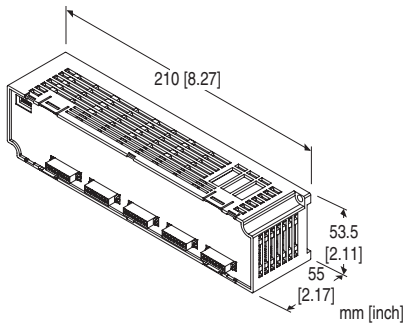
PC Recorder R7K4G Series

PC RECORDER

(Bus powered USB, 16 points DC input, 2 points dry contact, 2 points photo MOSFET relay output, tension clamp terminal)

Functions & Features

- Remote I/O module with 16 points DC input for measurement with PC
- 2 points dry contact and 2 points photo MOSFET relay output
- Available for trigger input and alarm output
- No power wiring required
- Dedicated PC software
- Modbus-RTU communication via USB (virtual COM port) is possible



CE

MODEL: R7K4GUS-G16D4-[1]-T

ORDERING INFORMATION

- Code number: R7K4GUS-G16D4-[1]-T

Specify a code from below for [1].
(e.g. R7K4GUS-G16D4-1-T)

I/O TYPE

G16D4: DC voltage input, 16 points,
dry contact, 2 points,
photo MOSFET relay output, 2 points
(for input range, refer to analog input specification)

[1] ANALOG INPUT RANGE

Select input range among the following combination (1 - 8 ch, 9 - 16 ch)

1: DC input, 16 points (wide span voltage input, 16 points)
2: DC input, 16 points
(1 - 8 ch wide span voltage input, 8 points +
9 - 16 ch middle span voltage input, 8 points)
3: DC input, 16 points
(1 - 8 ch wide span voltage input, 8 points +
9 - 16 ch narrow span voltage input, 8 points)
4: DC input, 16 points (middle span voltage input, 16 points)
5: DC input, 16 points
(1 - 8 ch middle span voltage input, 8 points +
9 - 16 ch narrow span voltage input, 8 points)
6: DC input, 16 points (narrow span voltage input, 16 points)

POWER INPUT

DC Power

T: 5 V DC power input by USB bus powered (high powered device)

RELATED PRODUCTS

- Configurator software for PC Recorder (model: PC Recorder)

Configurator software for PC Recorder is downloadable at our web site.
For connecting to PC, use commercially available cable.

GENERAL SPECIFICATIONS

Connection

- **Power input, communication**: USB Type-C connector (female)
- **I/O**: Tension clamp terminal

Housing material: Flame-resistant resin (gray)
Isolation: Analog input tp discrete input or output to USB connector (power input or communication)
Status indicator LEDs: PWR, RUN
(Refer to the instruction manual)
Discrete I/O status indicator LED: Green LED turns on with I/O ON

COMMUNICATION

Standard: Full Speed USB 2.0
Connector: Type-C
Role: device
Transmission speed: 12 Mbps
Cable specification / current value: 4 m max. / ≥ 1.5 A
Protocol: Modbus-RTU (via virtual COM port)
Node address is fixed at 1.
Communication is possible with any settings for baud rate, parity, and stop bit.

ANALOG INPUT SPECIFICATIONS

Input signal: DC current, 16 points

■ **Wide span voltage**
Input resistance: ≥ 1 MΩ
±10 V DC to ±0.8 V DC
Maximum input range: ±10.5 V DC

■ **Middle span voltage**
Input resistance: ≥ 100 kΩ
±0.8 V DC to ±80 mV DC

MG CO., LTD.
www.mgco.jp

Maximum input range: ±0.84 V DC

■ **Narrow span voltage**

Input resistance: ≥ 100 kΩ

±80 mV DC to ±10 mV DC

Maximum input range: ±84 mV DC

DISCRETE INPUT SPECIFICATIONS

Discrete input: Dry contact, 2 points

Common: Negative common (connect internally to 0V)

Maximum inputs applicable at once: No limit

Rated detective voltage: Approx. 5 V DC (internal supply)

ON voltage / resistance: ≥ 0.5 V / ≤ 1000 Ω

OFF voltage / resistance: ≤ 4.0 V DC / ≥ 20 kΩ

Input current: Approx. 3.8 mA

Input resistance: Approx. 1 kΩ

ON delay: ≤ 2.0 msec.

OFF delay: ≤ 2.0 msec.

OUTPUT SPECIFICATIONS

Photo MOSFET relay output, 2 points

Rated load voltage: 48 V peak AC / DC

Rated output current: 0.2 A per point

Output ON resistance: ≤ 1 Ω

Leakage current at open circuit: ≤ 0.1 mA

ON delay: ≤ 50 msec.

OFF delay: ≤ 1 msec.

(Recommended to protect the contact and to eliminate noise when driving an inductive load.)

INSTALLATION

Current consumption

5 V DC power input by USB bus powered (high powered device)

≤ 160 mA

Operating temperature: -10 to +55°C (14 to 131°F)

Storage temperature: -20 to +65°C (-4 to +149°F)

Operating humidity: 30 to 90 %RH (non-condensing)

Atmosphere: No corrosive gas or heavy dust

Mounting: Desktop, surface or DIN rail (35 mm rail)

Weight: 150 g (0.33 lb)

PERFORMANCE

Conversion accuracy: ±0.1 % (narrow span voltage input ±20 mV DC: ±0.2 %, ±10 mV DC: ±0.3 %)

Conversion rate: 4 msec.

Temp. coefficient: ±0.015 %/°C (±0.008 %/°F)

(±0.03 %/°C [±0.02 %/°F] with ±10 mV DC)

Insulation resistance: ≥ 100 MΩ with 500 V DC

Dielectric strength: 1500 V AC @ 1 minute

(analog input to discrete input or output to USB connector (power input or communication))

STANDARDS & APPROVALS

EU conformity:

EMC Directive

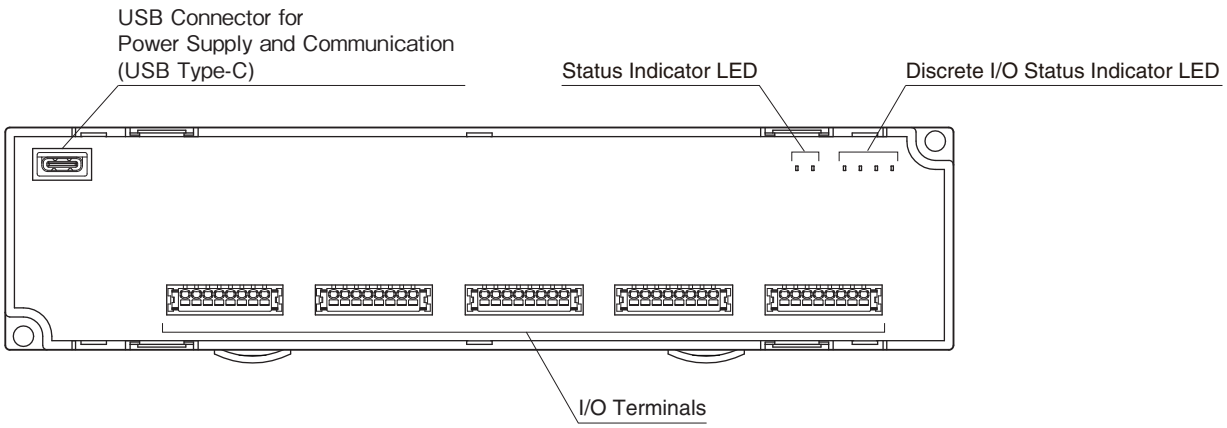
EMI EN 61000-6-4

EMS EN 61000-6-2

RoHS Directive

MG CO., LTD.
www.mgco.jp

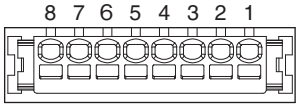
EXTERNAL VIEW



TERMINAL ASSIGNMENTS

■ ANALOG INPUT, DISCRETE I/O TERMINAL ASSIGNMENT

Terminal block: PTSM0,5/8-2,5-V SMD R44 (Phoenix Contact)
Applicable wire size: 0.2 - 0.5 mm²
Stripped length: 6 mm
Recommended solderless terminal
AI0,25-6BU 0.25 mm² (Phoenix Contact)
AI0,25-6YE 0.25 mm² (Phoenix Contact)
AI0,34-6TQ 0.34 mm² (Phoenix Contact)



· ANALOG INPUT

PIN NO.	ID	FUNCTION
1	AI4-	Input 4-
2	AI4+	Input 4+
3	AI3-	Input 3-
4	AI3+	Input 3+
5	AI2-	Input 2-
6	AI2+	Input 2+
7	AI1-	Input 1-
8	AI1+	Input 1+

PIN NO.	ID	FUNCTION
1	AI8-	Input 8-
2	AI8+	Input 8+
3	AI7-	Input 7-
4	AI7+	Input 7+
5	AI6-	Input 6-
6	AI6+	Input 6+
7	AI5-	Input 5-
8	AI5+	Input 5+

PIN NO.	ID	FUNCTION
1	AI12-	Input 12-
2	AI12+	Input 12+
3	AI11-	Input 11-
4	AI11+	Input 11+
5	AI10-	Input 10-
6	AI10+	Input 10+
7	AI9-	Input 9-
8	AI9+	Input 9+

PIN NO.	ID	FUNCTION
1	AI16-	Input 16-
2	AI16+	Input 16+
3	AI15-	Input 15-
4	AI15+	Input 15+
5	AI14-	Input 14-
6	AI14+	Input 14+
7	AI13-	Input 13-
8	AI13+	Input 13+

· DISCRETE I/O

PIN NO.	ID	FUNCTION
1	DO2	Photo MOSFET output 2
2	DO2	Photo MOSFET output 2
3	DO1	Photo MOSFET output 1
4	DO1	Photo MOSFET output 1
5	NC	Unused
6	DI2	Discrete input 2
7	DI1	Discrete input 1
8	COM	Common

MG CO., LTD.
www.mgco.jp

READING AND WRITING I/O DATA VIA MODBUS-RTU COMMUNICATION

The device is intended to be used with PC recorder software (model: PC Recorder), but it is also possible to read and write I/O data via Modbus-RTU communication through USB (virtual COM port).

When the PC and the device are connected with a USB cable, a virtual COM port is created on the PC.
The node address is fixed at 1, and communication is possible with any settings for baud rate, parity, and stop bit.

MODBUS FUNCTION CODES & SUPPORTED CODES

■ DATA AND CONTROL FUNCTIONS

CODE	NAME	
03	Read Holding Registers	General purpose register within the slave
04	Read Input Registers	Collected data from the field by the slave
06	Preset Single Register	General purpose register within the slave
16	Preset Multiple Registers	General purpose register within the slave

■ EXCEPTION CODES

CODE	NAME	
01	Illegal Function	Function code is not allowable for the slave
02	Illegal Data Address	Address is not available within the slave
03	Illegal Data Value	Data is not valid for the function

MODBUS I/O ASSIGNMENT

REGISTER	R/W	ADDRESS	DATA RANGE	DATA
Input Register (3X)	R	1 to 16	-27500 to +27500	Data of analog input 1 to 16
Holding Register (4X)		33	0, 1	Discrete input 1 (0 = OFF, 1 = ON)
		34	0, 1	Discrete input 2 (0 = OFF, 1 = ON)
	R/W	35	0, 1	Discrete output 1 (0 = OFF, 1 = ON)
		36	0, 1	Discrete output 2 (0 = OFF, 1 = ON)

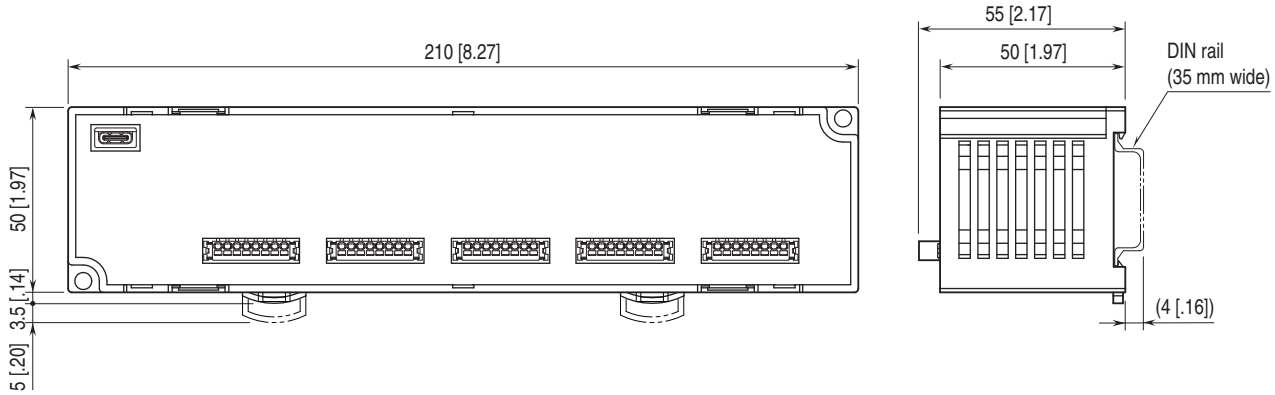
Note: DO NOT access addresses 37 or later. Such access may cause problems such as inadequate operation.

■ ANALOG INPUT DATA

ANALOG INPUT RANGE	DATA
Wide span voltage	-25000 to +25000 for -10 to +10 V
Middle span voltage	-25000 to +25000 for -0.8 to +0.8 V
Narrow span voltage	-25000 to +25000 for -80 to +80 mV

MG CO., LTD.
www.mgco.jp

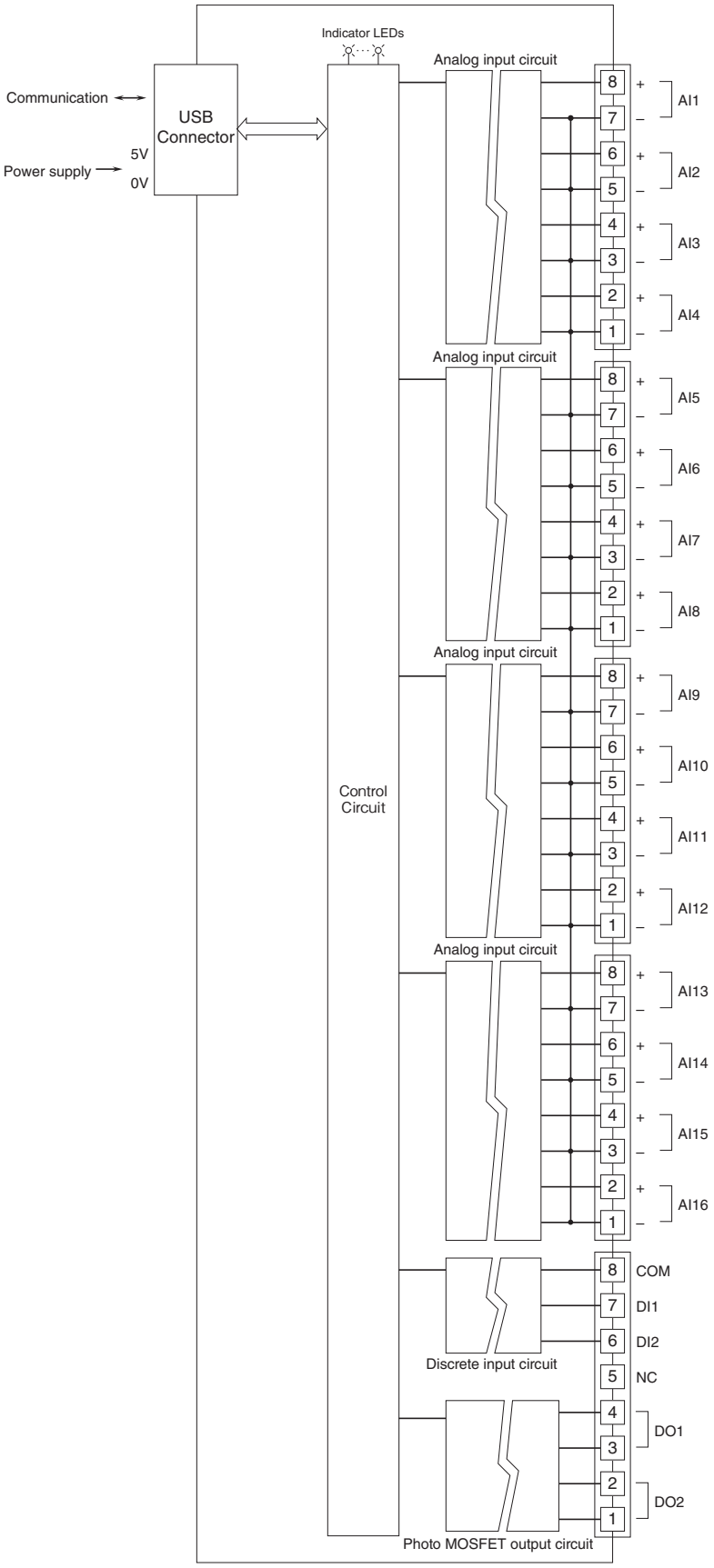
EXTERNAL DIMENSIONS unit: mm [inch]



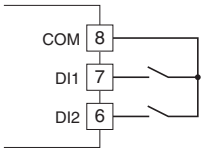
MOUNTING REQUIREMENTS unit: mm [inch]

MG CO., LTD.
www.mgco.jp

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



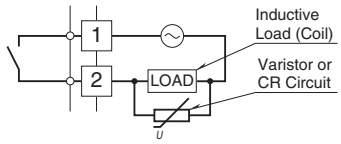
■ **Input Connection Examples**



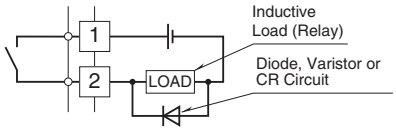
MG CO., LTD.
www.mgco.jp

■ **Relay protection**

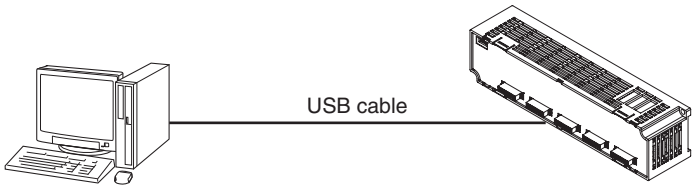
· AC Powered



· DC Powered



SYSTEM CONFIGURATION EXAMPLES



PC

PC Recorder
(Model: R7K4GUS-G16D4)

⚠ Specifications are subject to change without notice.

MG CO., LTD.
www.mgco.jp