PAPERLESS RECORDER

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) × 144 (H) × 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 points.

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 backlight.
   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	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
	Ni100	−60.0 to 180.0°C
	Pt50	−200.0 to 600.0°C
	Cu50	−50.0 to 200.0°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 : 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)
    U : Cu-Cu · Ni (DIN 43710)
    PN: Platinum
    JPt100 : JIS C 1604-1989 (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 (switchable)

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

(the complete indicator unit should be replaced when replacing backlight).

Trend display: Direction: vertical and horizontal

Number of channels: 10 channels or 4 channels for the group on one screen (Input: 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 table.

Screen	Number of channel on one screen		Items			
			TAG1	TAG2	unit	ch number
Trend	4 or less		+	+	+	+
	more than 5		x		x	x
Bar graph	4 or less		+	+	+	+
	more than 5		x		x	x
Analog meter	4 or less		all items are displayed			
	more than 5	No1 to 4	v		v	v
		others	x		x	x
Digital	4 or less		all items are displayed			
	more than 5		v		v	v

x: only 1 item can be displayed.

+: 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: 8

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 (7 page).)
(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 directly 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 settable.

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 Hz ±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/s^2 or less

Shock: None

Magnetic field: 400 A/m or less

Signal source resistance:

Thermocouple input …. 1kΩ or less

Resistance bulb input … 10Ω/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:

II

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".

Transportation/storage conditions

Temperature: −10 to +60°C

Humidity: 5 to 90%RH, no condensation

Vibration: 10 to 60Hz, 2.45m/s^2 or lower

Shock: 294m/s^2 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 types		Digital indication accuracy Note 1	Digital indication resolution

Thermocouple	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 Pt50	±(0.15%+1 digit)	0.1°C
	Ni100 Cu50	±(0.5%+1 digit)	
DC voltage	50mV	±(0.15%+1 digit)	10μV
	500mV		100μV
	1–5V		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 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:

About 1MΩ

Others

Clock: With calendar function (Christian era)

Accuracy: ±100ppm or less (monthly error: 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 nonvolatile flash memory.

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

Insulation resistance:

100MΩ 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): ±(0.2%+1 digit) or lower.
For the fluctuation in the range from 47 to 63Hz (power voltage: 100V AC)
Reading change (50Hz base): ±(0.2%+1 digit) or lower.

Effect of input signal resistance:

Thermocouple input: $(0.5\mu V/\Omega)$+1 digit or less
DC voltage: Fluctuation for resistance value equivalent to 0.1% of the input resistance: ±(0.2%+1 digit) or lower.
Resistance bulb (for wiring resistance of 10Ω for 1 line (the same for 3 lines))
Reading change: ±(0.2%+1 digit) or lower.

Effect of ambient temperature:

Reading change: ±(0.3%+1 digit)/10°C or lower.

Effect of Mounting position:

For the backward 30° slant
Reading change: ±(0.2%+1 digit) or lower.

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) or lower.

Effect of external noise:

Normal mode noise (50, 60Hz±0.1Hz) ···20dB or more
Common mode noise (50, 60Hz±0.1Hz) ···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 connectable including master station
Communication distance:
Total extension 500m or less
RS232C/RS485 Signal converter (recommendation):
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.
(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:

64MB or larger

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

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

Printer: 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 INPUT TYPE" 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.

EU Directive Compliance CE

LVD (2014/35/EU)

EN 61010-1

EN 61010-2-030

EMC (2014/30/EU)

EN 61326-1 (Table 3)

EN 55011 (Group 1 Class A)
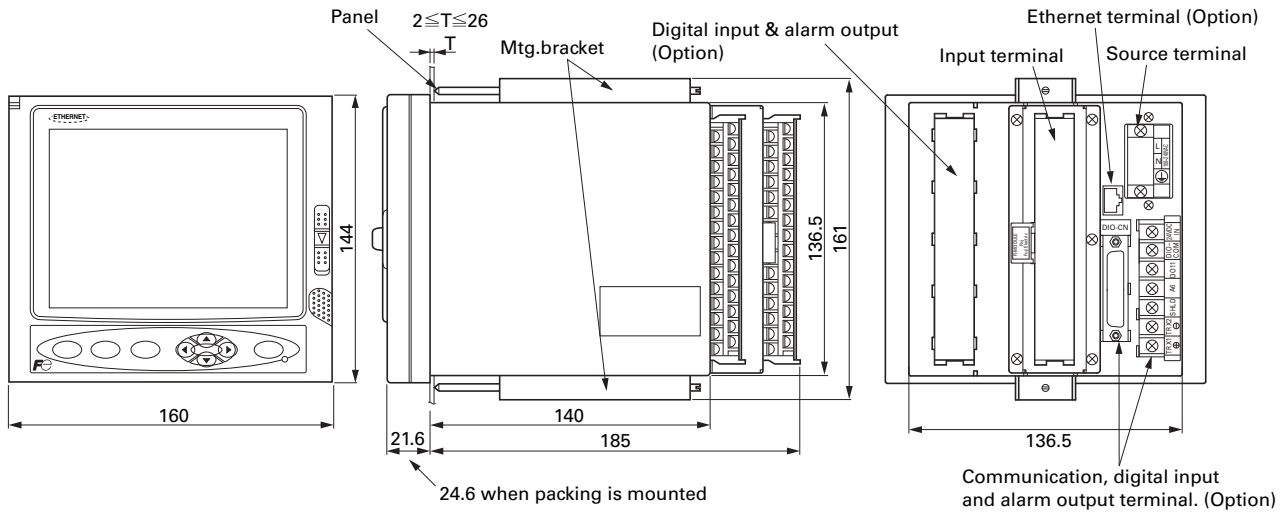
EN 61000-3-2 (Class A)

EN 61000-3-3

RoHS (2011/65/EU)

EN 50581

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 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.

ORDERING CODE

PHL | 4 5 6 7 8 9 10 11 12 13 |
        1 B 1 2 - E 1   V

Digit	Specifications	Note	
4	<Number of input points>		
	9		1
	18	Note 2	2
11	<Alarm (relay) output/DI input>		
	Without		0
	With	Note 1	1
12	<Communication>		
	Without any communication		Y
	With RS485, Alarm and DI input	Note 3	R
	With Ethernet communication		E
	With Ethernet, RS485, Alarm and DI input	Note 3	W

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

Item	Quantity
	Panel mounting
Recorder (PHL)	1
Panel mounting bracket	2
CD-ROM PC support software instruction manual	1
Panel packing 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

* 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

Panel
2≦T≦26
T
Mtg.bracket
Digital input & alarm output (Option)
Ethernet terminal (Option)
Input terminal
Source terminal

144

160

136.5
161

21.6
140
185

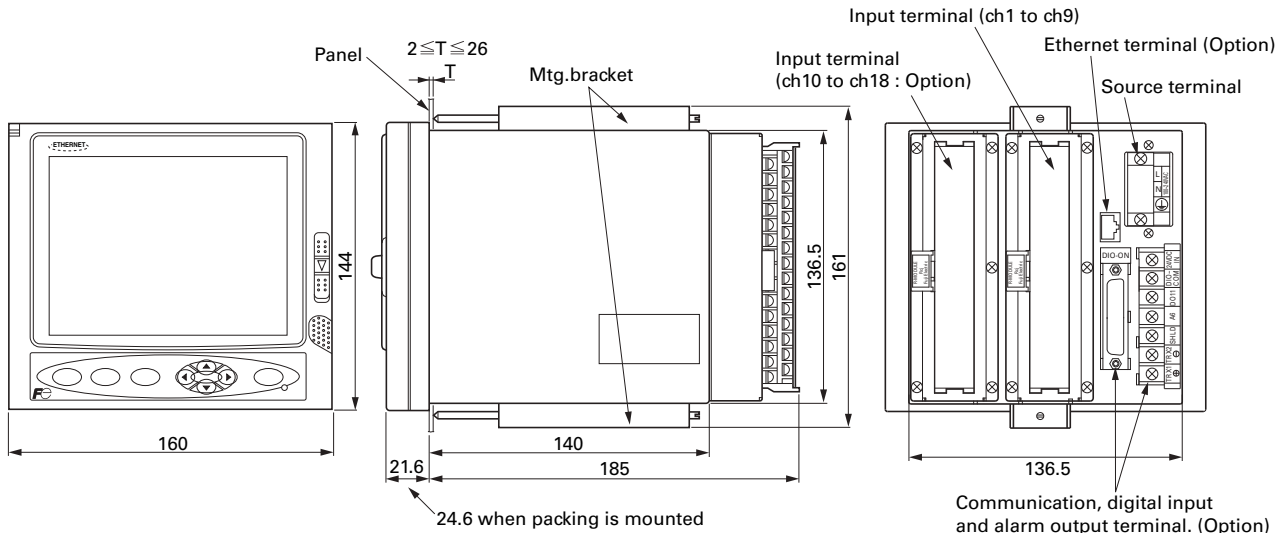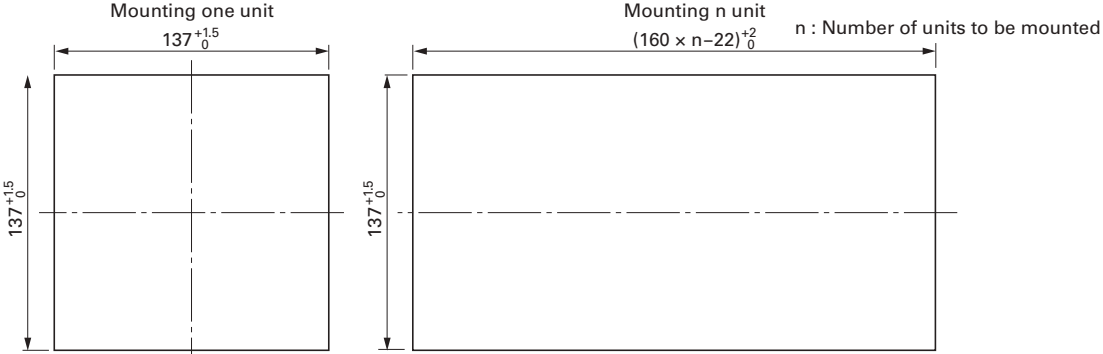24.6 when packing is mounted

136.5

Communication, digital input and alarm output terminal. (Option)

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

Panel
2≦T≦26
T
Mtg.bracket
Input terminal (ch10 to ch18 : Option)
Input terminal (ch1 to ch9)
Ethernet terminal (Option)
Source terminal

144

160

136.5
161

21.6
140
185

24.6 when packing is mounted

136.5

Communication, digital input and alarm output terminal. (Option)

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

Mounting one unit

$137 ^{+1.5}_{0}$

$137 ^{+1.5}_{0}$

Mounting n unit

$(160 \times n-22) ^{+2}_{0}$

n : Number of units to be mounted

$137 ^{+1.5}_{0}$

Do not use the water proof packing in case of mounting n unit

EXTERNAL CONNECTION DIAGRAMS (M3 screw)

In the case of 9-point input

Alarm (relay) output /
digital Input terminal

Input terminal

Source terminal

(Note) For current input, connect an optional
shunt resistance to a voltage input terminal
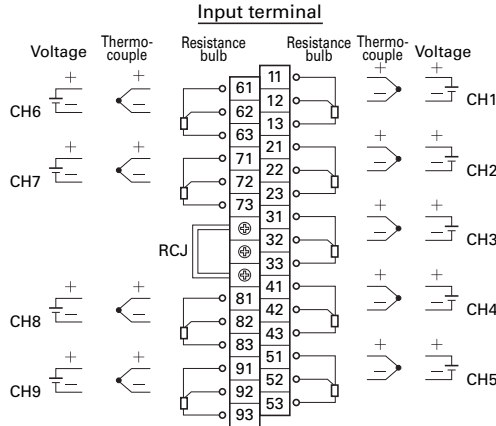
Digital input and alarm (open
collector) output terminal.
D-Sub terminal.
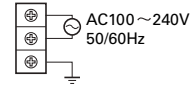
Communication, digital
input and alarm (open
collector) output terminal.
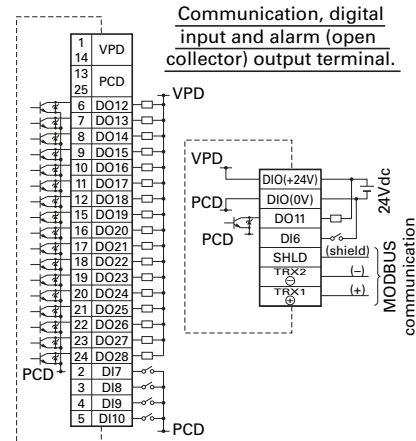
In the case of 18-point input

Input terminal
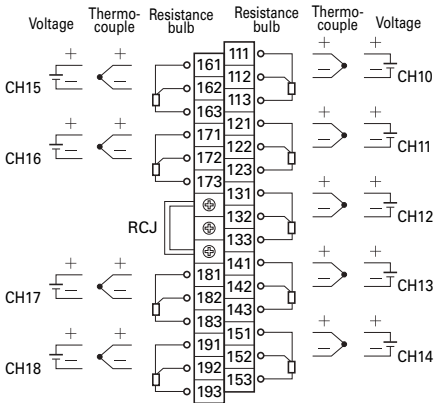
Input terminal
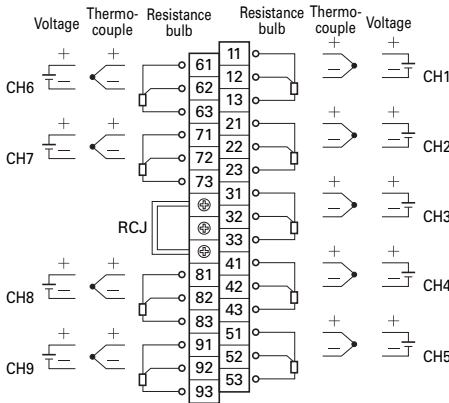
Source terminal

(Note) For current input, connect an optional
shunt resistance to a voltage input terminal

Digital input and alarm (open
collector) output terminal.
D-Sub terminal.
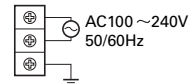
Communication, digital
input and alarm (open
collector) output terminal.
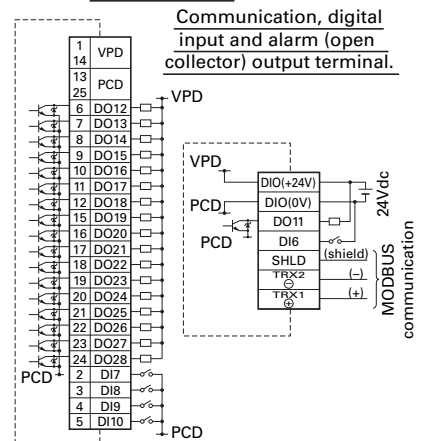
SELECTING INPUT TYPE

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, 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.

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⚠ Caution on Safety

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