

INVERTER

New Product RELEASE

No.16-9E

Release of the FR-F800-E Inverter with Built-in Ethernet Communication Function

The inverter with a built-in Ethernet communication function is now available in the FR-F800 series.

Features

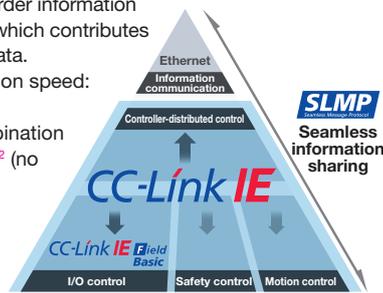
The following functions (protocols) are available via general-purpose Ethernet communication.

- CC-Link IE Field Network Basic
- MELSOFT / FA product connection
- SLMP*1
- Modbus/TCP

What is CC-Link IE Field Network Basic?

CC-Link IE Field Network Basic is a new application of the lineup for CC-Link IE (Ethernet-based integrated network). CC-Link IE enables seamless data transfer between network layers, from higher-order information systems to lower-order field systems, which contributes to the visualization of the production data.

- Cyclic communication (communication speed: 100 Mbps)
- Integrated Ethernet network in combination with the TCP or UDP IP connection*2 (no need for dedicated control wiring)
- Simple and inexpensive system construction by general-purpose Ethernet without installing any plug-in option



*1: SLMP is a common protocol for seamless communication between applications. Users do not have to be concerned with network layers or boundaries.

*2: MELSOFT / FA product connection, SLMP, etc.



Support tool with extensive functions

FR Configurator2 and an inverter can be connected by Ethernet even when they are remotely located from each other.*3

FR Configurator2 facilitates the setting of the inverter's parameters*4 for enabling automatic detection of or Ethernet communication with the connected devices.

Enabling construction of a small-scale system of inverters

The PLC function*5 allows the master inverter to send commands to control multiple slave inverters connected to Ethernet. (Inverter-to-inverter link function)

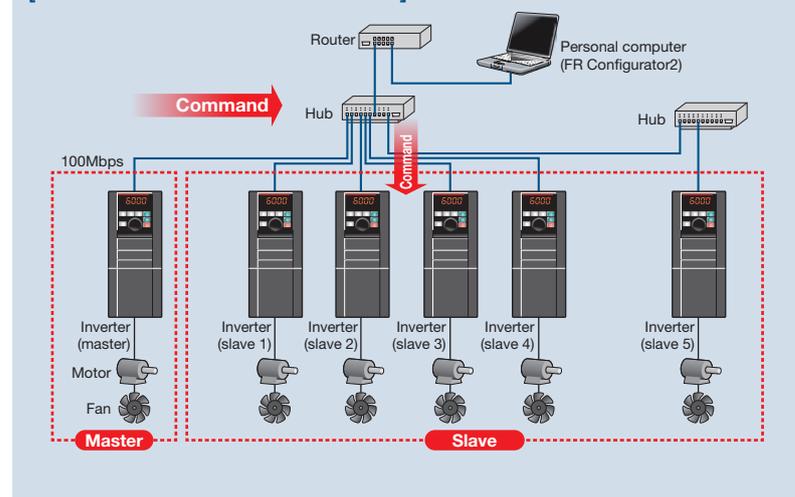
*3: In order to protect the inverter and the system against unauthorized access by external systems via network, take security measures including firewall settings in addition to the IP filter function of the inverter.

*4: Parameters for setting the data such as IP address or subnet mask

*5: Sequence programs can be read or written by Ethernet.

Application example (fan control)

[Inverter-to-inverter link function]



Ethernet is a registered trademark of Fuji Xerox Corporation in Japan.

Transmission specifications

Item	Description
Category	100BASE-TX/10BASE-T
Data transmission speed	100Mbps (100BASE-TX)/10Mbps (10BASE-T)*1
Interface	RJ-45
Number of interfaces available	1
IP version	IPv4

*1: Auto-negotiation is supported.

Specifications other than the above are the same as those of the FR-F800 series standard inverter. However, RS-485 terminals are not equipped, and some other restrictions apply.

Communication specifications

CC-Link IE Field Network Basic

Item	CC-Link IE Field Basic	CC-Link IE Field	CC-Link	
Communication speed	100Mbps	1Gbps	10Mbps	
Cable	Ethernet category 5 or higher	Ethernet category 5e or higher	Dedicated cable	
Number of connected inverters	64 (open specification)*2	64	42 (maximum)	
Cyclic communication	Supported	Supported	Supported	
Number of links*3	RX	64	64	
	RY	64	64	
	RWr	32 (64 bytes)	128 (256 bytes)	32 (64byte)
	RWw	32 (64 bytes)	128 (256 bytes)	32 (64byte)
Combination with TCP/IP	Supported	Not available	Not available	
Plug-in option	Not required	Required (FR-A8NCE)	Required (FR-A8NC)	
Topology	Star	Line, star, ring, line-star	Bus	

*2: The actual number of connectable inverters differs according to the setting of the master.

*3: The numbers of inverter's remote I/O devices and the addresses of inverter's remote registers are common between CC-Link and CC-Link IE Field Network Basic.

Modbus/TCP

Item	Description
Communication protocol	Modbus/TCP protocol
Conforming standard	OPEN Modbus/TCP SPECIFICATION
Waiting time setting	Not available
Maximum number of connections	3
Slave function (server)	Number of simultaneously acceptable request messages 1

Inverter-to-inverter link function

Item	Description	
Transmission speed	100Mbps	
Connectable units	Master: 1 Slave: up to 5	
Topology	Star	
Maximum number of links per station	Output device	16 (2 bytes)
	Special register	8 (16 bytes)

Lineup

FR - F 8 2 0 - 0.75K - E 1 -

Symbol	Voltage class	Symbol	Structure, functionality	Symbol*2*3	Description	Symbol	Type	Communication type*4	Symbol	Circuit board coating (IEC60721-3-3/3C2/3S2 compatible)	Plated conductor
2	200 V class	0	Standard model	0.75K to 560K	LD rated invertercapacity (kW)	E1	FM	Ethernet	None	Without	Without
4	400 V class	2	Separated converter type*5			E2	CA*5		60	With	Without
									06*6	With	With

*4: Models can be alternatively indicated with the inverter rated current (SLD rating).

*5: For the CA-type, the monitor output terminal FM/CA operates as terminal CA (analog current output 0 to 20 mADC), not as terminal FM (pulse train output).

*6: Available for the 7.5K or higher.

*7: For the 75K or higher inverter, always connect a DC reactor (FR-HEL), which is available as an option.

Select a DC reactor according to the applied motor capacity.

*8: Always install the converter unit (FR-CC2). (Not required when a high power factor converter (FR-HC2) is used)

*9: Inverters compatible with RS-485 communication are also available.

CC-Link IE Field Network Basic compatible products

Master

- MELSEC iQ-R series module with built-in Ethernet CPU
- MELSEC-Q series module with built-in Ethernet CPU
- MELSEC-L series module with built-in Ethernet CPU
- MELSEC iQ-F series module with built-in Ethernet CPU

Slave

- FR-A800 inverter
- FR-F800 inverter
- FR-E700 inverter (to be supported sequentially)
- MELFA industrial robot (to be supported sequentially)
- MR-J4 series servo amplifier (to be supported sequentially)
- GOT2000 series human machine interface (HMI).
GT27 model, GT25 model, and GT21 model (to be supported sequentially)
- M800/M80 series CNC control unit (to be supported sequentially)
- Block type remote I/O module (to be supported sequentially)

For the model names of the compatible products, please contact your sales representative.



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