**RM18J****HYBRID RECORDER****OUTLINE**

THE RM18J IS A HYBRID RECORDER ALLOWS DIGITAL PRINTOUT ON ANALOG TREND OR PEN TRACES ON 180 mm WIDE CHART.

THE RM18J OFFERS 288 x 288 mm DIN SIZE PANEL.

**FEATURES**

- CONTACT FREE FEEDBACK POTENTIOMETER AND INPUT SELECTOR
- EASY CHANNEL IDENTIFICATION BY MARK PRINTER
- BOTH TREND & DATA LOGGING PRINTOUTS
- DIELECTRICS STRENGTH OF 2000V BETWEEN POWER INPUT AND GROUND
- ABUNDANCE OF PRINTOUT FUNCTION
- INDIVIDUAL SCALE PLATE
- WIDE RANGE OF POWER SUPPLY VOLTAGE

**SPECIFICATIONS**

**Number of inputs:** 1,2,3,4 pen, 6,12,24,or 30 dot point.

**Type of input:**

**DC Voltage:** 4mVDC min., 20VDC max.

**Direct thermocouple:** K, T, J, E, B, S, R, G, C, N, PR40- 20,PLII,U,L,Au-Fe

**RTD:** Pt100,Pt50,JPt100,Cu10Ω (at 0°C), Cu10Ω (at 25°C), Cu10Ω (at 20°C), Cu10Ω (at 25Ω)

**Current:** 4 ~ 20mA

**Recording width:** 180mm calibrated

**Recording accuracy:** ± 0.5% max.

**Open input protection (option):** Up scale with mV or TC input

**Chart Speed:** 1, 2, 3, 4 pen model ; 1 ~ 3600mm/h , 6,12,24,30 point model ; 1 ~ 1800mm/h

**Chart:** Fold chart standard, 23m long, 210mm width

**Data print color:** Pen models; Black , Dot point models; Purple (Red on alarm)

**Dot print interval:** 2.5/ 5/ 10 s/ch.

**Input sampling:** Pen models ; 125 msec. Dot point models ; 2.5/ 5/ 10 s/ch.

**Cartridge pen:** Disposable felt pen.

**Print head:** Pen models; Wire dot 1 color ribbon cartridge, Dot point models; 6 color ribbon cartridge



**Input impedance:** 10MΩ min. in mV/TC input.

200kΩ min. in mV/TC Input with burn-out.

1MΩ min. in Volt Input.

100Ω in mA Input.

**Source impedance:** 10kΩ max. in mV/TC input.

200Ω max. in mV/TC input with burn-out.

1kΩ max. in Volt input.

10Ω max. per wire in RTD input.

**CMRR:** 140dB min. in 50/60 ± 0.5Hz

**NMRR:** 60dB min. in 50/60 ± 0.5Hz

**Isolation resistance:** Input/ground 500VDC, 20MΩ min.

**Dielectric strength:** Power supply voltage/ ground 2000VAC, 1 minute duration.

input/ground 500VAC, 1 minute duration.

**Rated supply voltage :** 100 ~ 240VAC

**Operating supply voltage range :** 85 ~ 264VAC

**Operating power frequency :** 45 ~ 65Hz

**Allowable instant power failure:** 50ms max.

**Power consumption:** 95VA max.

**Vibration resistance:** 1m/s<sup>2</sup> max., 10 ~ 60Hz

**Shock resistance:** 2m/s<sup>2</sup> max.

**Operating conditions:** -5 ~ 50°C. 35 ~ 85%RH

**Dimensions:** A,B case ; 288(w) x 288(h) x 340(d) mm

C,D case ; 288(w) x 322(h) x 340(d) mm

**Case structure:** Dust-proof

**Mounting:** Panel-mount

Allowable backward inclination : 30°

**Material:** Case --- Steel plate

Door frame --- Aluminum die casting

**Color:** Case --- Metallic silver

Door frame --- Black(Standard)

**Alarm types:** 6 types/ channel (H,HH,L,LL,RH,RL)  
**Drives:** 2 relay drive/alarm set value  
**Alarm output:** 250 V AC, 3 A max. (resistance load)  
125 V DC, 0.5 A max.(resistance load)  
30 V DC, 3 A max.(resistance load)  
**Hysteresis width:** 0.5 ± 0.2 %  
**Setting accuracy:** ± 0.5 %

## MEASUREMENT RANGE & ACCURACY

Reference junction compensation accuracy is not included in digital readout accuracy and recording accuracy. Reference junction compensation accuracy is based on operating conditions:

23 ± 2°C temperature, 55 ± 10%RH humidity,  
85 ~ 264VAC power source, 30 minutes min.  
warm-up time, performance under conditions  
that do not affect instrument operation such as  
vibration resistance and shock resistance.

Reference junction compensation accuracy :

± 1.0°C at R,S,PR40-20,Au-Fe,U,L

± 0.5°C at K,E,J,T,G,C,N

### Resolution:

Range Code	Max Resolution
000 & 001	10uV
002	100uV
003,004,006,007	1mV
005	10mV
008	0.01mA
010-047, 049-058	0.1°C
048	0.1K

Digital readout accuracy: ± (0.2% + 1digit)

Recording accuracy: ± 0.5%

GROUP	CODE	RANGE(*1)	INPUT
DCV	000	-10.0 ~ 10.0 mV	mV
	001	-50.0 ~ 50.0 mV	mV
	002	-200.0 ~ 200.0 mV	mV
	003	-1.0 ~ 1.0 V	V
	004	-5.0 ~ 5.0 V	V
	005	-20.0 ~ 20.0 V	V
	006	0.0 ~ 5.0 V	V
DCA	007	1.0 ~ 5.0 V	V
	008	4.0 ~ 20.0 mA	mA
	009		
TC	010	0.0 ~ 1450.0 °C	R
	011	0.0 ~ 1760.0 °C	R
	012	0.0 ~ 1760.0 °C	S
	013	0.0 ~ 1820.0 °C(*2)	B
	014	0.0 ~ 100.0 °C	K
	015	0.0 ~ 700.0 °C	K
	016	0.0 ~ 900.0 °C	K
	017	-200.0 ~ 100.0 °C	K
	018	-200.0 ~ 400.0 °C	K
	019	-200.0 ~ 650.0 °C	K
	020	-200.0 ~ 1370.0 °C	K
	021	0.0 ~ 1000.0 °C	K

GROUP	CODE	RANGE(*1)	INPUT
TC	022	0.0 ~ 150.0 °C	E
	023	0.0 ~ 400.0 °C	E
	024	-200.0 ~ 500.0 °C	E
	025	-200.0 ~ 600.0 °C	E
	026	-200.0 ~ 900.0 °C	E
	027	-200.0 ~ 250.0 °C	E
	028	-200.0 ~ 400.0 °C	E
	029	-200.0 ~ 700.0 °C	E
	030	0.0 ~ 150.0 °C	J
	031	0.0 ~ 500.0 °C	J
	032	-200.0 ~ 650.0 °C	J
	033	-200.0 ~ 300.0 °C	J
	034	-200.0 ~ 500.0 °C	J
	035	-200.0 ~ 900.0 °C	J
	036	-200.0 ~ 750.0 °C	J
	037	0.0 ~ 150.0 °C	T
	038	0.0 ~ 400.0 °C	T
	039	-200.0 ~ 350.0 °C	T
	040	-200.0 ~ 400.0 °C	T
	041	0.0 ~ 2320.0 °C	G
	042	0.0 ~ 2320.0 °C	C
RTD	043	0.0 ~ 900.0 °C	N
	044	0.0 ~ 1260.0 °C	N
	045	0.0 ~ 1880.0 °C(*3)	PR40-20
	046	-200.0 ~ 400.0 °C(*4)	U
	047	-200.0 ~ 900.0 °C(*4)	L
	048	1.0 ~ 300.0 K(*5)	Au-Fe
	049	-50.0 ~ 100.0 °C	JPt100
	050	-200.0 ~ 600.0 °C	JPt100
	051	-50.0 ~ 100.0 °C	Pt100
	052	-200.0 ~ 600.0 °C	Pt100
TC	053	-50.0 ~ 100.0 °C	Pt50
	054	-100.0 ~ 250.0 °C	Pt50
	055	-200.0 ~ 550.0 °C	Pt50
	056	-50.0 ~ 200.0 °C(*6)	Cu10 at25°C
	057	-50.0 ~ 200.0 °C(*6)	Cu10 at0°C
RTD	058	0.0 ~ 1360.0 °C	PLII
RTD	059	-50.0 ~ 200.0 °C(*6)	Cu25 at0°C
	060	-50.0 ~ 200.0 °C(*6)	Cu10 at20°C

### NOTE:

(\*1): Extension scaling up to 3 times among each ranges: ± (0.3% + 1digit)

(\*2): Ranges under a span of 0 ~ 400°C, can not guarantee accuracy.

(\*3): Ranges of 0 ~ 300°C: ± 2%, 300 ~ 800°C: ± 1%

(\*4): Ranges of 0 ~ 200°C: ± 0.3% + 1digit

(\*5): ± (0.5% + 1digit)

(\*6): ± (0.8% + 1digit)

(\*3 ~ \*6):

Recording accuracy = digital readout accuracy ± 0.3%

## STANDARD FUNCTIONS

FUNCTION	DESCRIPTION
Analog indication	Process variable is indicated on a scale plate.
Recording	Pen tracing (pen models), Printing with 5 marking by 6 color ribbon cartridge (dot point models).
Engineering unit indication	Engineering unit is indicated on the scale plate.
Digital display	Indicates channel no., process variable, date, chart speed, alarm set point in the display 1 & 2.
Scaling	Indicates and prints process variable with set point.
Logging print	Prints process variables and engineering units for each channel on chart. The print mode is selected from synchronous printing with analog recording or asynchronous printing that interrupts analog recording (for dot point models only).
Date print	Prints year and date at a programmed time.
Time print	Prints time at a Programmed interval.
List print	Prints type of input, range, engineering unit, alarm set point, date, time, chart speed, scaling and logging print status on the chart.
Skip	Abandon dot print of inputs as required by dot point models.
Programming	Chart speed, alarm set point, logging print interval, skip, date, and time can be programmed.
Memory backup	Configuration data is protected by non-volatile memory.
Key lock	If you don't use key for more than 5 minutes in a user mode, the key would be locked automatically.
Alarm	6 set points alarm per channel.
Chart speed	2 chart speeds can be programmed.
Time indicator	Indicates year, month, day, hour, minute. Adjust for leap year automatically. Back-up for clock by lithium batteries for 10 years or 5 years in unused
Self-diagnostics	Indicates "ERROR", and outputs when CPU, printer, ADC are faulty.
Fail alarm	Outputs when faulty.
Common alarm	Output when any of the alarms occurs.

## OPTION

CODE	FUNCTION	DESCRIPTION
A01	Burnout	Swings the cursor fully toward 100 % or 0 % when an input is disconnected. Either up or down can be specified for each channel.(DC voltage of $\pm 50\text{mV}$ max, thermocouple input)
A02	Zone recording (Track recording)	Capable of specifying a recording area for each channel to record by tracks.
A03	Partial compression and enlargement	Partial compression and enlargement in the same range can be done.
A04	Pen gap rectifying	Corrects for time deviation from 1 pen when 2 to 4 pens are used.
A05	Scale print	The scale values of zero point and span point of each channel is printed.
A06	Alarm print	When an alarm arises, alarm-on time, alarm-on channel, alarm setting number, and alarm mode printed. Printed in black color(pen models), red color(dot point models).
A07	Alarm recovery print	When an alarm is recovered, the time of recovery, the recovered channel, alarm setting number, and alarm mode are printed. Printed in black color(pen models), purple color(dot point models).
A08	Digital filter	Execute the first-order lag recording of the measured value through the digital filter.
A09	Changing range	Change ranges with DI, 2 ranges max.
A10	Operation Sum	Indicates and prints sum among channels.
A11	Operation difference	Indicates and prints balance among channels.
A12	Average among channels	Indicates and prints average among channels.
A15	Exponential display	Logarithmic scale and mantissa/exponent parts are indicated and recorded.
E01	Differential temperature input	The actual temperature after subtracting the reference temperature of reference channel is designated and recorded.
E02	New alarm	New alarm channel is output in one-shot relay.
E04	Digital display ON/OFF	To turn off the designated value in the display through Auto Mode.
E05	Adjustment of print gap	To adjust a gap on the time axis between 1-pen and print.
E06	Max., min., Ave. print	Prints max., min., and average per inputs in logging print.
E07	Hysteresis width	Hysteresis width can be set. (Standard : 0.5% FS)
E09	Fail alarm converse output	Outputs in operating, stops in power failure.
D02	DE wire connection input	To execute the compensating temperature, taking in, the inside temperature of outside compensating box by thermocouple input of the set channel.
D03	DH wire connection input	To execute the compensating temperature, taking in, the inside temperature of outside compensating box by the voltage wire (copper wire) of the set channel.

NOTE: Recording accuracy may change in case optional Zone Recording or Expanded/Reduced Recording is installed.

## DI REMOTE OPTIONS

CODE	FUNCTION	DESCRIPTION
B01	Chart start/stop	Close: starts Open: stops
B02	Change chart speed	Close: 1st Open: 2nd
B05 ~B09	Comment print	Prints up to 16 characters per verse.
B10	Remote logging print	Close: starts to print
B11	Remote date print	Close: starts to print
B18	New alarm reset	Close: executes to reset New Alarm
B19	Chart feed pulse	Chart is fed by external pulses at the set external chart feed pulse rate (number of pulses to feed 0.05mm). It is possible to select whether the chart feed internal feed/external feed setting can be switched by contact or display. In the case of internal feed/external feed by contact, the contact "ON" can be switched to internal, and the contact "OFF" to switch external.
B20	Integration	A constant amount is integrated in proportion to the number of times the contact is turned ON. Also, another DI No. Reset the integrated amount by the contact set to.

## OTHER OPTIONS

CODE	DESCRIPTION
A13	Dot print interval 2.5 sec.
A14	Dot print interval 10 sec.
C04	Clean chart
D05	short power supply terminal cover
E08	Manual chart speed change

## DI OPTIONS

- DI (5) :  
5-points DI (non-voltage contact input) can be assigned.  
Terminal block connection.
- DI (24) :  
24-points of DI (non-voltage contact input) can be assigned.  
connector connection.
- Recognizable pulse width : 50ms or more

## DO OPTIONS

- 8 relays :  
8 points of DO (C contact, relay output) can be assigned.  
Terminal block connection.
- DO (52):  
52-points of DO (open collector output) can be assigned.  
connector connection.
- 30 relays:  
30-points of DO (A contact, relay output) can be assigned.  
Terminal block connection.

## COMMUNICATION FUNCTION

Protocol : Selectable from three types: original protocol, Modbus RTU slave, and master.

- (1) RS-232C: communication speed  
1200,2400,4800,9600,19200,38400bps
- (2) RS-485: communication speed  
1200,2400,4800,9600,19200,38400bps

## QUAKE RESISTING OPTIONS

Vertical direction : 19.6m/s<sup>2</sup> or less 5 ~ 33Hz  
Front, back, left and right : 39.2m/s<sup>2</sup> or less 5 ~ 33Hz

Fixed with quake resisting support (recording during vibration is not guaranteed)

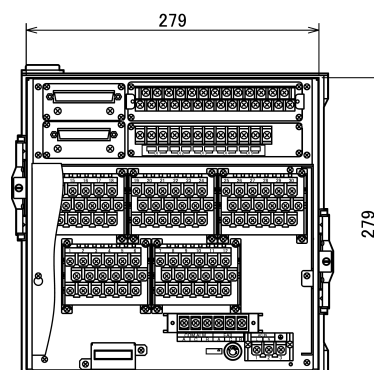
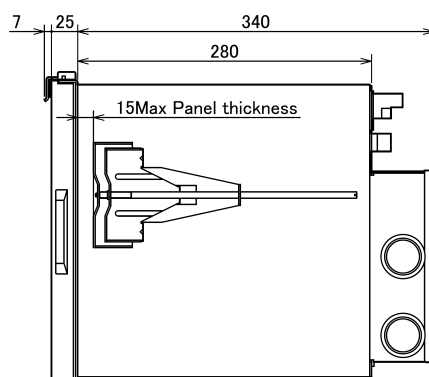
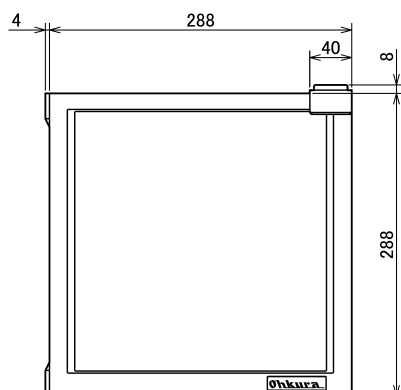
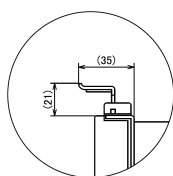
## SD CARD FUNCTION

- Output the instantaneous value, maximum/minimum value, and average value of the digital display value as a CSV file. (Recording cycle: 10min to 24h)
- Parameter reading/writing
- Sold separately: SD card 2GB (WMSU0607A01)  
Please use the products supplied by our company.

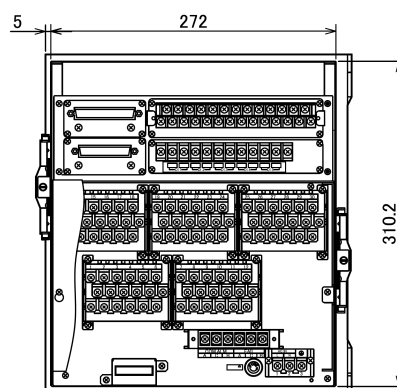
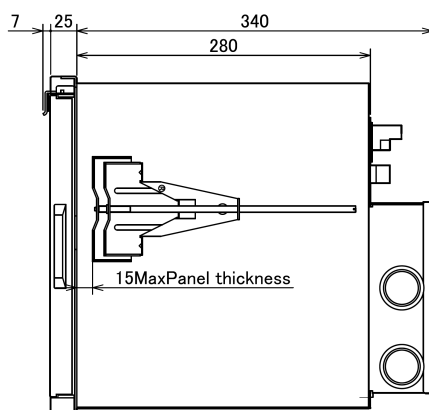
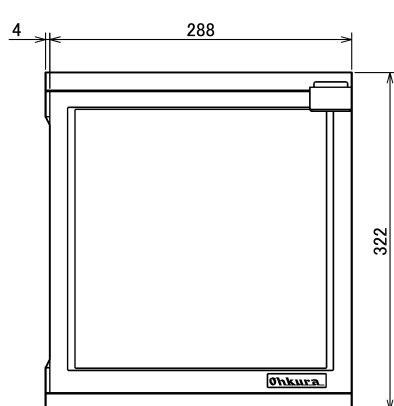
# OUTSIDE DIMENSION

(Unit : mm)

A,B case



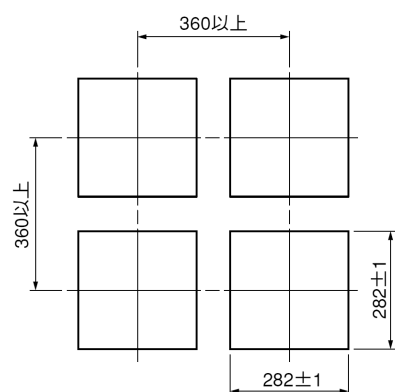
C,D case



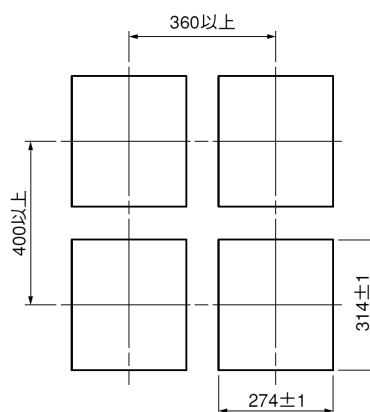
# PANEL CUTOUT

(Unit : mm)

A,B case

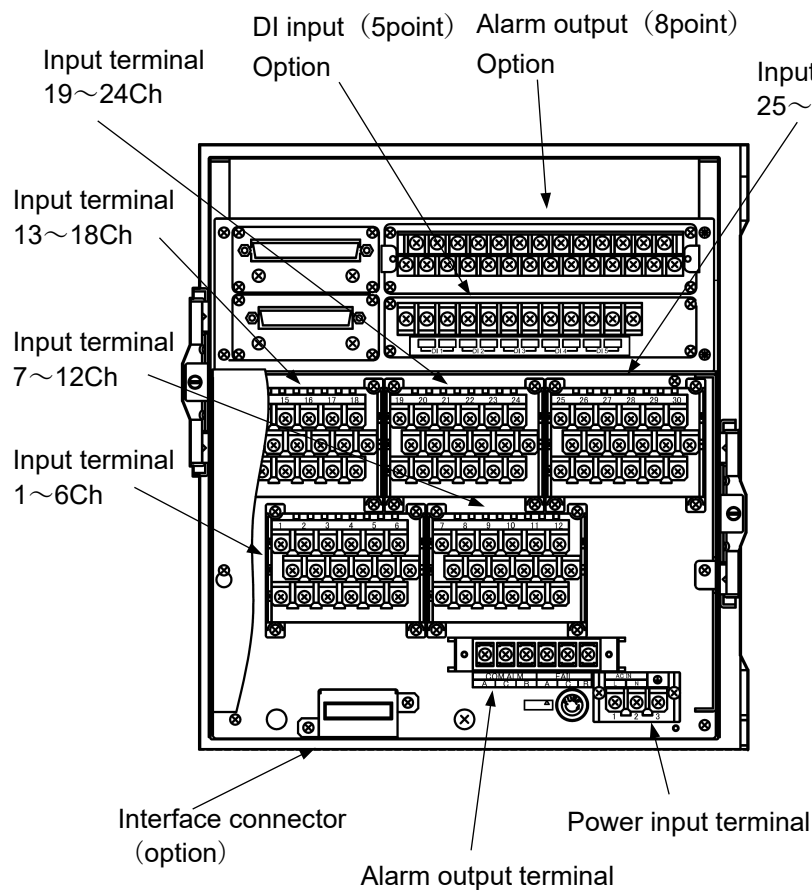


C,D case

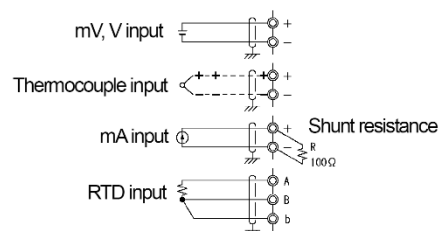


Door open angle: 135°  
Panel: Steel plate, 3mm thickness min.

# **TERMINAL ARRANGEMENT**

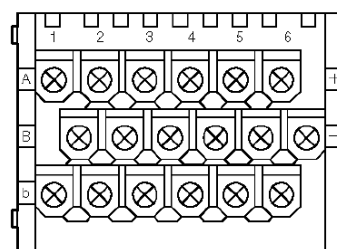


## **Wiring**

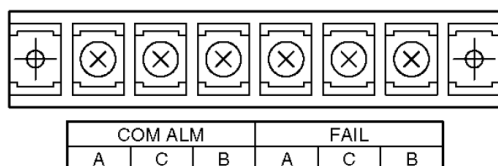


NOTE: Shunt resistance is installed on the terminal

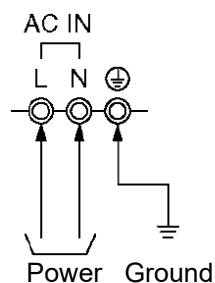
## **Input terminal**



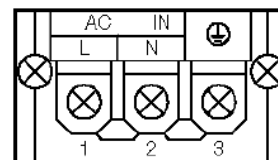
## **Alarm output terminal**



## **Power wiring**



## **Power terminal details**



## MODEL CODE NUMBER

MODEL	BASE INSTRUMENT	
RM1801	1 pen recorder	
RM1802	2 pen recorder	
RM1803	3 pen recorder	
RM1804	4 pen recorder	
RM1806	6 point recorder	
RM1812	12 point recorder	
RM1824	24 point recorder	
RM1830	30 point recorder	
J	CODE	STRUCTURE
	J	Standard
	CODE	COMMUNICATION INTERFACE
	0	None
	1	RS-232C
	2	RS-485
	9	Special
	CODE	DI/DO
	00	None
	01	DO(52)
	02	DI(24)
	03	DI(5)
	05	8relays
	06	DO(52) + DI(24)
	07	DO(52) + DI(5)
	09	DO(52) + 8relays
	10	DI(24) + DI(5)
	12	DI(24) + 8relays
	13	DI(5) + 8relays
	15	DO(52) + DI(24) + DI(5)
	17	DO(52) + DI(24) + 8relays
	18	DO(52) + DI(5) + 8relays
	20	DI(24) + DI(5) + 8relays
	22	DO(52) + DI(24) + DI(5) + 8relays
	24	30 relays
	CODE	SD CARD
	0	None
	1	Yes
	CODE	FRONT BEZEL COLOR
	1	N1.5 (Standard)
	2	7.5BG4/1.5
	9	Special
	CODE	CASE/QUAKE RESISTING OPTION
	A	Standard / None
	B	Standard / Yes
	C	RM18N panel cut equivalent product / None
	D	RM18N panel cut equivalent product / Yes
	CODE	OPTION
	0	None
	1	Provided (Fill "1", if any option for code from A01 to E08 is Installed)
	CODE	CUSTOM HARDWARE/SOFTWARE
	0	None
	X	Custom hardware (Consult factory)
	Y	Custom software (Consult factory)
	Z	Custom hardware + software (Consult factory)

Note1 : The built-in alarm has 30relays outputs of 1a and 8relays outputs of 1c.

Also, when 30relays output is specified, other DI/DO options cannot be specified.

Note2 : DO(52): DO output of 52 points is open collector output.

Note3 : DI is a non-voltage input isolated by a photocoupler.

Note4 : DI(5) can input 5 points and DI(24) can input 24 points.

## STANDARD ACCESSORIES

DESCRIPTION		MODEL	MODEL / NUMBERS					NOTE
			1PEN	2PEN	3PEN	4PEN	DOT POINT	
Box		H2H07827	1	1	1	1	1	
Lubricant		H4A12290	1	1	1	1	1	
Fuse		WPSJ011D000001A	1	1	1	1	1	
Chart		HZCAA1025AF001	1	1	1	1	1	100 division
Cartridge pen No.1		HPSR001L0001	1	1	1	1		Red
Cartridge pen No.2		HPSR001L0002		1	1	1		Blue
Cartridge pen No.3		HPSR001L0003			1	1		Green
Cartridge pen No.4		HPSR001L0004				1		Purple
Ribbon cassette		WMSU1200B	1	1	1	1		Black
		HPSR001H0005					1	6 color
Wrench		HPSAA003A001					1	For M3 screw
Mounting bracket	A,B case	WMSU1191B01	1	1	1	1	1	2 pieces/formula
	C,D case	WMSU1191B02						
Instruction manual		WXPRM1800J0001E	1	1	1	1		
		WXPRM1800J0002E					1	
Engineering data manual		WXPRM1800J0003E	1	1	1	1		
		WXPRM1800J0004E					1	



Do not install this device before consulting instruction manual

**Ohkura**

OHKURA ELECTRIC CO., LTD.

Head Office / Factory

Sales Offices

URL

e-mail (in English)

Saitama, JAPAN

Tokyo, Osaka, Nagoya, Kyushu, Tohoku

<http://www.ohkura.co.jp/>

[intsales@ohkura.co.jp](mailto:intsales@ohkura.co.jp)

Specifications are subject to change without notice.

For further information, a quotation or a demonstration please contact to:

Printed in Japan: November 2023