

MODEL: R7G4HML3-6-LC2A

Remote I/O R7G4H Series

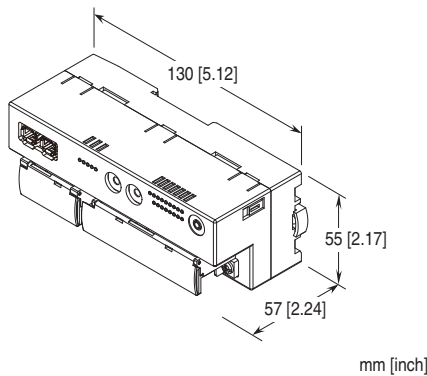
(Operational voltage range 24 V \pm 10 %, ripple 10 %p-p max.)

MECHATROLINK I/O MODULE

(tension sensor input (Nireco tension sensor), 2 points, isolated, screw terminal block, message transmission command, MECHATROLINK- III use)

Functions & Features

- 2 points Nireco tension sensor input for MECHATROLINK- III
- Easy parameter setting of individual channels with M-System's configurator software



MECHATROLINK

MODEL: R7G4HML3-6-LC2A-R[1]

ORDERING INFORMATION

- Code number: R7G4HML3-6-LC2A-R[1]
Specify a code from below for [1].
(e.g. R7G4HML3-6-LC2A-R/Q)
- Specify the specification for option code /Q
(e.g. /C01/SET)

TERMINAL BLOCK

- 6: Screw terminal block for power supply
Connector for MECHATROLINK- III
Screw terminal block for I/O

I/O TYPE

LC2A: Tension sensor input, 2 points,
(tension sensor MB, MG Nireco Corp.)

POWER INPUT

DC Power
R: 24 V DC

[1] OPTIONS

blank: none

/Q: Options other than the above (specify the specification)

SPECIFICATIONS OF OPTION: Q (multiple selections)

COATING (For the detail, refer to M-System's web site.)

/C01: Silicone coating

/C02: Polyurethane coating

/C03: Rubber coating

EX-FACTORY SETTING

/SET: Preset according to the Ordering Information Sheet
(No. ESU-7772-LC2A)

RELATED PRODUCTS

- PC configurator software (model: R7CFG)

Downloadable at M-System's web site.

A dedicated cable is required to connect the module to the PC. Please refer to the internet software download site or the users manual for the PC configurator for applicable cable types.

GENERAL SPECIFICATIONS

Connection

MECHATROLINK-III: MECHATROLINK-III connector

Power input, I/O: M3 separable screw terminal (torque 0.5 N·m)

Solderless terminal: Refer to the drawing at the end of the section.

Recommended manufacturer: Japan Solderless Terminal MFG.Co.Ltd, Nichifu Co.,Ltd

Applicable wire size: 0.25 to 1.65 mm² (AWG 22 to 16)

Screw terminal: Nickel-plated steel

Housing material: Flame-resistant resin (gray)

Isolation: Input 0 or monitor output 0 to input 1 or monitor output 1 to MECHATROLINK or FE to power

Zero adjustments: Configurable via R7CFG

Span adjustments: Configurable via R7CFG

Load coefficient: Configurable via R7CFG

Averaging: Configurable via R7CFG

Excitation Voltage: Configurable via R7CFG

Lowpass filter: Configurable via R7CFG

Monitor output: Configurable via R7CFG

Status indicator LEDs: PWR, ERR, CON, LNK1, LNK2

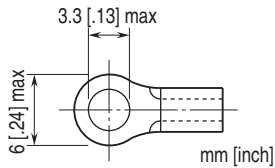
(Refer to the instruction manual for details)

Input status indicator LEDs: A.ZERO, ZERO, SPAN, MODE, RESET, UNDER, 0-100, OVER

(Refer to the instruction manual for details)

MODEL: R7G4HML3-6-LC2A

■Recommended solderless terminal



MECHATROLINK-III COMMUNICATION

Baud rate: 100 Mbps

Transmission distance: 6300 m max.

Distance between stations: 100 m max.

Transmission media: MECHATROLINK cable (Model JEPMC-W6013-x-E, Yaskawa Controls Co., Ltd.)

Connector: TYCO AMP Industrial mini I/O connector

Max. number of slaves: 62

(The maximum number of slaves might change depending on the master unit. Refer to the manual of the master unit)

Transmission cycle: 125 μ sec., 250 μ sec., 500 μ sec., 1 - 64 msec. (with 1 msec. increments)

Communication cycle: 125 μ sec. through 64 msec.

Applicable profile: Standard I/O profile (cyclic communication)

Event-driven communication acquiring ID profile (event-driven communication)

Transmission bytes: 16 bytes

Station address: 03H through EFH (set with rotary switches)

Cyclic communication: Available

Event-driven communication: Available

Message transmission command: 01H, 7FH

Slave monitoring: None

INPUT SPECIFICATIONS

■Nireco tension sensor input

- Tension sensor

Applicable sensor: MB tension sensor, MG tension sensor (Nireco)

Zero adjustment: max. allowable roll weight of a sensor

Lowpass filter: approx. 2 kHz or approx. 2 Hz

Conversion rate: min. 2000 samples/sec.

- Excitation: 6 V \pm 5%

Maximum current: max. 15 mA

OUTPUT SPECIFICATIONS

Output range: 0 - 10 V DC (for input 0 - 100 %)

Load resistance: \geq 100 k Ω

Operational range: -115 - +115 %

INSTALLATION

Current consumption

- DC: Approx. 100 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: Surface or DIN rail (35 mm rail)

Weight: 220 g (0.49 lb)

PERFORMANCE

Accuracy:

Tension sensor input: \pm 0.1% (% for max. span of wrap angle 0°, number of average min. 16)

Monitor output accuracy: \pm 0.1 %

Converted data range:

Input 0 / input 1: 0 - 10000 of the range from zero to span

Total input data: Sum of input 0 and input 1

Temperature coefficient

Tension sensor input: \pm 0.015 %/°C (\pm 0.008 %/°F) % for max. span of wrap angle 0°

Monitor output: \pm 0.015 %/°C (\pm 0.008 %/°F)

Input delay time:

Lowpass filter 2 kHz max. 20 msec. (0 - 90 %)

Lowpass filter 2 Hz max. 200 msec. (0 - 90 %)

Output delay time: \leq 250 msec. (0 - 90 %)

Resolution: 1/10000 (max. span of wrap angle 0°)

Insulation resistance: \geq 100 M Ω with 500 V DC

Isolation: 1500 V AC @ 1 minute

(input 0 or monitor output 0 to input 1 or monitor output 1 to MECHATROLINK or FE to power)

STANDARDS & APPROVALS

EU conformity:

EMC Directive

EMI EN 61000-6-4

EMS EN 61000-6-2

RoHS Directive

PC CONFIGURATOR

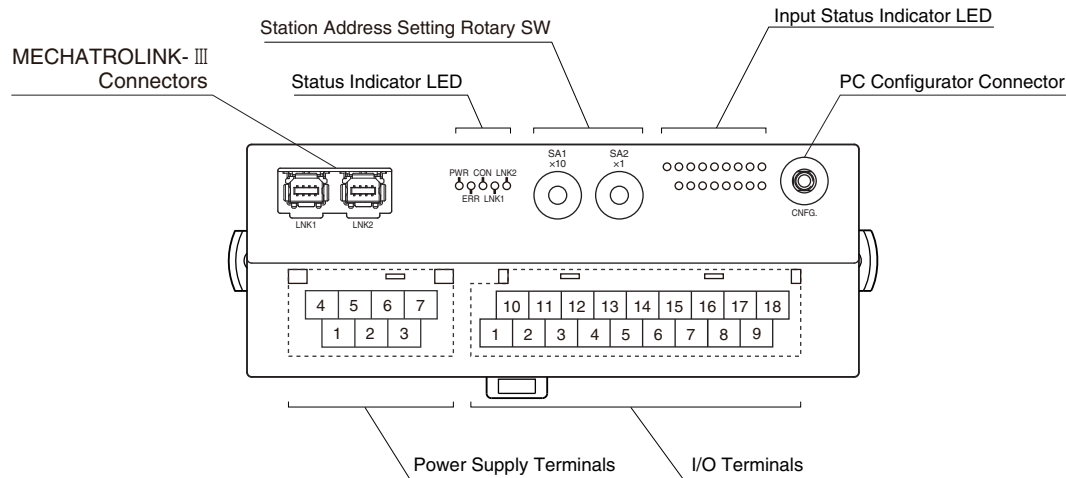
The following parameters can be set with using PC Configurator Software (model: R7CFG)

Refer to the users manual for the R7CFG for detailed operation of the software program.

■ SETTINGS FOR INDIVIDUAL CHANNELS

PARAMETER	SETTING RANGE	DEFAULT SETTING
Zero adjustment	Not exceeding allowable roll weight of the sensor	-
Span adjustment	10% to full scale	Full scale
Auto zero	-	-
Reset offset	-	-
Auto scale	0 to 32 000	-
Bias	-320.00 to +320.00 (%)	0.00 (%)
Gain	-3.2000 to +3.2000	1.0000
Zero scale	-32 000 to +32 000	0
Full scale	-32 000 to +32 000	10 000
Load ratio	10.00 to 100.00 (%)	100.00 (%)
Averaging	2, 4, 8, 16, 32, 64, 128, 256, 512, 1024	16
Lowpass filter	2Hz, 2kHz	2kHz
Monitor output	-115.00 to +115.00 (%)	-

EXTERNAL VIEW



TERMINAL ASSIGNMENTS

■ I/O TERMINAL ASSIGNMENT

10 NC	11 +EXC0	12 +IN0	13 NC	14 V0	15 +EXC1	16 +IN1	17 NC	18 V1
1 NC	2 -EXC0	3 -IN0	4 SLD0	5 C0	6 -EXC1	7 -IN1	8 SLD1	9 C1

NO.	ID	FUNCTION	NO.	ID	FUNCTION
1	NC	No connection	10	NC	No connection
2	-EXC0	Excitation 0-	11	+EXC0	Excitation 0+
3	-IN0	Input 0-	12	-IN0	Input 0+
4	SLD0	Shield 0	13	NC	No connection
5	C0	Monitor output 0-	14	V0	Monitor output 0+
6	-EXC1	Excitation 1-	15	+EXC1	Excitation 1+
7	-IN1	Input 1-	16	+IN1	Input 1+
8	SLD1	Shield 1	17	NC	No connection
9	C1	Monitor output 1-	18	V1	Monitor output 1+

■ POWER SUPPLY TERMINAL ASSIGNMENT

4 NC	5 NC	6 +24V	7 0V
1 NC	2 NC	3 FE	

- 1. NC -
- 2. NC -
- 3. FE Functional earth
- 4. NC -
- 5. NC -
- 6. +24V Power supply (24V DC)
- 7. 0V Power supply (0V)

MECHATROLINK RELATED COMMANDS

Commands available with the unit are as follow.

PROFILE	COMMAND	CODE	FUNCTION
Common command	NOP	00H	No operation command
	ID_RD	03H	Read ID command
	CONFIG	04H	Setup device command
	ALM_RD	05H	Read alarm or warning command
	ALM_CLR	06H	Clear alarm or warning command
	CONNECT	0EH	Establish connection command
	DISCONNECT	0FH	Release connection command
Standard I/O profile	DATA_RWA	20H	Transmit I/O data

DATA CONVERSION

■ 0 - 100% DATA CONVERSION

Analog input data is converted into digital representations of 0 - 100% proportional to each scaled range. The converted % values are multiplied by 100 and expressed in 16 bits.

Overrange input is possible from -15 to +115% of the nominal range. When the signal exceeds the limit, the data is fixed at -15% or +115% respectively.

Analog output is converted in the reverse order of the input data. The output range 0 - 10V DC is expressed as 10000 at 10.0V (100%) and 0 at 0V (0%).

RESPONSE TIME

Response time of analog input module is time from when 0 to 100% stepwise signal change is applied to the analog module till when the communication ASIC of the module (slave) transmits 90% of input signal.

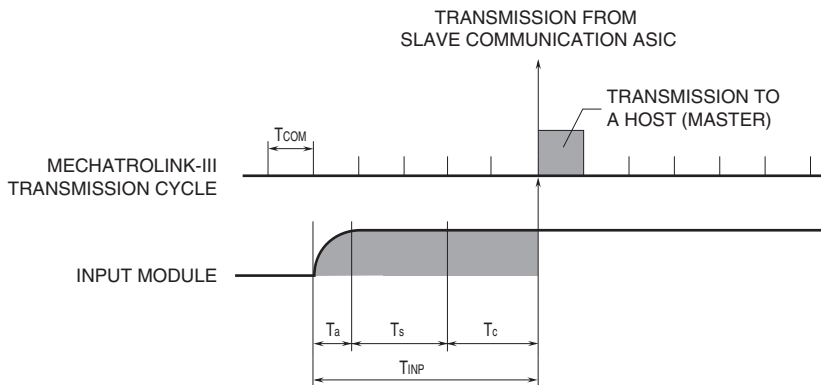
T_{COM} : MECHATROLINK-III transmission cycle set at master
(depends on system and configuration)

T_{INP} : Input module response time \leq Input Delay time (T_a) + Conversion rate^{*1} (T_b) + input internal processing delay time (T_c)
(two transmission cycle)

*1. Conversion rate x Averaging

E.g.: Averaging (2), input delay time of 20 msec, transmission cycle of 0.5 msec.

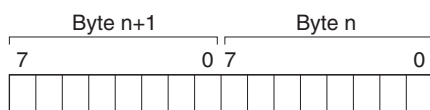
Input module response time (T_{INP}): Input Delay time (20 msec.) + Conversion rate (0.5 msec.) x Averaging (2)
+ internal processing delay time (0.5 msec. x 2) = 22 [msec.]



I/O DATA DESCRIPTIONS

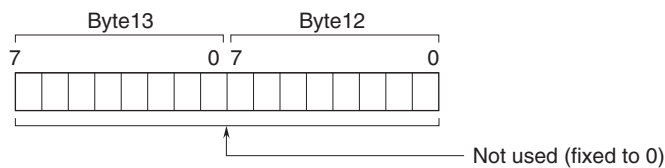
Scaling of analog I/O module is configurable with the configurator software (model: R7CFG). Refer to the software manual for details.

ANALOG I/O



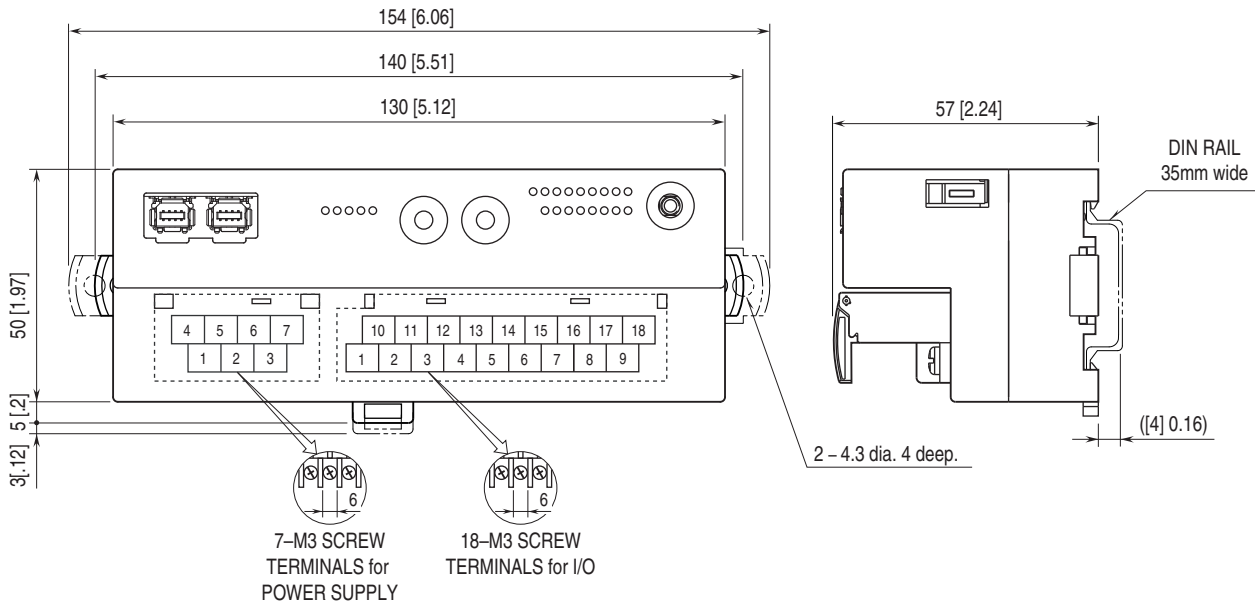
Data is represented in 16-bit binary. Negative value is represented in 2's complements.

STATUS

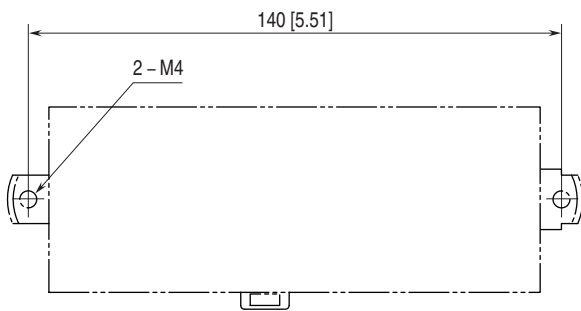


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EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



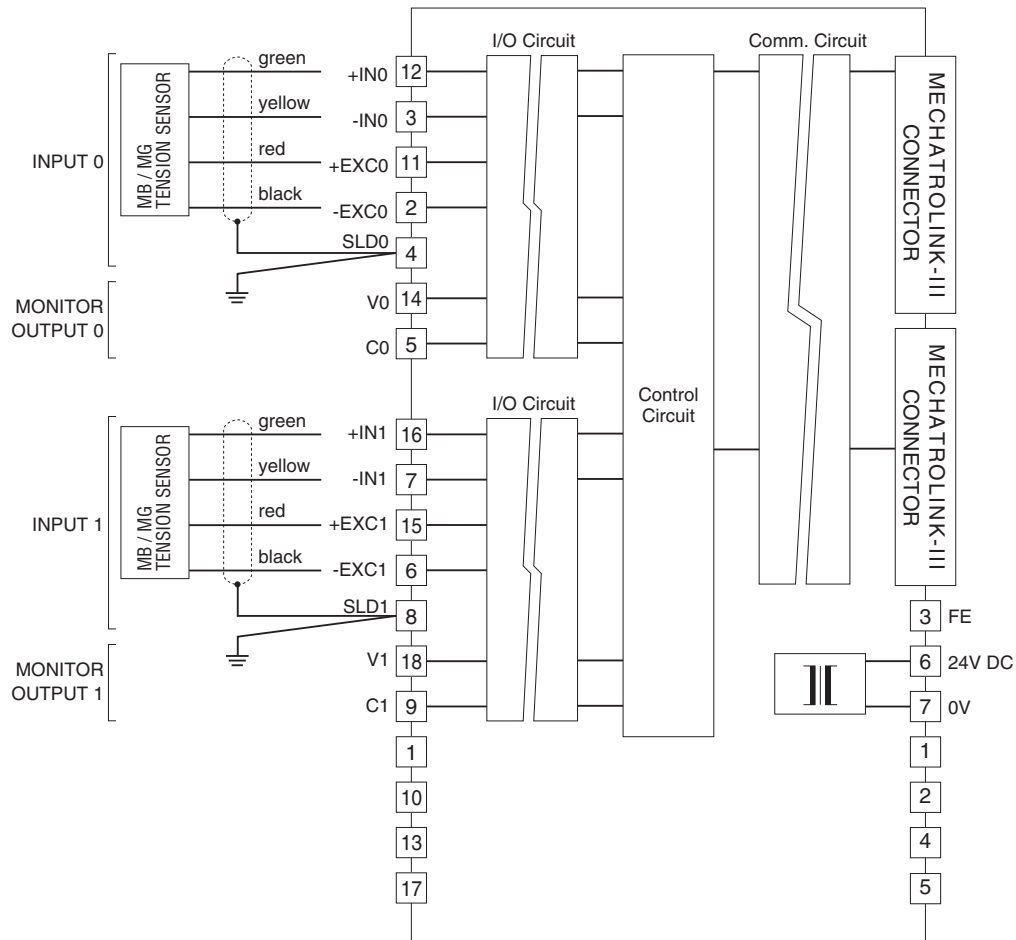
MOUNTING REQUIREMENTS unit: mm [inch]



SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

Note: In order to improve EMC performance, bond the FE terminal to ground.

Caution: FE terminal is NOT a protective conductor terminal.



Specifications are subject to change without notice.