2 / 97 44 058	BULGARIA	Meltrade Automatika Fertő utca 14 HU-1107 Budapest Phone +36 (0) 1 / 431-9726	HUNGARY	Koning & Hartman b.v. Haarlerbergweg 21-23 NL-1101 CH Amsterdam Phone +31 (0) 20 / 587 76 00	NETHERLANDS	AutoCont Control Radlinského 47 SK-02601 Dolný Kubín Phone +421 435868210	SLOVAKIA	Electrotechnical Partizanskaya St. 27, Off. 306 RU-121355 Moscow Phone +7 495 / 416 4321	RUSSIA		
AutoCont Jelinkova 59/3 CZ-721 00 Ostrava Svinov Phone +420 (0) 59 / 5691 150	CZECH REPUBLIC	SHERIF Motion Techn.LTD Rehov Hamerkava 19 IL-58851 Holon Phone +972 (0) 3 / 559 54 62	ISRAEL	Beijer Electronics A/S Teglverksveien 1 NO-3002 Drammen Phone +47 (0) 32 / 24 30 00	NORWAY	INEA d.o.o. Stegne 11 SI-1000 Ljubljana Phone +386 (0) 1 / 5 13 81 00	SLOVENIA	ELEKTROSTYLE Poslannikov Per., 9, Str.1 RU-105005 Moscow Phone +7 495 / 542 4323	RUSSIA		
lovis poulsen Geminievej 32 DK-2670 Greve Phone +45 (0) 70 / 10 15 35	DENMARK	Kazpromatomatiks Ltd. 2. Scladskaya Str. KAZ-470046 Karaganda Phone +47 3212 50 11 50	KAZAKHSTAN	MPL Technology ul. Krakowska 50 PL-32-083 Balice-Kraków Phone +48 (0) 12 / 630 47 00	POLAND	Beijer Electronics AB Box 426 S-20124 Malmö Phone +46 (0) 40 / 35 86 00	SWEDEN	ICOS Ryzanskijskij Prospekt, 8A, Office 100 RU-109428 Moscow Phone +7 495 / 232 0207	RUSSIA	CBi Ltd Private Bag 2016 ZA-1600 Isando Phone +27 (0) 11 / 9 28 20 00	SOUTH AFRICA



Mitsubishi Electric Europe B.V. /// FA - European Business Group /// Gothaer Straße 8 /// D-40880 Ratingen /// Germany  
Tel.: +49(0)2102-4860 /// Fax: +49(0)2102-486112 /// info@mitsubishi-automation.com /// www.mitsubishi-automation.com

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