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Changes for the Better

for a greener tomorrow

CC-Link IE Field Network Basic Compatible Products

CC-Link IE

CC-Link IE Broadcast

Easier network integration

Mitsubishi Electric is launching CC-Link IE Field Network Basic compatible products to further leverage networking on the production floor. With recent trends of IoT*1, network connection of devices and equipment for small-scale systems are becoming more mainstream. CC-Link IE Field Network Basic realizes easier network integration, as its cyclic communications stack is software-based, without requiring a dedicated ASIC helping to reduce implementation costs for device partners.

Plant-wide seamless communication

Utilizing standard Ethernet technology, TCP/IP protocol stack for communications (such as HTTP, FTP) is supported. Based on SLMP*2, data flows transparently between the sensor level and the enterprise level across multiple industry-standard automation networks. Seamless communication can be easily realized with CC-Link IE Field Network Basic, further improving performance of the manufacturing enterprise.

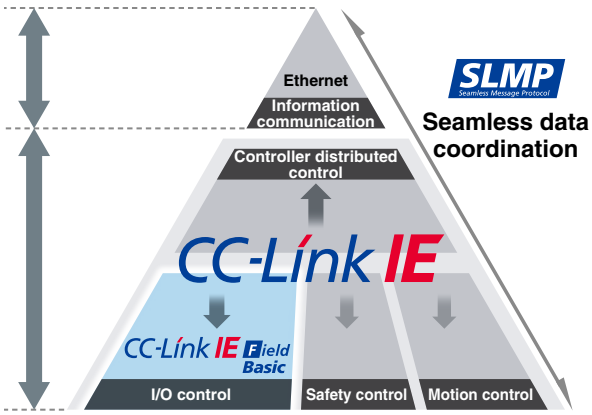
Highlights

- Small-scale network system configuration
- Simple setup and easy troubleshooting
- Combining with TCP/IP communications
- Wider range of connectable products

*1. Internet of Things
*2. SeamLess Message Protocol

Positioning within CC-Link IE Network

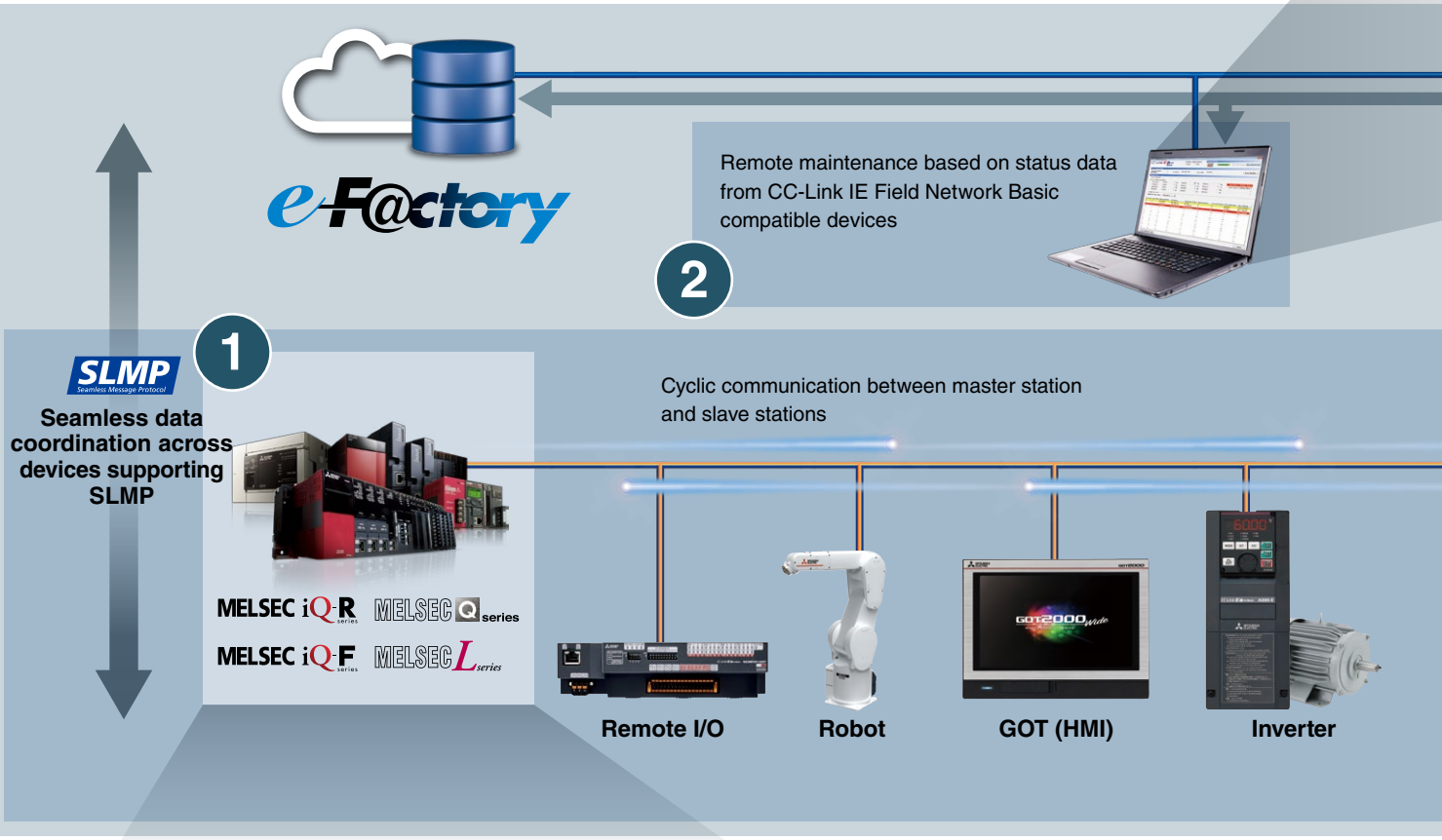
The Ethernet-based open network CC-Link IE is a high-speed and large-capacity network integrating distributed control, I/O control, safety control, and motion control. CC-Link IE Field Network Basic, which is a part of CC-Link IE Network, realizes easier connection of Ethernet devices. Transparent communications are achieved by utilizing SLMP that enables seamless connectivity within all levels of manufacturing.



Supporting Ethernet protocol stack realizing highly-flexible system

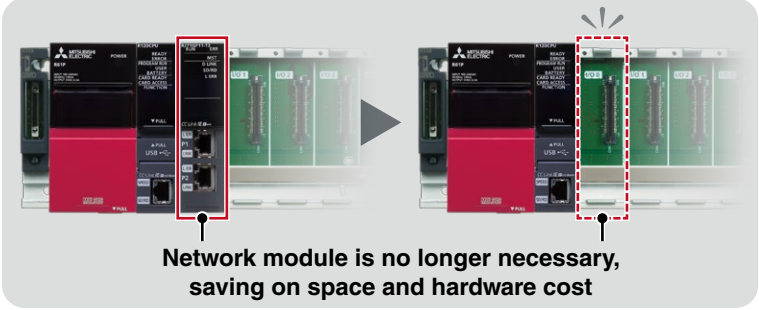
The protocol for CC-Link IE Field Network Basic is software-based (not requiring ASIC), realizing a wider range of compatible products. The network operates on the standard Ethernet protocol stack, which can be used together with TCP/IP communications. This feature allows CC-Link IE Field Network Basic compatible products and Ethernet compatible products to be connected on the same Ethernet communications line, enabling a highly-flexible and low cost system.

	Network				
Application software	HTTP/ FTP etc.	User application (Cyclic communication/transient communication/SLMP)			
		CC-Link IE Field Basic	CC-Link IE Field	CC-Link IE Control	CC-Link
Protocol stack	TCP/UDP				
	IP				
Communication driver	Ethernet				EIA-485



*For further details regarding this product, please directly contact 'CKD Corporation', details can be found on their website at **http://www.ckd.co.jp/english/glblinfo/global/**

Note: Some images are for illustrative purposes only.



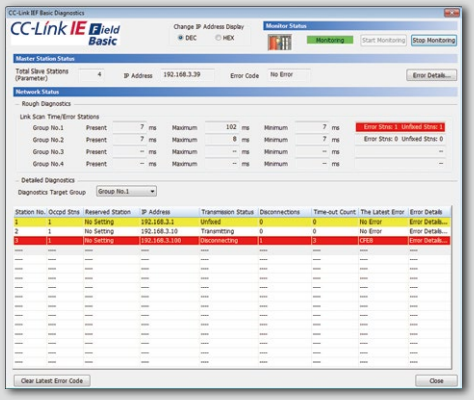
Network module is no longer necessary, saving on space and hardware cost

❶ Small-scale network system configuration

MELSEC programmable controller CPUs with an embedded Ethernet port can be used as a master station, eliminating the need for an additional network module. The network can be configured with a minimum number of modules reducing space and hardware cost.

❷ Simple setup and easy troubleshooting

Cyclic communications can be easily done just by registering parameters without requiring dedicated programs. Settings such as IP address can be easily done by automatically detecting slave devices using either the GX Works3 or GX Works 2 engineering tool. Maintenance is easier by being able to monitor the operating and communication statuses of nodes connected on the network.

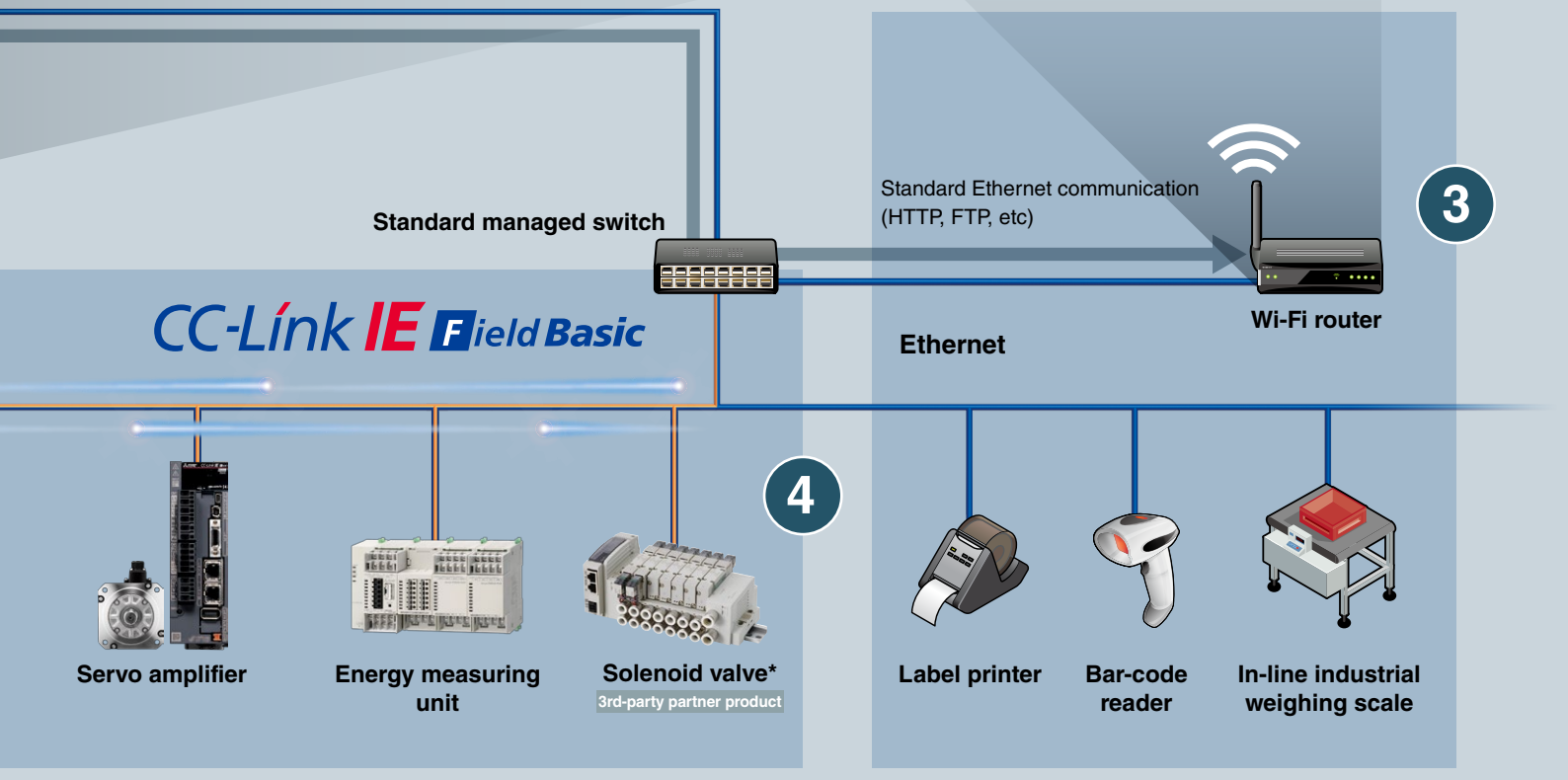


Diagnosis screen

❸ Combining with TCP/IP communications

By enabling cyclic communication control on standard Ethernet, parameter setting and status monitoring can be done with peripheral devices (such as an enterprise level or tablet computer) connected via TCP/IP communications. Systems requiring several manufacturing line devices can be realized by connecting Ethernet compatible devices such as a label printer, bar-code reader, and weighing scale.

Parameter setting and status monitoring using an embedded WEB server node.



❹ Wider range of connectable products

CC-Link IE Field Network Basic realizes cyclic communication with software implementation only. System can be easily configured using a standard managed switch and cables at a lower cost. Supported-products can be easily developed and a wider range of CC-Link IE Field Network Basic-supported devices can be readily available.

CC-Link IE Field Network Basic master embedded products

- Products with CC-Link IE Field Network Basic embedded
- The Ethernet port enables the product to operate as a CC-Link IE Field Network master station

MELSEC iQ-R Series

R□□CPU
R□□ENCPU
R12CCPU-V

64 slave stations can be connected per network


R32CPU


R12CCPU-V

MELSEC iQ-F Series

FX5U-□□□□/□□□
FX5UC-□□□□/□□□

16 slave stations can be connected per network


FX5U-32MR


FX5UC-32MT/D


FX5UC-32MT/DS-TS

MELSEC iQ-F Series Ethernet module

FX5-ENET NEW

32 slave stations can be connected per network


FX5-ENET

MELSEC-Q Series

Q□□UDVCPU

64 slave stations can be connected per network


Q03UDVCPU

MELSEC-L Series

L□□CPU (-P/-BT/-PBT)

16 slave stations can be connected per network


L02CPU

MELIPC MI5000 Series

MI5122-VW

64 slave stations can be connected per network


MI5122-VW

CC-Link IE Field Network Basic performance specifications

Item	CPU module					MELIPC
	R□CPU R□ENCPU R12CCPU-V	Q□UDVCPU	L□CPU	FX5U FX5UC	FX5-ENET	MI5122-VW
Communication speed (bps)	100 M					
Maximum stations per network*1	64 (16 × 4 groups)		16	16*2	32 (16 × 2 groups)	64 (16 × 4 groups)
Connection cable	Ethernet standard compatible cable, Category 5e or higher (STP cable)					
Maximum station-to-station distance (m)	100 (between a hub and node)*3					
Network topology	Star type					
Communication method	UDP					
Maximum link points per network*4						
Remote input (RX), remote output (RY)	4096		1024	1024	2048	4096
Remote register (RWr, RWw)	2048		512	512	1024	2048

*1. Maximum number of slave stations controlled by the master station, depending on the number of allocated slave stations. The total number of allocated stations should not exceed the maximum number of slave stations.
*2. Supported in the CPU module firmware version of "1.110" or later.
*3. The maximum distance between stations depends on the actual hub used. Please refer to the hub manufacturer's specifications.
*4. Remote input RX: Bit data input from a slave station to the master station
Remote output RY: Bit data output from the master station to a slave station
Remote register RWr: 16-bit (word) unit data output from the master station to a slave station
Remote register RWw: 16-bit (word) unit data output from the master station to a slave station

For detailed information about performance specifications, please refer to the "CC-Link IE Field Network Basic Reference Manual (SH(NA)-081684ENG)".

CC-Link IE Field Network Basic compatible servo amplifier

AC Servo MELSERVO-J4/JE Series
MR-J4-GF (-RJ)　MR-JE-C

- MR-J4-GF (-RJ)/MR-JE-C support CC-Link IE Field Network Basic
- With the drive system supporting CiA 402 drive profile, positioning systems are configured easily without a Positioning module

MR-J4-□GF　MR-JE-□C

CC-Link IE Field Network Basic compatible inverter

Inverter FREQROL-A800/A800 Plus/F800/E700 Series
FR-A800-E　FR-A800-E-CRN　FR-F800-E　FR-E700-NE

- CC-Link IE Field Network Basic realizes various inverter operations to be monitored at a fast rate (multiple monitoring and parameter reading/writing can also be executed simultaneously improving maintainability)
- Seamless network environment enables monitoring and setup of inverters from the IT system
- Standard Ethernet is supported without installing a plug-in option, realizing a low cost system easily

FR-A800-E

CC-Link IE Field Network Basic compatible robot

Industrial Robot MELFA FR Series
RV-□□FR　RH-□□FRH

- Cyclic communication is possible with CC-Link IE Field Network Basic compatible devices via Ethernet interface embedded as standard
- Communication of I/O signals and device registers between a robot controller and a programmable controller is possible without adding a communication option unit to the robot controller. Hardware cost reduction in system configuration is realized.

RV-7FRL

CC-Link IE Field Network Basic compatible GOT (HMI)

HMI GOT2000 Series
GT27□□-□□□□　GT25□□□-□□□□　GT210□-□□BD

- Cyclic communication is possible with CC-Link IE Field Network Basic compatible devices via Ethernet interface of GOT (HMI)
- TCP/IP communications are supported, enabling a highly-flexible system

CC-Link IE Field Network Basic Energy measuring unit

Energy measuring unit EcoMonitorLight

EMU4-□D1-MB

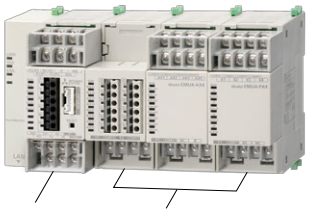
- EcoMonitorLight enables CC-Link IE Field Network Basic communication when combined with the dedicated option unit
- Single circuit measuring device with an integrated display enabling setting and measuring of current, voltage, and power. Measured data can be utilized for energy-saving on a per-equipment basis.

EMU4-HD1-MB

Energy measuring unit EcoMonitorPlus

EMU4-□□1-MB (basic unit)
EMU4-□□□ (extension unit)

- EcoMonitorPlus enables CC-Link IE Field Network Basic communication when combined with the dedicated option unit
- Combination of basic unit and extension units according to measurement items support leakage current measurement and analog/pulse input in addition to current, voltage, and power measurement of multiple circuits
- Measured data can be utilized for energy-saving, state monitoring, and preventive maintenance on a per-equipment basis



EMU4-□□1-MB EMU4-□□□

CC-Link IE Field Network Basic Block type remote modules

- CC-Link IE Field Network Basic slave station. These modules are useful when installation positions close to I/O devices are required
- Supports CC-Link IE Field Network Basic diagnostic function. Network error and I/O module fault can be checked using the engineering software. Enables CC-Link parameters to be set with simple switch operations

Input modules

Spring-clamp terminal block

NZ2MF2S1-32D

NZ2MF2S1-32D

Model	Input type DC input	Input points	Rated input voltage/current	Wiring type
NZ2MF2S1-32D	Positive common, Negative common	32 points	24 V DC (6 mA)	1-wire

Screw terminal block

NZ2MFB1-32D

NZ2MFB1-32D

Model	Input type DC input	Input points	Rated input voltage/current	Wiring type
NZ2MFB1-32D	Positive common, Negative common	32 points	24 V DC (6 mA)	1-wire

NZ2MFB2-16A

Model	Input type	Input points	Rated input voltage, frequency	Rated input current	Wiring type
NZ2MFB2-16A	AC input	16 points	100…120 V AC	8.2 mA (100 V AC, 60 Hz), 6.8 mA (100 V AC, 50 Hz)	2-wire

Output modules

Spring-clamp terminal block

NZ2MF2S1-32T
NZ2MF2S1-32TE1

NZ2MF2S1-32T

Model	Output type Transistor output	Output points	Rated load voltage/ Max. load current	Wiring type
NZ2MF2S1-32T	Sink type	32 points	12/24 V DC (0.5 A)	1-wire
NZ2MF2S1-32TE1	Source type	32 points	12/24 V DC (0.1 A)	1-wire

Screw terminal block

NZ2MFB1-32T
NZ2MFB1-32TE1

NZ2MFB1-32T

Model	Output type Transistor output	Output points	Rated load voltage/ Max. load current	Wiring type
NZ2MFB1-32T	Sink type	32 points	12/24 V DC (0.5 A)	1-wire
NZ2MFB1-32TE1	Source type	32 points	12/24 V DC (0.1 A)	1-wire

NZ2MFB2-16R

Model	Output type	Output points	Rated load voltage/ Max. load current	Wiring type
NZ2MFB2-16R	Contact output	16 points	24 V DC (2 A), 240 V AC (2 A)	2-wire

I/O combined modules

Spring-clamp terminal block

NZ2MF2S1-32DT
NZ2MF2S1-32DTE1

NZ2MF2S1-32DT

Model	Input type DC input	Input points	Rated input voltage/ current	Output type Transistor output	Output points	Rated load voltage/ Max. load current	Wiring type
NZ2MF2S1-32DT	Positive common	16 points	24 V DC (6 mA)	Sink type	16 points	24 V DC (0.5 A)	1-wire
NZ2MF2S1-32DTE1	Negative common	16 points	24 V DC (6 mA)	Source type	16 points	24 V DC (0.1 A)	1-wire

Screw terminal block

NZ2MFB1-32DT
NZ2MFB1-32DTE1

NZ2MFB1-32DT

Model	Input type DC input	Input points	Rated input voltage/ current	Output type Transistor output	Output points	Rated load voltage/ Max. load current	Wiring type
NZ2MFB1-32DT	Positive common	16 points	24 V DC (6 mA)	Sink type	16 points	24 V DC (0.5 A)	1-wire
NZ2MFB1-32DTE1	Negative common	16 points	24 V DC (6 mA)	Source type	16 points	24 V DC (0.1 A)	1-wire

CC-Link IE Field Network Basic compatible products

Type	Model	Outline
CC-Link IE Field Network Basic embedded CPU modules		
R□□CPU		MELSEC iQ-R Series CPU module master station
R□□ENCPU		MELSEC iQ-R Series CC-Link IE embedded CPU module master station
R12CCPU-V		MELSEC iQ-R Series C Controller module master station
Q□□UDVCPU		MELSEC-Q Series High-speed Universal model QCPU module master station
L□□CPU (-P/-BT/-PBT)		MELSEC-L Series CPU module master station
FX5U-□□□□/□□□		MELSEC iQ-F Series FX5U CPU module master station
FX5UC-□□□□/□□□		MELSEC iQ-F Series FX5UC CPU module master station
FX5-ENET NEW		MELSEC iQ-F Series Ethernet module master station
MI5122-VW		MELIPC MI5000 Series master station
Inverters		
FR-A800-E		FREQROL-A800 Series Inverter slave station
FR-A800-E-CRN		FREQROL-A800 Plus for CRANES Inverter slave station
FR-F800-E		FREQROL-F800 Series Inverter slave station
FR-E700-NE		FREQROL-E700 Series Inverter slave station
AC servos		
MR-J4-GF (-RJ)		MELSERVO-J4 Series Servo amplifier slave station
MR-JE-C		MELSERVO-JE Series Servo slave station
Industrial robots		
RV-□□FR		MELFA FR Series Robot vertical, multiple-joint type slave station
RH-□□FRH		MELFA FR Series Robot horizontal, multiple-joint type slave station
HMI GOT2000 Series		
GT27□□-□□□□		GT27 model slave station
GT25□□□-□□□□		GT25 model slave station
GT210□-□□□D		GT21 model slave station
Energy measuring units		
EMU4-□D1-MB		EcoMonitorLight slave station
EMU4-□□1-MB		EcoMonitorPlus slave station
EMU4-CM-CIFB		CC-Link IE Field Network Basic Communication Unit (EcoMonitorLight/Plus)
Block type remote modules		
DC input	NZ2MF2S1-32D	32 points, 24 V DC, response time 0…70 ms, positive/negative common shared, spring clamp terminal block, 1-wire
	NZ2MFB1-32D	32 points, 24 V DC, response time 0…70 ms, positive/negative common shared, screw terminal block, 1-wire
AC input	NZ2MFB2-16A	16 points, 100…120 V AC, 50/60 Hz, screw terminal block, 2-wire
Transistor output	NZ2MF2S1-32T	32 points, 12/24 V DC (0.5 A), sink type, spring clamp terminal block, 1-wire
	NZ2MF2S1-32TE1	32 points, 12/24 V DC (0.1 A), source type, spring clamp terminal block, 1-wire
	NZ2MFB1-32T	32 points, 12/24 V DC (0.5 A), sink type, screw terminal block, 1-wire
	NZ2MFB1-32TE1	32 points, 12/24 V DC (0.1 A), source type, screw terminal block, 1-wire
Contact output	NZ2MFB2-16R	16 points, 24 V DC/240 V AC (2 A), screw terminal block, 2-wire
I/O combined	NZ2MF2S1-32DT	Input 16 points, 24 V DC, response time 0…70 ms, positive common Output 16 points, 24 V DC (0.5 A), sink type spring clamp terminal block, 1-wire
	NZ2MF2S1-32DTE1	Input 16 points, 24 V DC, response time 0…70 ms, negative common Output 16 points, 24 V DC (0.1 A), source type spring clamp terminal block, 1-wire
	NZ2MFB1-32DT	Input 16 points, 24 V DC, response time 0…70 ms, positive common Output 16 points, 24 V DC (0.5 A), sink type screw terminal block, 1-wire
	NZ2MFB1-32DTE1	Input 16 points, 24 V DC, response time 0…70 ms, negative common Output 16 points, 24 V DC (0.1 A), source type screw terminal block, 1-wire

Third-party partner product

Company	Type	Series	Specifications
CKD Corporation	Solenoid valve	4G/W4G Series	NPN/PNP: 16 points/32 points Protective structure: 4G (IP20), W4G (IP65)

Country/Region Sales office

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⚠ For safe use

• To use the products listed in this publication properly, always read the relevant manuals before use.

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