Specifications Sheet	No.SPEC-1137E (1st Edition)
VM6100	**PAPERLESS RECORDER**

OUTLINE

This is a paperless recorder that displays measured data on the LCD in real time and stores data in CompactFlash.

The type of input such as thermocouple, resistance bulb, D.C. voltage (current), etc. can be arbitrarily set to 18 channels at the maximum.

The data stored in CompactFlash can be regenerated on the screen, and the use of supplied support software allows the data to be regenerated on a PC screen.

The data recorded in ASCII format can be directly read in a spreadsheet such as Excel, which facilitates the processing on a PC. (The data recorded in binary format cannot be read in.)

FEATURES

1. Large capacity storage by CompactFlash
Measured data is periodically stored in CompactFlash. In case of 256 MB, for example, display files for about one year and a half (display refresh cycle 30 sec) can be taken up (in case of ASCII data format, 9 channels, maximum/minimum recording).

2. Quick search and display of past data
Data stored in CompactFlash can be displayed in succession by scrolling the screen.

3. Various display capability
Depending on the object of measurement, the most suitable display format can be selected from a variety of formats including bar graph display, trend display, digital display,etc.

4. PC support software supplied as standard
Loader software that enables easy display and change of set data and data viewer software that regenerates the data stored in CompactFlash are supplied as standard.

5. Compact size
160 (W) × 144 (H) × 185 (D) mm(Panel mounting), Compact and as light as about 1.5 kg (9-point input, without option).

6. 18-point recording (Option)
12 types of thermocouples, 2 types of resistance bulbs and DC voltage/current input can be recorded up to 18 points.

7. Communication function
RS-485 MODBUS communication is available.

8. LCD extinguishing function
Automatically extinguishes the LCD if nothing is operated for certain time. You can set the time after a lapse of which the LCD is extinguished via parameter "LCD extinguishing time". The settable range is 0 to 60 minutes.
Setting at 0 minute overrides the function, whereby the LCD will never extinguish.
This function prevents the backlight life from shortening uselessly. During the extinguishment, the power consumption can be reduced.

9. Ethernet function(Option)
FTP,Web server, e-mail and MODBUS-TCP are available using 10Base-T.

SPECIFICATIONS

Input system

Number of input points:9 points or 18 points (Can be selected at the time of purchase)

Input circuit: Input mutual isolation
Resistance bulb measured current: about. 1 mA

Measuring cycles:9 or 18 points….100ms cycles

Input types: Thermocouple, resistance bulb, DC voltage, and DC current (Shunt resistorsvolt are fitted in input terminals).
Note) Provide a shunt resistor (type: WPSR222B000001A) separately.

Measuring range

Input types		Reference range
Thermocouple	B	400.0 to 1760.0°C
	R	0.0 to 1760.0°C
	S	0.0 to 1760.0°C
	K	-200.0 to 1370.0°C
	E	-200.0 to 800.0°C
	J	-200.0 to 1100.0°C
	T	-200.0 to 400.0°C
	N	0.0 to 1300.0°C
	W	0.0 to 1760.0°C
	L	-200.0 to 900.0°C
	U	-200.0 to 400.0°C
	PN	0.0 to 1300.0°C
Resistance bulb	JPt100	-200.0 to 600.0°C
	Pt100	-200.0 to 600.0°C
DC voltage	50mV	0.00 to 50.00mV
	500mV	0.0 to 500.0mV
	1-5V	1.000 to 5.000V
	0-5V	0.000 to 5.000V

Note) B, R, S, K, E, J, T, N : JIS C 1602, DIN IEC 584-1
W : 5%Re-26%Re・W (Hoskins Mfg. Co. USA)
L : Fe-Cu・Ni (DIN 43710)
U : Cu-Cu・Ni (DIN 43710)
PN: Platinel2
JPt100 : JIS C 1604-1989 (Old JIS Pt 100)
Pt100 : JIS 1604, DIN IEC 751

Selection of input types:
By key operation on the front panel. Note that the same input type (thermocouple, resistance bulb, voltage) should be set every 2 channels. Refer to "Setting method of input types" for details.

Burn-out function:
Provided as standard for thermocouple and resistance bulb inputs. If the input has been open-circuited, the recording level swings over 100%.
Thermocouple burn-out current: approx. 0.2 μA

Input filter function:
Settable for each channel (primary delay filter)
Time constants are settable in the range from 0 to 900 sec.

Scaling function:
Possible by DC voltage (current) input
Scaling range: -32767 to 32767
Decimal position: settable at any point
Unit symbol: Selectable out of 125 different units or 12 user units of up to 7 characters.

Subtraction function:
Subtraction between each channel is allowed.

Totalizing function:
The measured value of each channel can be totalized. Applicable to daily, monthly, annual or external input totalizing.

F value calculation function:
F value (extinction value of bacteria by sterilization by heating) can be calculated from the measured temperature by each channel.
F value and measured temperature can be displayed and recorded using 2 channels.

Square rooter function:
Square rooter can be performed against the input value per each channel.

Indication system

Indicator: 5.7" TFT color LCD (320 x 240 dots) with backlight, no contrast adjustment. On the LCD, certain picture elements remain lit or extinguished. On account of the nature inherent to LCD, the brightness may be non-uniform. But, such are not troubles.

Color of indication:
14 colors

Applicable language:
English, Japanese

Life of backlight:
50,000 hours in terms of total lighting time. (Replace the backlight as a set of display unit. If the LCD extinguishing function is resorted to, the LCD can be used longer as much.)

Trend display:
Direction: vertical and horizontal
Number of channels: 10 or 4 channels per screen group. (Input:18 points at the maximum).
Display refreshment cycles: select from 1 second to 12 hours
Scale display or no-display can be selected.

Bar graph display:
Number of channels: 10 or 4 channels per screen group. (Input:18 points at the maximum).
Display refreshment cycles: 1 second.

Analog meter display:
For 4 inputs per screen group. (input from 1 to 4). Display in bar graphs or in analog meters can be selected.
Display refresh cycle: 1 second

Digital display:
Number of channels: 10 or 4 channels per screen group. (Input:18 points at the maximum).
Display refreshment cycles: 1 second.

Totalizing data display:
Number of channels: 10 or 4 channels per screen group. (Input:18 points at the maximum)
Display refresh cycle: 1 second.

Event summary display:
Alarm summary and message summary can be displayed. The message occurrence information and message display can be switched.

Ethernet log display:
E-mail sending, FTP server log in/off and MODBUS TCP/IP communication start/stop can be displayed.

Parameter display/set:
Already-set data display and set change display screen

TAG indication: Number of characters to be displayed:
Up to 8 characters
Up to 8 characters (Note 1) at 10-channel display.
Up to 16 characters at 4channel display.
Note 1: Up to 7 characters only can be displayed on certain screens.

Characters to be displayed:
Alphanumerics, hiraganas and katakanas.

Tag, unit and channel No. display:
Which can be displayed depends on the particular screen. Refer to the table below. (Keywords only are extracted.)

Screen	Channels per screen		Item			
			Tag1	Tag2	Unit	ch No.
Trend	4 or less		+	+	+	+
	5 or more		×	–	×	×
Bar graph	4 or less		+	+	+	+
	5 or more		×	–	×	×
Analog Meter	4 or less		All			
	5 or more	No.1 to 4	All exept tag 2			
		Others	×	–	×	
Instantaneous Value	4 or less		All			
	5 or more		All exept tag 2			

× : Up to 7 characters, 1 item only can be displayed
+ : Up to 8 characters, 2 items only can be displayed
– : Nothing can be displayed

Historical trend display:
Displays past recording data read from compact flash, currently recording data or just recorded data. The recording chart can be scrolled or, via time designation, the control can jump to an arbitrary recording chart.

Number of screen groups:
Four groups (Up to 10 channels per 1 group can be registered.)

Keyboard

No. of Keys: 8

Function: Use to select various screens and set various parameters.

Recording function

External memory media:
Compact Flash card
Format according to FAT16 or FAT. Otherwise, reading and saving are impossible.
*Only the Sandisk's compact flash is warranted.

Recording capacity:
1GB maximum (compact flash).
The record file is made newly in every 768kB.

Recording method:
Turning ON the REC key allows measured data to be written at fixed cycles.
Recorded as a new file whenever the recording starts.

Data save cycles:
Linked to the display refreshment cycles on the "Real Time Trend" screen. However, they are automatically set to about 1 minute if the refreshment cycles are set to less than 1 minute.

Trend data: Measurement data sampled at measurement cycle is saved in terms of mean value, instantaneous value or maximum/ minimum value.

Event data: Saves alarm data and message data.
Further, saves power ON or OFF, when a power supply is ON or OFF after start of record.

Totalizing value data:
Records the totalized data according to the totalizing type selected by channels.
Values by totalizing types or total from the beginning of totalizing, whichever selected, can be recorded. For each channel, the input value totalizing, number of DI inputs or measurement at times when DI inputs have occurred can be selected. Input values to be totalized are selected from daily report, monthly report, yearly report and external input.
If power has been turned off and on while totalizing, the totalizing is resumed at last value. (Last value remains saved, but data during power OFF is not totalized.)

Configuration data:
Configuration data can be saved. And this data can also download to recorder.

Storage capacity :
Approximately 1.5 years when the display refresh cycle is 30 seconds (in case of 9-channel recording in ASCII data format, and 256 MB compact flash used). Refer to Table 1.

Residual capacity of memory:
Indicates how much of the memory card has been used on the screen. If the residual capacity is none, the recording stops.

Compact flash: Manufactured by SanDisk
URL: http://www.sandisk.com
Type: SDCFB-256-J60 (256MB)
Available at any PC shops

Data format: Either of ASCII or binary format can be selected. (Switching cannot be made while the recording is in progress. In the case of ASCII format, the data can be directly read on Excel, etc.)
Note: The data recorded in binary format cannot be read directly.
Approximately 166 bytes per sampling for maximum/minimum recording of 9-channel input in ASCII format, or approximately 40 bytes for maximum/minimum recording of 9-channel input in binary format.

Alarm function

No. of settings:
Up to 4 alarms for each channel are settable.

Type of alarm: High/Low limits

Indication: Status (alarm types) is displayed on digital display unit when an alarm occurs.
Historical display on alarm summary (Alarm start/cancel time and alarm types)

Hysteresis: Set within the recording range of 0 to 100%
Acts on high or low limit alarm, and does not affect the battery alarm nor memory full alarm.

Relay output: Number of points; 10 (option: Cannot be selected if the number of input points is 18.)

Transistor output (open collector output):
18 points (option)

Alarm latch function:
Holds alarm indication and alarm output even after measurement value has left the alarm range.
ON/OFF operation is performed according to key setting.

Power supply

Rated power voltage:
100 to 240V AC

Range of operating voltage:
90 to 264V AC

Supply frequency:
50/60Hz ± 2% (both employable)

Power consumption

Power voltage	consumption
100V AC	About 36VA
240V AC	About 47VA

Structure

Mounting method:
Panel-mounted (vertical panel) or portable (desktop type)

Thickness of panel:
2 to 26 mm

Materials: PC-ABS for case and bezel

Color: Black

External dimensions:
Panel-mounted: 160 (W) × 144 (H) × 185 (D) mm
Portable: 160 (W) × 179 (H) × 206.6 (D) mm

Weight: About 1.5 kg (9-point input, without option)

External terminal board:
Screw terminals (M3 thread)

Operating condition

Ambient temperature:
Panel-mounted(without Ethernet function): 0 to 50°C
Panel-mounted(with Ethernet function): 0 to 40°C
Portable: 0 to 40°C

Ambient humidity:
20 to 80%RH

Vibration: 10 to 60Hz 0.2m/s^2 max.

Shock: None

Magnetic field: 400 A/m max.

Signal source resistance:
Thermocouple input …. 1kohm max.
Resistance bulb input… 10ohm/wire max. (resistance of each wire of 3-wire system should be balanced).
Voltage input… 0.1% max. of input resistance

Mounting posture:
Forward tilt 0°, backward tilt within 30°, horizontal 0°

Warm-up time: One hour or more after power ON

Reference standard

Accuracy/resolution:
Measuring conditions (23 ± 2°C, 65 ± 10% RH, power voltage, frequency fluctuation within ± 1%, no external noise, warm-up time of 1 hour or more, vertical mounting, standard values of signal source resistance and wiring resistance... within 1%)

Input types		Digital indication	Digital indication Resolution
Thermo-couple	B R S K E J T N W L U PN	± (0.15%+1 digit) ± (0.3%+1 digit) for the range shown below Thermocouple B: 400 to 600°C Thermocouples R and S : 0 to 300°C Thermocouples K, E, J, T, L and U : -200 to -100°C	0.1°C
Resistance bulb	JPt100 Pt100	± (0.15% + 1 digit)	0.1°C
DC voltage	50mV 500mV 5V	± (0.15% + 1 digit)	10μV 100μV 1mV

Note 1) Digital indication accuracy is a percentage (%) with respect to input range of 1 page.
Note 2) No error of reference contact compensation of thermocouple is included.

Error of reference contact compensation:
K, E, J, T, N, L, U, PN: ± 0.5°C
R, S, B, W: ± 1.0°C
(when measured at 0°C or more)

Max. input voltage:
Thermocouple, resistance bulb, DC voltage: ± 10V DC (continuous)

Input resistance: Thermocouple, DC voltage: About1Mohm

Others

Clock: With calendar function (Christian era)
Accuracy: ± 50 ppm max. (monthly error: about 2 minutes)
However, time error at power ON/OFF is not included.

Memory backup: Parameters are saved to the internal nonvolatile flash memory.
The clock is backed up with built-in lithium battery.
Trend data is not backed up.

Insulation resistance:
100 Mohm (when measured between each terminal and ground by using a 500V DC megger)

Withstand voltage:
Input terminal – input terminal: 500 V AC, 1 min
Power terminal – ground: 2000V AC, 1 min
Input terminal – ground:500V AC, 1 min
Alarm terminal (contact output) – ground: 2000 V AC, 1 min
Alarm terminal (contact output) – alarm terminal (contact output): 750 V AC, 1 min
Communication terminal – ground: 500 V AC, 1 min
Alarm terminal (open collector) – ground: 500 V AC, 1 min

Effect on operation

Effect of power supply fluctuation conditions:
For the fluctuation in the range from 90 to 264V AC (frequency: 50/60Hz)
Reading change: ± (0.2% + 1 digit) max.
For the fluctuation in the range from 47 to 63Hz (power voltage: 100V AC)
Reading change: ± (0.2% + 1 digit) max.

Effect of input signal resistance:
Thermocouple input: 30μV ± 1 digit per 100Ω
DC voltage: Fluctuation for resistance value equivalent to 0.1% of the input resistance: ± (0.2% + 1 digit) max.
Reistance bulb (for wiring resistance of 10Ω for 1 line (the same for 3 lines))
Reading change: ± (0.2% + 1 digit) max.

Effect of ambient temperature:
Reading change: ± (0.3% + 1 digit)/10°C max.

Effect of Mounting position:
For the backward 30° slant
Reading change: ± (0.2%+1 digit) max.

Effect of vibration: When sine wave of 10 to 60Hz with the acceleration of 0.2m/s^2 is applied in each direction for 2 hours.
Reading change: ± (0.2%+1 digit) max.

Safety and EMC standard

Safety standard: Based on IEC61010-1
EMC standard: Based on EN61326

Transportation/storage conditions

Temperature: -10 to +60°C
Humidity: 5 to 90%RH
Vibration: 10 to 60Hz, 0.2m/s^2 or lower
Shock: 294m/s^2 or lower (packed state)

Additional function (option)

■ **Alarm relay output/DI (10th digit of code symbols: "1")**
A card with 10-point relay output and 5-point DI input can be mounted.
Cannot be mounted if the number of input points is 18.

Terminal structure:
M3 screw terminal

Alarm relay output: 1a contact output (10 points),
Individual channel or common output (OR output) allowed.
DO1: Contact capacity;150V/3A AC, 30V/ 3A DC (resistance load)
DO2-10: Contact capacity; 240/3A AC, 30V/3A DC (resistance load)

DI input: No-voltage contact input (5 points)
The following control is allowed by contact input.
(1) Recording start/stop
(2) Message set
(3) F value calculation reset
(4) Totalizing start/stop
(5) Totalized value reset
(6) LCD (backlight) lighting
(7) E-mail sending
On pulse width: 200ms min.
Off pulse width: 200ms min.

■ **Communication, alarm (open collector output), DI input(digit 11code: "1")**
RS485 communication. Card having 18 alarm points (open collector output) and 5 DI input points can be installed.

Terminal structure:
M3 thread terminal (DO11 (alarm open collector output), DI6, DIO source terminal and communication terminal)
D-Sub 25 pin female terminal (DO12 toDO28 (alarm open collector output)) andDI7 to DI10

Communication: Physical specifications: EIA RS-485
Communication protocol:
Modbus (RTU)
Communication method:
2 wire method. Half duplex bit serial, start-stop sync type.
Data type:
8 bits. Parity: odd/even/none.
Stop bit: 1 bit.
Communication rate: 9600, 19200bps
Connection aspect:
multi-drop/up to 32 recorders connectable including master station
Communication distance:
Total extension 500m or less
RS-232C/RS-485 Signal converter (recommendation):
Isolated type
Manufacture: OMRON Corporation
Model: K3SC-10

Alarm output: Open-collector transistor output (18 points)
Electrical Rate: 30Vdc, 100mA (resistance load)

DI input: No-voltage contact input (5 points).
Contact input allows following controls.
(1) Recording start/stop
(2) Message set
(3) F value calculation reset
(4) Totalizing start/stop
(5) Totalized value reset
(6) LCD (backlight) lighting
(7) E-mail sending
On pulse width: 200msec min.
Off pulse width: 200msec min.

■ **Ethernet Communication(digit 12code: "1")**
A card with Ethernet communication can be mounted. Please refer to the following for details.

Ethernet(Option)

The following can be performed through the Ethernet function.

■ **HTTP server (Internet Explorer 6 is available) *note1**

Measurement display:
Digitally displays the measurement of each channel of the recorder and alarm occurrence status.

Event summary display:
Displays event summary including alarm ON/OFF and issuance of messages.

Main unit information display:
Displays memory use conditions and information on the main unit such as the battery end warning.

Integrated value display:
Digitally displays the integrated value of each channel of the recorder.

■ **FTP server (Internet Explorer 6 is available) *note1**

File download: Record files stored in CompactFlash(CF) can be downloaded from the browser.

File delete: Record files stored in CF can be deleted from the browser.

Access authentication:
Authenticates access authority to FTP server.

■ **SMTP (e-mail client)**
Transmits e-mails to specified address under the following conditions.
(1) When an alarm turns ON or OFF.
(2) When DI is set to ON or OFF.
(3) When an error occurs to the main unit (such as low battery or no memory space)
(4) At specified intervals

■ **MODBUS TCP/IP**

Data read: Settings can be read through MODBUS TCP/IP communication.

Data write: Settings can be written through MODBUS TCP/IP communication.

Support software

Note:
- Applicable PC: PC/AT-compatible machine
- Operation on PC98-series machines by NEC is not guaranteed.
- Operation on self-made or shop-brand PCs is not guaranteed.

The following software is provided as standard.

■ **Loader software for PC**

Major function: Performs various parameter setting/change of the main unit
O/S: Windows 2000/XP
Required memory: 64MB or larger
Disk drive: Windows 2000/XP-capable CD-ROM
Hard disk capacity: Free capacity of 30MB or larger required
Printer: Windows 2000/XP-capable printer and printer driver

Note) PC loader communication cable (type WPSR222B00-0005A) is separately required.

■ **Data viewer software**

Major function: Regenerates the past trend record on the PC from the data in the compact flash.
Provided with historical trend display and event display functions.
Data can be changed to CSV file.
O/S: Windows 2000/XP
Required memory: 64MB or larger
Disk drive: Windows 2000/XP-capable CD-ROM drive
Hard disk drive: Free capacity of 30MB or larger required
Printer: Windows 2000/XP-capable printer and printer driver

Standard functions

Function	Description
Record range voluntary setting	Recording range can be set by channel.
Input type setting	Input can be set by channel. (Key operation on the front face) Set the same input type for every 2 channels.
Skip function	Skips arbitrary channel display/recording.
Overwrite function	When the capacity of CompactFlash is filled, an old file is deleted to continue recording. This function can set ON/OFF.
Trend display	Time display: Time is displayed at the top of the trend display screen. Alarm display: On occurrence of an alarm and the restoration, alarm is displayed in the alarm display field. The CompactFlash usage is displayed with a bargraph at the top.
TAG name display	By channel, Maximum of 8 characters.
Screen name display	Displays the screen name (maximum of 16 characters).
Unit creation	Industrial units can be arbitrarily created, Maximum of 7 digits, 12 types.
Scaling function	Arbitrary scaling is allowed in the case of DC voltage input. Decimal point position can also be arbitrarily set in the range from -32767 to 32767.
PV shift	Shift the zero point and slant of the reading.
Input filter	Prevents sudden fluctuation of input for each channel (First order lag). Time constant: 0 to 900 seconds.
Burnout function	Displays the break of thermocouple/resistance bulb input by scaling out to 100% side.
Historical trend display	Regenerates and displays the data stored in the compactflash by scrolling the screen. Displays data of a designated time.

Table 1. Recording capacity

The recording can be made for the period of time listed in the tables shown below under the following conditions.

- 9 input points
- Recording data format: ASCII
- Recording type: Maximum/minimum recording
- No alarm, nor message, nor other events.

CompactFlash size	256MB			
Display upgrade cycle	1 sec	10 sec	30 sec	1 min
Recordable capacity(about)	17 days	179 days	1.4 years	2.9 years

CompactFlash size	512MB			
Display upgrade cycle	1 sec	10 sec	30 sec	1 min
Recordable capacity(about)	35 days	358 days	2.9 years	5.8 years

CompactFlash size	1GB		
Display upgrade cycle	1 sec	10 sec	30 sec
Recordable capacity(about)	71 days	1.9 years	5.8 years

- When the number of input points is 18, the period is approximately one half of those listed in the table.
- In binary format, the period is approximately 4 times as long as those listed in the table.
- For recording type of mean or instantaneous value, the number of days is approximately 2 times as long.

When compact flash is not used, the capacity of the main unit is as follows:
Recorded data: for 400 data, Event data: for 180 data (1 sampling=1 data, irrespective of the number of channels, For 400 seconds at the refresh cycle of 1 second)

MODEL CODE NUMBER

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
V	M	6	1					4				A	0	0
				①		②	③	④	⑤	⑥	⑦			

Digit	Specifications	Code
5,6	<Number of input points>	
	9	09
	18	18
7	<Mounting>	
	Panel mounting	A
	Portable (desktop)(Note 2)	B
8	<Language (Instruction manual)>	
	Japanese	0
	English	1
9	<Software>	
	Type4	4
10	<Alarm output/DI input>	
	Without	0
	With (Note 1)	1
11	<Communication, alarm (open collector) output/DI Input>	
	Without	0
	With (Note 3)	1
12	<Ethernet communication >	
	Without	0
	With (Note 4)	1

Note 1 : Cannot be selected if 18 is selected for the 5,6 digit (the number of input points is 18).
Note 2 : Portable mounting type doesn't comply with CE.
Note 3. Alarm output; transistor (open collector) output
Note 4. Cannot be selected when "B" is selected for the 7th digit.

STANDARD ACCESSORY

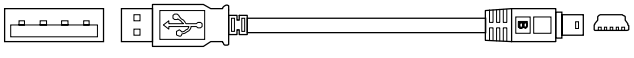
Item		Quantity	
		Panel mounting	Portable
Recorder		1	1
Panel mounting bracket		2	-
CD-ROM	PC support software instruction manual	1	1
Water proof panel packing for the front face		1	-
Noise filter for the power supply		1	1
AC power cord (2m)		-	1

OPTIONAL ITEMS

Item	Code	Specification
Shunt resistor for DC current input	WPSR222B000001A	10Ω ± 0.1%
PC loader communication cable	WPSR222B000005A	Length 3m with Connector USB-A/USB miniB terminal *
Terminating resistor for communication	WPSR222B000003A	100Ω
D-Sub light type 25 pin connector with male terminal for alarm output (without cable)	WPSR222B000004A	
PC card adapter Manufactured by SanDisk	SDAD-38-J60	For compact flash
Compact flash Manufactured by SanDisk	SDCFB-1024-J60 SDCFB-512-J60 SDCFB-256-J60	1GB 512MB 256MB

* Shape of this cable is shown below

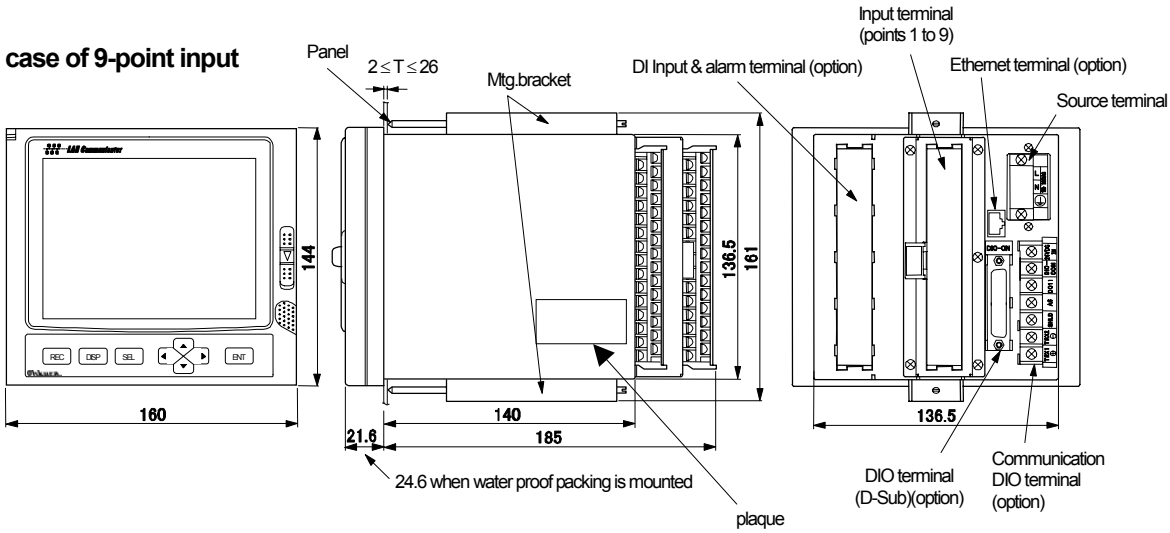
USB(A) Plug - USB(Mini-B) Plug



DIMENSIONS (Unit : mm)

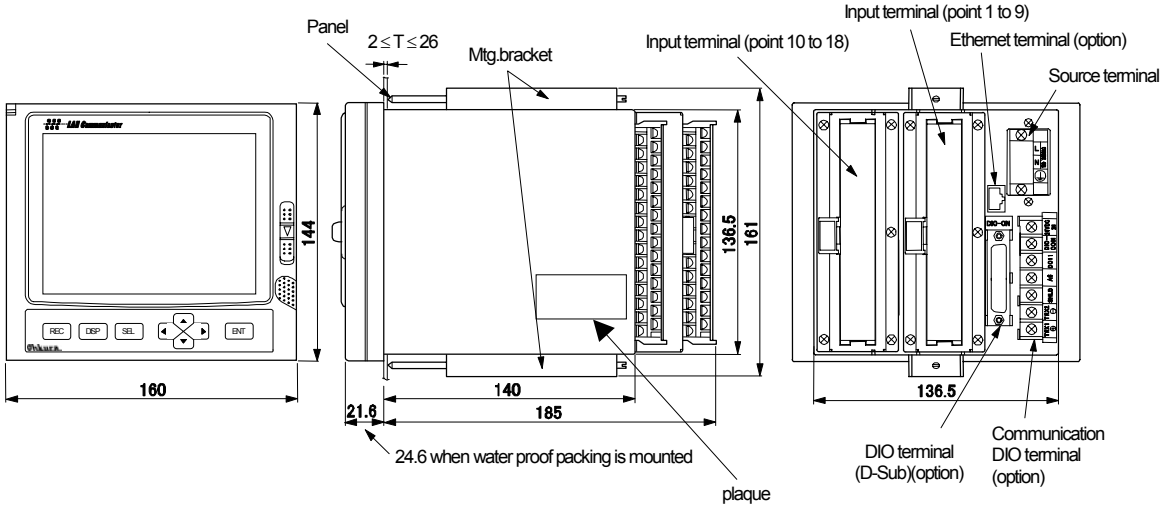
PANEL MOUNTING

In the case of 9-point input



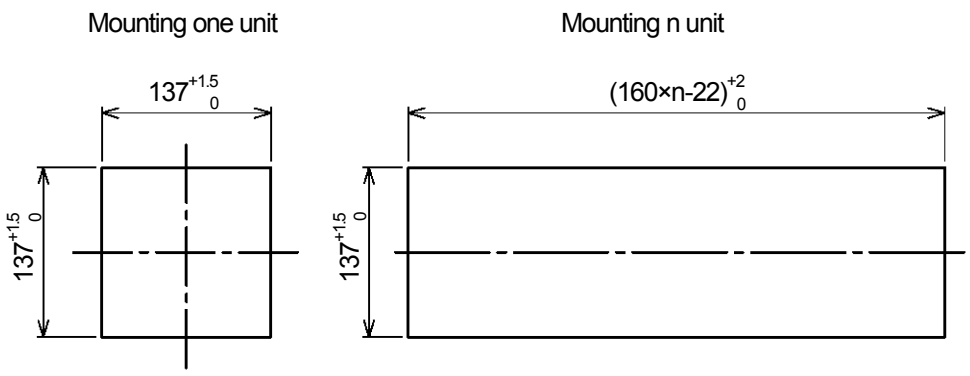
(Note) When placing the main unit on another instrument or on the floor, allow a space of 100mm or more between the unit and instrument or the floor.

In the case of 18-point input



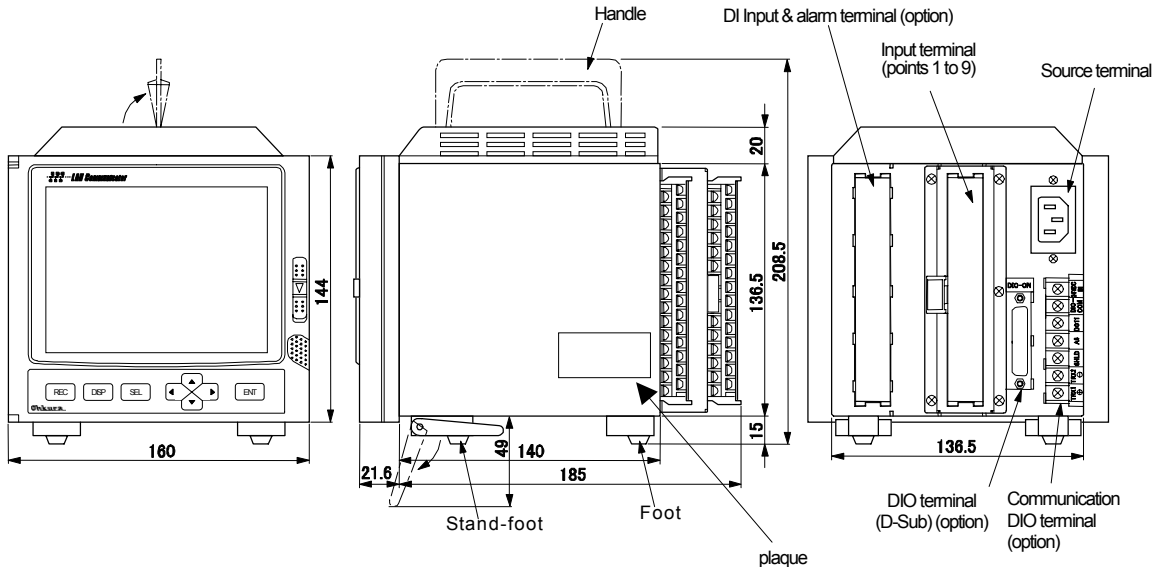
(Note) When placing the main unit on another instrument or on the floor, allow a space of 100mm or more between the unit and instrument or the floor.

PANEL CUTOUT



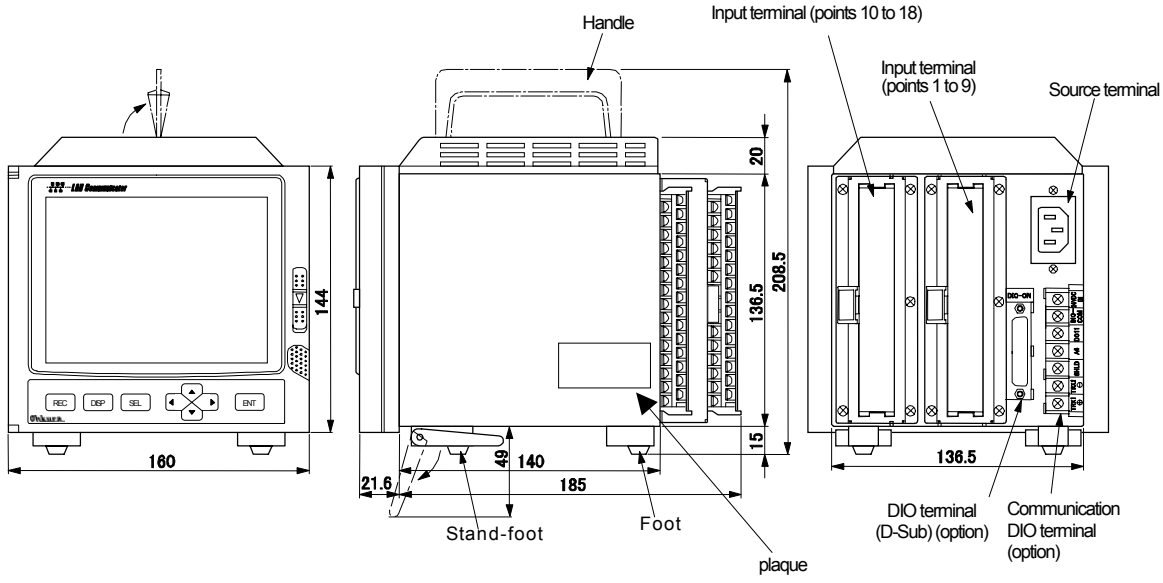
PORTABLE TYPE

In the case of 9-point input



(note) Please use the stand-foot upright.

In the case of 18-point input

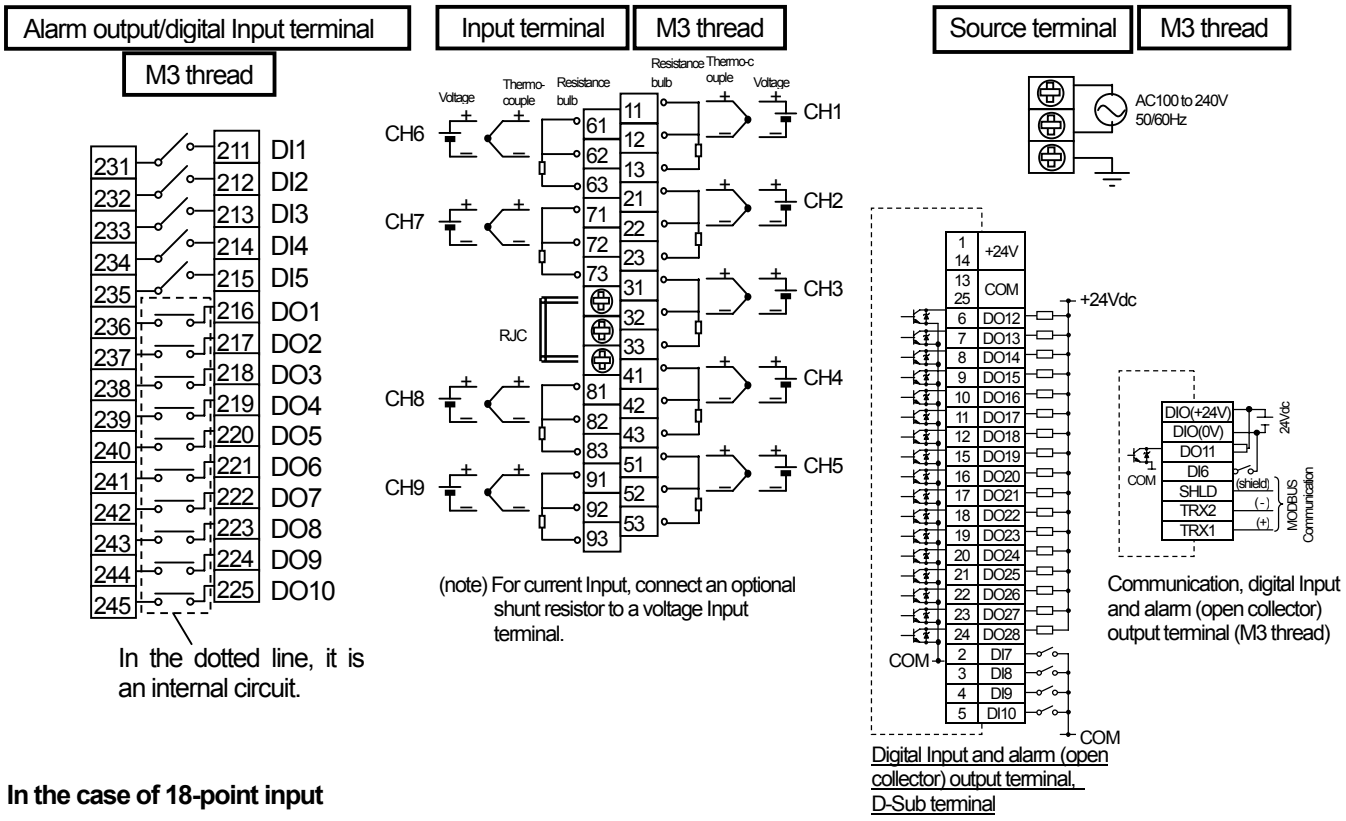


(note) Please use the stand-foot upright.

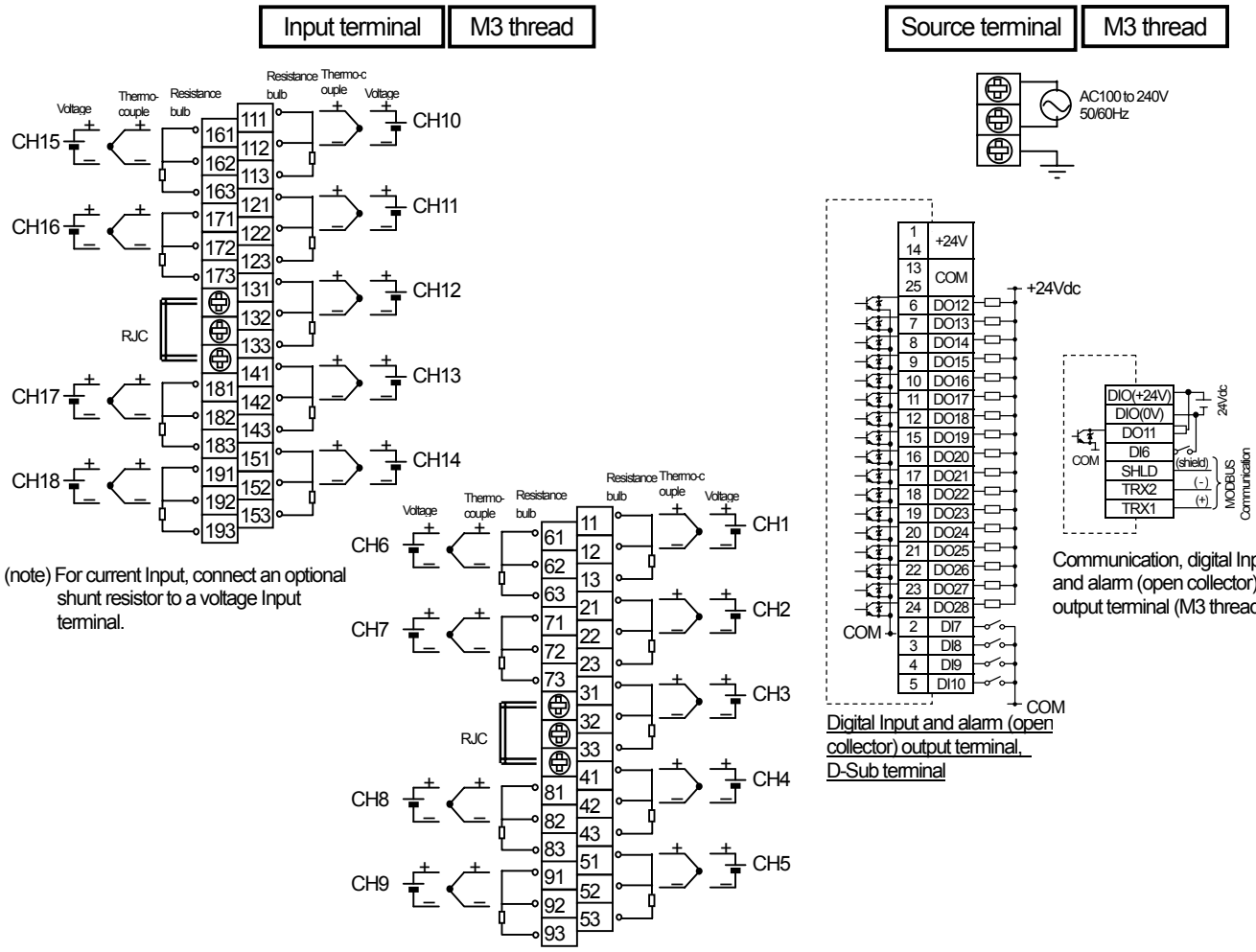
EXTERNAL CONNECTION DIAGRAMS (M3 screw)

PANEL MOUNTING

In the case of 9-point input



In the case of 18-point input

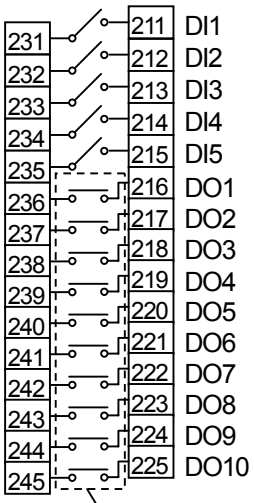


PORTABLE TYPE

In the case of 9-point input

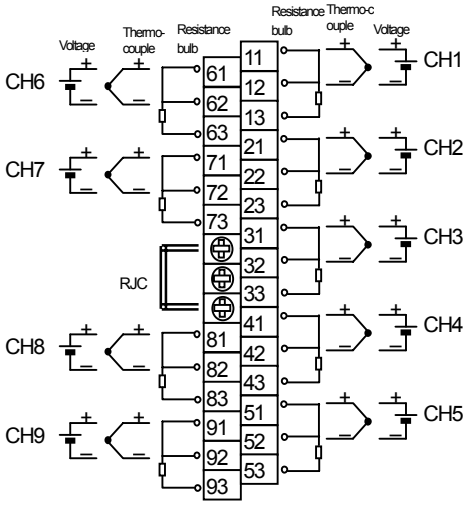
Alarm output/digital Input terminal

M3 thread



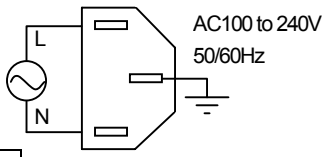
In the dotted line, it is an internal circuit.

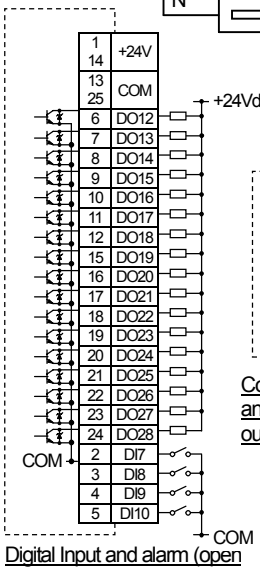
Input terminal | M3 thread



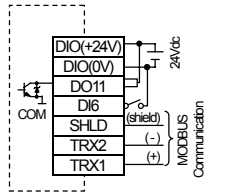
(note) For current Input, connect an optional shunt resistor to a voltage Input terminal.

Source terminal(Inlet)





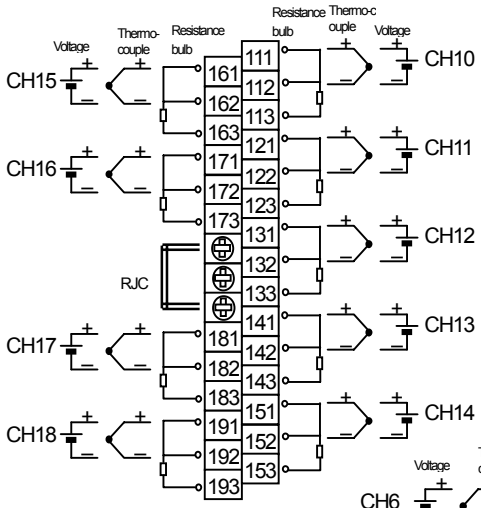
Digital Input and alarm (open collector) output terminal, D-Sub terminal



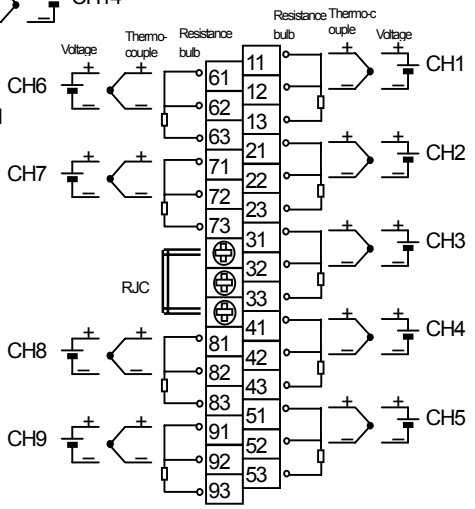
Communication, digital Input and alarm (open collector) output terminal (M3 thread)

In the case of 18-point input

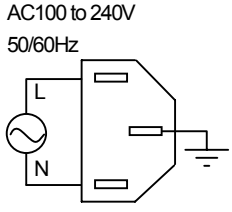
Input terminal | M3 thread

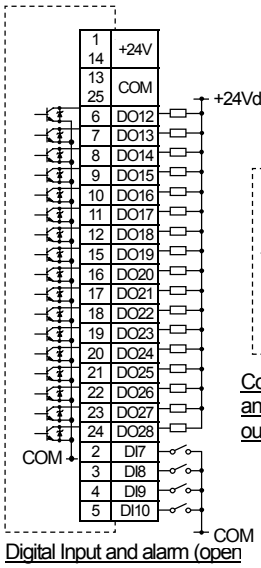


(note) For current Input, connect an optional shunt resistor to a voltage Input terminal.

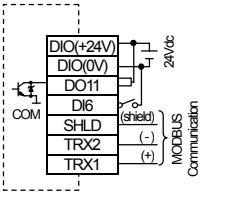


Source terminal (Inlet)





Digital Input and alarm (open collector) output terminal, D-Sub terminal



Communication, digital Input and alarm (open collector) output terminal (M3 thread)

SELECTING INPUT TYPE

The input type is the same every 2 channels.
The input type of channel 2, 4, 6, 8, 11, 13, 15 and 17 can only be set in the same category of previous channel.
The following input types are available.

Input type	Details
Thermocouple, 50mV	K, E, J, T, R, S, B, N, W, L, U, and PN thermocouples, 50mV
Resistance bulb	Pt100, JPt100
500mV	500mV
5V	1-5V, 0-5V
Other channels	Other channels (*1)

Note, however, that input type can be arbitrarily selected only for channels 9 and 18 irrespective of the type allocated to other channels.

*1: Used for F value calculation, for example. If an input type is allocated to another channel, or, if the input type of channel 2 is allocated to other channels and several settings are made when the temperature is being measured by connecting K thermocouple to channel 1, it is possible to display a temperature measured by K thermocouple on channel 2. F value calculation is available on channel 1, and the temperature recording is available on channel 2.
For setting method, refer to the instruction manual.

EXAMPLE OF CHANNEL INPUT TYPE SELECTION

	Input type	put type	Description
Channel 1	K thermocouple	Thermocouple, 50mV	The type of thermocouple can be arbitrarily selected for each channel.
Channel 2	T thermocouple		
Channel 3	1-5V	5V	
Channel 4	0-5V		
Channel 5	Pt100	Resistance bulb	The type of resistance bulb can be arbitrarily selected for each channel.
Channel 6	JPt100		
Channel 7	500mV	500mV	
Channel 8	500mV		
Channel 9	J thermocouple	Thermocouple, 50mV	Input type can be arbitrarily selected for channel 9.
Channel 10	K thermocouple	Thermocouple, 50mV	The input type of the thermocouple and 50mV is the same.
Channel 11	50mV		
Channel 12	Skip	5V	Skip can arbitrarily selected irrespective of the input type.
Channel 13	1-5V		
Channel 14	Pt100	Resistance bulb	
Channel 15	Skip		
Channel 16	Skip	500mV	
Channel 17	500mV		
Channel 18	50mV	Thermocouple, 50mV	Input type can be arbitrarily selected for channel 18.

Note 1) Windows 2000/XP, Excel are the registered trademarks of Microsoft Corporation of the U.S.A.
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Note 3) Modbus is the registered trademark of Schneider Electric.
Note 4) PC98 series are the registered trademarks of NEC Corporation.
Note 5) Ethernet is the registered trademark of Xerox Corporation.

⚠CAUTION

Do not install this device before consulting instruction manual

Specifications are subject to change without notice.
For further information, a quotation or a demonstration please contact to:

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Printed in Japan: Aug. 2006