THERMOCOUPLE & DC INPUT MODULE
(16 points; DeviceNet)

MODEL **R1D-GH2**

BEFORE USE ....

Thank you for choosing M-System. Before use, please check contents of the package you received as outlined below.
If you have any problems or questions with the product, please contact M-System's Sales Office or representatives.

This product is for use in general industrial environments, therefore may not be suitable for applications which require higher level of safety (e.g. safety or accident prevention systems) or of reliability (e.g. vehicle control or combustion control systems).

For safety, installation and maintenance of this product must be conducted by qualified personnel.

■ PACKAGE INCLUDES:
Remote I/O module (body + CJC sensor) ....(1)

■ MODEL NO.
Confirm Model No. marking on the product to be exactly what you ordered.

■ INSTRUCTION MANUAL
This manual describes necessary points of caution when you use this product, including installation, connection and basic maintenance procedures.
The R1D is programmable using the PC configurator software. For detailed information on the PC configuration, refer to the R1CON instruction manual. The R1CON PC Configurator Software is downloadable at M-System's web site: http://www.m-system.co.jp.

■ EDS FILE
EDS files are downloadable at M-System's web site: http://www.m-system.co.jp

POINTS OF CAUTION

■ POWER INPUT RATING & OPERATIONAL RANGE
• Locate the power input rating marked on the product and confirm its operational range as indicated below:
   100 – 240V AC rating: 85 – 264V, 47 – 66 Hz, approx. 6VA
   24V DC rating: 24V ±10%, approx. 2W

■ GENERAL PRECAUTIONS
• Before you remove the module, turn off the power supply and input signal for safety.

■ ENVIRONMENT
• Indoor use.
• When heavy dust or metal particles are present in the air, install the module inside proper housing with sufficient ventilation.
• Do not install the module where it is subjected to continuous vibration. Do not subject the module to physical impact.
• Environmental temperature must be within -5 to +60°C (23 to 140°F) with relative humidity within 30 to 90% RH in order to ensure adequate life span and operation.
• Be sure that the ventilation slits are not covered with cables, etc.

■ WIRING
• Wrong connection may damage the module.
• Do not connect cables to moving parts or pull them tightly.
• Do not install cables close to noise sources (relay drive cable, high frequency line, etc.).
• Do not bind these cables together with those in which noises are present. Do not install them in the same duct.
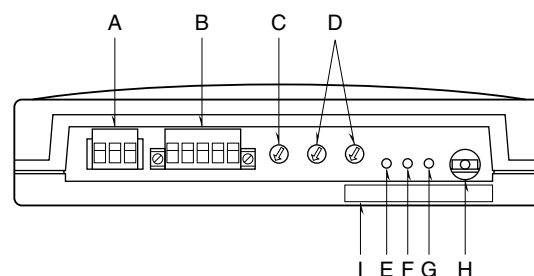
■ AND ....
• The module is designed to function as soon as power is supplied, however, a warm up for 10 minutes is required for satisfying complete performance described in the data sheet.

COMPONENT IDENTIFICATION

■ **TOP VIEW**

■ **REAR VIEW**

CJC Sensor (model: CJM)
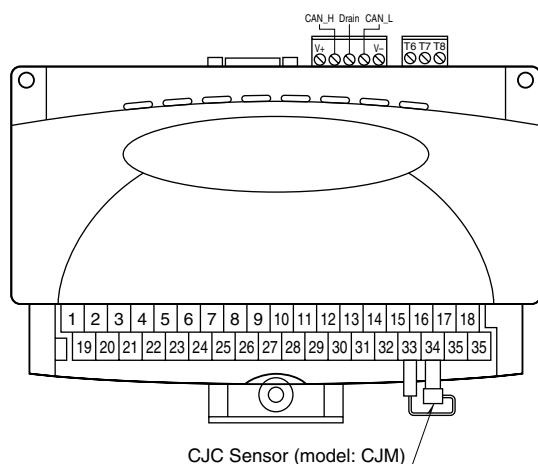
	NAME	FUNCTIONS		
A	Power terminal block	For power input		
B	Network terminal block	For wiring to DeviceNet		
C	Baud rate setting	125, 250, 500 kbps (factory set to: 125 kpbs)		
D	Node address setting	Selectable within 00 – 63 (factory set to: 00)		
E	NS (Network Status) indicator LED	COLOR	FUNCTIONS	
		Red	ON:	Critical communication error
			Blinking:	Minor communication error
		Green	ON:	Communication established
			Blinking:	Communication down
		----	OFF:	Power Not supplied
F	MS (Module Status) indicator LED	COLOR	FUNCTIONS	
		Red	ON:	Critical failure
			Blinking:	Minor failure
		Green	ON:	Normal conditions
			Blinking:	Device Not configured
		----	OFF:	Power Not supplied
G	Power LED	COLOR	FUNCTIONS	
		Green	ON:	Power supplied
		----	OFF:	Power Not supplied
H	Configurator jack	2.5 dia. miniature jack; RS-232-C level		
I	Specifications	Display(s) serial No., model No., etc.		

INSTALLATION

■ **DIN RAIL MOUNTING**

Set the body so that its DIN rail adaptor is at the bottom. Pull down the DIN rail adaptor. Position the upper hook at the rear side on the DIN rail and push in the lower. Push back the DIN rail adaptor.
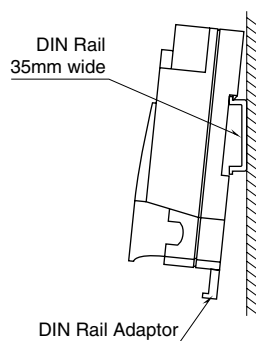
■ **WALL MOUNTING**

Set the body so that its DIN rail adaptor is at the bottom. Pull down the DIN rail adaptor. Refer to "EXTERNAL DIMENSIONS."

DIN Rail 35mm wide

DIN Rail Adaptor

TERMINAL CONNECTIONS

Connect the module referring to the connection diagram.
Attach the CJC sensor together with input wiring to the input screw terminals. The sensor is calibrated for each particular module and not interchangeable with another. Check the serial numbers of the module and sensor.

■ EXTERNAL DIMENSIONS mm (inch)

36–M3 INPUT TERMINALS
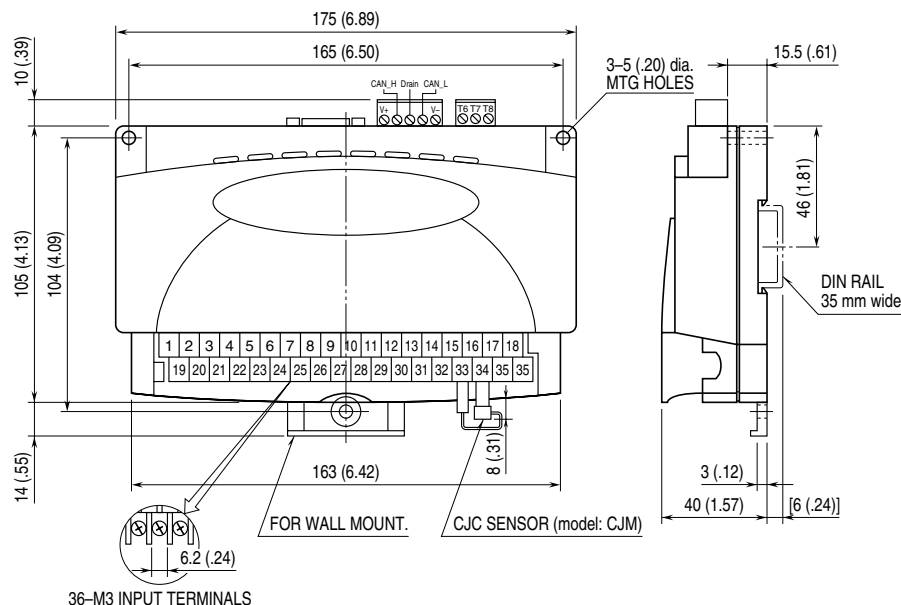
■ CONNECTION DIAGRAM
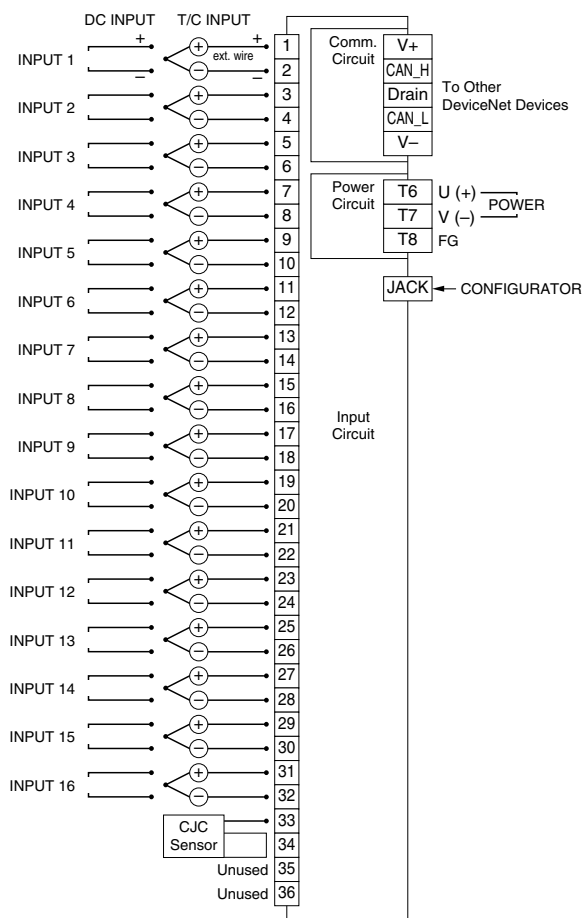
Note 1: This device is not designed to cancel noise included in the input signals.
　　　　Be careful to eliminate such noise by using shielded cables.
Note 2: Be sure to maintain the same potential at all the common negative
　　　　terminals for DC input.
Caution: FG terminal is NOT a protective conductor terminal.

WIRING INSTRUCTIONS

■ M3 SCREW TERMINAL (Input signal)

Torque: 0.6 N·m

■ SOLDERLESS TERMINAL

Refer to the drawing below for recommended ring tongue terminal size. Spade tongue type is also applicable.
Applicable wire size: 0.75 to 1.25 mm^2 (AWG19 to 16)
Recommended manufacturer: Japan Solderless Terminal MFG.Co.Ltd, Nichifu Co.,ltd
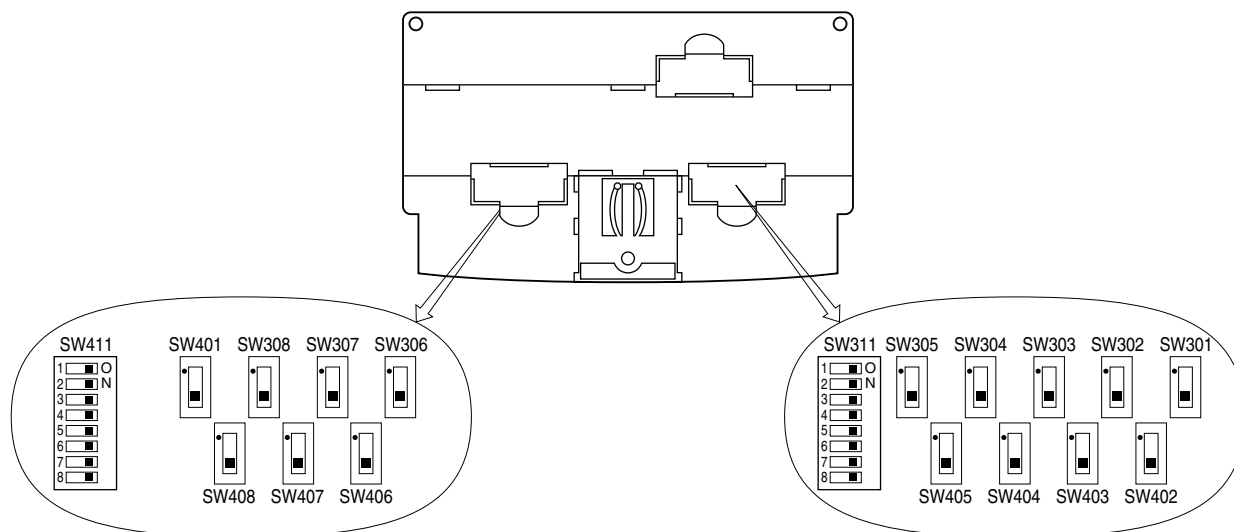

mm (inch)
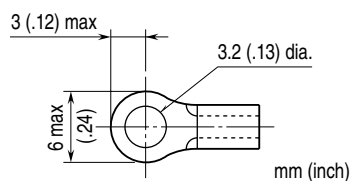
■ EURO TYPE CONNECTOR TERMINAL (Power input, DeviceNet)

Applicable wire size: 0.2 to 2.5 mm^2 (AWG24 to 12)
Stripped length: 7 mm

INPUT RANGE SELECTING

Select switches to match the input signal according to the table below.

INPUT	SWITCHES	SETTING	NOTES
Thermocouple	SW301 – SW308 (ch 1 – ch 8) SW401 – SW408 (ch 9 – ch 16)	Set to position "1"	Attenuation OFF
	SW311 (ch 1 – ch 8) SW411 (ch 9 – ch 16)	OFF	
Voltage input, 0.8V or less	SW301 – SW308 (ch 1 – ch 8) SW401 – SW408 (ch 9 – ch 16)	Set to position "1"	Attenuation OFF
	SW311 (ch 1 – ch 8) SW411 (ch 9 – ch 16)	ON	
Voltage input, above 0.8V (*)	SW301 – SW308 (ch 1 – ch 8) SW401 – SW408 (ch 9 – ch 16)	Set to position "3"	Attenuation ON
	SW311 (ch 1 – ch 8) SW411 (ch 9 – ch 16)	ON	

(*) Factory setting unless specific input types and ranges are specified when ordering

TRANSMISSION DATA

■ **INPUT**: Thermocouple or DC input*, 16 points

Input resistance: 300 kΩ

Thermocouple types: PR, K, E, J, T, B, R, S, C, N, U, L, P

MEASURING RANGE	NOTES
±20V, ±5V, ±1V	Atten. SW ON (3)
±0.8V, ±0.2V, ±50mV, ±10mV	Atten. SW OFF (1)

Sampling rate: 150 millisec./16 points

* Common negative for DC input

■ **ANALOG INPUT**

A/D conversion output: 16-bit signed binary (negative range represented by 2's complements)

Engineering unit value is converted into A/D conversion data as shown in the table below.

INPUT TYPE & RANGE	A/D DATA (decimal)
±20V	±20000
±5V	±5000
±1V	±10000
±0.8V	±8000
±0.2V	±20000
±50mV	±5000
±10mV	±10000
Thermocouples	Temperature × 10

In order to change input type and range after shipment, the R1X configurator software (model: R1CON) is required.

■ A/D CONVERSION DATA

The R1D reserves 16 words at the Output Data Area (data sent from the R1D to the master) for the specified node address and sets the input data at this area. The Input Data Area (data sent to the R1D from the master) for the same node address is only reserved but unused.

CHECKING

1) Terminal wiring: Check that all cables are correctly connected according to the connection diagram.
2) Power input: Check supply voltage across the terminals T6 – T7.
3) Input: Check that the input is within 0 – 100% of full-scale.
4) DIP SW setting: Check that all switches are set correctly.

ADJUSTMENT PROCEDURE

This unit is calibrated at the factory to meet the ordered specifications, therefore you usually do not need any calibration.

MAINTENANCE

Regular calibration procedure is explained below:

■ CALIBRATION

Warm up the unit for at least 10 minutes. Apply 0%, 25%, 50%, 75% and 100% input signal. Check that the output signal for the respective input signal remains within accuracy described in the data sheet. When the output is out of tolerance, please contact M-System's Sales Office or representatives.

EDS

```
$         DeviceNet Electronic Data Sheet
$         Author:S. Okazaki

[File]    DescText   = "This is for R1D_GH2";
          CreateDate = 01-18-02;
          CreateTime = 00:00:00;
          ModDate    = 03-10-14;
          ModTime    = 00:00:00;
          Revision   = 1.0;

[Device]  VendCode   = 184;
          VendName   = "M*System Co.,Ltd.";
          ProdType   = 0;
          ProdTypeStr= "Generic Device";
          ProdCode   = 22;
          MajRev     = 1;
          MinRev     = 1;
          ProdName   = "R1D_GH2";
          Catalog    = "N/A";

[IO_Info] Default    = 0x0001;
          PollInfo   = 0x0001,1,1;
          Input1     = 32,0,0x0001,
                       "",6,
                       "20 04 24 02 30 03","";
          Output1    = 0,0,0x0001,
                       "",6,
                       "20 04 24 01 30 03","";

[ParamClass]

[Params]

[EnumPar]

[Groups]
```