General Specifications

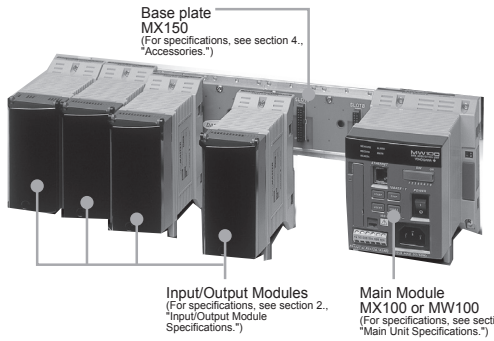
MX100/MW100 Specifications

GS 04M10A01-01E

1. MX100 and MW100 Hardware Specification

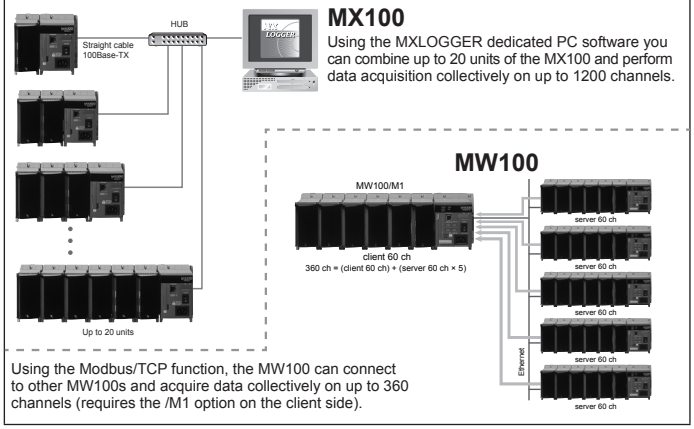
			MX100	MW100
Logging type			Mainly PC measurement	Mainly standalone measurement and distributed remote measurement
Style No.			S3	S3
Maximum number of connectable channels (per unit)			60	
Maximum number of connectable modules (per unit)			6	
Total maximum number of connectable channels			1200 (20 units × 6 modules)	360 (6 units × 6 modules)
Display monitor system			Through MX100 software or API	Through a Web browser
Environmental worthiness (operating temperature range1)			0 to 50°C	–20 to 60°C (or –20 to 50°C when using the MX120 or MX125 output modules)
Data save method	Save operation		Save on the PC (can be saved to CF card with the /DS option)	Save to CF card
	Save start/stop		Executed on the PC.	Executed using the START/STOP panel key, communication commands, or web browsers.
	Supported external media		CF card (up to 2 GB supported), Type I × 1 slot (The MX100 supports Type II)	
Measurement interval	Basic measurement interval		10, 50, 100, 200, 500 ms, 1, 2, 5, 10, 20, 30, 60 sec. However, the measurement interval that can be set differs from module to module. For the measurement interval and number of measurable channels, see 4, "Acquisition Speed & Save Time."	
	Multi-interval		Up to 3 measurement groups/measurement intervals can be set	
Display	Display type		2 × 7-segment display	
	Other		—	Measurement, alarm, recording, computation, and communication status indicators
Alarms (alarm functions)	Main unit alarm types		Upper limit, lower limit, differential upper limit, and differential lower limit	Upper limit, lower limit, differential upper limit, and differential lower limit, high limit on rate-of-change, low limit on rate of change, Delay alarm
	Number of alarms		4 levels per channel	4 levels per channel
	Number of relay outputs		1 to 60 points depending on the number of mounted DO modules	
Communication specifications	Standard interfaces		100Base-TX/10Base-T (auto detect), Ethernet	
	FTP function		—	Y
	E-mail function		—	Y
	DHCP client function		—	Y
	SNTP function		—	Y
	HTTP function		—	Y (Windows 2000/XP/Vista, Internet Explorer 5.5 or later)
	ModbusTCP (server/client)		—	Y (as client, requires /M1)
	ModbusRTU (master/slave)		—	Options (as Master, requires /M1)
	EtherNet/IP		—	Y
	RS-232		—	Options
	RS-422/485		—	Options
MATH functions	Availability		Comes standard (execute using PC software)	Optional (function added to main unit)
	Number of channels for computation		60 (Can also be set for communication input on the MW)	
	Number of channels for communication input		—	240
	Computations		Basic MATH functions, relational operations, logical operations, arithmetic operations, TLOG computation, and conditional expressions	Basic MATH functions, relational operations, logical operations, arithmetic operations, TLOG computation, CLOG computation, and conditional expressions
	MATH interval		100 ms or more (can be assigned)	
Report function			—	Hourly, Daily, Weekly, Monthly (option)
Normal operating conditions	Rated power supply voltage	AC power	100 to 240 VAC	
		DC power	—	12 to 28 VDC
	Power supply voltage	AC power	90 to 250 VAC	
		DC power	10 to 32 VDC	10 to 32 VDC
	Power supply frequency		50 Hz ± 2%, 60 Hz ± 2%	
	Power consumption	AC power	Up to approximately 70 VA (when 6 modules)	
		DC power	—	Up to approximately 35 VA (when 6 modules)
	Withstand voltage	AC power	1500 VAC (50/60 Hz) the power supply terminal and earth terminal	
		DC power	1000 VAC (50/60 Hz) the power supply terminal and earth terminal	
	Insulation resistance		Power supply terminals and ground, 20 MΩ or more (500 VDC)	
	Supported standards		CSA, UL (CSANRTL/C), CE, C-Tick	
Structure	External dimensions (mm)		Approximately 92 (W) × 131 (H) × 163 (D)	Approximately 105 (W) × 131 (H) × 163 (D)
	Weight		Approximately 4.1 kg (when 6 modules)	Approximately 4.3 kg (when 6 modules)
Other specifications	Main unit power consumption		Approximately 8 W	
	Clock accuracy		± 100 ppm	
Application software	Included software	Name	MX100 Standard Software	MW100 Viewer Software
		OS	Windows 2000/XP/Vista	Windows 2000/XP/Vista

Standard Configuration (MX and MW)



The MX can be configured for your specific measurement needs by combining the main module, input/output modules, and a base plate. Assembled units can be used as-is on the desktop, or can be rack- or panel-mounted with provided DIN rails (DIN rail mounting brackets come standard with the MX150).

Multi-Channel Measurement



Using the Modbus/TCP function, the MW100 can connect to other MW100s and acquire data collectively on up to 360 channels (requires the /M1 option on the client side).

2nd Edition Feb.08,2008

2. Input/Output Module Specifications

① 4-CH, High-Speed Universal Input Module

Module number		MX110-UNV-H04	
Style number		S1	
Number of inputs		4	
Measurement interval		10 ms (shortest)	
Types of measurement		DC voltage, thermocouple, 3-wire RTD, DI (non-voltage contact, level (5 V logic))	
A/D resolution		± 20000/± 6000	
Power consumption		Approximately 3 W	
External dimensions (mm)		Approximately 57 × 131 × 151 (including terminal cover)	
Terminal type		Clamp, removable on each CH	
Applicable cable size		0.2 to 2.5 mm² (AWG 24 to 12)	
Withstand voltage	Between input terminals	2300 VACrms (50/60 Hz), for one minute	
	Between input terminals and ground	3700 VACrms (50/60 Hz), for one minute	
Normal-mode voltage	DCV, TC, DI (level)	1.2 times the range rating or less (50/60 Hz, peak value including signals)	
	RTD 100 Ω	50 mV peak	
	RTD 10, 25, 50 Ω	10 mV peak	
Normal-mode rejection ratio	For integral time of 16.67 ms or more, 40 dB or more (50/60 Hz ± 0.1%)		
	50/60 Hz not rejected when the integral time is 1.67 ms.		
Common-mode voltage		600 VACrms (50/60 Hz), reinforced (double) insulation	
Common-mode rejection ratio	When the integral time is 16.67 ms or more, 120 dB or more		(50/60 Hz ±0.1%, 500 Ω unbalanced between minus measurement terminal and ground)
	When the integral time is 1.67 ms or more, 80 dB or more		
Common-mode voltage between channels		250 VACrms (50/60 Hz), reinforced (double) insulation	

• Measurement Ranges and Accuracies

The accuracy applies to standard operating conditions: ambient temp: 23±2°C, ambient humidity: 55±10% RH, supply voltage: 90 to 250 VAC, power frequency: 50/60 Hz ±1%, warm-up time: at least 30 minutes, without adverse conditions such as vibrations.

Input	Type	Rated measurement range	Measurement accuracy integral time 16.67 ms or more	Measurement accuracy integral time 1.67 ms
DC voltage	20 mV	–20.000 to 20.000 mV	±(0.05% of rdg. + 5 digits)	±(0.1% of rdg. + 25 digits)
	60 mV	–60.00 to 60.00 mV	±(0.05% of rdg. + 2 digits)	±(0.1% of rdg. + 10 digits)
	200 mV	–200.00 to 200.00 mV		
	2 V	–2.0000 to 2.0000 V	±(0.05% of rdg.+ 5 digits)	
	6 V	–6.000 to 6.000 V	±(0.05% of rdg. + 2 digits)	
	20 V	–20.000 to 20.000 V		
	100 V	–100.00 to 100.00 V		
Thermocouple (excludes RJC accuracy, when burnout is OFF)	R *1	0.0 to 1760.0°C	±(0.05% of rdg. + 1°C) However, R, S: 0 to 100°C: ±3.7°C 100 to 300°C: ±1.5°C B: 400 to 600C: ±2°C Less than 400°C: accuracy not guaranteed	±(0.1% of rdg. + 4°C) However, R,S: 0 to 100°C: ±10°C 100 to 300°C: ±5°C B: 400 to 600°C: ±7°C Less than 400°C: accuracy not guarantee
	S *1			
	B *1	0.0 to 1820.0°C		
	K *1	–200.0 to 1370.0°C	±(0.05% of rdg. + 0.7°C) However, –200 to –100°C: ±(0.05% of rdg. +1°C)	±(0.1% of rdg. + 3.5°C) However, –200 to –100°C: ±(0.1% of rdg. + 6°C)
	E *1	–200.0 to 800.0°C	±(0.05% of rdg. + 0.5°C) However, J, L: –200 to –100°C: ±(0.05% of rdg. + 0.7°C)	±(0.1% of rdg. + 2.5°C) However, –200 to –100°C: ±(0.1% of rdg. + 5°C)
	J *1	–200.0 to 1100.0°C		
	T *1	–200.0 to 400.0°C		
	L *2	–200.0 to 900.0°C		
	U	–200.0 to 400.0°C		
	N *3	0.0 to 1300.0°C	±(0.05% of rdg. + 0.7°C)	±(0.1% of rdg. + 3.5°C)
	W *4	0.0 to 2315.0°C	±(0.05% of rdg. + 1°C)	±(0.1% of rdg. + 7°C)
	KPvsAu7Fe	0.0 to 300.0 K	±(0.05% of rdg. + 0.7 K)	±(0.1% of rdg. + 3.5 K)
3-wire RTD (Mesurement current 1 mA)	Pt100 *5	–200.0 to 600.0°C	±(0.05% of rdg. + 0.3°C)	±(0.1% of rdg. + 1.5°C)
	JPt100 *5	–200.0 to 550.0°C		
	Pt100 (high resolution)	–140.00 to 150.00°C		
	JPt100 (high resolution)	–140.00 to 150.00°C		
	Ni100 SAMA *6	–00.0 to 250.0°C		
	Ni100 DIN *6	–60.0 to 180.0°C		
	Ni120 *7	–70.0 to 200.0°C		
3-wire RTD (Measurement current 2 mA)	Pt100 *5	–200.0 to 250.0°C	±(0.05% of rdg. + 0.3°C)	±(0.1% of rdg. + 1.5°C)
	JPt100 *5	–200.0 to 250.0°C		
	Pt100 (high resolution)	–140.00 to 150.00°C		
	JPt100 (high resolution)	–140.00 to 150.00°C		
	Pt50 *5	–200.0 to 550.0°C		
	Cu10 GE *8	–200.0 to 300.0°C	±(0.1% of rdg. + 0.7°C)	±(0.2% of rdg. + 2.5°C)
	Cu10 L&N *8	–200.0 to 300.0°C		
	Cu10 WEED *8	–200.0 to 300.0°C		
	Cu10 BAILEY *8	–200.0 to 300.0°C		
	J263B	0.0 to 300.0 K	±(0.05% of rdg. + 0.3 K)	±(0.1% of rdg. + 1.5K)
DI	Level	Vth = 2.4 V	Threshold level accuracy ±0.1 V	
	Non-voltage contact	100 V or less: ON, 10 kV or more: OFF *9		

*1 R, S, B, K, E, J, T: ANSI, IEC 584, DIN IEC 584, JIS C 1602-1981
*2 L: Fe-CuNi, DIN43710/U: Cu-CuNi, DIN 43710
*3 N: Nicrosil-Nisil, IEC 584, DIN IEC 584
*4 W: W 5%RE-W 26%Re (Hoskins Mfg Co)
*5 Pt50: JIS C 1604-1981, JIS C 1606-1986/Pt100: JIS C 1604-1989, JIS C 1606-1989, IEC 751, DIN IEC 751/JPt100: JIS C 1604-1981, JIS C 1606-1989
*6 SAMA/DIN
*7 McGRAW EDISON COMPANY
*8 Guaranteed accuracy range Cu10 GE: –84.4 to 170.0°C/Cu10 L&N: –75.0 to 150.0°C/Cu10 WEED: –20.0 to 250.0°C/Cu10 BAILEY: –20.0 to 250.0°C
*9 To be determined at the measurement current of 1 mA and within the range of 2 V. The threshold level is approximately 0.8 V.

***Special Input Ranges (MX100 can be used in MXLOGGER)**

Input	Type	Rated measurement range	Measurement accuracy integral time 16.67 ms or more	Measurement accuracy integral time 1.67 ms
Voltage	60 mV	0.000 to 60.000 mV	±(0.05% of rdg. +20 digits)	±(0.1% of rdg. +100 digits)
	1 V	–1 .0000 to 1.0000 V	±(0.05% of rdg. +2 digits)	±(0.1% of rdg. +10 digits)
	6 V	0.0000 to 6.0000 V	±(0.05% of rdg. +20 digits)	±(0.1% of rdg. +100 digits)

Supported thermocouple: PLATINEL, PR40-20, NiNiMo, WRe3-25, W/WRe26, N (AWG14)
Supported RTD: PT100 (high noise resistance), JPt (high noise resistance), Cu10 (at 20°C, a = 0.00392), Cu10 (at 20°C, a = 0.00393), Cu25 (at 0°C, a = 0.00425), Cu53 (at 0°C, a = 0.00426035), Cu100 (at 0°C, a = 0.00425), Pt25, Cu10 GE (high resolution), Cu10 L&N (high resolution), Cu10 WEED (high resolution), Cu10 BAILEY (high resolution)
also supports some of GOST ranges.

Measurement Interval	10 ms*1	50 ms			100 ms	200 ms	500 ms	1 s	2, 5,10, 20, 30, 60 s
Integration Time	1.67 ms	16.67 ms	20 ms	Auto*2	36.67 ms		100 ms	200 ms	

*1 When the measurement interval is 10 ms, measured values may fluctuate since power supply frequency noise is not rejected. In such cases, set the measurement interval to 50 ms or more.
*2 For DC power, set to 20 ms.

① 4-CH, High-Speed Universal Input Module
MX110-UNV-H04

② 10-CH, Medium-Speed Universal Input Module

Module number		MX110-UNV-M10	
Style number		S1	
Number of inputs		10	
Measurement interval		100 ms (shortest)	
Types of measurement		DC voltage, thermocouple, 3-wire RTD, DI (non-voltage contact, level (5 V logic))	
A/D resolution		± 20000/± 6000	
Power consumption		Approximately 1.2 W	
External dimensions (mm)		Approximately 57 × 131 × 151 (including terminal cover)	
Terminal types		Clamp, plate with removable clamp terminals	
Applicable cable size		0.14 to 1.5 mm² (AWG 26 to 16)	
Withstand voltage	Between input terminals	1000 VACrms (50/60 Hz), for one minute	
	Between input terminals and ground	3700 VACrms (50/60 Hz), for one minute	
Normal-mode voltage	DCV, TC, DI (level)	1.2 times the range rating or less (50/60 Hz, peak value including signals)	
	RTD 100 Ω	50 mV peak	
	RTD 10, 25, 50 Ω	10 mV peak	
Normal-mode rejection ratio	For integral time of 16.67 ms or more, 40 dB or more (50/60 Hz ± 0.1%)		
	50/60 Hz not rejected when the integral time is 1.67 ms.		
Common-mode voltage		600 VACrms (50/60 Hz), reinforced (double) insulation	
Common-mode rejection ratio	When the integral time is 16.67 ms or more, 120 dB or more		(50/60 Hz ±0.1%, 500 Ω unbalanced between minus measurement terminal and ground)
	When the integral time is 1.67 ms or more, 80 dB or more		
Common-mode voltage between channels		120 VACrms (50/60 Hz)	

• Measurement Ranges and Accuracies

The accuracy applies to standard operating conditions: ambient temp: 23±2°C, ambient humidity: 55±10% RH, supply voltage: 90 to 250 VAC, power frequency: 50/60 Hz±1%, warm-up time: at least 30 minutes, without adverse conditions such as vibrations.

Input	Type	Rated measurement range	Measurement accuracy integral time 16.67 ms or more	Measurement accuracy integral time 1.67 ms
DC voltage	20 mV	–20.000 to 20.000 mV	±(0.05% of rdg. + 5 digits)	±(0.1% of rdg. + 25 digits)
	60 mV	–60.00 to 60.00 mV	±(0.05% of rdg. + 2 digits)	±(0.1% of rdg. + 10 digits)
	200 mV	–200.00 to 200.00 mV		
	2 V	–2.0000 to 2.0000 V	±(0.05% of rdg. + 5 digits)	
	6 V	–6.000 to 6.000 V	±(0.05% of rdg. + 2 digits)	
	20 V	–20.000 to 20.000 V		
	100 V	–100.00 to 100.00 V		
Thermocouple RJC accuracy not included	R *1	0.0 to 1760.0°C	±(0.05% of rdg. + 1°C) However, R, S: 0 to 100°C: ±3.7°C 100 to 300°C: ±1.5°C B: 400 to 600°C: ±2°C Less than 400°C: accuracy not guaranteed	±(0.1% of rdg. + 4°C) However, R, S: 0 to 100°C: ±10°C 100 to 300°C: ±5°C B: 400 to 600°C: ±7°C Less than 400°C: accuracy not guaranteed
	S *1			
	B *1	0.0 to 1820.0°C		
	K *1	–200.0 to 1370.0°C	±(0.05% of rdg. + 0.7°C) However, –200 to –100°C: ±(0.05% of rdg. + 1°C)	±(0.1% of rdg. + 3.5°C) However, –200 to –100°C: ±(0.1% of rdg. + 6°C)
	E *1	–200.0 to 800.0°C	±(0.05% of rdg. + 0.5°C) Howerver, J, L: –200 to –100°C: ±(0.05% of rdg. + 0.7°C)	±(0.1% of rdg. 1+ 2.5°C) Howerver, –200 to –100°C: ±(0.1% of rdg. + 5°C)
	J *1	–200.0 to 1100.0°C		
	T *1	–200.0 to 400.0°C		
	L *2	–200.0 to 900.0°C		
	U	–200.0 to 400.0°C		
	N *3	0.0 to 1300.0°C	±(0.05% of rdg. + 0.7°C)	±(0.1% of rdg. + 3.5°C)
	W *4	0.0 to 2315.0°C	±(0.05% of rdg. + 1°C)	±(0.1% of rdg. + 7°C)
	KPvsAu7Fe	0.0 to 300.0 K	±(0.05% of rdg. + 0.7 K)	±(0.1% of rdg. + 3.5 K)
3-wire RTD (Measurement current 1 mA)	Pt100 *5	–200.0 to 600.0°C	±(0.05% of rdg. + 0.3°C)	±(0.1% of rdg. + 1.5°C)
	JPt100 *5	–200.0 to 550.0°C		
	Pt100 (high resolution)	–140.00 to 150.00°C	±(0.05% of rdg. + 0.3°C)	±(0.1% of rdg. + 1.5°C)
	JPt100 (high resolution)	–140.00 to 150.00°C		
	Ni100 SAMA *6	–200.0 to 250.0°C	±(0.05% of rdg. + 0.3°C)	±(0.1% of rdg. + 1.5°C)
	Ni100 DIN *6	–60.0 to 180.0°C		
	Ni120 *7	–70.0 to 200.0°C		
	Pt50 *5	–200.0 to 550.0°C		
	Cu10 GE *8	–200.0 to 300.0°C	±(0.1% of rdg. + 2°C)	±(0.2% of rdg. + 5°C)
	Cu10 L&N *8	–200.0 to 300.0°C		
	Cu10 WEED *8	–200.0 to 300.0°C		
	Cu10 BAILEY *8	–200.0 to 300.0°C		
	J263B	0.0 to 300.0 K	±(0.05% of rdg. + 0.3 K)	±(0.1% of rdg. + 1.5 K)
DI	Level	Vth = 2.4 V	Threshold level accuracy ±0.1 V	
	Non-voltage contact	1 kΩ or less: ON, 100 kΩ or more: OFF (parallel capacity is 0.01 µF or less) *9		

*1 R, S, B, K, E, J, T: ANSI, IEC 584, DIN IEC 584, JIS C 1602-1981
*2 L: Fe-CuNi, DIN43710/U: Cu-CuNi, DIN 43710
*3 N: Nicrosil-Nisil, IEC 584, DIN IEC 584
*4 W: W 5%RE-W 26%Re (Hoskins Mfg Co)
*5 Pt50: JIS C 1604-1981, JIS C 1606-1986/Pt100: JIS C 1604-1989, JIS C 1606-1989, IEC 751, DIN IEC 751/JPt100: JIS C 1604-1981, JIS C 1606-1989
*6 SAMA/DIN
*7 McGRAW EDISON COMPANY
*8 Guaranteed accuracy range Cu10 GE: –84.4 to 170.0°C/Cu10 L&N: –75.0 to 150.0°C/Cu10 WEED: –20.0 to 250.0°C/Cu10 BAILEY: –20.0 to 250.0°C
*9 To be determined at the measurement current of approximately 10 µA and within the range of 200 mV. The threshold level is approximately 0.1 V.

***Special Input Ranges (MX100 can be used in MXLOGGER)**

Input	Type	Rated measurement range	Measurement accuracy integral time 16.67 ms or more	Measurement accuracy integral time 1.67 ms
Voltage	60 mV	0.000 to 60.000 mV	±(0.05% of rdg.+ 20 digits)	±(0.1% of rdg.+ 100 digits)
	1 V	–1 .0000 to 1.0000 V	±(0.05% of rdg.+ 2 digits)	±(0.1% of rdg.+ 10 digits)
	6 V	0.0000 to 6.0000 V	±(0.05% of rdg.+ 20 digits)	±(0.1% of rdg.+ 100 digits)

Supported thermocouple: PLATINEL, PR40-20, NiNiMo, WRe3-25, W/WRe26, N(AWG14)
Supported RTD: Cu10 (at 20°C, a = 0.00392), Cu10 (at 20°C, a = 0.00393), Cu25 (at 0°C, a = 0.00425), Cu53 (at 0°C, a = 0.00426035), Cu100 (at 0°C, a = 0.00425), Pt25, Cu10 GE (high resolution), Cu10 L&N (high resolution), Cu10 WEED (high resolution), and Cu10 BAILEY (high resolution)
also supports some of GOST ranges.

Measurement Interval	100 ms	200 ms	500 ms			1 s	2 s	5 s	10, 20, 30, 60 s
Integration Time	1.67 ms*1		16.67 ms	20 ms	Auto*2	36.67 ms	100 ms *3	200 ms *4	200 ms

*1 When the measurement interval is 100 ms or 200 ms, measured values may fluctuate (especially for temperature, 20 Ω, and other measurements) since power supply frequency noise is not rejected. In such cases, set the measurement interval to 500 ms or more.
*2 For DC power, set to 20 ms.
*3 When synchronizing time by SNTP, the integral time is set to 36.67 ms. Also in this case, noise of 50 Hz, 60 Hz, and their integer multiples is rejected.
*4 When synchronizing time by SNTP, the integral time is set to 100 ms. Also in this case, noise of 10 Hz and its integer multiples is rejected.

② 10-CH, Medium-Speed Universal Input Module
MX110-UNV-M10

③ Six-Channel, Medium-Speed Four-Wire RTD Resistance Input Module

Module number		MX110-V4R-M06	
Style number		S2	
Number of inputs		6	
Measurement interval		100 ms (shortest)	
Types of measurement		DC voltage, 4-wire resistance temperature detector, 4-wire resistance, DI (non-voltage contact, level (5 V logic)).	
A/D resolution		± 20000/± 6000	
Power consumption		Approximately 1.2 W	
External dimensions (mm)		Approximately 57 × 131 × 151 (including terminal cover)	
Terminal types		Clamp, plate with removable clamp terminals	
Applicable cable size		0.14 to 1.5 mm² (AWG 26 to 16)	
Withstand voltage	Between input terminals	(DCV, DI range) 1000 VACrms (50/60 Hz) for one minute	
	Between input terminals	(RTD or resistance range), 620 VACrms (50/60 Hz) for one minute	
	Between input terminals and ground	3700 VACrms (50/60 Hz) for one minute	
Normal-mode voltage	DCV, DI (level)	1.2 times the range rating or less (50/60 Hz, peak value including signals)	
	2 kΩ resistance, RTD 100/500/1000 Ω	50 mV peak	
	200 Ω resistance, RTD 10/25/50 Ω	10 mV peak	
	20 Ω resistance	4 mV peak	
Normal-mode rejection ratio	For integral time of 16.67 ms or more, 40 dB or more (50/60 Hz ±0.1%)		
	50/60 Hz not rejected when the integral time is 1.67 ms.		
Common-mode voltage		600 VACrms (50/60 Hz), reinforced (double) insulation	
Common-mode rejection ratio	When the integral time is 16.67 ms or more, 120 dB or more	(50/60 Hz ±0.1%, 500 Ω unbalanced between minus measurement terminal and ground)	
	When the integral time is 1.67 ms or more, 80 dB or more		
Common-mode voltage between channels	For voltage/DI	120 VACrms (50/60 Hz)	
	For RTD/resistance	50 VACrms (50/60 Hz)	

• Measurement Ranges and Accuracies

The accuracy applies to standard operating conditions: ambient temp: 23±2°C, ambient humidity: 55±10% RH, supply voltage: 90 to 250 VAC, power frequency: 50/60 Hz ±1%, warm-up time: at least 30 minutes, without adverse conditions such as vibrations.

Input	Type	Rated measurement range	Measurement accuracy integral time 16.67 ms or more	Measurement accuracy integral time 1.67 ms
DC voltage	20 mV	–20.000 to 20.000 mV	±(0.05% of rdg. + 5 digits)	±(0.1% of rdg. + 25 digits)
	60 mV	–60.00 to 60.00 mV	±(0.05% of rdg. + 2 digits)	±(0.1% of rdg. + 10 digits)
	200 mV	–200.00 to 200.00 mV		
	2 V	–2.0000 to 2.0000 V	±(0.05% of rdg. + 5 digits)	
	6 V	–6.000 to 6.000 V	±(0.05% of rdg. + 2 digits)	
	20 V	–20.000 to 20.000 V		
	100 V	–100.00 to 100.00 V		
DI	Level	Vth = 2.4 V	Threshold level accuracy ±0.1 V	
	Non-voltage contact	1 kΩ or less: ON, 100 kΩ or more: OFF (parallel capacity is 0.01 µF or less) *1		
4-wire RTD (Measurement current 1 mA)	Pt100 *2	–200.0 to 600.0°C	±(0.05% of rdg. + 0.3°C)	±(0.1% of rdg. + 1.5°C)
	JPt100 *2	–200.0 to 550.0°C		
	Pt100 (high resolution)	–140.00 to 150.00°C		
	JPt100 (high resolution)	–140.00 to 150.00°C		
	Ni100 SAMA *3	–200.0 to 250.0°C		
	Ni100 DIN *3	–60.0 to 180.0°C		
	Ni120 *4	–70.0 to 200.0°C		
	Pt50 *2	–200.0 to 550.0°C		
	Cu10 GE *5	–200.0 to 300.0°C	±(0.1% of rdg. + 2°C)	±(0.2% of rdg. + 5°C)
	Cu10 L&N *5	–200.0 to 300.0°C		
	Cu10 WEED *5	–200.0 to 300.0°C		
	Cu10 BAILEY *5	–200.0 to 300.0°C		
	J263B	0.0 to 300.0 K	±(0.05% of rdg. + 0.3 K)	±(0.1% of rdg. + 1.5 K)
4-wire RTD (Measurement current 0.25 mA)	Pt500 *6	–200.0 to 600.0°C	±(0.05% of rdg. + 0.3°C)	±(0.1% of rdg. + 1.5°C)
	Pt1000 *6	–200.0 to 600.0°C		
4-wire resistance	20 Ω (measuement cuent: 1 mA)	0.000 to 20.000 Ω	±(0.05% of rdg. + 7 digits)	±(0.1% of rdg. + 25 digits)
	200 Ω (measuement cuent: 1 mA)	0.00 to 200.00 Ω	±(0.05% of rdg. + 3 digits)	±(0.1% of rdg. + 15 digits)
	2 kΩ (measuement cuent: 0.25 mA)	0.0 to 2000.0 Ω	±(0.05% of rdg. + 3 digits)	±(0.1% of rdg. + 10 digits)

*1 To be determined at the measurement current of approximately 10 µA and within the range of 200 mV. The threshold level is approximately 0.1 V.
*2 Pt50: JIS C 1604-1981, JIS C 1606-1986/Pt100: JIS C 1604-1989, JIS C 1606-1989, IEC 751, DIN IEC 751/JPt100: JIS C 1604-1981, JIS C 1606-1989
*3 SAMA/DIN
*4 McGRAW EDISON COMPANY
*5 Guaranteed accuracy range Cu10 GE: –84.4 to 170.0°C/Cu10 L&N: –75.0 to 150.0°C/Cu10 WEED: to 20.0 to 250.0°C/Cu10 BAILEY: –20.0 to 250.0°C
*6 The Pt500 resistance table is Pt100 3 5, and the Pt1000 resistance table is Pt100 × 10.

***Special Input Ranges (MX100 can be used in MXLOGGER)**

Input	Type	Rated measurement range	Measurement accuracy integral time 16.67 ms or more	Measurement accuracy integral time 1.67 ms
Voltage	60 mV	0.000 to 60.000 mV	±(0.05% of rdg.+20 digits)	+(0.1% of rdg.+ 100 digits)
	1 V	–1 .0000 to 1.0000 V	±(0.05% of rdg.+ 2 digits)	+(0.1% of rdg.+ 10 digits)
	6 V	0.0000 to 6.0000 V	±(0.05% of rdg.+ 20 digits)	+(0.1% of rdg.+ 100 digits)

Supported RTD: Cu10 (at 20°C, a = 0.00392), Cu10 (at 20°C, a = 0.00393), Cu25 (at 0°C, a = 0.00425), Cu53 (at 0°C, a = 0.00426035), Cu100 (at 0°C, a = 0.00425), Pt25, Cu10 GE (high resolution), Cu10 L&N (high resolution), Cu10 WEED (high resolution), and Cu10 BAILEY (high resolution)
also supports some of GOST ranges.

Measurement Interval	100 ms	200 ms	500 ms			1 s	2 s	5 s	10, 20, 30, 60 s
Integration Time	1.67 ms*1*2		16.67 ms	20 ms	Auto*3	36.67 ms	100 ms*4	200 ms*5	200 ms

*1 When the measurement interval is 100 ms, burnout is detected in one channel per measurement interval. Therefore, if measurement is started in a burnout condition or after a burnout occurs, burnout cannot be detected for up to 10 measurements (approximately 1 second).
*2 Because the power supply frequency noise is not rejected, measured values may fluctuate particularly for temperature measurements using thermocouples. If this happens, make the measurement interval longer, or use the 4-CH High-Speed Universal Input Module.
*3 For DC power, set to 20 ms.
*4 When synchronizing time by SNTP, the integral time is set to 36.67 ms. Also in this case, noise of 50 Hz, 60 Hz, and their integer multiples is rejected.
*5 When synchronizing time by SNTP, the integral time is set to 100 ms. Also in this case, noise of 10 Hz and its integer multiples is rejected.

③ Six-Channel, Medium-Speed Four-Wire RTD Resistance Input Module
MX110-V4R-M06

④⑤ 30-CH, Medium-Speed DCV/TC/DI Input Module

Module number		MX110-VTD-L30, (/H3: M3 screw terminal)	
Style number		S3	
Number of inputs		30	
Measurement interval		500 ms (shortest)	
Types of measurement		DC voltage, thermocouple, DI (non-voltage contact, level (5 V logic)	
A/D resolution		± 20000/± 6000	
Power consumption		Approximately 1.2 W	
External dimensions (mm)		Approximately 174 × 131 × 151 (including terminal cover)	
Terminal types		Clamp terminal, (/H3: M3 screw terminal)	
Applicable cable size		0.14 to 1.5 mm² (AWG 26 to 16)	
Withstand voltage	Between input terminals	1000 VACrms (50/60 Hz), for one minute	
	Between input terminals and ground	3700 VACrms (50/60 Hz), for one minute	
Normal-mode voltage	DCV, TC, DI (level)	1.2 times the range rating or less (50/60 Hz, peak value including signals)	
Normal-mode rejection ratio	For integral time of 16.67 ms or more, 40 dB or more (50/60 Hz ±0.1%)		
	50/60 Hz not rejected when the integral time is 1.67 ms.		
Common-mode voltage		600 VACrms (50/60 Hz), reinforced (double) insulation	
Common-mode rejection ratio	When the integral time is 16.67 ms or more, 120 dB or more	(50/60 Hz ±0.1%, 500 Ω unbalanced between minus measurement terminal and ground)	
	When the integral time is 16.67 ms, 80 dB or more		
Common-mode voltage between channels		120 VACrms (50/60 Hz)	

• Measurement Ranges and Accuracies

The accuracy applies to standard operating conditions: ambient temperature: 23 ±2°C, ambient humidity: 55 ±10% RH, supply voltage: 90 to 250 VAC, power frequency: 50/60 Hz ±1%, warm-up time: 30 minutes or more, without adverse conditions such as vibrations.

Input	Type	Rated measurement range	Measurement accuracy integral time 16.67 ms or more	Measurement accuracy integral time 1.67 ms	Maximum resolution (1 digit)
DC voltage	20 mV	–20.000 to 20.000 mV	± (0.05% of rdg. + 5 digits)	± (0.1% of rdg. + 25 digits)	1 µ V
	60 mV	–60.00 to 60.00 mV	± (0.05% of rdg. + 2 digits)	± (0.1% of rdg. + 10 digits)	10 µ V
	200 mV	–200.00 to 200.00 mV			10 µ V
	2 V	–2.0000 to 2.0000 V	± (0.05% of rdg. + 5 digits)		100 µ V
	6 V	–6.000 to 6.000 V	± (0.05% of rdg. + 2 digits)		1 mV
	20 V	–20.000 to 20.000 V			1 mV
	100 V	–100.00 to 100.00 V			10 mV
Thermocouple RJC accuracy not included	R *1	0.0 to 1760.0°C	± (0.05% of rdg. + 1°C) However, R, S: 0 to 100°C: ± 3.7°C 100 to 300°C: ± 1.5°C B: 400 to 600°C: ±2°C Less than 400°C: accuracy not guaranteed	± (0.1% of rdg. + 4°C) However, R, S: 0 to 100°C: ± 10°C 100 to 300°C: ± 5°C B: 400 to 600°C: ± 7°C Less than 400°C: accuracy not guaranteed	0.1°C
	S *1				
	B *1	0.0 to 1820.0°C			
	K *1	–200.0 to 1370.0°C	± (0.05% of rdg. + 0.7°C) However, –200 to –100°C: ± (0.05% of rdg. + 1°C)	± (0.1% of rdg. + 3.5°C) However, –200 to –100°C: ± (0.1% of rdg. + 6°C)	
	E *1	–200.0 to 800.0°C	± (0.05% of rdg. + 0.5°C) However, J, L: –200 to –100°C: ±(0.05% of rdg. + 0.7°C)	± (0.1% of rdg. + 2.5°C) However, –200 to –100°C: ± (0.1% of rdg. + 5°C)	
	J *1	–200.0 to 1100.0°C			
	T *1	–200.0 to 400.0°C			
	L *2	–200.0 to 900.0°C			
	U	–200.0 to 400.0°C			
	N *3	0.0 to 1300.0°C	± (0.05% of rdg. + 0.7°C)	± (0.1% of rdg. + 3.5°C)	
	W *4	0.0 to 2315.0°C	± (0.05% of rdg. + 1°C)	± (0.1% of rdg. + 7°C)	
	KPvsAu7Fe	0.0 to 300.0 K	± (0.05% of rdg. + 0.7 k)	± (0.1% of rdg. + 3.5 K)	0.1 k
DI	Level	Vth = 2.4 V	Threshold level accuracy ± 0.1 V		
	Non-voltage contact	1 k Ω or less: ON, 10 k Ω or more: OFF (parallel capacity is 0.01 µF or less) *9			

*1 R, S, B, K, E, J, T: ANSI, IEC 584, DIN IEC 584, JIS C 1602-1981
*2 L: Fe-CuNi, DIN 43710/U: Cu-CuNi, DIN 43710
*3 N: Nicrosil-Nisil, IEC 584, DIN IEC 584
*4 W: W5%RE-W 26%Re (Hoskins Mfg Co)
*5 Pt50: JIS C 1604-1981, JIS C 1606-1986/Pt100: JIS C1604-1989, JIS C 1606-1989, IEC 751, DIN IEC 751/JPt100: JIS C 1604-1981, JIS C 1606-1989
*6 SAMA/DIN
*7 McGRAW EDISON COMPANY
*8 Guaranteed accuracy range Cu10 GE: –84.4 to 170.0°C/Cu10 L&N: –75.0 to 150.0°C/Cu 10 WEED: –20.0 to 250.0°C/Cu10 BAILEY:–20.0 to 250.0°C
*9 To be determined at the measurement current of approximately 10 mA and within the range of 200 mV. The threshold level is approximately 0.1V.

***Special Input Ranges (MX100 can be used in MXLOGGER)**

Input	Type	Rated measurement range	Measurement accuracy integral time 16.67 ms or more	Measurement accuracy integral time 1.67 ms
Voltage	60 mV	0.000 to 60.000 mV	±(0.05% of rdg. + 20 digits)	±(0.1% of rdg. + 100 digits)
	1 V	–1 .0000 to 1.0000 V	±(0.05% of rdg. + 2 digits)	±(0.1% of rdg. + 10 digits)
	6 V	0.0000 to 6.0000 V	±(0.05% of rdg. + 20 digits)	±(0.1% of rdg. + 100 digits)

Supported thermocouple: PLATINEL, PR40-20, NiNiMo, WRe3-25, W/WRe26, N(AWG14)

Measurement Interval	500 ms	1 s			2 s	5 s	10, 20, 30, 60 s
Integration Time	1.67 ms*1	16.67 ms	20 ms	Auto*2	36.67 ms*3	100 ms*4	100 ms

*1 Because the power supply frequency noise is not rejected, the measured vales may fluctuate especially with temperature measurement using thermocouples. In such cases, increase the measurement interval, or use the 4-CH High-Speed Universal Input Module or the 10-CH, Medium Speed Universal Input Module.
*2 For DC power, set to 20 ms.
*3 When synchronizing time by SNTP, the integral time is the same as when the measurement interval is 1 s.
*4 When synchronizing time by SNTP, the integral time is set to 36.67 ms. Also in this case, noise of 50 Hz, 60 Hz, and their integer multiples is rejected.

④ 30-CH Medium-Speed DCV/TC/DI Input Module (clamp terminal)
MX110-VTD-L30

⑤ 30-CH Medium-Speed DCV/TC/DI Input Module (M3 screw terminal)
MX110-VTD-L30/H3

⑥⑦⑧ 4-CH Medium-Speed Strain Input Module

Module number		MX112-□□□-M04
-B12		Built-in bridge resistance: 120 Ω
-B35		Built-in bridge resistance: 350 Ω
-NDI		NDIS connector for connection to external bridge head and strain gauge type converters
Style number		S2
Number of inputs		4
Measurement interval		100 ms (shortest)
Types of measurement		Strain gauge or strain gauge type sensor (static strain)
A/D resolution		± 20000 (excluding 1.67 ms integral time)
Power consumption		Approximately 3 W
External dimensions (mm)		Approximately 57 × 131 × 151 (including terminal cover)
Terminal type		-B12 and -B35 are clamp terminals. Plate with removable clamp terminals.
		-NDI is an NDIS connector.
Applicable cable size		(-B12, -B35) 0.14 to 1.5 mm² (AWG 26 to 16)
Withstand voltage (-NDI is not applicable)	Between input terminals and ground	2300 VACrms (50/60 Hz), for one minute
Normal-mode rejection ratio:	For integral time of 16.67 ms or more, 40 dB or more (50/60 Hz ±0.1%)	
	50/60 Hz not rejected when the integral time is 1.67 ms.	
	(voltage conversion value given a bridge voltage of 2 V)	
Common-mode voltage	-B12, -B35: 30 VAC rms (50/60 Hz) between channels, 250 VAC rms (50/60 Hz) between input and ground	
	-NDI: 30 VACrms (50/60 Hz) between channels, 30 VACrms (50/60 Hz) between input and ground	
	(Note that the connector shell is connected to earth potential)	
Common-mode rejection ratio	When the integral time is 16.67 ms or more, 120 dB or more	
	When the integral time is 1.67 ms, 80 dB or more	
	(voltage conversion value at 50/60 Hz ±0.1%, bridge voltage of 2 V)	

• Measurement ranges and accuracies (1 gauge method conversion, other gauge methods use conversion by scaling)

The accuracy compatible with standard operating conditions.
Ambient temperature: 23 ± 2°C, ambient humidity: 55 ± 10% RH, supply voltage: 90 to 250 VAC, power frequency: 50/60 Hz ± 1%, warm-up time: 30 minutes or more, without adverse conditions such as vibrations.

Measurement range	Measuring range	Integral time 16.67 ms or more		Integral time 1.67 ms	
		Measurement Accuracy	Resolution	Measurement Accuracy	Resolution
2000 μ strain	± 2000.0 μ strain	±0.5% of range	0.1 μ strain	2% of range	1 μ strain
20000 μ strain	± 20000 μ strain	±0.3% of range	1 μ strain	1% of range	2 μ strain
200000 μ strain	± 200000 μ strain	±0.3% of range	10 μ strain	1% of range	10 μ strain

Bridge resistance accuracy (-B12, -B35): ± 0.01% ± 5ppm/°C
Input/output resistance: 1 MΩ or more
Effect of wiring resistance: No correction for wiring resistance (with -B12 or -B35). Depends on the gauge resistance. For -NDI, 50 ppm of rdg./Ω (using remote sensing wire).
Temperature coefficient: ± 100 ppm of range/°C


⑥ 4-CH Medium-Speed Strain Input Module MX112-B12-M04


⑦ 4-CH Medium-Speed Strain Input Module MX112-B35-M04


⑧ 4-CH Medium-Speed Strain Input Module MX112-NDI-M04

⑨ 10-CH, Pulse Input Module

Module number		MX114-PLS-M10
Style number		S3 (Dedicated MW100, N/A:MX100) MX100 can use only API (MX190)
Number of inputs		10
Measurement interval		100 ms (shortest)
Types of measurement		Non-voltage contact, level (5 V logic), and open collector
Input type		Pull-up with approx. 5 V/5 kΩ, common voltage within the same module
Measurement mode		RATE (numbers of count measuring mode), a mode which outputs the number of pulse inputted by set interval
Input range		30000 counts/measurement interval (however, 10000 counts/sec at the fastest)
Setting span		0 to 30000 (however, plus over if the number of maximum counts in the measurement interval exceeds 31500.)
Measurement accuracy		The number of counts ±1 pulse
Chattering elimination filter		Chattering elimination filter up to 5 ms (ON/OFF switching for every channels)
TLOG.PSUM calculation limit		0 to 99999999 (8 digits excluding a decimal position)
Minimum detection pulse width		40 μs
Input threshold level		
Non-voltage contact or open collector		Count every change when the value of 100 kΩ or above changes to the value of 100 Ω or below.
Level (5 V logic)		Count every change when the value of 1 V or below changes to 3 V or above.
Hysteresis width		Approximately 0.1 V
Contact, transistor rating		Contact with a rating of 15 VDC or more, and 30 mA or more
		Transistor with a rating of Vce >15 VDC and Ic >30 mA
Maximum input voltage		±10 VDC
Power consumption		Approximately 1.5 W
External dimensions (mm)		Approximately 57 × 131 × 151 (including terminal cover)
Terminal type		Clamp. Plate with removal clamp terminals
Applicable cable size		0.14 to 1.5 mm² (AWG 26 to 16)
Withstand voltage	Between input terminals and ground	2300 VACrms (50/60 Hz). For one minute
Common mode voltage	Between input terminals and ground	250 VACrms (50/60 Hz)
Insulation resistance	Between input terminals and ground	20 MΩ or more (500 VDC)


⑨ 10-CH, Pulse Input Module MX114-PLS-M10

⑩ 10-CH, High-Speed 5 V Digital Input Module

Module number		MX115-D05-H10
Style number		S1
Number of inputs		10
Input threshold level:		Contact (non-voltage contact, open collector): 100 Ω or less, ON, 100 kΩ or more, OFF LEVEL (5-V logic): OFF at 1 V or less and ON at 3 V or more
Measurement interval		10 ms (shortest)
Types of measurement		Non-voltage contact, level (5-V logic), and open collector
Input type		Pull-up with approx. 5 V/5 kΩ, common voltage within the same module
Measurement mode		RATE (numbers of count measuring mode), a mode which outputs the number of pulse inputted by set interval
Input range		30000 counts/measurement interval (however, 10000 counts/sec at the fastest)
Setting span		0 to 30000 (however, plus over if the number of maximum counts in the measurement interval exceeds 31500.)
Measurement accuracy		The number of counts ±1 pulse
Chattering elimination filter		Chattering elimination filter up to 5 ms (ON/OFF switching for every channels)
TLOG.PSUM calculation limit		0 to 99999999 (8 digits excluding a decimal position)
Minimum detection pulse width		Twice the sampling interval or more
Input threshold level		
Non-voltage contact or open collector		100 Ω or less: ON, 100 kΩ or more: OFF
Level (5 V logic)		1 V or less: OFF, 3 V or more: ON
Hysteresis width		Approximately 0.1 V
Contact, transistor rating		Contact with a rating of 15 VDC or more, and 30 mA or more
		Transistor with a rating of Vce > 15 VDC and Ic > 30 mA
Maximum input voltage		±10 VDC
Power consumption		Approximately 1.5 W
External dimensions (mm)		Approximately 57 × 131 × 151 (including terminal cover)
Terminal type		Clamp. Plate with removable clamp terminals
Applicable cable size		0.14 to 1.5 mm² (AWG 26 to 16)
Withstand voltage	Between input terminals and ground	2300 VACrms (50/60 Hz), for one minute
Common mode voltage	Between input terminals and ground	250 VACrms (50/60 Hz)
Insulation resistance	Between input terminals and ground	20 MΩ or more (500 VDC)

⑪ 10-CH, High-Speed 24 V Digital Input Module

Module number		MX115-D24-H10
Style number		S2
Number of inputs		10
Input threshold level:		LEVEL (24-V logic): OFF at 6 V or less and ON at 16 V or greater
Measurement Interval		10 ms (shortest)
Types of measurement		Level (24 V logic)
Minimum detection pulse width		Twice the sampling interval or more
Input threshold level		6 V or less: OFF, 16 V or more: ON
Hysteresis width		Approximately 1.5 V.
Maximum input voltage		50 VDC
Power consumption		Approximately 1.5 W
External dimensions (mm)		Approximately 57 × 131 × 151 (including terminal cover)
Terminal type		Clamp. Plate with removable clamp terminals removable
Applicable cable size		0.14 to 1.5 mm² (AWG 26 to 16)
Withstand voltage	Between input terminals and ground	2300 VACrms (50/60 Hz), for one minute
Common mode voltage	Between input terminals and ground	250 VACrms (50/60 Hz)
Insulation resistance	Between input terminals and ground	20 MΩ or more (500 VDC)

⑫ 10-CH, Medium-Speed Digital Output Module

Module number		MX125-MKC-M10
Style number		S1
Number of outputs		10
Contact mode		A contact (SPST) You can set the operation type, excitation status, hold, operation
Output update interval		Outputs every 100 ms (not synchronized to the measurement interval)
Output types		Alarm output. Command output, failure output, error output, low free space on media error output.
Contact capacity		250 VDC/0.1 A, 250 VAC/2 A, or 30 VDC/2A (load resistance)
Contact lifespan		Approximately 100,000 times at rated load or 20 million times with no load.
Power consumption		Approximately 2 W (All relay:ON)
External dimensions (mm)		Approximately 57 × 131 ×151 (including terminal cover)
Terminal type		Clamp. Removable in units of 5 ch.
Applicable cable size		0.08 to 2.5 mm² (AWG 28 to 12)
Withstand voltage	Between output terminals and ground	2300 VACrms (50/60 Hz), for one minute
	Between output terminals	2300 VACrms (50/60 Hz), for one minute
Common mode voltage	Between output terminals and ground	250 VACrms (50/60 Hz)
Insulation resistance	Between output terminals and ground	20 MΩ or more (500 VDC)
	Between output terminals	20 MΩ or more (500 VDC)


⑩ 10-CH, High-Speed 5 V Digital Input Module MX115-D05-H10


⑪ 10-CH, High-Speed 24 V Digital Input Module MX115-D24-H10


⑫ 10-CH, Medium-Speed Digital Output Module MX125-MKC-M10

⑬ 8-CH, Medium-Speed PWM Output Module

Module number		MX120-PWM-M08
Style number		S2
Number of outputs		8
Pulse (output) interval		1 ms to 300 S
Output update Interval		100 msec
Output data		Command output
		Transmission output
		Output on power ON, output on abnormality (error), output upon ± Over
Pulse interval accuracy		± 100 ppm of setting value
Output capacity		1A/ch max, however, 4 A or less total per module (a current limit circuit of approximately 1 A is built in)
External power supply		4 to 28 V (External power supply sourcing)
Power consumption		Approximately 2.5 W
External dimensions (mm)		Approximately 57 × 131 × 151 (including terminal cover)
Terminal type		Clamp. Removable in units of 4 ch.
Applicable cable size		0.08 to 2.5 mm² (AWG 28 to 12)
Withstand Voltage	Between output terminals and ground	2300 VACrms (50/60 Hz), for one minute
	Between output terminals	Non-isolated
Common mode voltage	Between output terminals and ground	250 VACrms (50/60 Hz)
Insulation resistance	Between output terminals and ground	20 MΩ or more (500 VDC)
	Between output terminals	Non-isolated

⑬ 8-CH, Medium-Speed PWM Output Module
MX120-PWM-M08

⑭ 8-CH, Medium-Speed Analog Output Module

Module number		MX120-VAO-M08
Style number		S2
Number of outputs		8
Output update interval		100 msec
Output type		DC voltage, DC current
Output data		Command output
		Transmission output
		Output on power ON, output on abnormality (error), output upon ± Over
Rated output range	Voltage	–10 V to 10 V
	Current	0 to 20 mA (soucing 1 to 5 V:4 to 20 mA)
Maximum allowable output range	Voltage	–11 V to 11 V
	Current	0 to 22 mA
Load resistance		Voltage: 5 k Ω or more, current: 600 Ω or less
Accuracy (at rated output)		± 0.2% of F.S or more (F.S. = 10 V or 20 mA)
Output resolution		12 bit of F.S or greater
External power supply (required for current output)		24 V ±10%, allowable current 250 mA or more (external power supply not required for output of voltage only)
Power consumption		Approximately 2.5 W
External dimensions (mm)		Approximately 57 × 131 × 151 (including terminal cover)
Terminal type		Clamp. Removable in units of 4 ch.
Applicable cable size		0.08 to 2.5 mm² (AWG 28 to 12)
Withstand voltage	Between output terminals and ground	2300 VACrms (50/60 Hz), for one minute
	Between output terminals, non-isolated	(minus terminals common potential)
Common mode voltage	Between output terminals and ground	250 VACrms (50/60 Hz)
Insulation resistance	Between output terminals and ground	20 MΩ or more (500 VDC)
	Between output terminals, non-isolated	(minus terminals common potential)

⑭ 8-CH, Medium-Speed Analog Output Module
MX120-VAO-M08

3. Acquisition Speed and Recording Time

Table of Shortest Measurement Intervals (when MX110)

interval	MAX. number of channels	
	MX100	MW100
10 ms	24 ch *1	10 ch
50 ms	120 ch *1	30 ch
100 ms	300 ch *1	60 ch
200 ms	500 ch *1	—
500 ms	600 ch *1	—
1 s	1200 ch *1	—

MX100:The relationship between the measurement interval and number of channels depends greatly on the performance of the PC.

*1 Maximum number of channels when using MXLOGGER.

Storage capacity in terms of time by CF card size

Select the CF card according to the required data recording time.

Channels	interval	128 MB	512 MB	1 GB	2 GB
10 ch	10 ms	8.8 hours	1.4 days	2.8 days	5.6 days
	100 ms	3.7 days	14.8 days	28.9 days	57 days
	500 ms	18.5 days	74 days	144 days	288 days
	1 s	37 days	148 days	289 days	578 days
	2 s	74 days	296 days	578 days	1156 days
	5 s	185 days	740 days	1446 days	2892 days
20 ch	100 ms	1.8 days	7.4 days	14.4 days	28.8 days
	500 ms	9.2 days	37 days	72.3 days	144 days
	1 s	18.5 days	74 days	144 days	288 days
	2 s	37 days	148 days	289 days	578 days
	5 s	92.5 days	370 days	723 days	1445 days
60 ch	100 ms	14.8 hours	2.4 days	4.8 days	9.5 days
	500 ms	3 days	12.3 days	24.1 days	48.2 days
	1 s	6.1 days	24.6 days	48.2 days	96.4 days
	2 s	12.3 days	49.3 days	96.4 days	192 days
	5 s	30.8 days	123 days	241 days	482 days

Note that saving to the CF card is performed arbitrarily on the MX100 when the /DS option is installed (on the standard MX100, the card is used for automatic backup when communications are disconnected).

■ Hardware Specifications

Common Specifications

Vibration: 10-60 Hz, 0.2 m/s² or less
Shock: Not allowed
Magnetic field: 400 A/m or less (50/60 Hz)
Position: Position horizontally with feet down
Usage location: Indoors
Operating altitude: 2,000 m or less
Overvoltage category: II (per IEC61010-1 and CSA C22.2 No.61010-1)
Measurement category: II (per IEC61010-1 and CSA C22.2 No.61010-1)
Degree of pollution: 2 (per IEC61010-1 and CSA C22.2 No.61010-1)

*1: Not including operating temperature range specification of accessory AC power cord and AC adapter. The operating temperature range specifications of the AC power supply cord and AC adapter are as shown below.

Suffix code in the model name	Standard applicable to included power cord	Operating temperature
-1D	UL/CSA	–20-60°C
-1F	VDE	–15-60°C
-1R	SAA	–15-60°C
-1Q	BS	–15-60°C
-1H	GB (CCC)	–15-60°C

The operating temperature range of the AC adapter is 0 to 40°C.
*2: The operating humidity range of the AC adapter is 20-80% RH at 0-40°C. (no condensation)
*3: No condensation

• Shipping and Storage Conditions

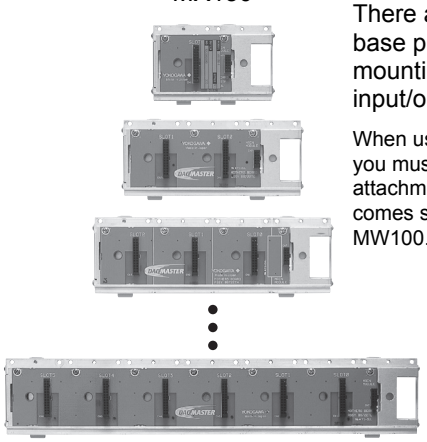
Environmental conditions for the transportation/storage of equipment from the time of delivery until the start of use, as well as for the transportation/storage when the use of equipment is temporarily suspended.
Storage ambient temperature: –25-70°C
Storage ambient humidity: 5-95%RH (or 10-90%RH for the AC adapter)
Vibration: 10-60 Hz, 4.9 m/s² or less
Shock: 392 m/s² or less (when packaged)

CSA	Obtained CSA22.2 No.61010-1, Overvoltage category: II, Measurement category: II, Degree of pollution: 2	
UL	Obtained UL61010B-1 (CSA NRTL/C)	
CE	EMC directive	EN61326, EN61000-3-2, EN61000-3-3, EN55011 Class A Group1
	Low voltage directive	EN61010-1, Overvoltage category: II, Measurement category: II, Degree of pollution: 2
C-Tick	Obtained AS/NZS CISPR11 Class A Group 1	

4. Accessories

Base plate

MX150



There are six types of base plate available for mounting 1 to 6 input/output modules.

When used for the MW100, you must replace the attachment with the one that comes standard with the MW100.

Accessories

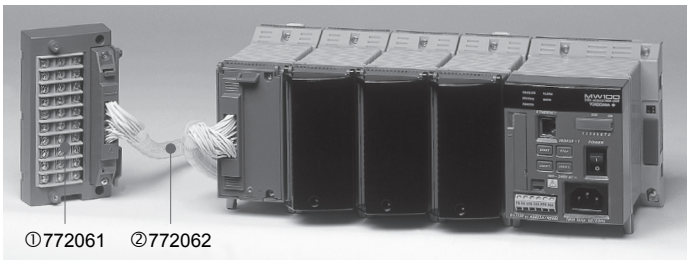
772066

• Connector cover
Connector cover for open slots

• 772075
AC adapter
AC adaptor for the DC power model
Operating temperature range: 0-40°C

Accessories (Removable Terminals)

All input/output terminals are removable except for those of the MX112-NDI-M04, MX110-VTD-L30, MX110-VTD-L30/H3.



①772061 ②772062

③772063

④772064

⑤772065

⑥772067

⑦772068

⑧772069

⑨772080

⑩ – ⑫

	Module no.	Name	Description
①	772061	M4 external screw terminal block	RJC included. Used in combination with 772062. Compatible with MX110-UNV-M10, MX114-PLS-M10, MX115-D□□-H10
②	772062	Cable between input module screw terminal blocks	Used in combination with 772061. Compatible with MX110-UNV-M10, MX114-PLS-M10, MX115-D□□-H10
③	772063	Clamp terminal block with plate	RJC included. Compatible with MX110-UNV-M10, MX114-PLS-M10, MX115-D□□-H10
④	772064	Clamp terminal	Compatible with MX110-UNV-H4
⑤	772065	Clamp terminal	Compatible with MX120-VAO-M08, MX120-PWM-M08, and MX125-MKC-M10
⑥	772067	Clamp terminal block with plate	Compatible with MX110-V4R-M06
⑦	772068	Clamp terminal block with plate	120 Ω bridge built in. Compatible with MX112-B□□-M04
⑧	772069	Clamp terminal block with plate	350 Ω bridge built in. Compatible with MX112-B□□-M04
⑨	772080	M3 plate with screw terminals	RJC included. Compatible with MX110-UNV-M10, MX114-PLS-M10, MX115-D□□-H10
⑩	772081	Plate with built-in shunt resistance (10 Ω)	Compatible with the MX110-UNV-M10
⑪	772082	Plate with built-in shunt resistance (100 Ω)	Compatible with the MX110-UNV-M10
⑫	772083	Plate with built-in shunt resistance (250 Ω)	Compatible with the MX110-UNV-M10

■PC software specifications

• MX100 standard software (attached to the main module of MX100): for connection with a single MX unit

• Release number: R3.01 or later

• Integrated Monitor (main functions):
Setting of the basic connection, setting of various conditions (range, measurement interval, computation, tag), monitor display (digital, trend), 32 channels in one group, 10 groups, logging, computation function (60 channels), alarm output, retransmission output, manual digital output, manual analog/PWM output, etc.

• Viewer (main functions):
Re-display of saved data files, 32 channels in one group, 50 groups, data synchronization processing, file merge display (limited to files that can be merged), multi-interval supported (If channels with different intervals are assigned to the same group, windows are split (up to four splits) and displayed.), graph, digital display/print, cursor value display, interval arithmetic, alarm display, mark display, alarm/mark search, file information display, tag, tag comment, channel display switchover, data formatting conversion (conversion to ASCII, Excel, or Lotus format), etc.

• Calibration software (main function): calibration function

• Operating environment

[Windows2000/XP]

OS:	Windows 2000 [Professional SP4] Windows XP [HomeEdition SP2/Professional SP2] (Professional 64bit edition is excluded.)
CPU:	Pentium4 1.6GB or more
Memory:	256MB or more (recommended: 512MB or more)
Hard disk capacity:	Free space of 50MB or more (recommended: 1GB or more, 7200rpm or more)
Display:	1024×768 dot or more, Color of 65536 or more (recommended: 1280×1024 dot or more)

[WindowsVISTA]

OS:	Windows Vista[Business/HomePremium] (64bit edition is excluded.)
CPU:	Pentium4 3GB or more
Memory:	1GB or more (recommended: 2GB or more)
Hard disk capacity:	Free space of 50MB or more (recommended: 1GB or more, 7200rpm or more)
Display:	1024×768 dot or more, Color of 65536 or more (recommended: 1280×1024 dot or more)

• MXLOGGER (optional)
This is used to connect multiple MX units. Up to 20 units can be connected.

• Release number: R2.04 or later

• Integrated Monitor (main functions):
Setting of the basic connection, setting of various conditions (range/alarm, measurement interval, computation), project functions (project switchover, copy, deletion), logging, computation function (240 channels, computation across units possible), alarm output, file split save function, retransmission output, manual digital output, manual analog/PWM output, activation of various types of software, display-related settings, 32 channels in one group, 50 groups, monitor displays (trend, digital, meter, alarm), multi-interval supported (If channels with different intervals are assigned to the same group in trend graphs, windows are split (up to four splits) and displayed.), All-channel trend display, temporary suspension, tag, tag comment, channel display switchover, marking function, event processor (automatic conversion, ftp, mail), Automatic start function, etc.

• Viewer (main functions):
Re-display of saved data files, data synchronization processing, file merge display (limited to files that can be merged), 32 channels in one group, 50 groups, multi-interval supported (If channels with different intervals are assigned to the same group in trend graphs, windows are split (up to four splits) and displayed.), graph, digital display/print, cursor value display, interval arithmetic, alarm display, mark display, alarm/mark seach, file information display, tag, tag comment, channel display switchover, embedding of backup file data , data formatting conversion (conversion to ASCII, Excel, or Lotus format), etc.

• Monitor Server (main functions):
Retention of 1,800-point data/channels, connection with DAQLOGGER/AddObserver/AddMulti possible, acquisition of instantaneous values on all channels, etc.

• DDE server

• Operating environment:

[Windows2000/XP]

OS:	Windows 2000 [Professional SP4] Windows XP [HomeEdition SP2/Professional SP2] (Professional 64bit edition is excluded.)
CPU:	Pentium4 1.6GB or more
Memory:	512MB or more
Hard disk capacity:	Free space of 200MB or more
Display:	1024×768 dot or more, Color of 65536 or more

[WindowsVISTA]

OS:	Windows Vista[Business/HomePremium] (64bit edition is excluded.)
CPU:	Pentium4 3GB or more
Memory:	2GB or more
Hard disk capacity:	Free space of 200MB or more
Display:	1024×768 dot or more, Color of 65536 or more

• MW100 viewer software (attached to the main module of MW100)

• Release number: R3.01 or later

• Address setting software (main functions):
Entering of initial communication settings such as IP address

• Viewer (main functions):
Re-display of saved data files, 32 channels in one group, 50 groups, file merge display (limited to files that can be merged), multi-interval supported (If channels with different intervals are assigned to the same group, windows are split (up to four splits) and displayed.), graph, digital display/print, cursor value display, interval arithmetic, alarm display, mark display, alarm/mark search, file information display, tag, tag comment, channel display switchover, data formatting conversion (conversion to ASCII, Excel, or Lotus format), etc.

• Calibration software (main function): calibration function

• Operating environment

[Windows2000/XP]

OS:	Windows 2000 [Professional SP4] Windows XP [HomeEdition SP2/Professional SP2] (Professional 64bit edition is excluded.)
CPU:	Pentium4 1.6GB or more
Memory:	256MB or more (recommended: 512MB or more)
Hard disk capacity:	Free space of 50MB or more (recommended: 1GB or more, 7200rpm or more)
Display:	1024×768 dot or more, Color of 65536 or more (recommended: 1280×1024 dot or more)

[WindowsVISTA]

OS:	Windows Vista[Business/HomePremium] (64bit edition is excluded.)
CPU:	Pentium4 3GB or more
Memory:	1GB or more (recommended: 2GB or more)
Hard disk capacity:	Free space of 50MB or more (recommended: 1GB or more, 7200rpm or more)
Display:	1024×768 dot or more, Color of 65536 or more (recommended: 1280×1024 dot or more)

5. Models and External Dimensions

Main Unit

MX100

Model	Suffix Code		Description
MX100			Main module
Software language	-E		English (with MX100 standerd software)
Supply voltage	-1		100 VAC-240 VAC
Power supply inlet and power supply cord		D	3-pin power intel with UL/CSA cable
		F	3-pin power intel with VDE cable
		R	3-pin power intel with SAA cable
		Q	3-pin power intel with BS cable
		H	3-pin power inlet with CCC cable
		W	Screw terminal (power supply cord is not attached)
Options	/DS		Dual save function

MW100

Model	Suffix Code		Added Specifications Code	Description
MW100				Main module *1, 2
Language	-E			English (comes with MW100 Viewer Software)
Supply voltage	-1			100 VAC-240 VAC
	-2			12 to 28 VDC, with AC adapter *3
	-3			12 to 28 VDC, without AC adapter *4
Power input type and power supply cord		D		AC power: 3-pin power inlet with UL/CSA cable DC power: Screw terminal, UL/CSA cable for AC adapter
		F		AC power: 3-pin power inlet with VDE cable DC power: Screw terminal, VDE cable for AC adapter
		R		AC power: 3-pin power inlet with SAA cable DC power: Screw terminal, SAA cable for AC adapter
		Q		AC power: 3-pin power inlet with BS cable DC power: Screw terminal, BS cable for AC adapter
		H		AC power: 3-pin power inlet with GB (CCC) cable DC power: Screw terminal, GB (CCC) cable for AC adapter
		W		Screw terminal (does not come with a power supply cord) *3, 4
Options			/C2	RS-232 communication interface *5, 6
			/C3	RS-422-A/485 communication interface *5, 6
			/M1	MATH functions *6, 7
			/M3	Report mathematical function
			/SL1	10-CH Quick Start Package
			/SL2	20-CH Quick Start Package
			/SL3	30-CH Quick Start Package

*1 CF (compact flash) card not included.
*2 Modbus/TCP function comes standard
*3 "W" cannot be selected with "-2"
*4 With -3, only W (screw terminal) can be selected
*5 /C2 and /C3 cannot be selected together.
*6 /C2 or /C3 must be selected when using the Modbus/RTU slave function.
Also, "/M1" must be selected for use of the Modbus/RTU master function.
*7 /M1 must be selected when using the Modbus/TCP client function.

Accessories

Model	Suffix Code	Description
772061		10 ch screw (M4) terminal block (RJC included) *1
772062		Cable between input module and screw terminal blocks *2
Cable length	-50	50 cm cable
	-100	100 cm cable
772063		Plate with clamp terminals (RJC included) *3
772064		Clamp terminal *4

*1 772061 is only compatible with the MX110-UNV-M10 (10-CH, Medium Speed Universal Input Module), MX114-PLS-M10 (Pulse Input Module), MX115-D05-H10 (10-CH High-Speed 5 V DI Module), and MX115-D24-H10 (10-CH High-Speed 24 V DI Module)
*2 772062 is only compatible between the MX110-UNV-M10 (10-CH, Medium Speed Universal Input Module) and screw terminal block (772061), MX114-PLS-M10 (Pulse Input Module) and screw terminal block (772061), MX115-D05-H10 (10-CH High-Speed 5 V DI Module) and screw terminal block (772061), and MX115-D24-H10 (10-CH High-Speed 24 V DI Module) and screw terminal block (772061).
*3 772063 is only compatible with the MX110-UNV-M10 (10-CH, Medium Speed Universal Input Module), MX114-PLS-M10 (Pulse Input Module), MX115-D05-H10 (10-CH High-Speed 5 V DI Module), and MX115-D24-H10 (10-CH High-Speed 24 V DI Module).
*4 772064 is only compatible with the MX110-UNV-H04 (4-CH High-Speed Universal Input Module).

Model	Description
772065	Clamp terminal *5
772066	Connector cover for base plate
772067	Plate with clamp terminals *6
772068	Plate with clamp terminals (built-in bridge, 120 Ω) *7
772069	Plate with clamp terminals (built-in bridge, 350 Ω) *8
772080	Plate with screw (M3) terminals (RJC included) *9
772081	Plate with built-in shunt resistance (10 Ω) *10
772082	Plate with built-in shunt resistance (100 Ω) *10
772083	Plate with built-in shunt resistance (250 Ω) *10

*5 772065 is only compatible with MX120-VA0-M08 (8-CH AO module), MX120-PWM-M08 (8-CH PWM output module), and the MX120-MKC-M10 (10-CH DO module).
*6 772067 is only compatible with the MX110-V4R-M06 (6-CH Medium-Speed 4-Wire RTD Resistance Input Module).
*7 772068 is only compatible with MX112-B12-M04 and MX112-B35-M04 (4-CH, Medium-Speed Strain Input Module).
*8 772069 is only compatible with MX112-B35-M04 and MX112-B12-M04 (4-CH, Medium-Speed Strain Input Module).
*9 772080 is only compatible with MX110-UNV-M10 (10-CH, Medium Speed Universal Input Module), MX114-PLS-M10 (10-CH Pulse input Module), MX115-D05-H10 (10-CH High-Speed 5 V DI Module), and MX115-D24-H10 (10-CH High-Speed 24 V DI Module).
Includes terminal cover. Note 3 Common to b terminals (2 terminals) for RTD.
*10 772081-772083 are only compatible with MX110-UNV-M10 (10-CH Medium-Speed Universal Input Module).

Part Name	Model	Description
Shunt resistor (for clamp terminal)	438920	250 Ω ±0.1%
	438921	100 Ω ±0.1%
	438922	10 Ω ±0.1%
Shunt resistor (for screw (M4) clamp terminals)	415920	250 Ω ±0.1%
	415921	100 Ω ±0.1%
	415922	10 Ω ±0.1%
Adapter for compact flash memory card	772090	
Compact flash memory card	772091	128 MB
	772092	256 MB
	772093	512 MB
	772094	1 GB

Input/Output Modules

Model	Suffix Code		Added Specifications Code	Description
MX110				Analog Input Modules
Input type	-UNV			DCV/TC/DI/3-wire RTD*1
	-V4R			DCV/DI/4-wire RTD/Ω*1
	-VTD			DCV/TC/DI
Measurement interval and number of channels		-H04		4-CH, high-speed (shortest measurement interval: 10 ms)
		-M06		6-CH, medium-speed (shortest measurement interval: 100 ms) *1
		-M10		10-CH, medium-speed (shortest measurement interval: 100 ms) *2
		-L30		30-CH, Medium speed (shortest measurement interval: 500 ms)
Options			/NC	No plate with clamp terminals*2
			/H3	M3 screw terminals*4

*1 -M06 must be selected if -V4R is selected. Also, the -M06 specification when selecting -UNV cannot be made.
*2 With NC, only -M10 can be selected.
*3: -L30 must be selected if -VTD is selected. Also, the -L30 specification when selecting -UNV and -V4R cannot be made.
*4: With/H3, only-L30 can be selected.

Model	Suffix Code		Description
MX112			Strain Input Module
Input type	-B12		Internal bridge resistance: 120 Ω
	-B35		Internal bridge resistance: 350 Ω
	-NDI		NDIS connector for connection to external bridge head and strain gauge type converters
Measurement interval and number of channels		-M04	4-CH, medium-speed (shortest measurement interval: 100 ms)

Model	Suffix Code		Added Specifications Code	Description
MX114				Pulse input module
Input type	-PLS			Pulse input
Measurement interval, number of channels		-M10		10-CH, Medium speed (shortest measurement interval: 100 ms)
			/NC	Without clamp terminal block with plate

Note: MX100 can use only API (MX190).

Model	Suffix Code		Added Specification Code	Description
MX115				Digital Input Module
Input type	-D05			Non-voltage contact, level (5 V logic), and open collector
	-D24			24 V logic
Measurement interval and number of channels		-H10		10-CH, high-speed (shortest measurement interval: 10 ms)
Options			/NC	No plate with clamp terminals

Model	Suffix Code		Description
MX120			Analog output module
Output type	-VAO		Allows voltage/current output and mixed voltage/current output
	-PWM		Pulse width modulation output
Output update interval and number of channels		-M08	8-CH, output update interval: 100 ms

Model	Suffix Code		Description
MX125			Digital output module
Output type	-MKC		A contact
Output update interval and number of channels		-M10	10-CH, output update interval: 100 ms

Model	Suffix Code	Description
MX150		Base plate
Base type	-1	1 main module, for connecting 1 input/output module
	-2	1 main module, for connecting 2 input/output modules
	-3	1 main module, for connecting 3 input/output modules
	-4	1 main module, for connecting 4 input/output modules
	-5	1 main module, for connecting 5 input/output modules
	-6	1 main module, for connecting 6 input/output modules

Application Software

MX100

Model	Description
MX180	MX100 Standard Software (for connecting to the 1 unit).
WX103	MXLOGGER (for connecting multiple unit, up to 20 units).
MX190	API for MX100 and DARWIN (group of functions for creating programs).

MW100

Model	Description
MW180	MX100 Viewer Software

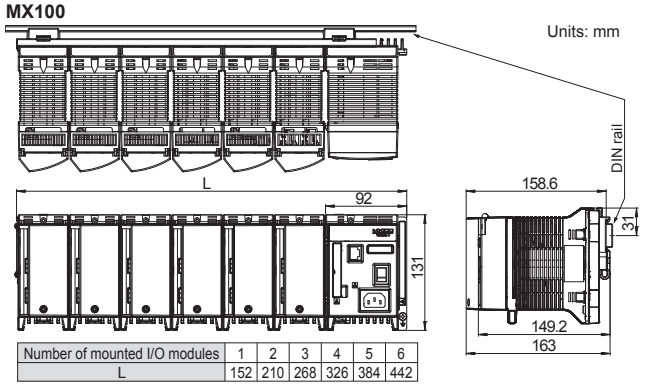
MX100/MW100

Model	Description
WX101	DAQLOGGER (for mixed connections of the MX, DARWIN, MV, DX, and μR)
WX1	Gate MX/MW (for connecting to the DAQLOGGER)

External Dimensions

MX100

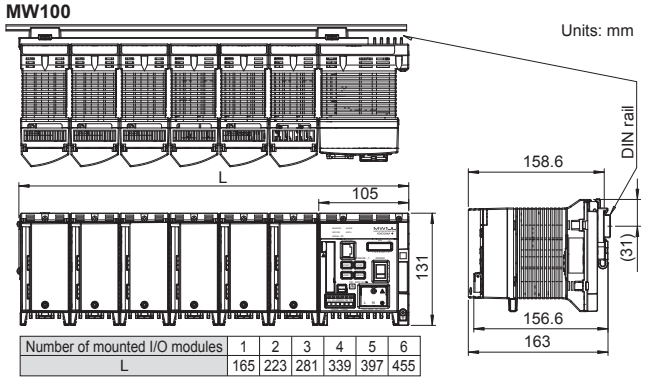
Units: mm



Number of mounted I/O modules	1	2	3	4	5	6
L	152	210	268	326	384	442

MW100

Units: mm



Number of mounted I/O modules	1	2	3	4	5	6
L	165	223	281	339	397	455

See GS 04M10B01-01E for the dimensions of the 772061 and the dimension for installation in upper and lower directions using the DIN rail.