Remote I/O R3 Series

CC-Link INTERFACE MODULE

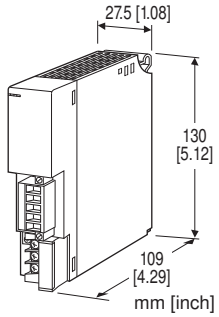
(CC-Link Ver.1.10/Ver.2.00)

Functions & Features

• Enables other protocol interface modules to communicate with CC-Link data (gateway).
• Recognized as an analog I/O mixed module by other protocol interface modules.

Typical Applications

• A gateway for CC-Link and Modbus.



CE

MODEL: R3-GC1S[1]

ORDERING INFORMATION

• Code number: R3-GC1S[1]
Specify a code from below for [1].
(e.g. R3-GC1S/CE/Q)
• Specify the specification for option code /Q
(e.g. /C01)

COMMUNICATION MODE

S: Single

[1] OPTIONS (multiple selections)

Standards & Approvals
blank: Without CE
/CE: CE marking
Other Options
blank: none
/Q: Option other than the above (specify the specification)

SPECIFICATIONS OF OPTION: Q

COATING (For the detail, refer to our web site.)
/C01: Silicone coating
/C02: Polyurethane coating
/C03: Rubber coating

CAUTION

• When selecting network modules, note that this unit is not designed to be used with network modules of certain types or versions.
• This unit CANNOT be used with R3-NC2, R3-NEIP1, R3-NFx, and R3-NLx.
• This unit CAN be used with:
R3-NM3 and R3-NML3 of firmware version V1.00 or higher;
R3-NC1, R3-NC3, R3-NDx, R3-NE1, R3-NFL1, R3-NM1, R3-NM4, and R3-NP1 of firmware version V2.00 or higher; and
other models of any firmware versions.

PACKAGE INCLUDES...

• Terminating resistor (110 Ω, 0.5 W)

GENERAL SPECIFICATIONS

Connection
Network: Euro type connector terminal
(applicable wire size: 0.2 to 2.5 mm^2, stripped length 7 mm)
Internal bus: Via the Installation Base (model: R3-BSx)
Internal Power: Via the Installation Base (model: R3-BSx)
RUN contact output: M3 separable screw terminal (torque 0.5 N·m)
Screw terminal: Nickel-plated steel
Isolation: CC-Link to internal bus or internal power to RUN contact output
RUN indicator: Bi-color (green/red) LED
Green turns ON when CC-Link communication is normal and fieldbus communication on the R3 Network module side is also normal; or
Red turns ON when receiving data.
Indication selectable with DIP SW3-4.
ERR indicator: Bi-color (green/red) LED
Green turns ON/blinks in communication errors (OFF with wire breakdown; Green blinks with setting errors); or
Red turns ON when transmitting data.
Indication selectable with DIP SW3-4.

■ RUN CONTACT OUTPUT

RUN contact: Turns on while the green RUN LED is ON (only when CC-Link communication and the field bus built-in the interface module are in normal).
Rated load: 250 V AC @ 0.5 A (cos ø = 1)
30 V DC @ 0.5 A (resistive load)
(Less than 50 V AC to conform with EU Directive)
Maximum switching voltage: 250 V AC or 30 V DC
Maximum switching power: 250 VA or 150 W
Minimum load: 1 V DC @ 1 mA

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Mechanical life: 2×10^7 cycles (300 cycles/min.)
When driving an inductive load, external contact protection and noise quenching recommended.

CC-Link COMMUNICATION

CC-Link: Both Version 1.10 and Version 2.00 are available. Select the version with DIP SW3.
Cyclic expansion: 2, 4, 8 folds (Function selected with DIP SW)
Station No. setting: Rotary switch; 1 – 64
Baud rate setting: Rotary switch
156kbps, 625kbps, 2.5Mbps, 5Mbps, 10Mbps
Station type: Remote device station
Required nodes: 4
Ver.1.10: (128 I/O points, 16 words)
Ver.2.00: (112 I/O points, 16 words) × m (m = expanded cyclic setting)
Transmission cable: Approved for CC-Link

INSTALLATION

Operating temperature: -10 to +55°C (14 to 131°F)
Operating humidity: 30 to 90 %RH (non-condensing)
Atmosphere: No corrosive gas or heavy dust
Mounting: Installation Base (model: R3-BSx)
Weight: 200 g (0.44 lb)

PERFORMANCE

Data allocation
Ver.1.10: 16
Ver.2.00: 16 × m (m = expanded cyclic setting)
Current consumption: 120 mA
Insulation resistance: ≥ 100 MΩ with 500 V DC
Dielectric strength: 1500 V AC @ 1 minute
(CC-Link to internal bus or internal power to RUN contact output)
2000 V AC @ 1 minute (power input to FG; isolated on the power supply module)

STANDARDS & APPROVALS

EU conformity:
EMC Directive
EMI EN 61000-6-4
EMS EN 61000-6-2
RoHS Directive

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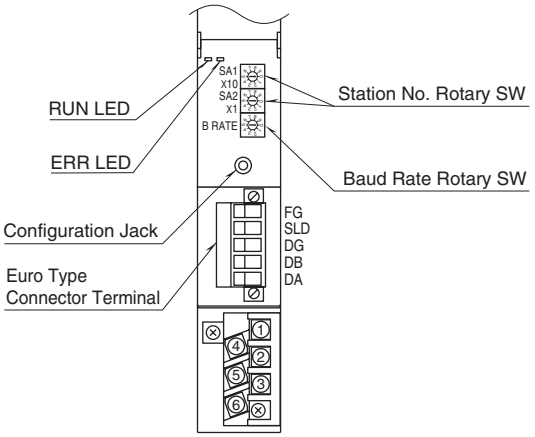
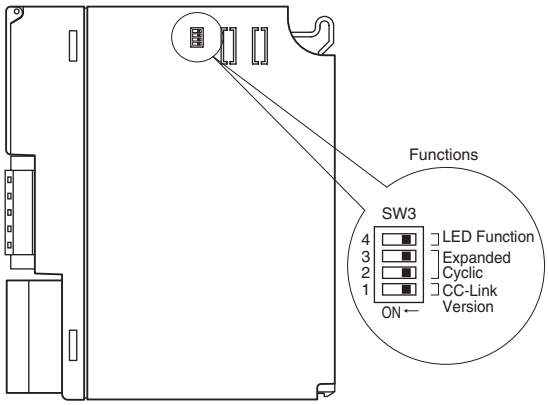
EXTERNAL VIEW

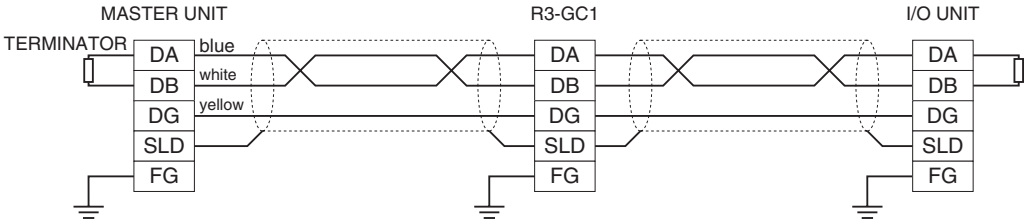
■ **FRONT VIEW**



■ **SIDE VIEW**



COMMUNICATION CABLE CONNECTIONS



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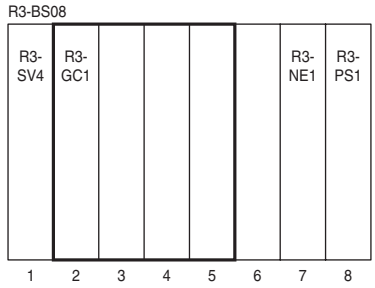
TRANSMISSION DATA DESCRIPTIONS

Use the DIP SW located at the side of the module to specify expanded cyclic setting. 16 words input and 16 words output make 1 cyclic. Max. 8 cyclic (128 words input, 128 words output) transmission is available. 1 cyclic is equivalent to 1 I/O module (analog input 16 points, analog output 16 points). Max. 8 I/O modules can be assigned to 8 slots.
Note: Do not mount any modules in the slots which are occupied by virtual modules. If a real I/O module is mounted in the slot, an internal bus error occurs and the ERR LED turns on. Max. 16 real I/O modules and virtual modules are available. The interface module can not read the data for more than 16 modules.

■ WHEN R3-GC1 IS MOUNTED ON SLOT NO. 2 (4 CYCLIC)

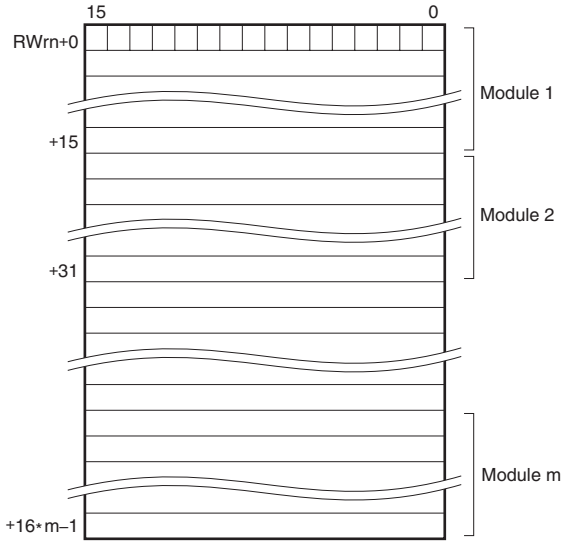
Real I/O modules are mounted on Slots No. 1 and 2, however, the network module (R3-NE1) recognizes that each of Slots No. 1 to 5 is occupied. That is, R3-NE1 recognizes R3-SV4 mounted on Slot No.1 as it is and recognizes R3-GC1 mounted on Slot No.2 as divided into four modules and occupying Slots No. 2 to 5.



SLOT	REAL MODULE	VERTUAL MODULE	NO. OF WORDS
Slot No.1	R3-SV4	R3-SV4	4 Words
Slot No.2	R3-GC1	R3-GC1 (1/4)	16 Words
Slot No.3	No module	R3-GC1 (2/4)	16 Words
Slot No.4	No module	R3-GC1 (3/4)	16 Words
Slot No.5	No module	R3-GC1 (4/4)	16 Words
Slot No.6	No module	No module	----
Slot No.7	R3-NE1	R3-NE1	----
Slot No.8	R3-PS1	R3-PS1	----

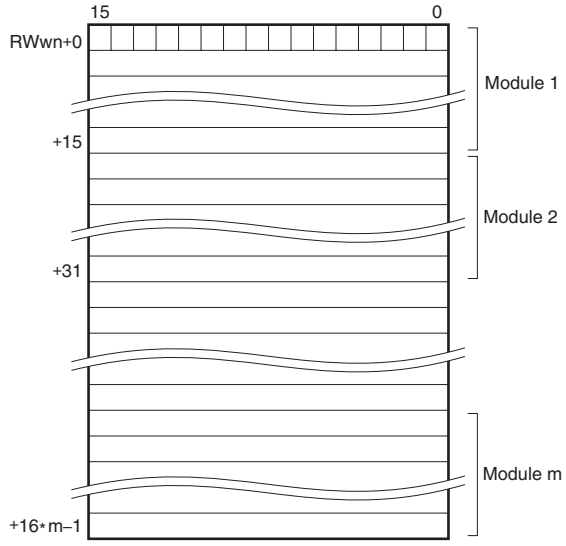
■ OUTPUT DATA

The figure below shows the allocation of the data sent from the network module to the master.



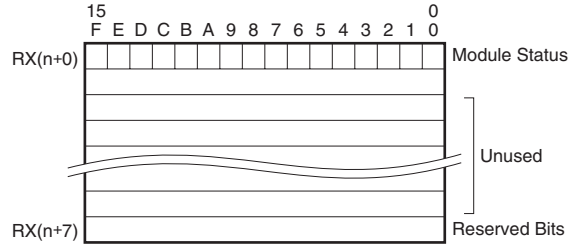
■ INPUT DATA

The figure below shows the allocation of the data sent from the master to the network module.

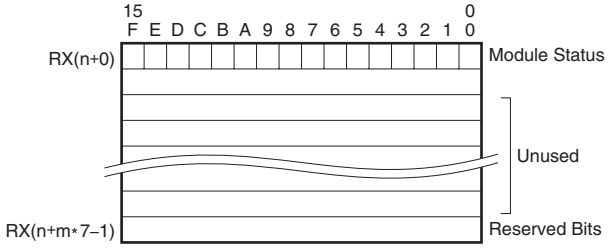


• The available data area for R3-GC1 is [16*m] (m=expanded cyclic setting)

CC-Link Ver.1.10



CC-Link Ver.2.00



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• CC-Link Ver.1.10

1. Module Status

RX (n + 0) 0 indicates whether a virtual I/O module is specified or not.
The virtual I/O module is a fixed one for CC-Link Ver.1.10, the related bit must be “1”.

RX (n + 0) 0 Virtual I/O module 1

2. RX (n + 1) to RX (n + 6) are not used.
3. RX (n + 7) 0 to RX (n + 7) 7 is a reservation area.
   RX (n + 7) B is used as Ready signal, the bit is “1” when this module is in normal.
   RX (n + 7) 8 to A, C to F are not used.

• CC-Link Ver.2.00

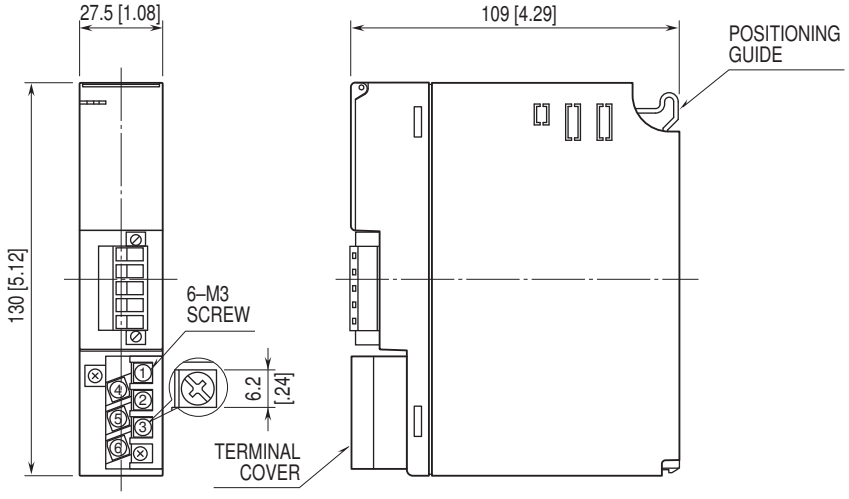
1. Module Status

RX (n + 0) 0 to RX (n + 0) 7 indicates whether virtual I/O modules are specified or not.
When a virtual module is specified, the related bit is “1”. When a virtual module is not specified, the related bit is “0”.
The detailed information is as shown below.

RX (n + 0) 0	Virtual I/O module 1
RX (n + 0) 1	Virtual I/O module 2
RX (n + 0) 2	Virtual I/O module 3
RX (n + 0) 3	Virtual I/O module 4
RX (n + 0) 4	Virtual I/O module 5
RX (n + 0) 5	Virtual I/O module 6
RX (n + 0) 6	Virtual I/O module 7
RX (n + 0) 7	Virtual I/O module 8

2. RX (n + 1) to RX (n + m * 7 – 2) are not used.
3. RX (n + m * 7 – 1) 0 to RX (n + m * 7 – 1) 7 is a reservation area.
   RX (n + m * 7 – 1) B is used as Ready signal, the bit is “1” when this module is in normal.
   RX (n + m * 7 – 1) 8 to A, C to F are not used.

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



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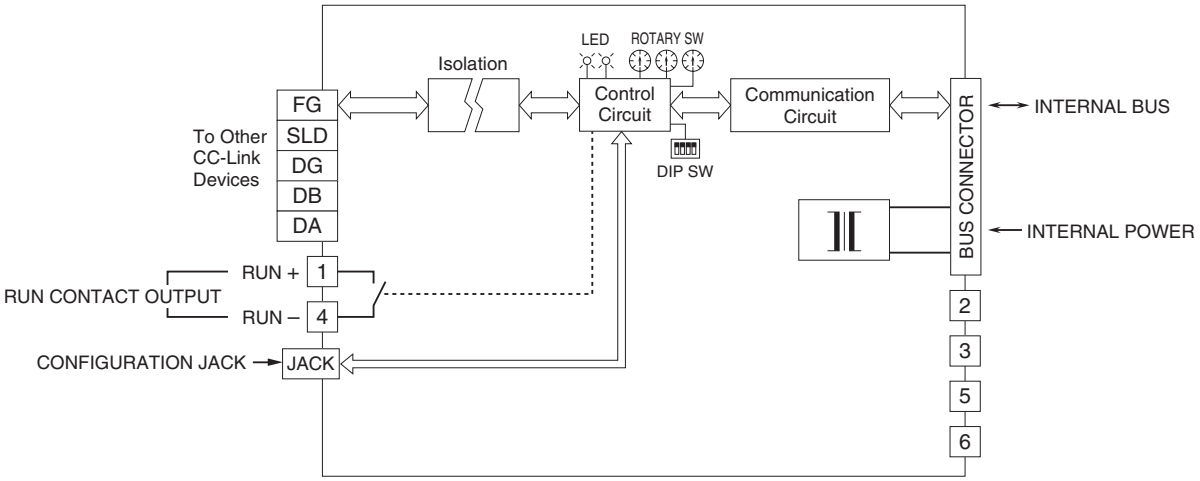
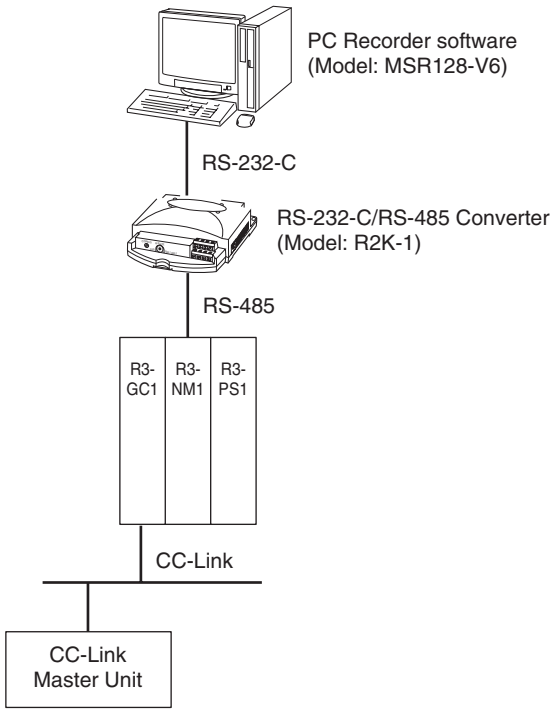
SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



SYSTEM CONFIGURATION EXAMPLES

In the following system configuration, PC Recorder software captures the CC-Link data via R3-GC1 which is used as a gateway.



⚠ Specifications are subject to change without notice.

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