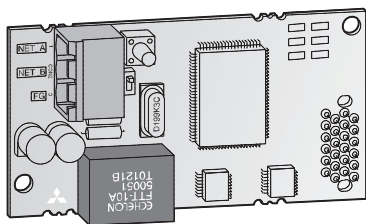


## Internal and External Options



A large number of options allows an individual adoption of the inverter to the according task. The options can be installed quickly and easily. Detailed information on installation and functions is included in the manual of the options.

The options can be divided into two major categories:

- Internal options
- External options

### Internal options

The internal options comprise input and output extensions as well as communications options supporting the operation of the inverter within a network or connected to a personal computer or PLC.

### External Options

In addition to the FR-PU07 parameter unit that enables interactive operation of the frequency inverter the available external options also include additional EMC noise filters, reactors for improving efficiency and brake units with brake resistors.

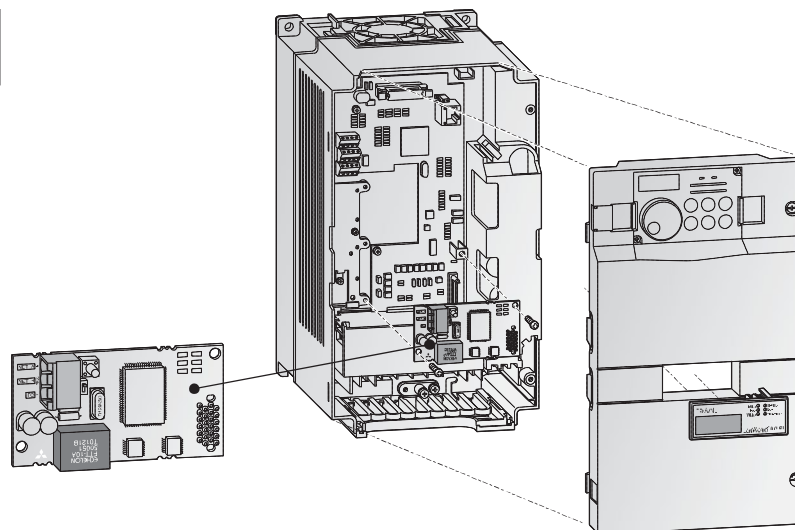
Option	Description	FR-D700 SC	FR-E700 SC	FR-F700	FR-A700	FR-HC2	
Internal options	Digital input	—	●	●	●	—	
	Digital output	—	●	●	●	—	
	Expansion analog output	—	●	●	●	—	
	Relay output	—	●	●	●	—	
	Orientation control, encoder feedback (PLG), vector and master slave control	—	—	—	●	—	
	Communications	CC-Link	—	●	●	●	●
		CC-Link IE Field	—	—	—	●	—
		Ethernet multi-protocol	—	—	●	●	●
		LonWorks	—	●	●	●	—
		Profibus DP	—	●	●	●	—
DeviceNet		—	●	●	●	—	
SSCNETIII		—	—	—	●	—	
RS485 multi-protocol	—	—	●	●	●		

Option	Description	FR-D700 SC	FR-E700 SC	FR-F700	FR-A700
External options	Parameter unit (8 languages)	●	●	●	●
	FR-Configurator software	●	●	●	●
	EMC noise filter	●	●	●	●
	Brake unit	●	●	●	●
	External high-duty brake resistor	●	●	—	●
	DC reactor AC chokes	●	●	●	●
	Floor standing unit FSU	—	—	●	●
	Filter module	●	●	●	●
	Regenerative unit	●	●	●	●
	Regenerative unit	●	●	●	●
	Harmonic Converter	●	●	●	●
	Communications Profibus DP	●	●	●	●

## Overview Internal Options

Internal options	Description	Remarks/Specifications	Type	Applicable inverter	Art. no.
16 digital inputs	Interface for the input of the frequency setting via 4-digit BCD or 16-bit binary code, setting of gain and bias supported.	Input: 24 V DC; 5 mA; open collector or switching signal, sink or source logic	FR-A7AX	FR-F700 FR-A700	156775
			FR-A7AX-Ekit-SC-E	FR-E700 SC	239641
7 digital outputs 2 analog outputs	Selectable among 43 standard output signals of the inverter can be output at the open collector. The outputs are isolated with optocouplers. Selectable among 37 standard monitor signals of the inverter can be output at the analog outputs.	Output load: 24 V DC; 0,1 A, source or sink logic Output: max. 0–10 V DC; 0–20 mA; Resolution: 3 mV at voltage output, 10 µA at current output, accuracy: ±10 %	FR-A7AY	FR-F700 FR-A700	156776
			FR-A7AY-Ekit-SC-E	FR-E700 SC	239642
3 relay outputs	Selectable among 43 standard output signals of the inverter can be output through the isolated relay terminals.	Switching load: 230 V AC/0.3 A, 30 V DC/0.3 A	FR-A7AR	FR-F700 FR-A700	156777
			FR-A7AR-Ekit-SC-E	FR-E700 SC	239643
1 analog output 1 analog input	Selectable among 24 analog output signals Analog input of torque and speed related data Selectable among 37 standard monitor signals of the inverter can be output at the analog output.	Bipolar analog output max. 0–(±)10 V DC Bipolar analog input (16 bit) 0–(±)10V DC	FR-A7AZ	FR-A700	191401
Encoder power supply	Control terminal block with integrated power supply	12 V DC	FR-A7PS	FR-A700	191399
Vector control with encoder feedback	Closed loop vector control with encoder can be performed. Encoder feedback enables high-precision speed, torque and position control.	5 V TTL differential 1024–4096 pulse	FR-A7AP	FR-A700	166133
Master-Slave control	Closed loop vector control with encoder can be performed. Master-Slave position and speed synchronisation are possible with command pulse scaling and position control.	11–30 V HTL complimentary	FR-A7AL	FR-A700	191402
CC-Link	Option board for the integration of a frequency inverter into a CC-Link network. The operation, display functions, and parameter settings can be controlled by a PLC.	Maximum transfer distance: 1200 m (at 156 kBaud)	FR-A7NC	FR-F700 FR-A700	156778
			FR-A7NC-Ekit-SC-E	FR-E700 SC	239644
CC-Link IE Field	Option board for the integration of a frequency inverter into a CC-Link IE Field network	Maximum transfer rate: 1 GBaud	FR-A7NCE	FR-A700	244993
Ethernet multi-protocol	Ethernet multi-protocol interface card, Modbus TCP, Ethernet/IP, Profinet, BACnet to Modbus RTU WiFi Ethernet multi-protocol interface card, Modbus TCP, Ethernet/IP, BACnet, MELSEC ABCSP to Modbus RTU		FR-A7N-ETH	FR-A700 FR-F700	212369
			FR-A7N-WiE	FR-A700 FR-F700	264932
LonWorks	Option board for integration of a frequency inverter in a LonWorks network. Operation, display functions and parameter settings can be controlled by a computer (PC etc.) or a PLC.	Connection of up to 64 inverters supported. Maximum transfer rate: 78 kBaud	FR-A7NL	FR-F700 FR-A700	156779
			FR-A7NL-Ekit-SC-E	FR-E700 SC	239645
Communi-cations	Option board for the integration of a frequency inverter into a Profibus DP network. The operation, display functions, and parameter settings can be controlled by a computer (PC etc.) or a PLC.	Connection of up to 126 inverters supported. Maximum transfer rate: 12 MBaud  D-Sub9 connection adapter for FR-A7NP	FR-A7NP	FR-F700 FR-A700	158524
			FR-A7NP-Ekit-SC-E (Terminals)	FR-E700 SC	239646
			FR-A7NP-Ekit-01-E (D-Sub9)		239647
			FR-D-Sub9	FR-F700 FR-A700	191751
DeviceNet™	Option board for the integration of a frequency inverter into a DeviceNet. The operation, display functions, and parameter settings can be controlled by a computer (PC etc.) or a PLC.	Maximum transfer rate: 10 MBaud	FR-A7ND	FR-F700 FR-A700	158525
			FR-A7ND-Ekit-SC-E	FR-E700 SC	239648
SSCNETIII	Option board for the integration of a frequency inverter into the Mitsubishi Electric servo system network SSCNETIII. The operation and display functions can be controlled by Motion Controller (Q172H CPU, Q173H CPU).	Maximum transfer rate: 50 MBaud	FR-A7NS	FR-A700	191403
RS485 multi-protocol	RS485 multi-protocol interface option board; Siemens FLN and Metasys N2		FR-A7N-XLT	FR-F700, FR-A700	208972

Mounting example of an internal option

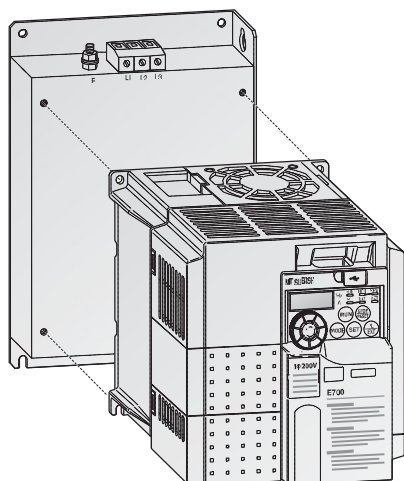


## Overview External Options

External options	Description	Remarks/Specifications	Type	Applicable inverter	Art. no.	
Parameter unit	Interactive standard parameter unit with copy function	For mounting on the switchgear cabinet door (for instance)  Refer to page 50 for details.	FR-DU07	All	157514	
	Interactive standard parameter unit with copy function, protection level IP54		FR-DU07-IP54	All	207067	
	Interactive parameter unit with LC display (8 languages) with copy function.		FR-PU07	All	166134	
	Interactive parameter unit like FR-PU07 with additional HAND/AUTO keys and advanced PID monitor		FR-PU07-01	FR-F700	242151	
	Interactive parameter unit with LC display and battery pack		FR-PU07BB-L	FR-E700 SC FR-A700	157515	
	Interactive standard parameter unit with copy function		FR-PA07	FR-D700 SC FR-E700 SC	214795	
Adapter	Connection adapter for FR-DU07	Required for remote connection of the FR-DU07 with FR-ASCBL	FR-ADP	FR-A700 FR-F700	157515	
Connection cable for remote parameter unit	Cable for a remote connection of a parameter unit	Available length: 1; 2.5 and 5 m	FR-A5 CBL	All	1 m: 70727 2.5 m: 70728 5 m: 70729	
Installation kit for external air cooling	For installation of the heatsink on the switchgear cabinet door	Reduces temperature in switchgear cabinet of about 2/3	FR-A7CN	FR-A700 FR-F700	refer to page 47	
Distributor module for RJ45 connections	Distributor for connection of multiple inverters in a serial network	For up to 2 frequency inverters	FR-RJ45-HUB4	All	167612	
		For up to 8 frequency inverters	FR-RJ45-HUB10	All	167613	
	Terminating resistor for RJ45	120 Ω	FR-RJ45-TR	All	167614	
Interface cable	Communications cable for RS232 or RS485 interface to connect an external personal computer	Length 3 m	SC-FR PC	All	88426	
USB-RS232 converter	Port converter adapter cable from RS232 to USB	USB specification 1.1, 0.35 m long	USB-RS232	FR-D700 SC FR-F700	155606	
FR-Configurator	Parameterization and setup software for Mitsubishi Electric inverter.	Refer to page 57 for details.	—	All	215701	
EMC noise filter	Noise filter for compliance with EMC directives.	Refer to page 44 for details.	FFR-□□ FR-, FN-□□	All	refer to page 44	
du/dt filter	Output filter for du/dt reduction	Refer to page 45 for details.	FFR-DT-□□A-SS1	All	refer to page 45	
Sinusoidal filter	Output filter for sine wave output voltage	Refer to page 46 for details.	FFR-SH-□□A-SS1	All	refer to page 46	
AC chokes	For increased efficiency, reduction of mains feedback and compensation of voltage fluctuations.	Refer to page 48 for details.	FR-BAL-B		refer to page 48	
DC reactor ①	DC reactor for compensation of voltage fluctuations.	Refer to page 50 for details.	FR-HEL ① FFR-HEL-(H)-E		refer to page 50	
Filter module	Passive harmonic filter to reduce mains pollution	<5 % THDi to <16 % THDi		FR-D700 SC, FR-E700 SC, FR-F700, FR-A700	on request	
Regenerative unit	Regeneration of electrical energy in short-term operation	(ED < 50 %)	on request			
Regenerative unit	Regeneration of electrical energy in short-term operation	(ED = 100 %)				
Harmonic Converter	For power supply and regeneration of electrical energy for one or several frequency inverters and class leading harmonics filtration.	THDi < 4 %	FR-HC2		refer to page 50	
Brake units	For an improvement of the brake capacity. For high inertia loads and active loads. Used in combination with a resistor unit.	Refer to page 51 for details.	FR-BU2, BU-UFS + RUFC		refer to page 51	
External high-duty brake resistor	To improve the brake capacity of the inverter; used in combination with the internal brake transistor	Refer to page 52 for details.	FR-ABR(H)	FR-D700 FR-E700 SC-EC FR-A740	refer to page 52	
Communications	Profibus DP	High speed converter for Profibus DP to RS485 inverter protocol	Base unit with 8 ports	PBDP-GW-G8	All	224915
			Extension unit with 8 ports	PBDP-GW-E8	All	224916

① A DC reactor is included as standard equipment with frequency inverters FR-F740/A740-01800 through 12120. These reactors are essential for operation and must be installed.

Installing an EMC noise filter on an FR-E700 SC



Installing an EMC noise filter on an FR-F700

