

# MX100/MW100 Specifications

# 1. Main Unit Specifications

# MX100 and MW100 Hardware Specifications

			MX100	MW100	
Logging type			Mainly PC measurement	Mainly standalone measurement and distributed remote measurement	
Maximum number of connecta	able channels (per unit)		60		
Maximum number of connecta	able modules (per unit)			6	
Total maximum number of con	nectable channels		1200 (20 units × 6 modules)	360 (6 units × 6 modules)	
Display monitor system			Through PC software or API	Through a Web browser	
Environmental worthiness (ope	erating temperature range1)		0 to 50°C	$-20$ to $60^\circ\text{C}$ (or $-20$ to $50^\circ\text{C}$ 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 and number of measurable channels, see 4, "Acquisition Speed & Save	interval that can be set differs from module to module. For the measurement Time."	
	Multi-interval		Up to 3 measurement groups/m	easurement intervals can be set	
Display	Display type		2×7-segm	ent 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	
	Number of alarms		2 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 server/client function		_	Y	
	E-mail function (client)		_	Y	
	DHCP/DNS function (client)		_	Y	
	SNTP function (server/client)		—	Y	
	HTTP function (server)		_	Y	
	ModbusTCP function		_	Y (as client, requires /M1)	
	ModbusRTU function		_	Options (as Master, requires /M1)	
	Supported OS, browsers		_	Windows 2000/XP, Internet Explorer 5.5 and 6.0	
	RS-232-C		_	Options	
	RS-422-A/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 com	munication 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)		
Normal operating conditions0	Rated power supply voltage	AC power	100 to 2	240 VAC	
		DC power	-	12 to 28 VDC	
	Power supply voltage	AC power	90 to 2	50 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 7	0 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 s	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 gro	ound, 20 MΩ or more (500 VDC)	
	Supported standards		CSA, UL (CSANF	RTL/C), CE, C-Tick	
Structure	External dimensions (mm)		92 (W) × 131 (H) × 163 (D)	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		Approxim	nately 8 W	
	Clock accuracy		± 100	) ppm	
Application software	Included software	Name	MX100 Standard Software	MW100 Viewer Software	
		OS	Windows NT 4.0, 2000, XP (recommended)	Windows 2000, XP (recommended)	





Bulletin 04M10A01-02E

# 2 Input/Output Module Specifications

4-0	H, Higi	h-Speed U	n	iversal Input	Module	
Module numbe	er		MX110-UNV-H04			
Style number Number of inp	uts		4			
Measurement	interval		10 ms (shortest)			
Types of meas	urement		DC (no	voltage, thermocoupl	e, 3-wire RTD, DI el (5 V logic))	
A/D resolution			± 2	20000/± 6000	51 (0 ¥ logio))	
Power consum	nption		Ap	proximately 3 W		
External dimer	nsions (mm	)	Ap (inc	proximately 57 × 131 cluding terminal cover	× 151 )	
Terminal type			Cla	amp, removable on eac	sh CH	
Applicable cal	ble size	input terminale	0.2	to 2.5 mm <sup>2</sup> (AWG 24 t	o 12)	
voltage	Between	n input terminals	370	00 VACrms (50/60 Hz),	for one minute	
Normal mode	and gro	und DL (laval)	1.0	times the range ratio	or loop (50/60 Hz	
voltage	DCV, IC	, DI (level)	pea	ak value including sign	als)	
	RTD 100	Ω	50	mV peak		
Normal-mode	For integ	25, 50 12 gral time of 16.67	ms	or more, 40 dB or mor	e (50/60 Hz ± 0.1%)	
rejection ratio	50/60 H	z not rejected wh	en t	the integral time is 1.6	7 ms.	
Common-mod	e voltage		600 ins	0 VACrms (50/60 Hz), i ulation	reinforced (double)	
Common-mod	e When th	e integral time is	16.	67 ms or more, 120 dB	3 or more	
rejection ratio	When th	e integral time is	1.6	7 ms or more, 80 dB o	r more	
Common-mode	e voltage be	etween channels	250 ins	0 VACrms (50/60 Hz), i ulation	reinforced (double)	
Measurement he accuracy a umidity: 55±1 varm-up time:	Ranges ar applies to st 0% RH, su at least 30	Id Accuracies andard operating pply voltage: 90 t minutes, without a	g co o 2 adv	onditions: ambient tem 50 VAC, power frequer erse conditions such a	p: 23±2°C, ambient ncy: 50/60 Hz ±1%, as vibrations.	
Input	Туре	Rated measurem range	ent	accuracy integral time 16.67 ms or more	accuracy integral time 1.67 ms	
	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 r	mV	±(0.05% of rda	- 20 ulgits)	
	200 mV	-200.00 to 200.00 mV		+ 2 digits)		
DC voltage	2 V	-2.0000 to 2.0000 V		±(0.05% of rdg. + 5 digits)	+(0.1% of rda	
	6 V	-6.000 to 6.000 V			+ 10 digits)	
	20 V	-20.000 to 20.000 V		±(0.05% of rdg. + 2 digits)		
	100 V	- 100.00 to 100.00 V				
	R*1	0.0 to 1760.0°C		±(0.05% of rdg. + 1°C)	±(0.1% of rdg. + 4°C)*10	
	5-		-	However, R, S: 0 to 100°C: +3 7°C	However, R,S: 0 to 100°C: +10°C	
	B*1	0.0 to 1820.0°C		100 to 300°C: ±1.5°C B: 400 to 600C: ±2°C Less than 400°	100 to 300*C: ±5°C B: 400 to 600°C: ±7°C Less than 400°	
Thermocouple (excludes RJC	K*1	-200.0 to 1370.0°C		guaranteed ±(0.05% of rdg. + 0.7°C) However, -200 to - 100°C:	guarantee ±(0.1% of rdg. + 3.5°C)* <sup>10</sup> However, -200 to -100°C:	
when burnout				±(0.05% of rdg. +1°C)	±(0.1% of rdg. + 6°C)*10	
IS OFF)	E*1	-200.0 to 800.0 -200.0 to 1100.0	°C I°C	±(0.05% of rdg. + 0.5°C)	±(0.1% of rdg. + 2.5°C)*10	
	T *1	-200.0 to 400.0	°C	However, J, L: -200 to -100°C:	However, -200 to -100°C:	
	L *2 U	-200.0 to 900.0°	2° 2°	±(0.05% of rdg. + 0.7°C)	±(0.1% of rdg. + 5°C)*10	
	N *3	-200.0 to 1300.0°C		±(0.05% of rdg.	±(0.1% of rdg.	
	W *4	0.0 to 2315.0°C		±(0.05% of rdg.	±(0.1% of rdg. + 7°C	
	KDue A75-	0.0 to 200.0 K	_	+ 1°C) ±(0.05% of rdg.	±(0.1% of rdg.	
	Pt100 *5	-200.0 to 600.0 K	°C.	+ 0.7 K)	+ 3.5 K)*10	
	JPt100 *5	-200.0 to 550.0	°Č			
	Pt100 (high	- 140.00 to				
3-wire RTD (Mesurement current 1 mA)	JPt100 (high resolution)	- 140.00 to 150.00°C		±(0.05% of rdg. + 0.3°C)	±(0.1% of rdg. + 1.5°C) *10	
	Ni100 SAMA *6	-00.0 to 250.0%	С			
	Ni100 DIN	-60.0 to 180.0%	с			
	Ni120 *7	-70.0 to 200.0%	С			
	Pt100 *5 JPt100 *5	-200.0 to 250.0 -200.0 to 250.0	°C °C			
	Pt100 (high resolution)	- 140.00 to 150.00°C		±(0.05% of rdg.	±(0.1% of rdg.	
	JPt100 (hiah	-140.00 to		+ 0.3°C)	+ 1.5°C)*10	
0	resolution)	150.00°C	~			
3-wire HTD (Measurement	Cu10 GE	-200.0 to 300.0	v c			
current 2 mA)	*8 Cu10 L&N	200.0 10 300.0	~			
	*8	-200.0 to 300.0	·U	±(0.1% of rdg. + 0.7%	±(0.2% of rdg. + 2.5%) *10	
	WEED *8	-200.0 to 300.0	°C	10.70)	12.3 ()	
	Cu10 BAILEY *8	-200.0 to 300.04	°C			
	J263B	0.0 to 300.0 K		±(0.05% of rdg. + 0.3 K)	±(0.1% of rdg. + 1.5K)	
-	Level	Vth = 2.4 V		Threshold level a	accuracy ±0.1 V	
ы	Non!					

L: re-cum, LINN471UU: CU-CAN, DIN 43710 N: Microsil-Neil, EG 594, DN IEG 594, DN IEG 594 W: W SKEL-W 20%Re (Hoskins Mfg Co),PH00: JIS C 1604-1989, JIS C 1606-1989, IEC 751, DN IEC 751, VID/100: JIS C 1604-1981, JIS C 1606-1989 SAMADIN MGGRAW EDISON COMPANY \*3 \*4 \*5

\*6 \*7 \*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

WEED: - 20.0 to 200.0°C/C010 BAILET: - 20.0 to 2000 C To be determined at the measurement current of 1 mA and within the threshold level is approximately 0.8 V. Setting of the integral time of 1.67 mx is not available for the MX100 \*9 rent of 1 mA and within the range of 2 V. The

## \*10

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

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

Supported H ID: P (10) (high noise resistance), 94 (high noise resistance), Cu10 (at 20°c, a = 0.03392, Cu10 (at 20°c, a = 0.0033), Cu26 (at 0°c, a = 0.00425), Cu35 (at 0°c, a = 0.00426), Cu30 (at 0°c, a = 0.00425), P25, Cu10 GE (high resolution), Cu10 L&N (high resolution), Cu10 WEED (high resolution), Cu10 BAILEY (high resolution) The MW100 also supports some of GOST ranges.

MX110-UNV-M10 lodule numbe Style numbe tyle number Number of inputs Jumber of inp 10 Measurement interva 100 ms (shortest) Types of meas DC voltage, thermocouple, 3-wire RTD, DI (non-voltage contact, level (5 V logic)) A/D resolution ± 20000/± 6000 Approximately 1.2 W Power consumption Approximately 57 × 131 × 151 (including terminal cover) Terminal types lamp, plate with removable clamp terminals 0.14 to 1.5 mm<sup>2</sup> (AWG 26 to 16) Applicable ca Withstand voltage 1000 VACrms (50/60 Hz), for one minute Between input term 3700 VACrms (50/60 Hz), for one minute Between input te and ground DCV TC DI (level .2 times the range rating or less (50/60 Hz, beak value including signals) Normal-mode voltage RTD 100 Ω 50 mV peak RTD 10, 25, 50 Ω 10 mV peak Normal-mode For integral time of 16.67 ms or more, 40 dB or more (50/60 Hz  $\pm$  0.1%) 50/60 Hz not rejected when the integral time is 1.67 ms. ced (double) 600 VACrms (50/60 Hz), reinfo tage Common-mode When the integral time is 16.67 ms or more, 120 dB or more rejection ratio When the integral time is 1.67 ms or more, 80 dB or more Common-mode voltage between channels 1200 VACrms (50/60 Hz) urement 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. Measurement ccuracy integral time 16.67 ms or more Measurement ted meası range Input Туре curacy integ 1.67 m -20.000 to 20.000 mV ±(0.1% of rdg. 25 digits) 20 mV ±(0.05% of rdg. + 5 digits) 60.00 to 60.00 -200.00 to 200.00 mV 60 mV ±(0.05% of rdg. + 2 digits) 200 mV ±(0.05% of rdg. + 5 digits) 2 V DC voltage ±(0.1% of rdg. + 10 digits) 6 V 6.000 to 6.000 -20.000 to 20.000 V ±(0.05% of rdg. + 2 digits) 20 V 100 V - 100.00 to 100.00 V ±(0.05% of rdg. + 1°C) However, R, S: 0 to 100°C: ±3.7°C 100 to 300°C: ±1.5°C ±(0.1% of rdg. + 4°C However, R, S: 0 to 100°C: ±10°C 100 to 300°C: ±5°C B' R' S' 0.0 to 1760.0°C 100 to 300 0. \_\_\_\_ B: 400 to 600°C: ±7°C 1 ass than 400° 100 to 300°C: ±1.5°C B: 400 to 600°C: ±2.5°C Less than 400° C: accuracy not guaranteed ±(0.05% of rdg. + 0.7°C) However, −200 to −100°C: ±(0.05% of rdg. + 1°C) в\* 0.0 to 1820.0°C Less than 400° C: accuracy not guaranteed ±(0.1% of rdg. + 3.5°C) K \*1 -200.0 to 1370.0% -200 to -100°C: (0.1% of rdg. + 6°C RJC accurac not included ±(0.05% of rdg. + 0.5°C) + Е -200.0 to 800.0% ±(0.1% of rdg. 1+ 2.5°C) -200.0 to 1100.09 J 0.5°C) However, J, L: -200 to -100°C: ±(0.05% of rdg. + 0.7°C) However, -200 to -100°C: (0.1% of rdg. + 5° -200.0 to 400.0% L\* ±(0.05% of rdg. 0.7°C) ±(0.1% of rdg. + 3.5°C) N \*3 0.0 to 1300.0°C ±(0.05% of rdg. + W \*4 ±(0.1% of rdg. + 7°C 0.0 to 2315.0°C ±(0.05% of rdg. + 0.7 K) ±(0.1% of rdg. + 3.5 K) PvsAu7F 0.0 to 300.0 K Pt100 ±(0.05% of rdg. + 0.3°C) ±(0.1% of rdg. + 1.5°C) JPt100 Pt100 (high resolutio -200.0 to 550.0° - 140.00 to 150.00°C ±(0.05% of rdg + 0.3°C) ±(0.1% of rdg. + 1.5°C) JPt100 (high -140.00 to Ni100 SAMA \*6 -200.0 to 250.0°C 100 DI ±(0.1% of rdg. + 1.5°C) ±(0.05% of rdg + 0.3°C) 4-wire RTD -60.0 to 180.0°C wire RTD Ni120 ' -70.0 to 200.0°C current 1 mA Pt50 \*5 Cu10 GE -200.0 to 300.0°C Cu10 L&N -200.0 to 300.0°C ±(0.1% of rdg. + 2°C) ±(0.2% of rdg. + 5°C Cu10 WEED \*8 -200.0 to 300.0°C Cu10 BAILEY \*8 -200.0 to 300.0°C ±(0.05% of rdg. + 0.3 K) ±(0.1% of rdg. + 1.5 K) J263B 0.0 to 300.0 K Level Vth = 2.4 V ±0.1 V ss: ON, 100 kΩ o . 1 kO i · OFF DI \*2 
 DI
 Non-voltage (natal)
 1 kd α r less: ON, 100 kΩ α r more: OFF (parallel capacity is 0.01 μF or less)<sup>™</sup>

 R, S, B, K, E, J, T, ANSI, IEC 584, DNI IEC 584, JIS C 1602-1981
 L i=FocJNI, IDNI 3710U; C-CuAIU, DNI 43710

 N: Norosil-Nisil, IEC 584, DNI IEC 584
 W
 SSR-40 kg/ssR-40 kg/ \*3 \*4 \*5 \*1 \*2 \*3 \*4 \*5 \*6 PISC. US C 1004-1961, vs v v DINIEC 751/PHOTO. JUS C 1604-1981, JUS C 1606-1969 SAMADIN McGRAW EDISON COMPANY 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 BALEY, – 20.0 to 250.0°C 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. \*6 \*7 \*9 \*Special Input Ranges (MX100 can be used in MXLOGGER)

10-CH, Medium-Speed Universal Input Module

Rated Measurement accuracy ntegral time 16.67 m Measurement Input Type me accuracy ntegral time 1.67 ms range 
 range
 Integrat the root in more

 0.000 to 60.000 mV
 ±(0.05% of rdg.+ 20 digits)

 −1.0000 to 1.0000 V
 ±(0.05% of rdg.+ 2 digits)

 0.0000 to 6.0000 V
 ±(0.05% of rdg.+ 2 digits)
 ±(0.1% of rdg.-100 digits) ±(0.1% of rda.-60 mV Voltage 1 V ±(0.1% of rdg.+ 10 digits) ±(0.1% of rdg.+ 100 digits) 6 V

upported thermocouple: PLATINEL, PR40-20, NINMo, WRe3-25, WWR62-26, NIXMG(14) upported RTD: Cu10 (at 20°C, a = 0.00392), Cu10 (at 20°C, a = 0.00393), Cu26 (at 0°C, a = 0.00393), Cu26 (at 0°C, a = 0.00426), Cu25 (at 0°C, at 0°C

he MW100 also supports some of GOST ranges

#### 100 ms (shortest) easurement inter DC voltage, 4-wire resistance temperature detector, 4-wire resistance, DI (non-voltage contact, level (5 V logic)). pes of measure A/D resolution ± 20000/± 6000 Approximately 1.2 \ ower consumption xternal dimensions (r Approximately 57 × 131 × 151 (including erminal cover) erminal types Clamp, plate with removable clamp terminals Applicable cab 0.14 to 1.5 mm2 (AWG 26 to 16) (DCV, DI range) 1000 VACrms (50/60 Hz) for one minute /ithstand en input ter oltage (RTD or resistance range), 620 VACrms (50/6/ Hz) for one minute 3700 VACrms (50/60 Hz) for one minute een input termina ind gro DCV, DI (level) 1.2 times the range rating or less (50/60 Hz, peak value including signals) Normal-mode voltage $2~\text{k}\Omega$ resistance, RTD 100/500/1000 $\Omega$ 50 mV peak 200 Ω resistance, RTD 10/25/50 Ω 10 mV peak 20 $\Omega$ res For integral time of 16.67 ms or more, 40 dB or more (50/60 Hz ± 0.1%) Vormal-mode ejection ratio 50/60 Hz not rejected when the integral time is 1.67 ms ommon-mode voltage 600 VACrms (50/60 Hz), reinforced (double) insulation ommon-mode When the integral time is 16.67 ms or more, 120 dB or more When the integral time is 1.67 ms or more, 80 dB or more ommor For voltage/DI 120 VACrms (50/60 Hz) tage b For RTD/resistance 50 VACrms (50/60 Hz) Measurement Ranges and Accuracies he accuracy applies to standard operating conditions: ambient temp: 23±2°C, ambient middly: 55±10% RH, supply voltage: 90 to 250 VAC, power frequency: 50/60 Hz ± 1%, arm-up time: at least 30 minutes, without adverse conditions such as vibrations. Measurer The acc humidity Measurement accuracy integral time 16.67 ms or mor-Rated measurement range Mea urement integral tim Input Туре ccuracy int 1.67 ±(0.1% of rdg. + 25 digits) -20.000 to 20.000 mV 20 mV ±(0.05% of rdg. + 5 digits) 60 mV 60.00 to 60.00 ±(0.05% of rdg. + 2 digits) 200 mV 200.00 to 200.00 mV -2.0000 to 2.0000 V ±(0.05% of rdg. + 5 digits) DC voltage 2 V ±(0.1% of rdg. + 10 digits) 6 V -6.000 to 6.000 V -20.000 to 20.000 V 20 V ±(0.05% of rdg. + 2 digits) -100.00 to 100 V 100.00 Level Vth = 2.4 V hreshold level accuracy ±0.1 V DI 1 kΩ or less: ON, 100 kΩ or more: OFF (parallel capacity is 0.01 μF or less) \* on-voltaç contact 200.0 to 600.0°C Pt100 \* JPt100 \* 200.0 to 550.0° Pt100 (high - 140.00 to 150.00°C JPt100 (high -140.00 to 150.00°C ±(0.05% of rdg. + 0.3°C) ±(0.1% of rdg. + 1.5°C) Ni100 SAMA -200.0 to 250.0°C li100 DIN ire RT[ -60.0 to 180.0°C

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

MX110-V4R-M06

cuent: 1 m/ 2 kΩ ±(0.05% of rdg. + 3 digits) ±(0.1% of rdg. + 10 digits) 0.0 to 2000.0 Ω neasuemen cuent: 0.25 mA)

±(0.1% of rdg. + 2°C) ±(0.2% of rdg. + 5°C

±(0.1% of rdg. + 1.5 K)

±(0.1% of rdg. + 1.5°C)

±(0.1% of rdg. + 25 digits)

±(0.1% of rdg. + 15 digits)

±(0.05% of rdg. + 0.3 K)

±(0.05% of rdg. + 0.3°C)

±(0.05% of rdg. + 7 digits)

±(0.05% of rdg. + 3 digits)

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. PK5 JJS C 160-198J, JJS C 1606-1986P,1100. JJS C 1604-1989, JJS C 1606-1989, IEC 751, DIN IEC 751, DP1100. JJS C 1604-1981, JJS C 1606-1989 SMAQDIN MCGRAWE DISON COMPANY Guaranteed accuracy range C 21/0 EE = 84.4 to 170.0°C/C/U10 L&N: =75.0 to 150.0°C/C/U10 WEED: to 20.0 to 250.0°C/C/U10 BALEY = 20.0 to 250.0°C mP Ef000 resistance table is Ph100 x 10.

#### 

Ni120

Pt50 \*2 Cu10 GE

Cu10 L&N

Cu10 WEED \*5

BAILEY \*

J263B

Pt500 \*6

Pt1000 \*6

20 Ω

uent: 1 m 200 Ω

-200.0 to 550

-200.0 to 300.0°C

-200.0 to 300.0°C

-200.0 to 300.0°C

-200.0 to 300.0°C

0.0 to 300.0 K

-200.0 to 600.0°C

-200.0 to 600.0°C

0.000 to 20.000 Ω

0.00 to 200.00 Ω

irrent 1 m

rent 0.25 mA)

4-wire

esistance

oposial inpartialigos (inverso dan be doca in invezo daelli)						
Input	Туре	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: 0.00425), C resolution), resolution)	Cu10 (at 20 u53 (at 0°C, Cu10 L&N (	°C, a = 0.00392), Cu1 a = 0.00426035), Cu1 high resolution), Cu10	0 (at 20°C, a = 0.00393), 100 (at 0°C, a = 0.00425) WEED (high resolution),	Cu25 (at 0°C, a = , Pt25, Cu10 GE (high and Cu10 BAILEY (high		

The MW100 also supports some of GOST ranges

	4-CH Medi	um-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 (mr	n)	Approximately $57 \times 131 \times 151$ (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 mm <sup>2</sup> (AWG 26 to 16)		
Withstand voltage (-NDI is not applicable)	Between input terminals and ground	2300 VACrms (50/60 Hz), for one minute, 30 VACrms or less between channels		
Normal-mode rejection	For integral time of 16.67	7 ms or more, 40 dB or more (50/60 Hz ±0.1%)		
ratio:	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 When the integral time is 16.67 ms or		16.67 ms or more, 120 dB or more		
rejection ratio	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.

		Integral time 16	6.67 ms or more	Integral time 1.67 ms		
Measurement range	Measuring range	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	

Exector plantaria (La Caractary (B12, e35): ± 0.01% ± 55pm°C Imputioupt resistance: 1M, or more Effect of winn greatistance (Norm or exection for winn greatistance (with -B12 or -B35), Depends on the gauge resistance. For -NDI, 50 ppm of rdg /\_ (using remote sensing wine). Temperature coefficient: ± 100 ppm of range°C

	8-CH, Med	ium-Speed PWM Output Module	
Module number		MX120-PWM-M08	
Style number		\$2	
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	
Power consumption		Approximately 2.5 W	
External dimensions (mr	n)	Approximately 57 × 131 × 151 (including terminal cover)	
Terminal type		Clamp. Removable in units of 4 ch.	
Applicable cable size		0.08 to 2.5 mm <sup>2</sup> (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	

	10-CH, Medi	um-Speed Digital Output Module
Module number		MX125-MKC-M10
Style number		S1
Number of outputs		10
Contact mode		A contact (SPST)
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
External dimensions (mr	n)	Approximately 57 × 131 ×151 (including terminal cover)
Terminal type		Clamp. Removable in units of 5 ch.
Applicable cable size		0.08 to 2.5 mm <sup>2</sup> (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)

# 3. Acquisition Speed and **Recording Time**

Table of Shortest Measurement Intervals (when MX110)

MAX. number of channels MX100 MW100 interval 10 ms 24 ch 10 ch 120 ch \*2 300 ch \*2 500 ch 600 ch 50 ms 30 ch 100 ms 200 ms 500 ms 60 ch 1 s 1200 ch

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

performance of the PC. <<u>eExample PC.</u> CPU. Pentium 4, 3.2 GHz Memoy: 10B OS: Windows 2000 Disk space: 160 GB Communication interface: Ethernet 100Base-TX

\*1 When measuring TC and RTD, measurment interval is 50 ms. \*2 Maximum number of channels when using MXLOGCER. When as a standalone, 24 ch at 50 ms and 60 ch at 100 ms.

Storage capacity in terms of time by CF card size Select the CF card according to the required data recording

Channels	interval	128 MB	512 MB	1 GB	2 GB
	10 ms	8.8	1.4	2.8	5.6
	100 ms	3.7	14.8	28.9	57
10 ob	500 ms	18.5	74	144	288
10 CH	1 s	37	148	289	578
	2 s	74	296	578	1156
	5 s	185	740	1446	2892
	100 ms	1.8	7.4	14.4	28.8
	500 ms	9.2	37	72.3	144
20 ch	1 s	18.5	74	144	288
	2 s	37	148	289	578
	5 s	92.5	370	723	1445
	100 ms	14.8	2.4	4.8	9.5
	500 ms	3	12.3	24.1	48.2
60 ch	1 s	6.1	24.6	48.2	96.4
	2 s	12.3	49.3	96.4	192
	5 s	30.8	123	241	482
kote that saving to the CF card is performed arbitrarily on he MX100 when the /DS option is installed (on the standard MX100, the card is used for automatic backup when communications are disconnected).					

	10-CH, High	-Speed 5 V Digital Input Module
Module number		MX115-D05-H10
Style number		S1
Number of inputs		10
Measurement interval		10 ms (shortest)
Types of measurement		Non-voltage contact, level (5-V logic), and open collector
Minimum detection puls	e width	Twice the sampling interval or more
Input threshold level		
Non-voltage contact or o	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	9	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 (mr	n)	Approximately 57 × 131 × 151 (including terminal cover)
Terminal type		Clamp. Plate with removable clamp terminals
Applicable cable size		0.14 to 1.5 mm <sup>2</sup> (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)

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

Module number		MX115-D24-H10
Style number		\$2
Number of inputs		10
Measurement Interval		10 ms (shortest)
Types of measurement		Level (24 V logic)
Minimum detection puls	e 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 (mr	n)	Approximately 57 × 131 × 151 (including terminal cover)
Terminal type		Clamp. Plate with removable clamp terminals removable
Applicable cable size		0.14 to 1.5 mm <sup>2</sup> (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	20 MΩ or more (500 VDC)

## 8-CH, Medium-Speed Analog Output Module

Module number		MX120-VAO-M08	
Style number		\$2	
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	
Maximum allowable	Voltage	-11 V to 11 V	
output range	Current	0 to 22 mA	
Load resistance		Voltage: 5 k Ω or more, current: 600 Ω or less	
Accuracy (at rated output	ut)	± 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 (r output)	equired for current	24 V $\pm$ 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 (mr	n)	Approximately $57 \times 131 \times 151$ (including terminal cover)	
Terminal type		Clamp. Removable in units of 4 ch.	
Applicable cable size		0.08 to 2.5 mm <sup>2</sup> (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)	

# 4. Accessories

#### Base plate MX150

Accessories





 Connector cover AC adapter AC adaptor for the DC power model

V. (772075) g temperature range: 0-40°C

	Module no.	Name	Description
1	772061	M4 external screw terminal block	RJC included. Used in combination with 772062. Compatible with MX110-UNV-M10, MX115-DH10
2	772062	Cable between input module screw terminal blocks	Used in combination with 772061. Compatible with MX110-UNV-M10 and MX115-DH10
3	772063	Clamp terminal block with plate	RJC included. Compatible with MX110-UNV-M10 and MX115-DH10
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
1	772068	Clamp terminal block with plate	120 Ω bridge built in. Compatible with MX112-BM04
8	772069	Clamp terminal block with plate	350 Ω bridge built in. Compatible with MX112-BM04
9	772080	M3 plate with screw terminals	RJC included. Compatible with MX110-UNV-M10, MX115-DH10
10	772081	Plate with built-in shunt resistance (10 Ω)	RJC included. Compatible with the MX110-UNV-M10
1	772082	Plate with built-in shunt resistance (100 Q)	RJC included. Compatible with the MX110-UNV-M10
(12)	772083	Plate with built-in shunt resistance (250 $\Omega$ )	RJC included. Compatible with the MX110-UNV-M10

# 5. Models and External Dimensions

### Main Unit MX100

Model	Suffix Codo		do	Description	
MV100	Sullix COC		ue	Main madula	
	5				
Software language	-E				English (with MX 100 standerd software)
Supply voltage		-1			100 VAC-240 VAC
Power supply inlet and power D		D		3-pin power intel with UL/CSA cable	
supply cord	F		F		3-pin power intel with VDE cable
R Q H W		R Q		3-pin power intel with SAA cable	
				3-pin power intel with BS cable	
		Н		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	-3		12 to 28 VDC, without AC adapter *4	
Power input type and power supply cord		wer	r D A 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	
			н		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		

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

mpuv	Output	wouldes	

Model	Model Suffix Code		Added Specifications Code	Description	
MX110	MX110			Analog Input Modules	
Input type	-UNV			DCV/TC/DI/3-wire RTD*1	
-V4R				DCV/DI/4-wire RTD/Q*1	
Measurement inter	val and	-H04		4-CH, high-speed (shortest measurement interval: 10 ms)	
number of channe	ls	-M06		6-CH, medium-speed (shortest measurement interval: 100 ms) *1	
		-M10		10-CH, medium-speed (shortest measurement interval: 100 ms) *2	
Options			/NC	No plate with clamp terminals*2	
*1 -M06 must be sele *2 With NC, only -M1	ected if -V 0 can be	4R is sele selected.	cted. Also, the -M	06 specification when selecting -UNV cannot be made.	
Model		Suffix	Code	Description	
MX112				Strain Input Module	
Input type	-B12			Internal bridge resistance: 120 Q	
	-B35			Internal bridge resistance: 350 Ω	
	-NDI			NDIS connector for connection to external bridge head and strain gauge type converters	
Measurement inter of channels	val and	number	-M04	4-CH, medium-speed (shortest measurement interval: 100 ms)	
Model	Model Suffix Code		Added Specification Code	Description	
MX115	MX115			Digital Input Module	
Input type	-D05			Non-voltage contact, level (5 V logic), and open collector	
	-D24			24 V logic	
Measurement interval and -H10 number of channels			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	
1	6			1 main marking for a superstine Cline of a start data and the	

#### Accessories

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

 IClamp terminal "
IClamp cerminal bic mathematic cerminal bic (72061)
IClamp cerminal bic mathematic cerminal bic (72061)
IClamp cerminal biclamp cerminal bic (72061)
IClamp cermina \*2

- \*3
- \*4



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Accessories

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 $\Omega$ ) * <sup>10</sup>
772083	Plate with built-in shunt resistance (250 Ω) *10
5 772065 is only com	patible with MX120-VA0-M08 (8-CH AO module), MX120-PWM-M08 (8-CH PWM output module), and the

772065 is only compatible with MX120-VAC-M08 (8-CH AO module), MX120-PWM-M08 (8-CH PWM output module), and the MX120-MKC-M10 (10-CH D0 module).
772067 is only compatible with the MX110-V4P-M06 (6-CH Medium-Speed 4-Wire RTD Resistance Input Module).
772068 is only compatible with MX112-B12-M04 and MX112-B35-M04 (4-CH, Medium-Speed Strain Input Module).
772069 is only compatible with MX112-B12-M04 and MX112-B12-M04 (4-CH, Medium-Speed Strain Input Module).
772069 is only compatible with MX112-B35-M04 (4-CH, Medium-Speed Strain Input Module).
772069 is only compatible with MX115-B24-H10 (10-CH High-Speed 24 VDI Module). MX115-D26-H10 (10-CH High-Speed 24 VDI Module).
772080 is only compatible with MX115-D24-H10 (10-CH High-Speed 24 VDI Module).
772081 is 0.5 Cmm on to b terminals (or 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
	772004	1 GB

## **Application Software**

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).
/W100	
Model	Description
MW180	MX100 Viewer Software

# MX100/MW100

F

1X100/10100100	
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



### MW100



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- Before operating the product, read the user's manual thoroughly for proper and safe operation.
- If this product is for use with a system requiring safeguards that directly involve personnel safety, please contact the Yokogawa sales offices.
- This product is not constructed to be explosion-proof.

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