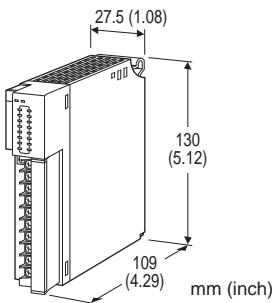## Remote I/O R3 Series

DISCRETE INPUT OUTPUT MODULE
(Di & Do 8 points each; internal power)

Typical Applications
• Controls start/stop of field devices with ON/OFF control output
• Simplifies signal hold circuit of field devices
• Utilizing One-Shot Output reduces the load of PLC side.

27.5 (1.08)
130 (5.12)
109 (4.29)
mm (inch)

MODEL: R3–DAC16A[1][2]

ORDERING INFORMATION
• Code number: R3-DAC16A[1][2]
Specify a code from below for each [1] and [2].
(e.g. R3-DAC16AW/Q)
• Specify the specification for option code /Q
 (e.g. /C01)

NO. OF CHANNELS
16: 8 points input, 8 points output

EXCITATION SUPPLY
A: Internal

[1] COMMUNICATION MODE
S: Single
W: Dual

[2] OPTIONS
Other Options
blank: none
/Q: Option other than the above (specify the specification)

SPECIFICATIONS OF OPTION: Q
COATING (For the detail, refer to M-System's web site.)
/C01: Silicone coating
/C02: Polyurethane coating
/C03: Rubber coating

RELATED PRODUCTS
• Interface Module (model: R3-NC1, NC3, NE1, NM1, NM4, NDx, NFL1)
Output completion status is compatible with interface modules of firmware version V2.00 or higher.
• Interface Module (model: R3-NM3, NML3)
Output completion status is compatible with firmware version V1.00 or higher of interface modules.

GENERAL SPECIFICATIONS
Connection
 Internal bus: Via the Installation Base (model: R3-BSx)
 Input, Output: M3 separable screw terminal (torque 0.5 N·m)
 Internal power: Via the Installation Base (model: R3-BSx)
Screw terminal: Nickel-plated steel
Isolation: I/O to internal bus or internal power
Output mode setting: One-Shot Output Mode, ON/OFF Control Output Mode, Continuance Output Mode selectable with DIP switch
Output data length: 8bit, 4bit selectable with DIP switch (For ON/OFF Control Output Mode only)
Output ON time: 0.1 to 25.6 sec. selectable with DIP switch
Max. ON points at once: 1, 2 , 4 , 8 selectable with DIP switch (only in One-Shot Output Mode and ON/OFF Control Output Mode)
ON/OFF control output channel: Swappable its pair with DIP switch.
Output hold function: Setting for communication error with side DIP SW
RUN indicator: Bi-color (red/green) LED;
Red when the bus A operates normally;
Green when the bus B operates normally;
Amber when both buses operate normally.
ERR indicator: Bi-color (red/ green) LED;
Green in normal operating conditions
Red with the abnormal configuration
Status indicator: Red LED;
 1 to 8: Intput status, turns on with input ON.
 9 to 16: Output status, turns on with output ON.
Di read rate: 1 / 5 / 10 / 20 / 50 / 70 / 100 / 200 msec. selectable with DIP SW

INPUT SPECIFICATIONS
Number of input: 8 points
Isolation: Optical isolator
Input resistance: Approx. 6 kΩ
Common: All 8 points (4 terminals, common with the output)
Sensing: 24 V DC +10 %
ON current/resistance: ≥ 2.5 mA, ≤ 5.5 kΩ

OFF current/resistance: ≤ 1.5 mA, ≥ 7 kΩ
Detection levels
 ON: ≥ 15 V
 OFF: ≤ 9 V

OUTPUT SPECIFICATIONS
Output: Wet contact, 8 points
Common: All 8 points (4 terminals, common with the input)
Output voltage: 24 V DC±10 %
Max. load current: 150 mA per point, common
Load resistance: 160 Ω min.

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
Output ON time accuracy: Greater between ±5 % of max. time or ±0.1 sec. setting
Data allocation: 1
Current consumption: 350 mA
Response time: ≤ 0.1 sec. (delay)
Insulation resistance: ≥ 100 MΩ with 500 V DC
Dielectric strength: 1500 V AC @ 1 minute (I/O to internal bus or internal power)
2000 V AC @ 1 minute (internal power to FG; isolated on the power supply module)

FUNCTIONS
■OUTPUT HOLD or OUTPUT OFF
In normal conditions, the module outputs the signal from the preferred bus A.
When an error is detected, the output is switched to the data from the bus B.
•Output Hold
If both are in error, the module holds the signal and stands by until one of the communications recovers.
•Output OFF
If both are in error, the module outputs OFF signals and stands by until one of the communications recovers.
At the startup, it outputs OFF until the communication is established and normal data is received.
■ MAX. ON POINTS AT ONCE
Function available for One-Shot Output Mode and ON/OFF Control Output Mode.
Divide the points to be ON at once. When the total of load current exceeds the maximum load current, "Max. ON
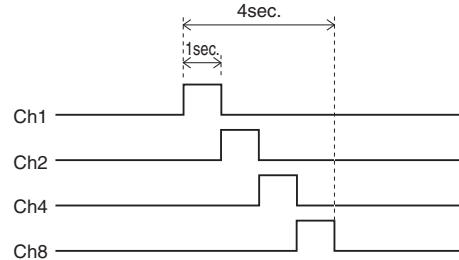
Points at Once" function is activated.
The number of the channel turned ON is output in order from the lowest.
Example: One-Shot Output with Max. ON Points at Once: 1 point; ON Time setting: 1 sec.
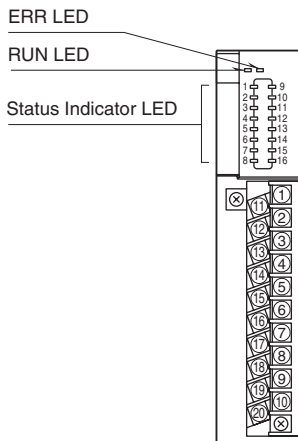 Ch1, 2, 4, 8 all ON: Ch1→Ch2→Ch4→Ch8 are turned ON in this order in a total time of 4 seconds.
Note: When writing in the same channel two or more times, check the previous output completion status to set the output.
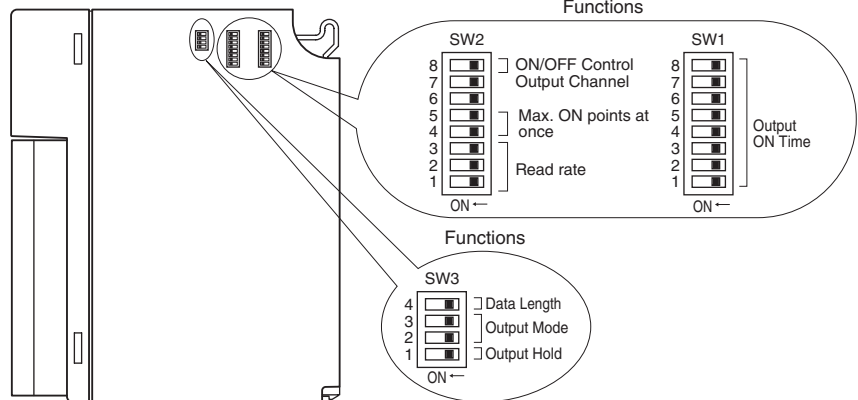
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EXTERNAL VIEW

■ **FRONT VIEW**   ■ **SIDE VIEW**

I/O DATA DESCRIPTIONS

■ **ONE-SHOT OUTPUT MODE**

8-bit output data (Do 1 through 8) and output (Ch1 through 8) are assigned 1:1.

Do	WRITE	ONE-SHOT OUTPUT/RESET	Di	OUTPUT COMPLETION STATUS
Do 1	1	Ch1 Output	Di 9	Ch1 Output Completion Status
	0	Ch1 Output Completion Reset		
Do 2	1	Ch2 Output	Di 10	Ch2 Output Completion Status
	0	Ch2 Output Completion Reset		
Do 3	1	Ch3 Output	Di 11	Ch3 Output Completion Status
	0	Ch3 Output Completion Reset		
Do 4	1	Ch4 Output	Di 12	Ch4 Output Completion Status
	0	Ch4 Output Completion Reset		
Do 5	1	Ch5 Output	Di 13	Ch5 Output Completion Status
	0	Ch5 Output Completion Reset		
Do 6	1	Ch6 Output	Di 14	Ch6 Output Completion Status
	0	Ch6 Output Completion Reset		
Do 7	1	Ch7 Output	Di 15	Ch7 Output Completion Status
	0	Ch7 Output Completion Reset		
Do 8	1	Ch8 Output	Di 16	Ch8 Output Completion Status
	0	Ch8 Output Completion Reset		

■ **ON/OFF CONTROL OUTPUT MODE**
• **Data Length: 8 bits**
Do 1 through 8 are assigned to Ch1 through 8.

Do	WRITE	ONE-SHOT OUTPUT/RESET	Di	OUTPUT COMPLETION STATUS
Do 1 Do 2	0 0	Not Operating		
	1 0	Ch1 Output	Di 9	Ch1 Output Completion Status
	0 1	Ch2 Output	Di 10	Ch2 Output Completion Status
	1 1	Output Data Reset		
Do 3 Do 4	0 0	Not Operating		
	1 0	Ch3 Output	Di 11	Ch3 Output Completion Status
	0 1	Ch4 Output	Di 12	Ch4 Output Completion Status
	1 1	Output Data Reset		
Do 5 Do 6	0 0	Not Operating		
	1 0	Ch5 Output	Di 13	Ch5 Output Completion Status
	0 1	Ch6 Output	Di 14	Ch6 Output Completion Status
	1 1	Output Data Reset		
Do 7 Do 8	0 0	Not Operating		
	1 0	Ch7 Output	Di 15	Ch7 Output Completion Status
	0 1	Ch8 Output	Di 16	Ch8 Output Completion Status
	1 1	Output Data Reset		

The above table shows the case of Not Swapped (SW2-8: OFF). ON/OFF control output is swapped with its pair when SW2-8 is ON. The following is an example of Do1 and Do2.

Do	WRITE	ONE-SHOT OUTPUT/RESET	Di	OUTPUT COMPLETION STATUS
Do 1 Do 2	0 0	Not Operating		
	1 0	Ch2 Output	Di 10	Ch2 Output Completion Status
	0 1	Ch1 Output	Di 9	Ch1 Output Completion Status
	1 1	Output Data Reset		

• **Data Length: 4 bits**
Do 1 through 4 are assigned to Ch1 through 8 as 1:2.

Do	WRITE	ONE-SHOT OUTPUT/RESET	Di	OUTPUT COMPLETION STATUS
Do 1	0	Ch1 Output	Di 9	Ch1 Output Completion Status
	1	Ch2 Output	Di 10	Ch2 Output Completion Status
Do 2	0	Ch3 Output	Di 11	Ch3 Output Completion Status
	1	Ch4 Output	Di 12	Ch4 Output Completion Status
Do 3	0	Ch5 Output	Di 13	Ch5 Output Completion Status
	1	Ch6 Output	Di 14	Ch6 Output Completion Status
Do 4	0	Ch7 Output	Di 15	Ch7 Output Completion Status
	1	Ch8 Output	Di 16	Ch8 Output Completion Status

The above table shows the case of Not Swapped (SW2-8: OFF). ON/OFF control output is swapped with its pair when SW2-8 is ON. The following is an example of Do1.

| Do	WRITE	ONE-SHOT OUTPUT/RESET	Di	OUTPUT COMPLETION STATUS
Do 1	0	Ch2 Output	Di 10	Ch2 Output Completion Status
	1	Ch1 Output	Di 9	Ch1 Output Completion Status

■ **CONTINUANCE OUTPUT MODE**
Do 1 through 8 are assigned to and Ch1 through 8. When data Do is "1" output is ON (energized) and when it is "0" output is OFF (de-energized). The operation is equivalent to 16 points discrete output module (model: R3-DC16). Output completion status Di is related to Do.

| Do	CONTINUANCE OUTPUT	Di	OUTPUT COMPLETION STATUS
Do 1	Ch1 Output	Di 9	Ch1 Output Completion Status
Do 2	Ch2 Output	Di 10	Ch2 Output Completion Status
Do 3	Ch3 Output	Di 11	Ch3 Output Completion Status
Do 4	Ch4 Output	Di 12	Ch4 Output Completion Status
Do 5	Ch5 Output	Di 13	Ch5 Output Completion Status
Do 6	Ch6 Output	Di 14	Ch6 Output Completion Status
Do 7	Ch7 Output	Di 15	Ch7 Output Completion Status
Do 8	Ch8 Output	Di 16	Ch8 Output Completion Status

DATA ASSIGNMENT

■ **Do**
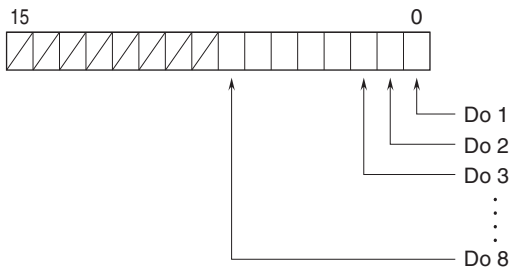
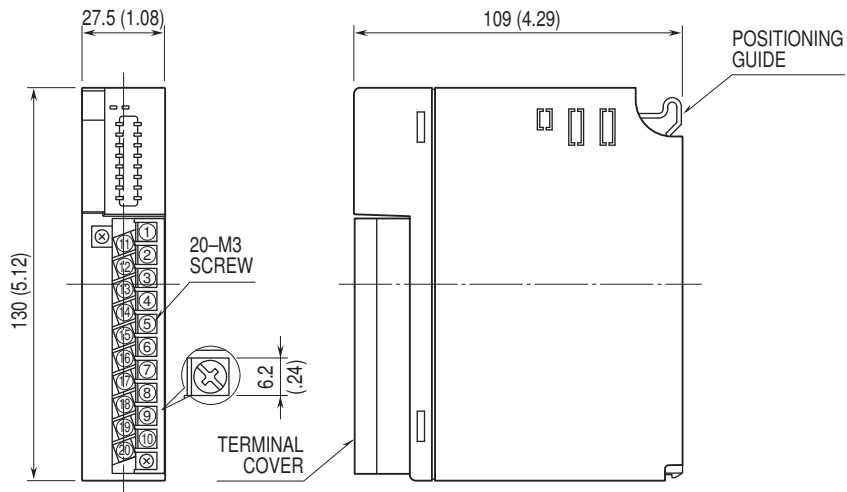Note. For 4-bit length ON/OFF control mode, Do 5 through Do 8 are unavailable.

■ **Di**
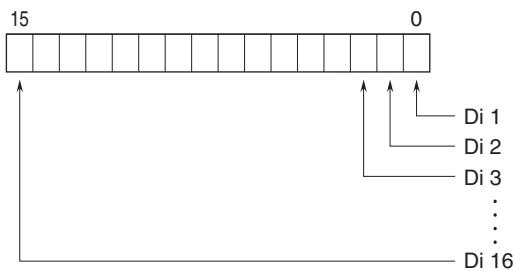
Note. Di 9 – 16 data is not practical discrete input data. It is "output completion status" internal data.

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XIN TOP WORLD WIDE SERVICE

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)

27.5 (1.08)

109 (4.29)

POSITIONING GUIDE
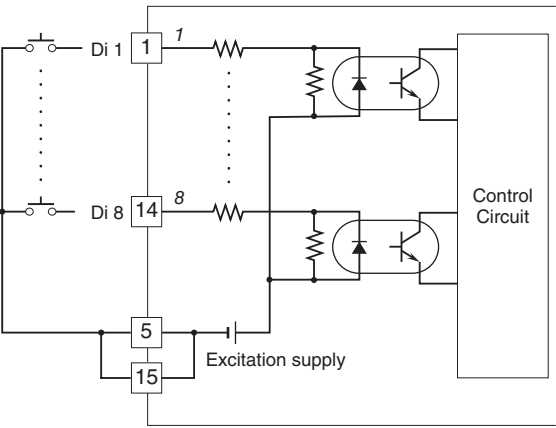
130 (5.12)

20–M3 SCREW

6.2 (.24)

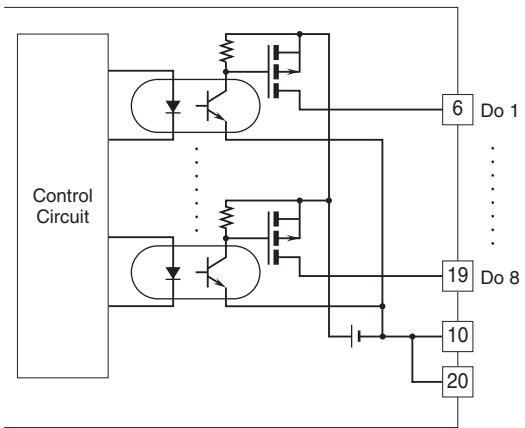TERMINAL COVER

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM
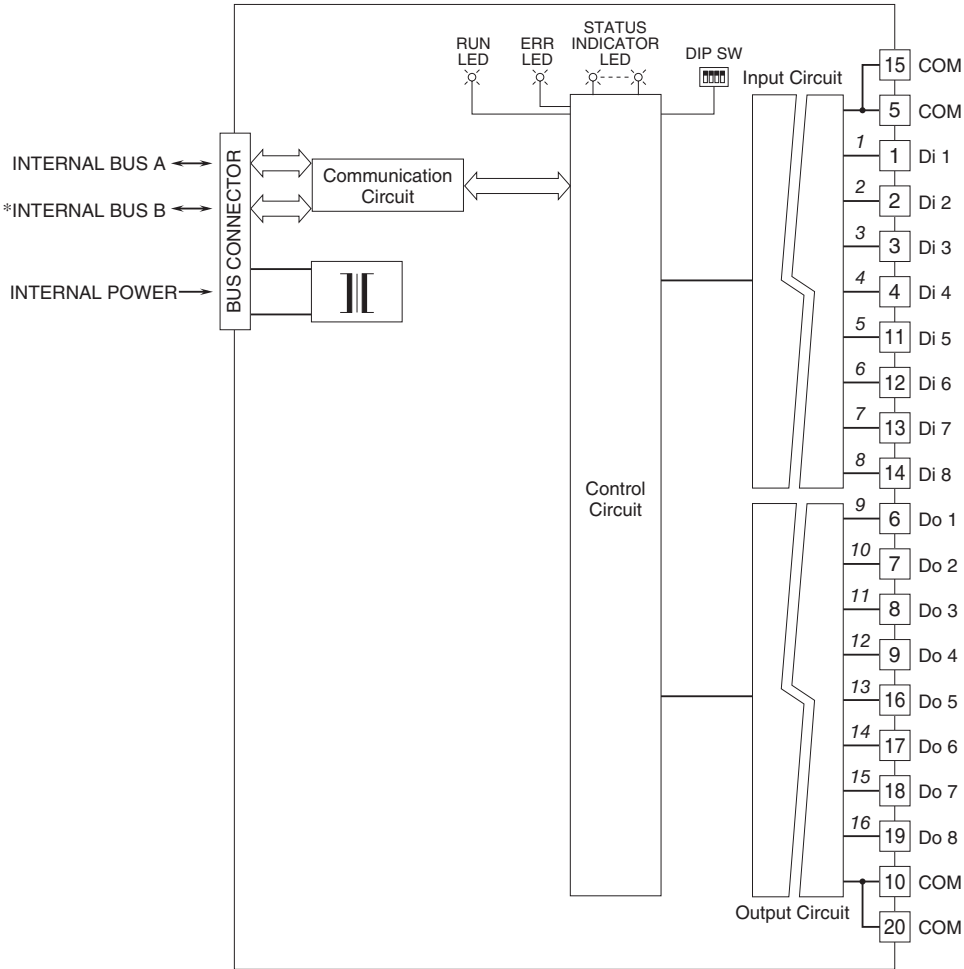
Numbers in italic indicate LED No.s assigned to the front panel LEDs.
*For dual redundant communication.

■ **Input Circuit**

■ **Output Circuit**

⚠ Specifications are subject to change without notice.