

FR-E700

Frequency Inverters

The Compact Drive Solution

Versatile, reliable, expandable



Simple and fast installation, exceptionally user-friendly



High-grade components for at least 10 years of maintenance-free operation



Compact dimensions, space-saving installation



Very expandable, extensive communications options

The Powerful Compact Inverter



Material transport systems like this example in a printing works are just one of the many applications for the new FR-E700 series.



Mitsubishi frequency inverter drives are now standard equipment in the textile industry.

The new powerhouse

With 11 million frequency inverter drives already sold, Mitsubishi Electric now introduces its latest generation of compact inverters, the new FR-E700 series. In addition to better features and performance than their predecessors, the models in the new series are also more compact and even easier to install.

Improvements include an integrated USB port, an integrated one-touch Digital Dial control with a display, improved power usage at low speeds and an expansion slot compatible with the many option cards from the 700 series. All this makes the FR-E700 an economical and highly-versatile solution for a wide range of applications from textiles machines to door and gate drive systems to material handling systems.

Intelligent functions for every application

■ Sensorless Vector Control

The outstanding speed and torque performance and the fast response of the FR-E700 are due to a large extent to the Sensorless Vector Control system. This technology makes it possible to achieve exceptional speed and torque performance, even with motors that do not have encoder feedback loops, thus saving additional hardware costs.

■ Advanced autotuning

Good motor control is only possible with accurate motor data. This new generation of inverter drives has an Autotuning function that can read out all the necessary parameters directly from the motor in less than a minute, even when it is not running.

■ Overload capacity increased to 200 %

The new models increase the maximum short-term overload capacity to 200 % for a full 3 seconds, compared to 0.5 seconds in the earlier versions. This makes it much easier to select the right frequency inverter drive for your application and also reduces wasteful downtime caused by overload alarms.

■ Torque limiting

Improved torque/current limiting during startup and deceleration ensures better protection for your machines, reliably preventing machine damage.

External brake

Applications like gate drives, hoists, cranes and so on often need an additional brake to cope with their suspended loads. The frequency inverter drives of the FR-E700 series support connection of an external mechanical brake controlled by the inverter.

Responsive technology

To protect both staff and valuable machinery the new FR-E700 series is packed with innovative functions that enable the inverters to respond with great sensitivity to a variety of external events.

■ Controlled deceleration for brief power failures

The frequency inverter can respond to power failures, using regenerative energy to perform controlled deceleration of the motor, thus preventing uncontrolled run-down and possible damage, for example to textile machines.

■ Automatic restart after power failures

In pump and fan applications you can configure the inverter to resume operation after brief power failures – the system then "catches" the coasting motor and automatically accelerates it back up to the preset speed.

Simple operation

■ Integrated control unit

The integrated control unit with the one-touch Digital Dial gives the user direct access to all important parameters – much more quickly than would be possible with normal keys.

In addition to entering and displaying parameter values, the integrated LED display is also used to monitor and check operating values and alarm codes.



The installed Multi User Panel with the Digital Dial

■ Powerful software

The FR-Configurator software package comes with a number of powerful and user-friendly functions including graphical machine analysis for optimisation of your drive system and an automatic conversion tool that makes it easy to switch from a previous model to in inverter of the latest generation

■ Integrated USB port

An integrated USB port enables direct connection of a PC or notebook computer for quick and easy parameter configuration, monitoring and maintenance.

An investment in the future

■ Long lifetime

Frequency inverter drives from Mitsubishi Electric are famous for their reliability and longevity. The FR-E700 is designed for a service life of over 10 years. Among other things, this is made possible by high-performance heat-resistant capacitors, cooling fans with sealed bearings and special lubricating greases. The flows of cooling air only come into contact with the heat sinks, not with the electronic components, ensuring that no dust or dirt can collect on the components.

The circuit boards are very well protected against aggressive environments with single or double coatings of varnish – another feature that ensures a longer service life.

■ Fast servicing

The fans are designed as compact units that can be replaced in less than 10 seconds for cleaning or in the event of failure. Even replacing the entire inverter is a quick and simple operation – there is no wiring work at all because the terminal block is removable.

Versatile design

■ Compact installation

The installation footprint is the same as that of the predecessor models but the FR-E700 units can now be installed directly next to one another. Heat dissipation has been optimised by designing the heat sinks so that they can now be installed outside the switchgear cabinet.

■ Flexible connection and expansion

FR-E700 inverters can be connected to RTU Modbus and network systems like Profibus/DP, CC-Link, DeviceNet and LonWorks.

Functions can be added with option cards and additional I/O modules to configure the system for individual applications and requirements.



Option cards for additional functions

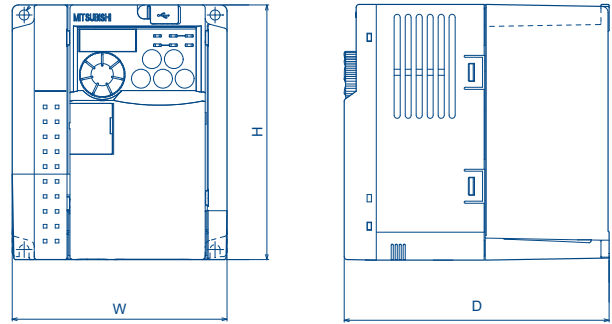
Conformity with international standards including CE, UL, cUL and GOST ensure trouble-free deployment worldwide.

■ Self-diagnostics for reliable operation

These inverter drives actively monitor themselves to make sure they are working properly. For example, if the fan performance drops to 40 % or lower a pre-alarm is triggered automatically. An internal measurement program monitors the ageing of the main circuit capacitors and an operating hours counter enables the operator to plan the best time for servicing well in advance. Protection and overload functions like the phase failure monitoring system for both the input and output circuits ensure trouble-free operation.

Specifications ///

Overload capacity	ND (normal duty)
60 seconds overload	150 %
3 seconds overload	200 %
Ambient temperature	50 °C



Type	Rated current [A] *	Rated motor capacity [kW] *	W x H x D (mm)
FR-E720S-008-EC	0.8	0.1	68x128x80
FR-E720S-015-EC	1.5	0.2	68x128x80
FR-E720S-030-EC	3.0	0.4	68x128x142
FR-E720S-050-EC	5.0	0.75	108x128x135
FR-E720S-080-EC	8.0	1.5	108x128x161
FR-E720S-110-EC	11	2.2	140x150x155
FR-E740-016-EC	1.6	0.4	140x150x114
FR-E740-026-EC	2.6	0.75	140x150x114
FR-E740-040-EC	4.0	1.5	140x150x135
FR-E740-060-EC	6.0	2.2	140x150x135
FR-E740-095-EC	9.5	3.7	140x150x135
FR-E740-120-EC	12	5.5	220x150x147
FR-E740-170-EC	17	7.5	220x150x147
FR-E740-230-EC	23	11	220x260x190
FR-E740-300-EC	30	15	220x260x190

Operating conditions	Specifications
Power supply	FR-E720S: 1-phase, 200–240 V AC (–15 %, +10 %) FR-E740: 3-phase, 380–480 V AC (–15 %, +10 %)
Ambient temperature	–10 °C to +50 °C (non-condensing)
Storage temperature	–20 °C to +65 °C
Relative humidity	Max. 90 % (non-condensing)
Installation altitude	Max. 1000 m above sea level
Protection	IP20
Shock resistance	10 G
Vibration resistance	Max. 0.6 G
Certifications	CE/UL/cUL/GOST

* Standard operation / initial value

Internal options	Description
FR-A7AX E kit	Additional free configurable digital inputs
FR-A7AY E kit	Selectable standard digital output signals of the inverter can be output at the open collector. Selectable additional signals like analog output voltage or output current can be output and indicated at the analog output.
FR-A7AR E kit	Selectable output signals of the inverter can be output through relay terminals.
FR-A7NP E kit	Integration of the frequency inverter in a Profibus/DP network
FR-A7ND E kit	Integration of the frequency inverter in a DeviceNet network
FR-A7NC E kit	Integration of the frequency inverter in a CC-Link network
FR-A7NL E kit	Integration of the frequency inverter in a LonWorks network
FR-A7NCA E kit	Integration of the frequency inverter in a CAN Open network

EUROPEAN BRANCHES

MITSUBISHI ELECTRIC EUROPE B.V. Radlická 714/113a CZ-158 00 Praha 5 Phone: +420 (0)251 551 470	CZECH REPUBLIC
MITSUBISHI ELECTRIC EUROPE B.V. 25, Boulevard des Bouvets F-92741 Nanterre Cedex Phone: +33 (0)1 / 55 68 55 68	FRANCE
MITSUBISHI ELECTRIC EUROPE B.V. Gothaer Straße 8 D-40880 Ratingen Phone: +49 (0)2102 / 486-0	GERMANY
MITSUBISHI ELECTRIC EUROPE B.V. Westgate Business Park, Ballymount IRL-Dublin 24 Phone: +353 (0)1 4198800	IRELAND
MITSUBISHI ELECTRIC EUROPE B.V. Viale Colleoni 7 I-20041 Agrate Brianza (MI) Phone: +39 039 / 60 53 1	ITALY
MITSUBISHI ELECTRIC EUROPE B.V. Carrereta de Rubi 76-80 E-08190 Sant Cugat del Vallés (Barcelona) Phone: 902 131121 // +34 935653131	SPAIN
MITSUBISHI ELECTRIC EUROPE B.V. Travellers Lane UK-Hatfield, Herts. AL10 8XB Phone: +44 (0)1707 / 27 61 00	UK

EUROPEAN REPRESENTATIVES

GEVA Wiener Straße 89 AT-2500 Baden Phone: +43 (0)252 / 85 55 20	AUSTRIA	B:TECH A.S. U Borové 69 CZ-58001 Havlíčkův Brod Phone: +420 (0)569 777 777	CZECH REPUBLIC	Beijer Electronics SIA Vestienas iela 2 LV-1035 Riga Phone: +371 (0)784 / 2280	LATVIA	MPL Technology Sp. z o.o. Ul. Krakowska 50 PL-32-083 Balice Phone: +48 (0)12 / 630 47 00	POLAND	Beijer Electronics AB Box 426 SE-20124 Malmö Phone: +46 (0)40 / 35 86 00	SWEDEN	SHERF Motion Techn. Ltd. Rehov Hamerkava 19 IL-58851 Holon Phone: +972 (0)3 / 559 54 62	ISRAEL
TEHNIKON Oktjabrskaya 16/5, Off. 703-711 BY-220030 Minsk Phone: +375 (0)17 / 210 46 26	BELARUS	Beijer Electronics A/S Lykkegårdsvej 17, 1. DK-4000 Roskilde Phone: +45 (0)46 / 75 76 66	DENMARK	Beijer Electronics UAB Savanoriu Pr. 187 LT-02300 Vilnius Phone: +370 (0)5 / 232 3101	LITHUANIA	Sirius Trading & Services Aleea Lacul Morii Nr. 3 RO-060841 Bucuresti, Sector 6 Phone: +40 (0)21 / 430 40 06	ROMANIA	Econotec AG Hinterdorfstr. 12 CH-8309 Nürensdorf Phone: +41 (0)44 / 838 48 11	SWITZERLAND	CEG INTERNATIONAL Cebaco Center/Block A Autostrade DORA Lebanon - Beirut Phone: +961 (0)1 / 240 430	LEBANON
Koning & Hartman b.v. Woluwelaan 31 BE-1800 Vilvoorde Phone: +32 (0)2 / 257 02 40	BELGIUM	Beijer Electronics Eesti OÜ Pärnu mnt.160i EE-11317 Tallinn Phone: +372 (0)6 / 51 81 40	ESTONIA	ALFATRADE Ltd. 99, Paola Hill Malta- Paola PLA 1702 Phone: +356 (0)21 / 697 816	MALTA	Craft Con. & Engineering d.o.o. Bulevar Svetog Cara Konstantina 80-86 SER-18106 Nis Phone: +381 (0)18 / 292-24-4/5	MOLDOVA	GTS Darilaceze Cad. No. 43 KAT. 2 TR-34384 Okmeydanı-Istanbul Phone: +90 (0)212 / 320 1640	TURKEY	CBI Ltd. Private Bag 2016 ZA-1600 Isando Phone: +27 (0)11 / 928 2000	SOUTH AFRICA
INEA BH d.o.o. Aleja Lipa 56 BA-71000 Sarajevo Phone: +387 (0)33 / 921 164	BOSNIA AND HERZEG.	Beijer Electronics OY Jaakonkatu 2 FIN-01620 Vantaa Phone: +358 (0)207 / 463 500	FINLAND	INTEHISIS srl bld. Traian 23/1 MD-2060 Kishinev Phone: +373 (0)22 / 66 4242	MOLDOVA	INEA SR d.o.o. Izletnicka 10 SER-113000 Smederevo Phone: +381 (0)26 / 617 163	SERBIA	CSC Automation Ltd. 4-B, M. Raskovoyi St. UA-02660 Kiev Phone: +380 (0)44 / 494 33 55	UKRAINE		
AKHNATON 4 Andrej Ljapchev Blvd. Pb 21 BG-1756 Sofia Phone: +359 (0)2 / 817 6004	BULGARIA	UTEKO A.B.E.E. 5, Mavrogenou Str. GR-18542 Piraeus Phone: +30 211 / 1206 900	GREECE	HIFLEX AUTOM. B.V. Wolweverstraat 22 NL-2984 CD Ridderkerk Phone: +31 (0)180 - 46 60 04	NETHERLANDS	AutoCont Control s.r.o. Radlinského 47 SK-02601 Dolny Kubin Phone: +421 (0)43 / 5868210	SLOVAKIA	CS MTrade Slovensko, s.r.o. Vajanského 58 SK-92101 Piestany Phone: +421 (0)33 / 7742 760	SLOVAKIA		
INEA CR d.o.o. Losinjka 4 a HR-10000 Zagreb Phone: +385 (0)1 / 36 940 -01 / 02 / 03	CROATIA	MELTRADE Ltd. 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	CS MTrade Slovensko, s.r.o. Vajanského 58 SK-92101 Piestany Phone: +421 (0)33 / 7742 760	SLOVAKIA	INEA d.o.o. Stegne 11 SI-1000 Ljubljana Phone: +386 (0)1 / 513 8100	SLOVENIA		
AutoCont C.S. s.r.o. Technologická 374/6 CZ-708 00 Ostrava-Pustkovec Phone: +420 595 691 150	CZECH REPUBLIC	Kazpromautomats Ltd. Mustafina Str. 7/2 KAZ-470046 Karaganda Phone: +7 7212 / 50 11 50	KAZAKHSTAN	Beijer Electronics AS Postboks 487 NO-3002 Drammen Phone: +47 (0)32 / 24 30 00	NORWAY						



Mitsubishi Electric Europe B.V. /// FA - European Business Group /// Gothaer Straße 8 /// D-40880 Ratingen /// Germany
Tel.: +49(0)2102-4860 /// Fax: +49(0)2102-4861 120 /// info@mitsubishi-automation.com /// www.mitsubishi-automation.com

Specifications subject to change /// Art. no. 211705-C /// 05.2009
All trademarks and copyrights acknowledged.