

# PAPERLESS RECORDER

i data sheet i PHL

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. Large storage capacity of up to 512MB allows display files for approximately one and a half years to be recorded continuously at the display refresh cycle of 30 seconds (in the case of ASCII data format, 9 channels).

#### 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)  $\times$  144 (H)  $\times$  185 (D) mm (Panel mounting), 1.5kg compact size

### 6. 18-point recording (Option)

12 types of thermocouples, 5 types of resistance bulbs and DC voltage/current input can be recorded up to 18

#### 7. Communication function (Option)

With RS485 (MODBUS protocol) interface

#### 8. Screen saver fanction

Period of non-operation exceeds the setting value of parameter, "LCD lights-out time", recorder turns off the

Setting range of this parameter is 0 to 60 minutes. Set to 0, this function doesn't work, so the backlight keeps turning on during power on.

Screen saver function makes the life of backlight expand and power consumption reduce.

#### 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

Recording cycle: 1 sec to 12 hours Input types:

Thermocouple, resistance bulb, DC voltage, and DC current (Shunt resistors are

fitted in input terminals).

Note) Provide a shunt resistor (type:

PHZP0101) separately.

#### Measuring range

Input types		Reference range	
Thermocouple	BRSKEJTNWLUPN	400.0 to 1760.0°C 0.0 to 1760.0°C 0.0 to 1760.0°C 0.0 to 1760.0°C -200.0 to 1370.0°C -200.0 to 800.0°C -200.0 to 1100.0°C -200.0 to 400.0°C 0.0 to 1300.0°C 0.0 to 1760.0°C -200.0 to 900.0°C -200.0 to 400.0°C 0.0 to 1300.0°C 0.0 to 1300.0°C	
Resistance bulb	JPt100 Pt100 Ni100 Pt50 Cu50	-200.0 to 600.0°C -200.0 to 600.0°C -60.0 to 180.0°C -200.0 to 600.0°C -50.0 to 200.0°C	
DC voltage	50mV 500mV 1-5V 0-5V	0.00 to 50.00mV 0.0 to 500.0mV 1.000 to 5.000V 0.000 to 5.000V	

Note) B, R, S, K, E, J, T : JIS C 1602, DIN IEC 584-1 N : NICOSIL-NISIL (IEC 584)

W : 5% Re-26% Re · W (Hoskins Mfg. Co. USA) L : Fe-Cu · Ni (DIN 43710)

Cu-Cu · Ni (DIN 43710)

PN: Platinum

JPt100 : JIS C 1604-<sub>1989</sub> (Old JIS Pt 100) Pt100, Pt50 : JIS C 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:

Equipped in thermocouple and resistance bulb inputs as standard, and overswings the recording to 100% side.

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: settable up to 7 digits and 125+12 types

#### Subtraction function:

Subtraction between each channel is allowed

#### Totalizing function:

The measured value of each channel can be totalized. The base time can be selected from Day, Hour, Minute, and Second.

#### F value calculation function:

F value (extinction value of bacteria by sterilization by heating) can be calculated from the measured temperature by each channel.

#### Square rooter function:

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

#### Logarithmic calculation function:

The measured value of each channel can be displayed in exponent form.

#### Mathematics function:

The math function as shown below is available

#### 1) Formula

It can be set 1 main formula and 3 temporary one.

Addition, Subtraction, Multiplication, Division Absolute value, X to the power of Y, Logarithm, Natural logarithm, Exponential function, Humidity, Average, Maximum, Minimum.

2) Input signal

DI (DI1 to DI10), Totalize (ch1 to ch30), Analog input (ch1 to ch30), Constant (No.1 to No.20), Communication input (No.1 to No.12)

#### **Indication system**

Indicator:

5.7" TFT color LCD (320 × 240 dots) with backlight, no contrast adjustment

Note) The LCD may have some pixels that do not stay on or off.

> Due to the characteristics of liquid crystal, the brightness may not be uniform, which is not a failure.

## Color of indication:

14 colors

### Applicable language:

English, French, German, Italian (switch-

able)

Life of backlight: 50,000 hours (20°C)

(the complete indicator unit should be re-

placed when replacing backlight).

Trend display: Direction: vertical and horizontal

Number of channels: 10 channels or 4 channels for the group on one screen (In-

put: 18 points at the maximum). Display refreshment cycles:

select from 1 second to 12 hours No numerical value display. Scale display/

no-display can be selected.

#### Bar graph display:

Direction: vertical

Number. of channels: 10 channels or 4 channels for the group on one screen (Input:18 points at the maximum).

Display refreshment cycles: 1 second.

#### Analog meter display:

Display for up to 4 inputs per 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 channels or 4 channels for the group on one screen (Input:18 points at the maximum). Display refreshment cycles: 1 second.

## Totalizing data display:

Number of channels: 10 channels or 4 channels for the group on one screen (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 (note 1) at 10 channels on one screen or up to 16 (= 8 × 2) characters at 4 channels on one screen

Note 1: On some screen, it can be displayed only 7 characters.

#### Characters to be displayed:

Alphanumerical characters

Tag, unit and channel number display: It depends on the screen. See below

C	Number of channel on one screen		Items			
Screen			TAG1	TAG2	unit	ch number
Trend	4 or less		+	+	+	+
	more than 5		Х		X	X
Bar graph	4 or less		+	+	+	+
	more than 5		Х		Х	Х
Analog	4 or less		а	ll items are	e displa	yed
meter	more than 5	No1 to 4	V		V	٧
		others	Х		Х	X
Digital	4 or less		а	II items are	e displa	ved

table.

more than 5 x: only 1 item can be displayed.

<sup>+:</sup> only 2 items can be displayed.

v: 3 items can be displayed. Only TAG2 can't be displayed.

#### Historical trend display:

The past data can be displayed from the Compact Flash or internal memory. The past data file can be read and displayed with scroll display function or jump the cursor to the position which you entered date and time. Scale display/no-display can be selected.

#### Number of screen groups:

Four groups (Up to 10 channels per 1 group can be registered.)

## Keyboard

No. of Keys:

Function: Use to select various screens and set

various parameters.

## Recording function

#### External memory media:

Compact Flash card

(Format as FAT32, FAT16 or FAT, or recorder can't read and write.)

#### Recording capacity:

2 GB maximum (compact flash). Limiting the recording file to 64 MB is recommended (for 112 hours if display refresh cycle is 1 second. See Table 1 (p. 7).)

(When the size of the recording file comes to be 256 MB or more, a new file is created automatically and recording is maintained.)

\* Please change the compact flash every six month to prevent the data losing.

### 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 "Trend display" screen. However, they are automatically set to about 1 minute if the refreshment cycles are set to less than 1 minute.

Trend data:

Average, instance or min. and max. measured values out of measured data that are sampled at the measuring cycles are

saved.

Event data:

Saves alarm data, message data and power ON data when the power turns off and on during recording.

#### Totalizing value data:

Totalizing value data at designated timing is recorded per channel.

Totalized value data at designated totalized value recording cycle or the sum total is recorded in the totalizing file.

You can choose which type you want to record

For each cahnnel. it can be select as totalizing action from Analog input totalization, Digital input count or period of Digital input ON, and it can be select as totalizing period type from Dairy, Weekly, Monthly, Annual, Periodic, Dairy (time set) or External input signal.

Even if a power failure occues during totalization and then the power is restored, the totalization restarts from the value before power failure.

#### Storage capacity:

Approximately 3 years when the display refresh cycle is 30 seconds (in the case of 9-channel recording in ASCII data format, and 512 MB Compact Flash is used). Refer to Table 1.

#### Residual capacity of memory:

Indicates the memory which has already used on the screen. When all the memory is used up, you can stop recording or delete the oldest recording file to save the newest data.

Compact flash card form: PHZP2801

(CF card) (If a card other than the above is used, no

operation assurance is ensured.

Meanwhile, as for other CF cards for which operation check will have been completed, the results will be posted on our company's homepage sequentially.

Please refer to this website.)

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 di-

rectly read on Excel, etc.)

Note: The data recorded in binary format

cannot be read directly.

Approximately 166 bytes per 1 sampling (for 9-channel input in ASCII format) or approximately 40 bytes (for 9-channel input

in binary format)

#### **Alarm function**

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

table.

Type of alarm: High/Low limits

Indication: Status (alarm types) is displayed on digital

display unit when an alarm occurs. History display on alarm summary (Alarm start/cancel time and alarm types)

**Hysteresis:** Set within the recording range of 0 to

100% (it is effective only in case of high/

low limit alarm)

Relay output: Number of points; 10 (option: Cannot be

selected if the number of input points is

18.)

Transistor output (Open collector):

Number of points; 18 (option)

## Alarm latch function:

Keeps alarm indication and alarm output

turning on after alarm reset.

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 (both employable)

Power consumption:

100V AC	About 36VA
240V AC	About 47VA

## Structure

Mounting method:

Panel-mounted (vertical panel)

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

Mass: About 1.5 kg (no option)

External terminal board:

Screw terminals (M3 thread) RJ45: Ethernet terminal (option)

## Normal operating condition

Power voltage: 90 to 264V AC

Supply frequency:

 $50/60 \text{ Hz } \pm 2\%$  (both employable)

Ambient temperature: Panel-mounted

0 to 50°C

(without Ethernet option\*1)

0 to 40°C

(with Ethernet option\*2)

Ambient humidity:

20 to 80%RH

Vibration: 10 to 60Hz 0.2m/s2 or less

Shock: None

Magnetic field: 400 A/m or less

Signal source resistance:

Thermocouple input ....  $1k\Omega$  or less Resistance bulb input ...  $10\Omega$ /wire or less (resistance of each wire of 3-wire system

should be balanced).

Voltage input ... 0.1% or less of input

resistance

Mounting posture:

Forward tilt 0°, backward tilt within 30°,

horizontal 0°

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

Environmental protection:

IEC IP50 (Front)/20 (Terminal)

Installation category:

Pollution degree: 2 Operating altitude:

2000m max.

\*1: In case of the 12th digit of ordering code is "Y" or "R".

\*2: In case of the 12th digit of ordering code is "E" or "W".

## 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, no condensation Vibration: 10 to 60Hz, 2.45m/s<sup>2</sup> or lower Shock: 294m/s<sup>2</sup> or lower (packed state)

#### 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 ty	pes	Digital indication accuracy Note 1	Digital indication resolution
Thermocouple	BRSKEJTZŠLJZ	±(0.15%+1 digit)  ±(0.3%+1 digit) for the range shown below Thermocouple B:	0.1°C
Resistance bulb	JPt100 Pt100 Pt50 Ni100	±(0.15%+1 digit)	0.1°C
	Cu50	±(0.5%+1 digit)	
DC voltage 50mV 500mV			10μV
		±(0.15%+1 digit)	100μV
	1-5V	(0.107011 digit)	1mV
0-5V			1mV

Note 1) Digital indication accuracy is a percentage (%) of the value in the measuring range on page 1.

Note 2) No error of reference contact compensation of thermocouple is

#### 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 volt-

age: ±10V DC (continuous)

Input resistance: Thermocouple, DC voltage:

About  $1M\Omega$ 

#### **Others**

Clock: With calendar function (Christian era)

Accuracy: ±100ppm or less (monthly er-

ror: about 4 minutes)

However, time error at ambient temperature 23±2°C and power ON/OFF is not

included

Memory backup: Parameters are saved to the internal non-

volatile flash memory

The clock and totalized data are backed up with built-in lithium battery.

#### Insulation resistance:

 $100M\Omega$  or more (when measured between each terminal and ground by using a 500V DC megger)

#### Withstand voltage:

Power terminal – ground: 2000V AC, 1 min Input terminal – ground: 500V AC, 1 min Alarm terminal – ground: 2000V AC, 1 min Alarm terminal - alarm terminal:

750V AC, 1 min

Communication terminal - ground:

500V AC, 1 min

Alarm terminal (open-collector) – ground:

500V 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 (100V AC base):  $\pm (0.2\% + 1 \text{ digit})$  or lower.

For the fluctuation in the range from 47 to 63Hz (power voltage: 100V AC)

Reading change (50Hz base):  $\pm$ (0.2%+1 digit) or lower.

### Effect of input signal resistance:

Thermocouple input:  $(0.5\mu\text{V}/\Omega)+1$  digit or less

DC voltage: Fluctuation for resistance value equivalent to 0.1% of the input resistance:  $\pm (0.2\% + 1 \text{ digit})$  or lower.

Resistance bulb (for wiring resistance of  $10\Omega$  for 1 line (the same for 3 lines)) Reading change:  $\pm (0.2\% + 1 \text{ digit})$  or lower.

Effect of ambient temperature:

Reading change:  $\pm (0.3\% + 1 \text{ digit})/10^{\circ}\text{C}$  or lower.

#### Effect of Mounting position:

For the backward 30° slant

Reading change:  $\pm (0.2\% + 1 \text{ digit})$  or lower.

#### Effect of vibration:

When sine wave of 10 to 60Hz with the acceleration of 0.2m/s² is applied in each direction for 2 hours.

Reading change:  $\pm (0.2\% + 1 \text{ digit})$  or lower.

#### Effect of external noise:

Normal mode noise (50, 60Hz±0.1Hz)

···20dB or more

Common mode noise (50, 60Hz±0.1Hz)

 $\cdots$ 120dB or more

(Thermocouple input: minus terminal-

ground)

(Resistance bulb input: b Line-ground)

## Additional function (option)

■ Alarm relay output/DI (11th 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:

Contact output (SPST:10 points),

Individual channel or common output (OR output) allowed.

DO1: Contact capacity; 150V/3A AC,

30V/3A DC (resistive load)

DO2-10: Contact capacity; 240V/3A AC,

30V/3A DC (resistive 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) Totalizing reset
- (6) LCD turns on
- (7) E-mail sending

On pulse width: 200msec or longer Off pulse width: 200msec or longer

■ Communication, Alarm output with open-collector and DI (12th digit of code symbols: "R")

A card with communication with RS485. MODBUS protocol, 18-points open-collector output and 5-points DI input is available.

#### Terminal structure:

M3 screw terminal for communication, DO11 (alarm output with open-collector),

DI6 and power supply for DIO.

D-sublight type 25 pins connector with female terminal for DO12 to DO28 (alarm output with open-collector), and DI7 to DI10.

## Communication: Physical specifications: EIA RS485

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 connect-

able including master station Communication distance:

Total extension 500m or less RS232C/RS485 Signal converter (recom-

mendation): Isolated type

Manufacture: OMRON Corporation

Model: K3SC-10

Alarm output: Open-collector transistor output (18

points)

Electrical Rate: 30Vdc, 100mA (resistive

load)

DI input: No-voltage contact input (5 points)

The following control is allowed by contact input.

aut impat. 1) December etc

- (1) Recording start/stop
- (2) Message set
- (3) F value calculation reset
- (4) Totalizing start/stop
- (5) Totalizing reset
- (6) LCD turns on
- (7) E-mail sending

On pulse width: 200msec or longer Off pulse width: 200msec or longer

## **Ethernet (Option)**

The following can be performed through the Ethernet function.

■ HTTP server (Internet Explorer 6 is available) Note 1 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.) Note 1

File download: Record files stored in compact flash (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 TC/IP

Data read: Settings can be read through MODBUS

TCP/IP communication.

Data write: Settings can be written through MOD-

BUS TCP/IP communication.

Note1: Neither Netscape nor Mozilla Firefox are available.

#### Support software

The following software is provided as standard.

• 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

■ Loader software for PC

Major function: Performs various parameter setting/

change of the main unit

O/S: Windows 2000/XP, Windows 7 (Home

Premium, Professional (Not applicable for

64 bit version))

Required memory:

64MB or larger

Disk drive: Windows 2000/XP/7-capable CD-ROM

drive

Hard disk capacity:

Free capacity of 30MB or larger required

Printer: Windows 2000/XP/7-capable printer and

printer driver

Note) PC loader communication cable (type PHZP1801) 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.

O/S: Windows 2000/XP, Windows 7 (Home

Premium, Professional)

Required memory:

Printer:

64MB or larger

Disk drive: Windows 2000/XP/7-capable CD-ROM

drive

Hard disk drive: Free capacity of 30MB or larger required

Windows 2000/XP/7-capable printer and

printer driver

## **Standard functions**

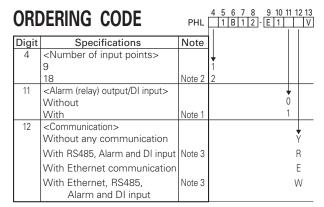
Function	Description	
Record range voluntary setting	Recording range can be set by channel.	
Input type setting	Input can be set by channel. (Key operation on the front face) Set the same input type for every 2 channels. See "SELECTING INPUTTYPE" on the last page.	
Skip function	Skips arbitrary channel display/recording.	
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 Compact Flash usage is displayed at the top of the bargraph.	
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 (primary delay filter). 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 compact flash by scrolling the screen or jump to time when you entered.	

## Table 1. Recording capacity

If the number of input points is 9, there are no events such as messages, and the data format is ASCII, the recording can be made for the period of time listed in the tables shown below. (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.)

CompactFlash size	256MB			
Display refreshment cycle 1 sec 10 sec 30 sec 1 mi		1 min		
Recordable capacity(about)	18 days	187 days	1.5 years	3 years

When Compact Flash is not used, up to 600K bytes of the recording data and the event data can be stored in the main unit. (In case of 9-channel in Max./Min. recording, approximately 15,300 data can be stored. For 4 hour at the display refresh cycle of 1 second. The number of the save data varies depending on the number of the event data.



Note 1: Cannot be selected if 2 is selected for the forth digit (the number of input points is 18).

Note 2 : Cannot be selected if 1 is selected for the 11th digit. Note 3 : Alarm outputs are open-collector transister output.

## STANDARD ACCESSORY

ltem		Quantity Panel mounting	
Recorder (PHL)		1	
Panel mounting bracket		2	
CD-ROM PC support software instruction manual		1	
Panel pack	ing for the front face	1	
Noise filter for the power supply		1	

## **OPTIONAL ITEMS**

Item	Code	Specification
		'
Shunt resistor for DC current input	PHZP0101	10Ω±0.1%
PC loader communication cable	PHZP1801	With USB-A and USB miniB *
CD-ROM with Instruction manual and 2 support software	PHZP0601	
Terminating resister for communication	PHZP0701	100Ω
D-sublight type 25pins connector with male terminal for alarm output, which does not include cable	PHZP0801	
Transmission cable	PHZP0901 PHZP1001	For PHL to PC For PHL to PHL
PC card adapter	PHZP0501	For Compact Flash
Compact Flash	PHZP2801-512 PHZP2801-01G	512MB 1GB

<sup>\*</sup> Shape of this cable is shown below

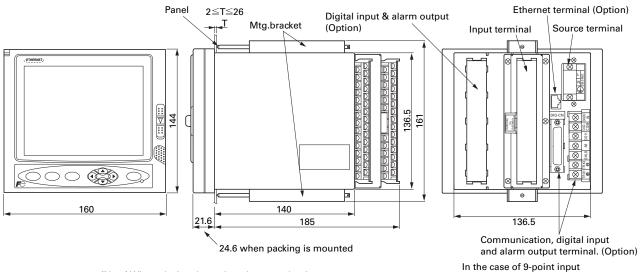
USB (A) Plug – USB (Mini-B ) Plug



# **OUTLINE DIAGRAMS (Unit: mm)**

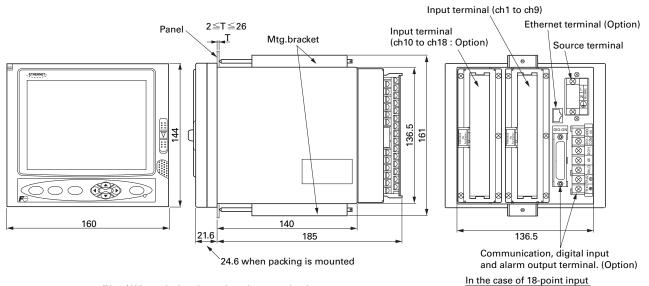
## **PANEL MOUNTING**

In the case of 9-point input



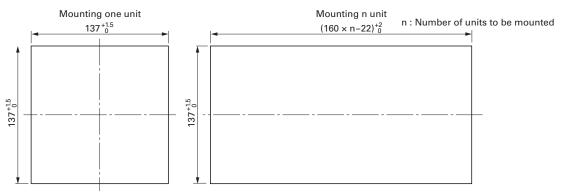
(Note) When placing the main unit on another instrument or on the floor, allow a space of 100mm or more between the unit and instrument or the floor.

In the case of 18-point input



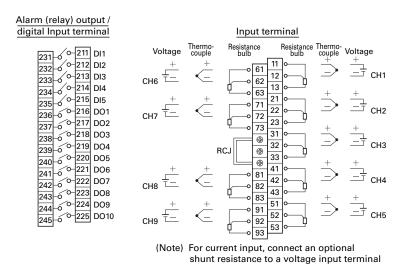
(Note) When placing the main unit on another instrument or on the floor, allow a space of 100mm or more between the unit and instrument or the floor.

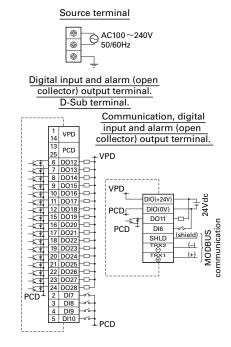
## PANEL CUTOUT



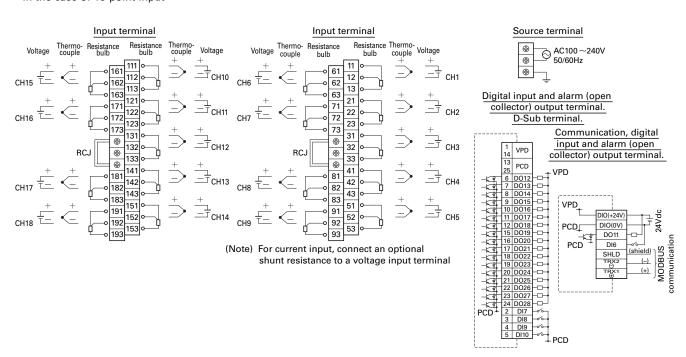
## **EXTERNAL CONNECTION DIAGRAMS (M3 screw)**

In the case of 9-point input





In the case of 18-point input



## **SELECTING INPUT TYPE**

Basically, the input type can be 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 category	Details	
Thermocouple, 50mV	K, E, J, T, R, S, B, N, W, L, U, and PN thermocouples, 50mV	
Resistance bulb	Pt100, JPt100, Ni100, Pt50, Cu50	
500mV	500mV	
5V	1 to 5V, 0 to 5V	

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

## Example of channel input type selection

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

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## 

\*Before using this product, be sure to read its instruction manual in advance.



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