

Analog Input Modbus Output Module

WMB-AI8



This is module which inputs 8ch of DC signal.
It is compatible with Modbus (RTU) of general purpose protocol.

Features

- ★ 8ch input of DC voltage / current
- ★ RS-485 Modbus (RTU) compatible
- ★ Zero span adjustment and low cut setting by RS-485
- ★ Baud rate and Node address setting by front switch
- ★ Easy maintenance by removable terminal block from body

Ordering code

WMB - AI8 - D 00

Series	Type	Input	Power supply	Test report	Suffix	Description
WMB	AI8					Series Modbus I/O module
		11				Type Analog input 8ch
		12				0~100mVDC (Input resistance 1MΩ)
		13				0~1VDC (Input resistance 1MΩ)
		14				0~5VDC (Input resistance 1MΩ)
		15				1~5VDC (Input resistance 1MΩ)
		23				0~10VDC (Input resistance 1MΩ)
		24				±1VDC (Input resistance 1MΩ)
		25				±5VDC (Input resistance 1MΩ)
		25				±10VDC (Input resistance 1MΩ)
		35				0~20mADC (Input resistance 50Ω)
		36				4~20mADC (Input resistance 50Ω)
		56				4~20mADC (Input resistance 250Ω)
			D			Power supply 24VDC ±10%
				0		Test report Without test report
				1		Test report With test report
					00	Suffix Standard

Specifications

Input Specifications

Input signal	DC voltage / current
Number of inputs	8
Input Configuration	Single ended
A/D conversion	ΔΣ conversion
Sampling rate	Approx. 150ms/1ch
Allowable input	±0.1% Full scale
Influence of ambient temperature	±0.01% Full scale per °C
Input common	1 common for each input
Setting	Span/zero adjustment, Simulated input, Low cut (Setting by RS-485)

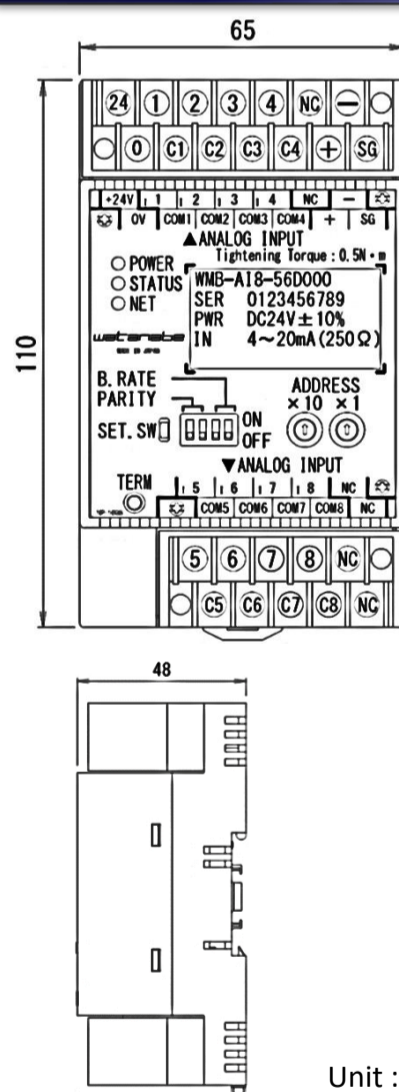
Standard Specifications

Power supply	24VDC ±10%
Power consumption	Less than 50mA max.
Operating temperature/humidity	-5 to 55°C, 90% (non-condensing)
Storage temperature/humidity	-20 to 60°C, 90% (non-condensing)
Warm-up time	30 min
Dielectric strength	1500VAC per 1 min. : Between Power
Insulation resistance	500Vdc, 100MΩ or more
Dimensions	65(W) x 110(H) x 48mm(D) DIN size
Weight	Approx. 220g
Connection	M3 screw terminal block (removable), 14P, 10P (Tightening torque 0.5N·m)
Mounting	DIN rail or wall surface

RS-485 Specifications

Standard	Conform to RS-485
Baud rate	4800 / 9600 / 19200 / 38400 bps (Selectable by DIP switch)
Terminal resistance	Approx. 120Ω (Standard accessory)
Max. No. of connection	31
Node address	1 to 99 (Setting by Rotary switch)
Transmission distance	Approx. 500m or less (Depends on connection device and)
Communication form	1:N communication
Protocol	Modbus (RTU) protocol

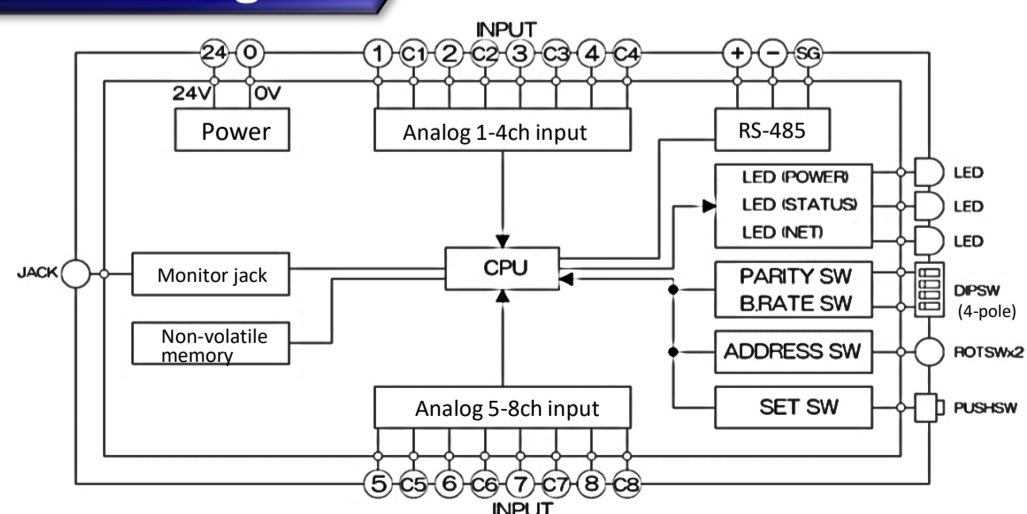
Dimensions



Unit : mm

No	Symbol	Description
24	Power supply	+24V Power supply
0		0V
1	Analog input	I1 Analog input 1
C1		COM1 Common 1
2		I2 Analog input 2
C2		COM2 Common 2
3		I3 Analog input 3
C3		COM3 Common 3
4		I4 Analog input 4
C4		COM4 Common 4
	NC	No connection
+	RS485	+ RS-485 + terminal
-		- RS-485 - terminal
SG		SG RS-485 SG terminal
5	Analog input	I5 Analog input 5
C5		COM5 Common 5
6		I6 Analog input 6
C6		COM6 Common 6
7		I7 Analog input 7
C7		COM7 Common 7
8		I8 Analog input 8
C8		COM8 Common 8
	NC	No connection
	NC	No connection

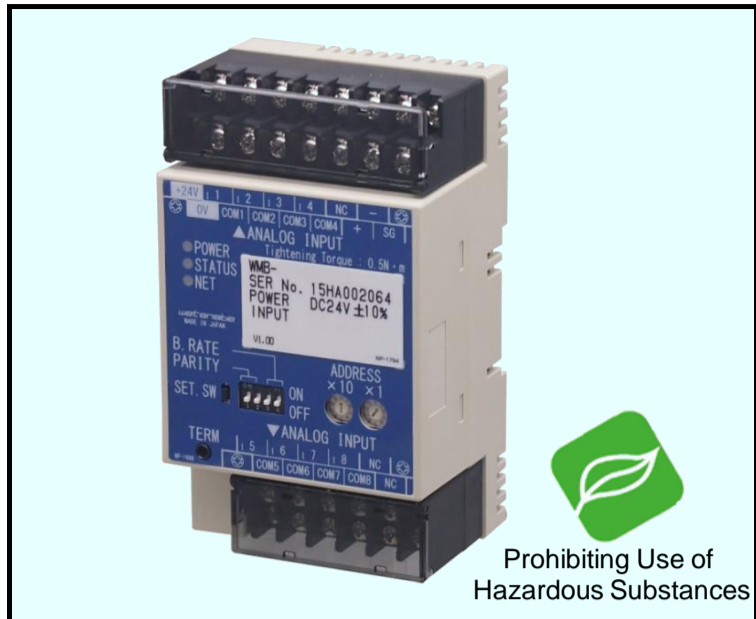
Block Diagram



* Specification is subject to change without notice

Analog / RTD Input Modbus Output Module

WMB-MAI6



This is module which inputs 3ch of DC signal and 3ch of RTD input. It is compatible with Modbus (RTU) of general purpose protocol.

Features

- ★ 3ch input of DC voltage / current, and 3ch RTD input (Total 6ch)
- ★ RS-485 Modbus (RTU) compatible
- ★ Zero span adjustment and low cut setting by RS-485
- ★ Baud rate and Node address setting by front switch
- ★ Easy maintenance by removable terminal block from body

Ordering code

WMB - MAI6 - F D 00

Series	Type	Input	RTD Type	Power supply	Test report	Suffix	Description
WMB	MAI6						Series Modbus I/O module
							Type Analog input 3ch, RTD input 3ch
		11					0~100mVDC (Input resistance 1MΩ)
		12					0~1VDC (Input resistance 1MΩ)
		13					0~5VDC (Input resistance 1MΩ)
		14					1~5VDC (Input resistance 1MΩ)
		15					0~10VDC (Input resistance 1MΩ)
		23					±1VDC (Input resistance 1MΩ)
		24					±5VDC (Input resistance 1MΩ)
		25					±10VDC (Input resistance 1MΩ)
		35					0~20mADC (Input resistance 50Ω)
		36					4~20mADC (Input resistance 50Ω)
		56					4~20mADC (Input resistance 250Ω)
			F				RTD Type Pt100Ω
				D			Power supply 24VDC ±10%
					0		Without test report
					1		With test report
						00	Suffix Standard

Specifications

Input Specifications

Input signal	DC voltage / current, RTD
Number of inputs	3ch Analog input, 3ch RTD input (Total 6ch)
Input Configuration	Single ended
A/D conversion	ΔΣ conversion
Sampling rate	Approx. 150ms/1ch
Allowable input	±0.1% Full scale
Influence of ambient temperature	±0.01% Full scale per °C
Input common	1 common for each input
Setting	Span/zero adjustment, Simulated input, Low cut (Setting by RS-485)
RTD Type	Pt100Ω
RTD temperature range	-50°C to 200°C

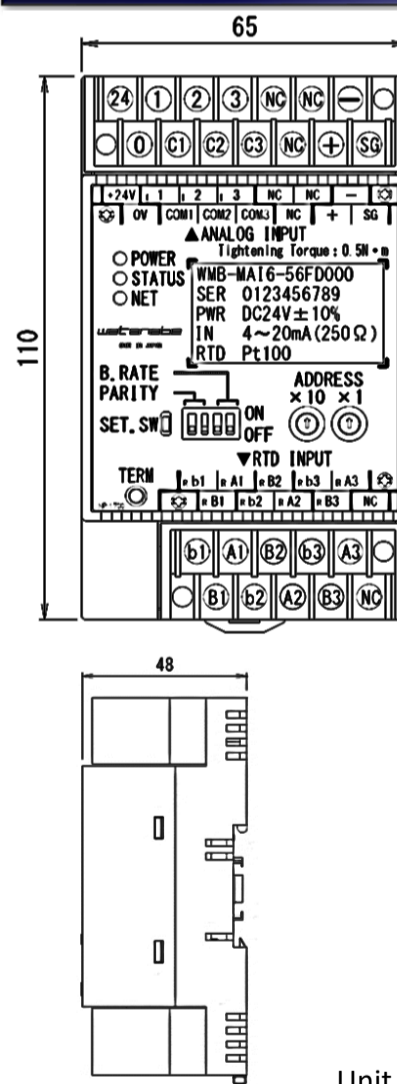
Standard Specifications

Power supply	24VDC ±10%
Power consumption	Less than 50mA max.
Operating temperature/humidity	-5 to 55°C, 90% (non-condensing)
Storage temperature/humidity	-20 to 60°C, 90% (non-condensing)
Warm-up time	30 min
Dielectric strength	1500VAC per 1 min. : Between Power
Insulation resistance	500Vdc, 100MΩ or more
Dimensions	65(W) x 110(H) x 48mm(D) DIN size
Weight	Approx. 220g
Connection	M3 screw terminal block (removable), 14P, 10P (Tightening torque 0.5N·m)
Mounting	DIN rail or wall surface

RS-485 Specifications

Standard	Conform to RS-485
Baud rate	4800 / 9600 / 19200 / 38400 bps (Selectable by DIP switch)
Terminal resistance	Approx. 120Ω (Standard accessory)
Max. No. of connection	31
Node address	1 to 99 (Setting by Rotary switch)
Transmission distance	Approx. 500m or less (Depends on connection device and)
Communication form	1:N communication
Protocol	Modbus (RTU) protocol

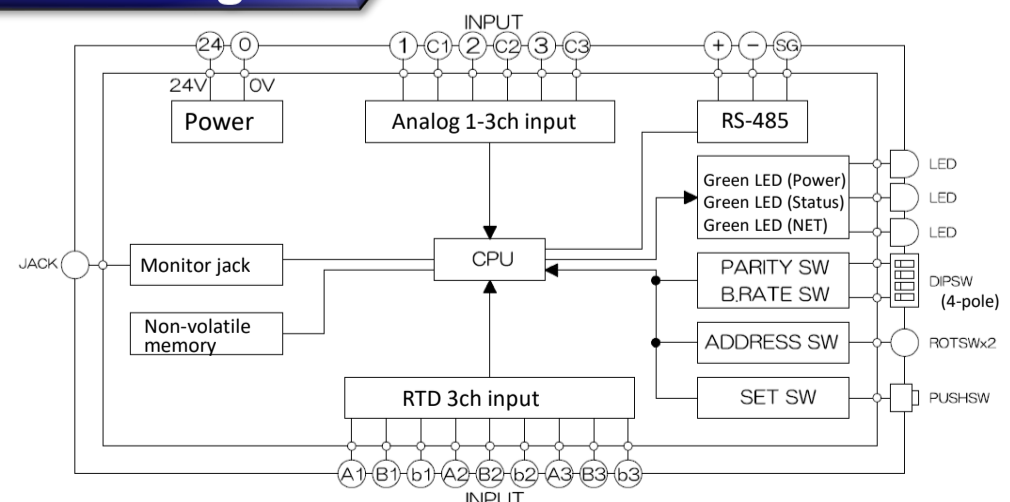
Dimensions



No	Symbol	Description
24	Power supply	+24V
0		0V
1	Analog input	I1
C1		COM1
2		I2
C2		COM2
3	I3	Analog input 3
C3	COM3	Common 3
	NC	No connection
	NC	No connection
	NC	No connection
+	RS485	+
-		-
SG		SG
b1	RTD input	b1
B1		B1
A1		A1
b2		b2
B2		B2
A2		A2
b3		b3
B3		B3
A3		A3
	NC	No connection

Unit : mm

Block Diagram



* Specification is subject to change without notice



This is module which inputs 16ch of Relay or Open collector ON/OFF. Also able to integrate input signal from pulse output device. It is compatible with RS-485 Modbus (RTU) of general purpose protocol.

Features

- ★ 16ch input of Relay / Open collector ON/OFF, pulse signal
- ★ RS-485 Modbus RTU communication
- ★ Able to expand Input to 32ch by Expansion module
- ★ Easy maintenance by removable terminal block from body
- ★ Storage integrated value in nonvolatile memory at power failure

Ordering code

WMB - DI16 - 00D 00

Series	Type	Expansion	Option	Power supply	Test report	Suffix	Description
WMB	DI16	None	00	D	0	00	Series Modbus I/O module
		A			1		Type Digital Input 16ch
							Expansion Main module
							Expansion module *
							Option None
							Power supply 24VDC ±10%
							Test report Without test report
							Test report With test report
							Suffix Standard

* Expansion module WMB-DI16A cannot use independently, WMB-DI16A can connect only WMB-DI16

Specifications

◆ Standard Specifications

Power supply	24VDC ±10%
Power consumption	DI16 : Approx.130mA (DC24V) DI16A : Approx.80mA (DC24V)
Operating temperature/humidity	-5 to 55°C, 90% (non-condensing)
Storage temperature/humidity	-20 to 60°C, 90% (non-condensing)
Warm-up time	30 min
Dielectric strength	DI16 : 1500VAC per 1 min. Between Power - Communication - Internal circuit - Output DI16A : 1500VAC per 1 min. Between Internal circuit - Input - Output
Insulation resistance	500VDC, 100MΩ or more
Dimensions	65(W) x 110(H) x 48mm(D) DIN size
Weight	DI16 : Approx.220g DI16A : Approx.200g
Connection	M3 screw terminal block (removable), 14P, 10P (Tightening torque 0.5N·m)
Mounting	DIN rail or wall surface

◆ RS-485 Specifications

Standard	Conform to RS-485
Baud rate	4800 / 9600 / 19200 / 38400 bps (Selectable by DIP switch)
Terminal resistance	Approx. 120Ω (DI-16:Standard accessory)
Max. No. of connection	31
Node address	1 to 99 (Setting by Rotary switch)
Transmission distance	Approx. 500m or less (Depends on connection device and
Communication form	1:N communication
Protocol	Modbus (RTU) protocol

◆ Input Specifications (Main module WMB-DI16)

Input signal	Pulse/ no-voltage contact or transistor output · Input sense current : Approx. 4.2mA (when ON resistance is 0 Ω) · Input pull-up voltage : 24VDC (Power supply and internal common) · Input pulse ON time : 10ms or more · Input pulse OFF time : 10ms or more
Number of inputs	16
Input common	Negative common : 1 common for 8 input
Input frequency	50Hz or less
Setting	Max. pulse, Pulse reset, Time integration reset

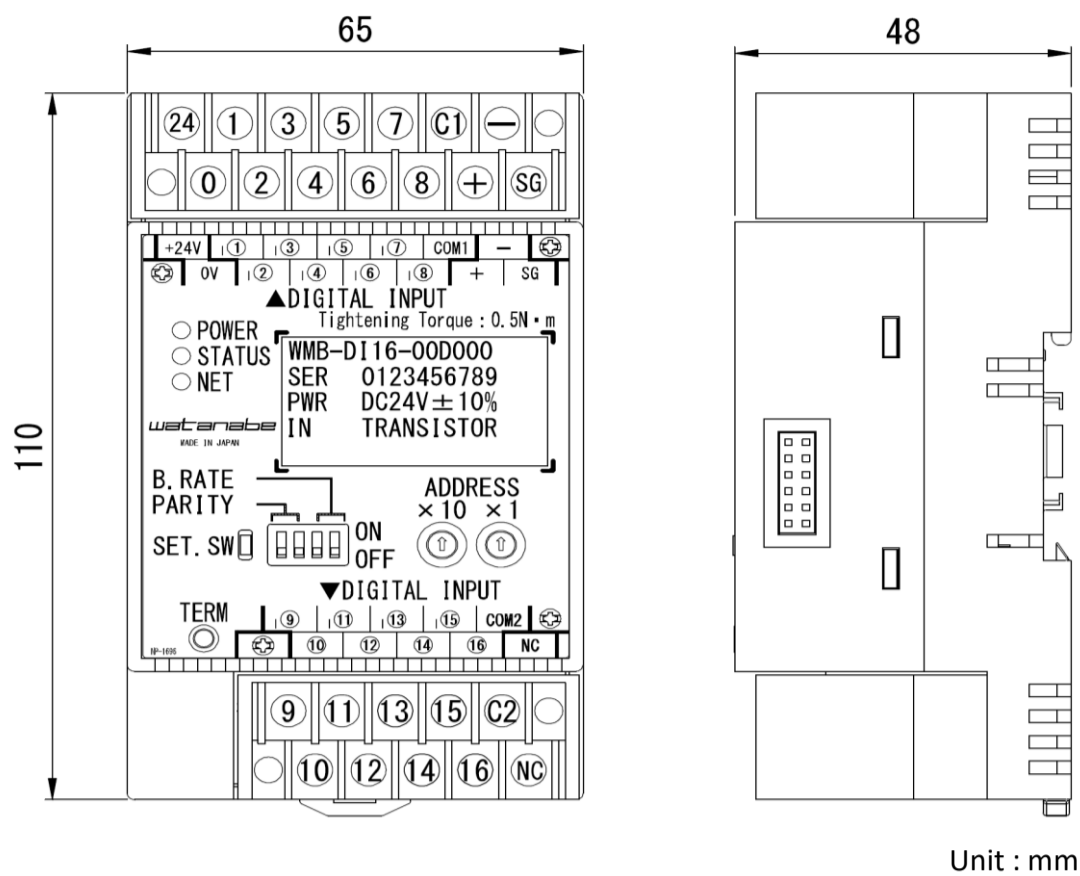
◆ Input Specifications (Expansion module WMB-DI16A)

Input signal	Pulse/ no-voltage contact or transistor output · Input sense current : Approx. 4.2mA (when ON resistance is 0 Ω) · Input pull-up voltage : 24VDC (Power supply and internal common) · Input pulse ON time : 25ms or more · Input pulse OFF time : 25ms or more
Number of inputs	16
Input common	Negative common : 1 common for 8 input
Input frequency	15Hz or less
Setting	Max. pulse, Pulse reset, Time integration reset

* Specification is subject to change without notice

Dimensions / Terminal connections

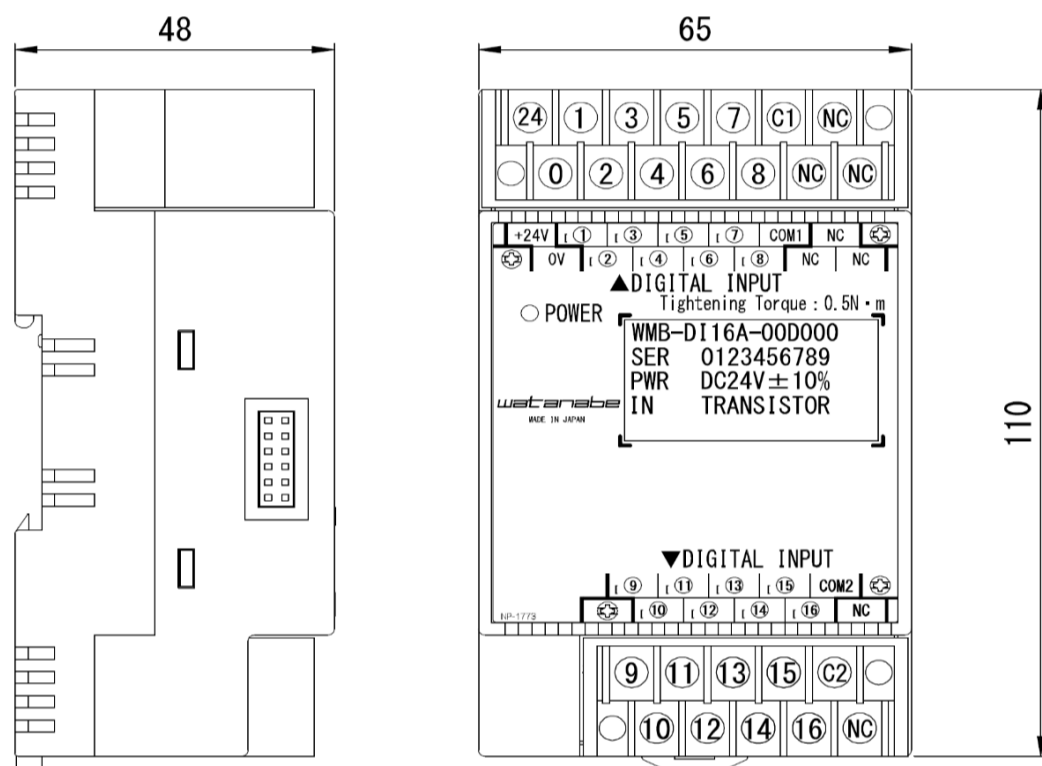
WMB-DI16



Unit : mm

No	Symbol	Description	
24	Power supply	+24V Power supply + terminal (24VDC ±10%)	
0	Power supply	0V Power supply - terminal	
1	Digital input	I1 Digital input 1	
2		I2 Digital input 2	
3		I3 Digital input 3	
4		I4 Digital input 4	
5		I5 Digital input 5	
6		I6 Digital input 6	
7		I7 Digital input 7	
8		I8 Digital input 8	
C1	COM1	Common 1 (For Digital input 1 to 8)	
+	RS485 (Modbus)	+ RS-485 + terminal	
-		- RS-485 - terminal	
SG	SG	RS-485 SG terminal	
1	Digital output	O1 Digital output 1	
2		O2 Digital output 2	
3		O3 Digital output 3	
4		O4 Digital output 4	
C2		COM2	Common 2 (For Digital output 1 to 4)
5		O5 Digital output 5	
6		O6 Digital output 6	
7		O7 Digital output 7	
8	O8 Digital output 8		
C3	COM3	Common 3 (For Digital output 5 to 8)	

WMB-DI16A

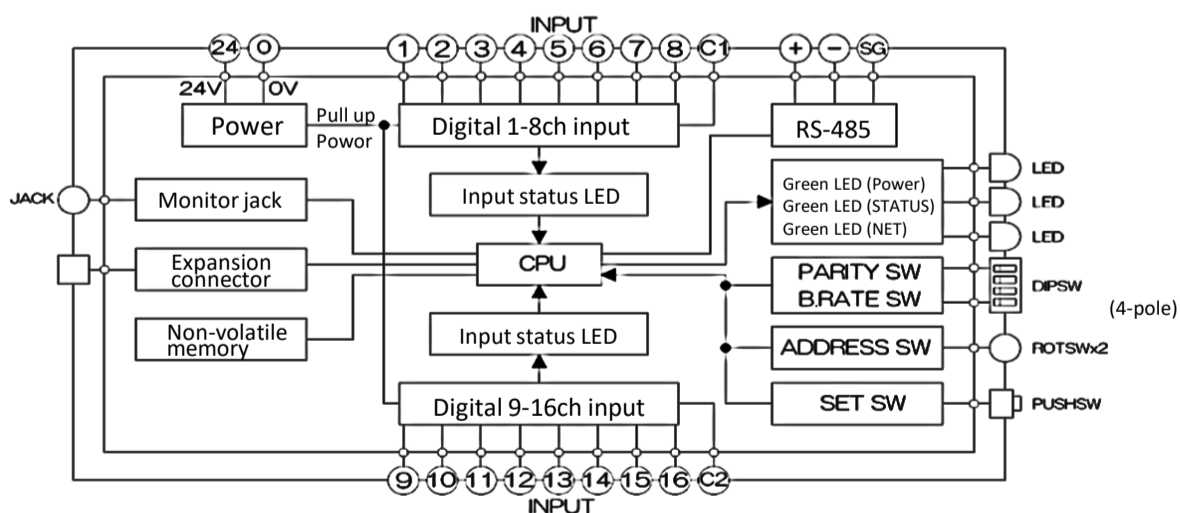


Unit : mm

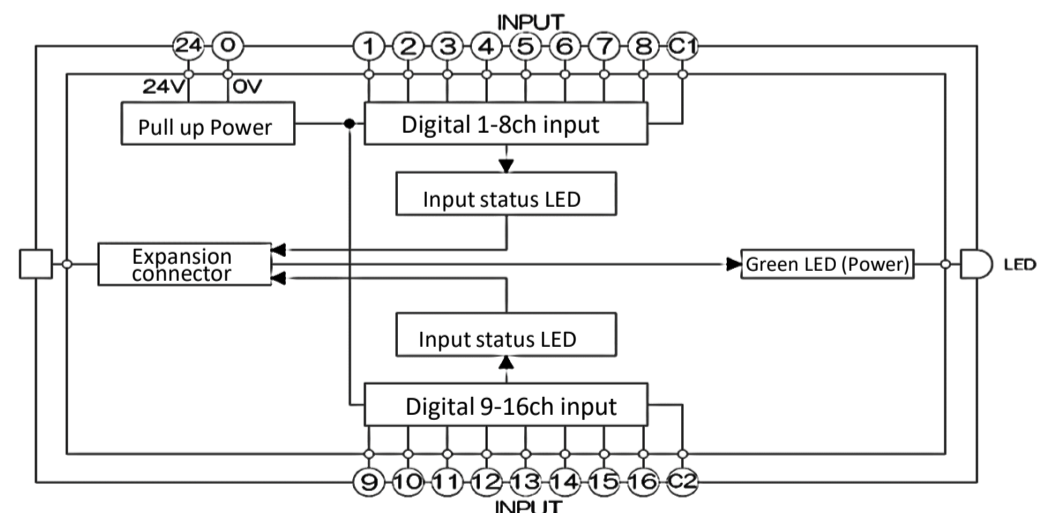
No	Symbol	Description	
24	Power supply	+24V Power supply + terminal (24VDC ±10%)	
0	Power supply	0V Power supply - terminal	
1	Digital input	I1 Digital input 1	
2		I2 Digital input 2	
3		I3 Digital input 3	
4		I4 Digital input 4	
5		I5 Digital input 5	
6		I6 Digital input 6	
7		I7 Digital input 7	
8		I8 Digital input 8	
C1	COM1	Common 1 (For Digital input 1 to 8)	
	NC	No connection	
	NC		
	NC		
1	Digital output	O1 Digital output 1	
2		O2 Digital output 2	
3		O3 Digital output 3	
4		O4 Digital output 4	
C2		COM2	Common 2 (For Digital output 1 to 4)
5		O5 Digital output 5	
6		O6 Digital output 6	
7		O7 Digital output 7	
8	O8 Digital output 8		
C3	COM3	Common 3 (For Digital output 5 to 8)	

Block Diagram

WMB-DI16



WMB-DI16A



* Specification is subject to change without notice



This is module which inputs 8ch of Relay or Open collector ON/OFF and outputs 8ch Relay. Also able to integrate input signal from pulse output device. It is compatible with RS-485 Modbus (RTU) of general purpose protocol.

Features

- ★ 8ch input of Relay / Open collector ON/OFF, pulse signal
- ★ Outputs 8ch Relay
- ★ RS-485 Modbus RTU communication
- ★ Able to expand Input & output to 16ch by Expansion module
- ★ 4 types output operation (Normal, Reverse, One shot, Start-stop)
- ★ Easy maintenance by removable terminal block from body
- ★ Storage integrated value in nonvolatile memory at power failure

Ordering code

WMB - DIO8R - 00D 00

Series	Type	Output	Expansion	Option	Power supply	Test report	Suffix	Description	
WMB								Series	Modbus I/O module
	DIO8							Type	Digital I/O 8ch
		R						Output	Relay output (Normal open)
			None					Expansion	Main module
			A					Expansion	Expansion module *
				00				Option	None
					D			Power supply	24VDC ±10%
						0		Test report	Without test report
						1		Test report	With test report
							00	Suffix	Standard

* Expansion module WMB-DIO8RA cannot use independently, WMB-DIO8RA can connect only WMB-DIO8

Specifications

Standard Specifications

Power supply	24VDC ±10%
Power consumption	DIO8R : Approx.180mA DIO8RA : Approx.120mA
Operating temperature/humidity	-5 to 55°C, 90% (non-condensing)
Storage temperature/humidity	-20 to 60°C, 90% (non-condensing)
Warm-up time	30 min
Dielectric strength	DIO8R : 1500VAC per 1 min. Between Power - Communication - Internal circuit - Output DIO8RA : 1500VAC per 1 min. Between Internal circuit - Input - Output
Insulation resistance	500VDC, 100MΩ or more
Dimensions	65(W) x 110(H) x 48mm(D) DIN size
Weight	DIO8R : Approx.250g DIO8RA : Approx.230g
Connection	M3 screw terminal block (removable), 14P, 10P (Tightening torque 0.5N·m)
Mounting	DIN rail or wall surface

RS-485 Specifications

Standard	Conform to RS-485
Baud rate	4800 / 9600 / 19200 / 38400 bps (Selectable by DIP switch)
Terminal resistance	Approx. 120Ω (DIO8R:Standard accessory)
Max. No. of connection	31
Node address	1 to 99 (Setting by Rotary switch)
Transmission distance	Approx. 500m or less (Depends on connection device and
Communication form	1:N communication
Protocol	Modbus (RTU) protocol

Input Specifications (Main module WMB-DIO8R)

Input signal	Pulse/ no-voltage contact or transistor output · Input sense current : Approx. 4.2mA (when ON resistance is 0 Ω) · Input pull-up voltage : 24VDC (Power supply and internal common) · Input pulse ON time : 10ms or more · Input pulse OFF time : 10ms or more
Number of inputs	8
Input common	Negative common : 1 common for 8 input
Input frequency	50Hz or less
Setting	Max. pulse, Pulse reset, Time integration reset, Simulated input

Input Specifications (Expansion module WMB-DIO8RA)

Input signal	Pulse/ no-voltage contact or transistor output · Input sense current : Approx. 4.2mA (when ON resistance is 0 Ω) · Input pull-up voltage : 24VDC (Power supply and internal common) · Input pulse ON time : 25ms or more · Input pulse OFF time : 25ms or more
Number of inputs	8
Input common	Negative common : 1 common for 8 input
Input frequency	15Hz or less
Setting	Max. pulse, Pulse reset, Time integration reset, Simulated input

Output Specifications (Main module WMB-DIO8R)

Output signal	Relay contact output (normal open) · Rated control capacity : 2A/250VAC, 2A/30 VDC · Minimum applied load : 10mA/5VDC · Insulation withstand voltage : Open between contacts 750VAC 1min · Mechanical life : 5,000,000 times or more · Electrical life : 200,000 times or more (at Rated load)
Number of outputs	8
Output common	Negative common : 1 common for 4 output
Response time	15ms
Output operation	Normal, Reverse, One shot, Start-stop (Start-stop use 2ch to output)
Setting	Simulated input

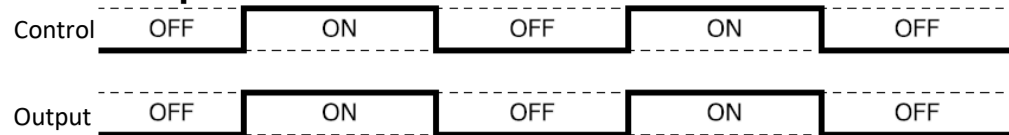
Output Specifications (Expansion module WMB-DIO8RA)

Output signal	Relay contact output (normal open) · Rated control capacity : 2A/250VAC, 2A/30 VDC · Minimum applied load : 10mA/5VDC · Insulation withstand voltage : Open between contacts 750VAC 1min · Mechanical life : 5,000,000 times or more · Electrical life : 200,000 times or more (at Rated load)
Number of outputs	8
Output common	Negative common : 1 common for 4 output
Response time	15ms
Output operation	Normal, Reverse, One shot, Start-stop (Start-stop use 2ch to output)
Setting	Simulated input

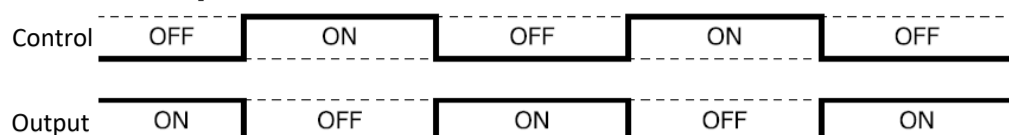
* Specification is subject to change without notice

Output operation

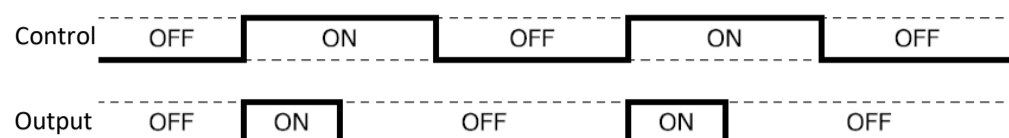
1) Normal output



2) Reverse output

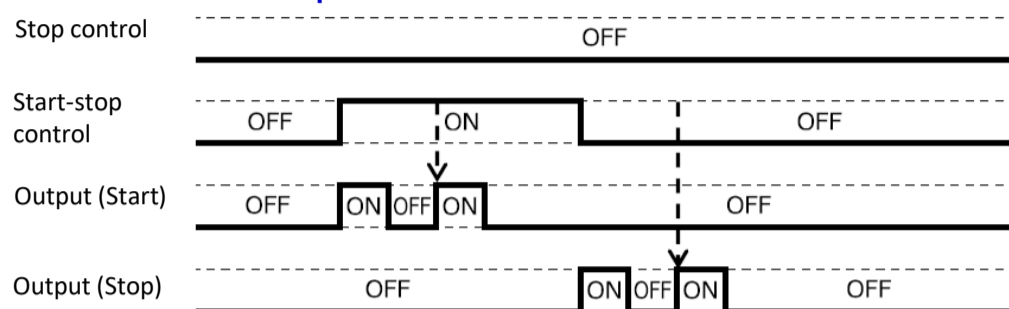


3) One shot output

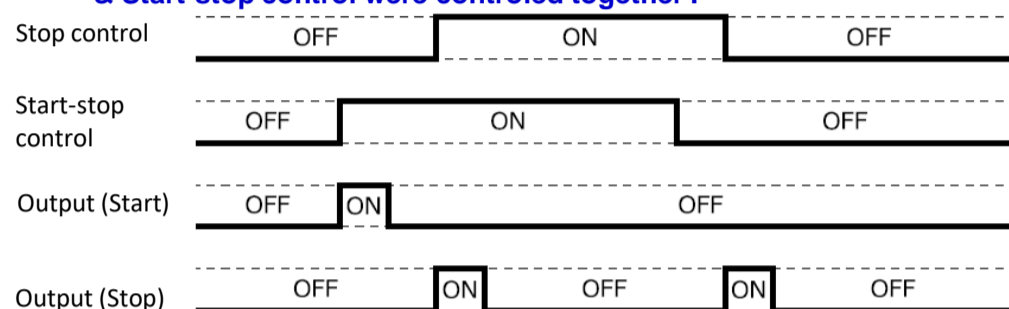


4) Start-stop output

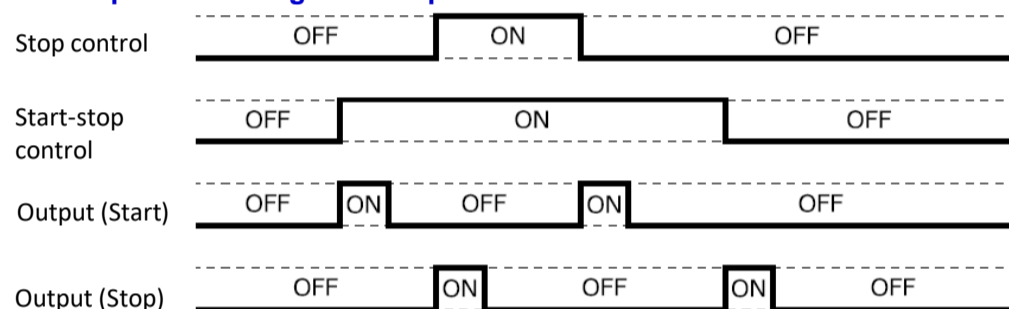
Case 1 : Output (Start) & Output (Stop) status of Start-stop control when Forced stop control is OFF.



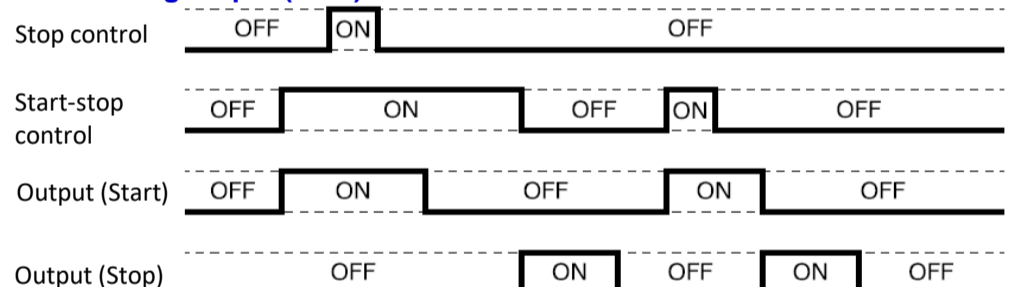
Case 2 : Output (Start) & Output (Stop) status when Forced stop control & Start-stop control were controled together .



Case 3 : Output (Start) and Output (Stop) status when forced stop control is operated during start-stop control.



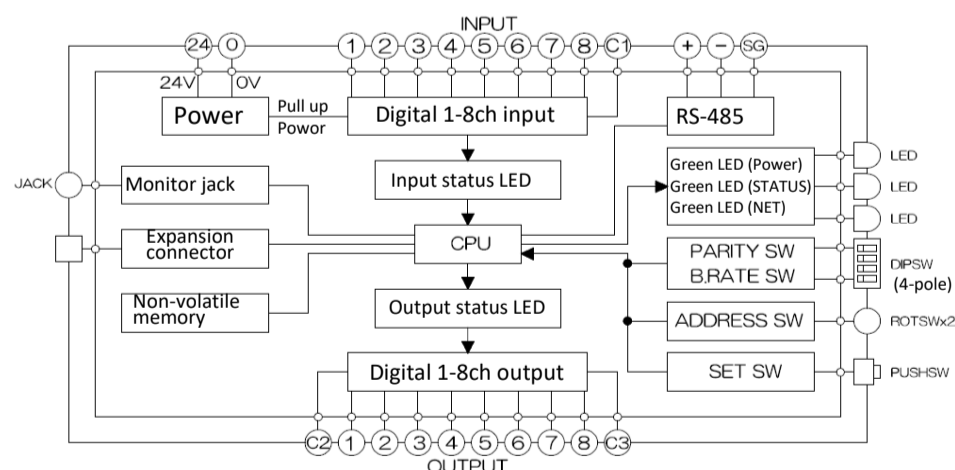
Case 4 : Output (Start) and Output (Stop) status when forced stop control is operated during output (start), and start-stop control is OFF during output (start).



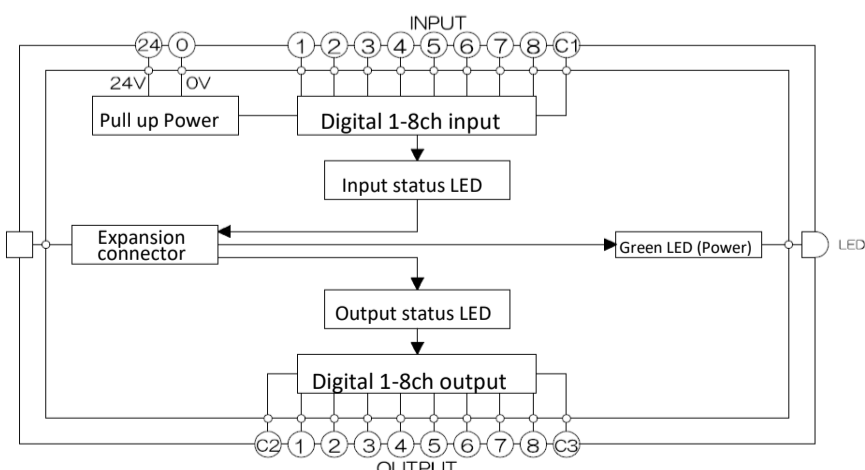
*Start-stop output : Ignores start-stop control while forced stop control is ON.

Block Diagram

WMB-DIO8R

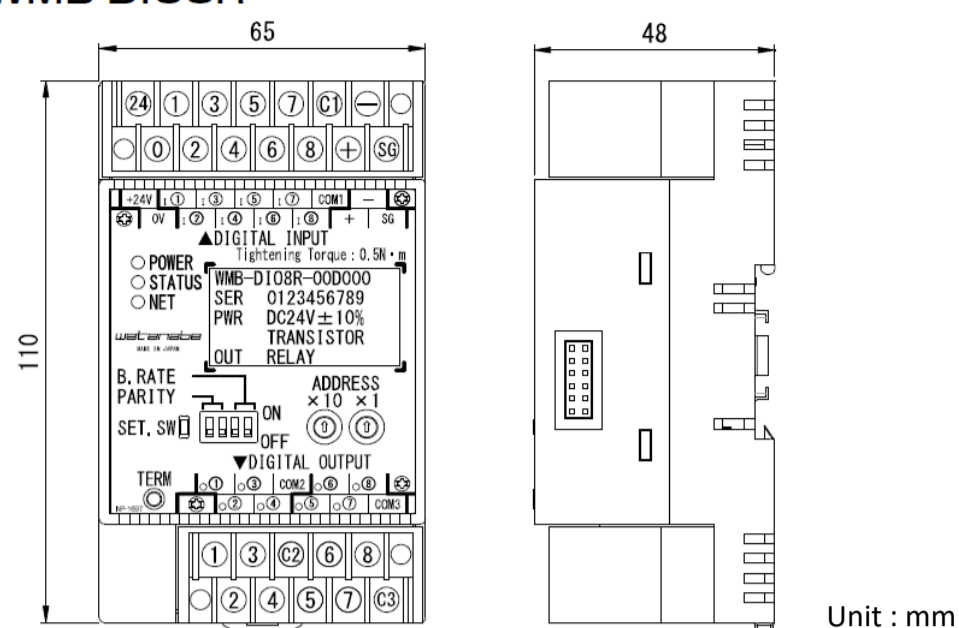


WMB-DIO8RA



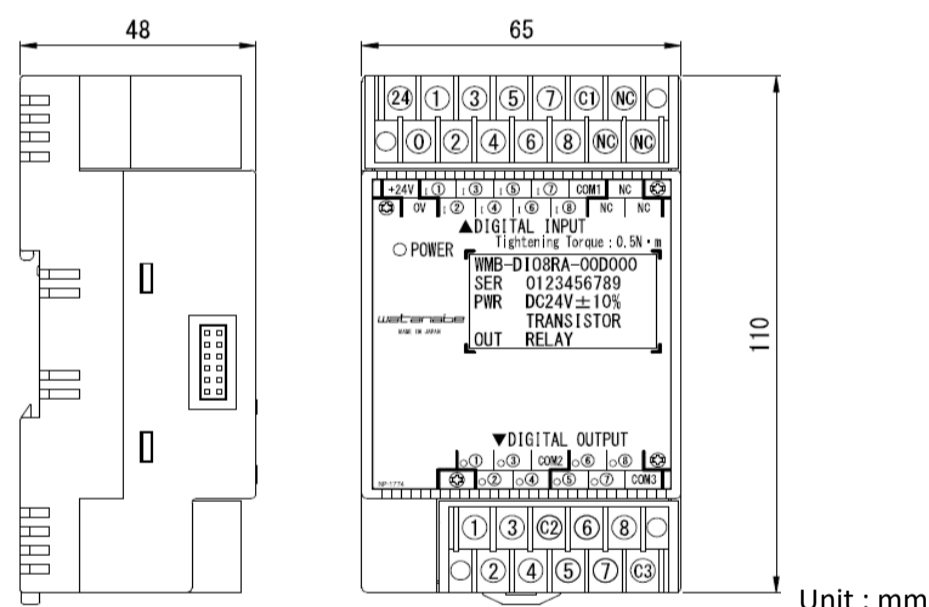
Dimensions / Terminal connections

WMB-DIO8R



No	Symbol	Description	
24	Power supply	+24V Power supply + terminal (24VDC ±10%)	
0		0V Power supply - terminal	
1	Digital input	I1 Digital input 1	
2		I2 Digital input 2	
3		I3 Digital input 3	
4		I4 Digital input 4	
5		I5 Digital input 5	
6		I6 Digital input 6	
7		I7 Digital input 7	
8		I8 Digital input 8	
C1	COM1	Common 1 (For Digital input 1 to 8)	
+	RS485 (Modbus)	+ RS-485 + terminal	
-		- RS-485 - terminal	
SG	SG	RS-485 SG terminal	
1	Digital output	O1 Digital output 1	
2		O2 Digital output 2	
3		O3 Digital output 3	
4		O4 Digital output 4	
C2		COM2	Common 2 (For Digital output 1 to 4)
5		O5 Digital output 5	
6		O6 Digital output 6	
7		O7 Digital output 7	
8	O8 Digital output 8		
C3	COM3	Common 3 (For Digital output 5 to 8)	

WMB-DIO8RA



No	Symbol	Description	
24	Power supply	+24V Power supply + terminal (24VDC ±10%)	
0		0V Power supply - terminal	
1	Digital input	I1 Digital input 1	
2		I2 Digital input 2	
3		I3 Digital input 3	
4		I4 Digital input 4	
5		I5 Digital input 5	
6		I6 Digital input 6	
7		I7 Digital input 7	
8		I8 Digital input 8	
C1	COM1	Common 1 (For Digital input 1 to 8)	
	NC	No connection	
	NC		
	NC		
1	Digital output	O1 Digital output 1	
2		O2 Digital output 2	
3		O3 Digital output 3	
4		O4 Digital output 4	
C2		COM2	Common 2 (For Digital output 1 to 4)
5		O5 Digital output 5	
6		O6 Digital output 6	
7		O7 Digital output 7	
8	O8 Digital output 8		
C3	COM3	Common 3 (For Digital output 5 to 8)	

* Specification is subject to change without notice