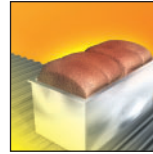
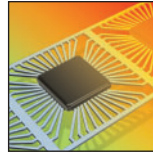


模組化溫度調節器

THERMAC EJ1



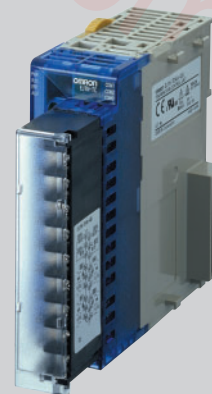
利用彈性模組的方式，提昇與上位機器間的連接性與親和性
隨心所欲地控制溫度，操作簡易



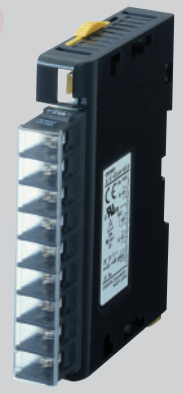
HFU
高功能模組
EJ1N-HFU型



4CH溫度調節
基本模組
EJ1N-TC4型



2CH溫度調節
基本模組
EJ1N-TC2型



EDU
終端模組
EJ1C-EDU型

可藉由PC或顯示器進行設定 其中Ladderless通訊功能更是 無需再撰寫階梯程式， 即可與PLC進行通訊

徹底追求裝置控制的趨勢
配合顧客的需求，
達成豐富的「易用性」目標



過去欲建立PLC與溫度調節器的通訊程式極為不易

➤採取Ladderless通訊方式，因此不需要通訊程式

想要由顯示器來進行設定，想要簡單的設定方式

➤NS系列可利用Smart Active Parts (SAP)程式庫簡單地進行設定

與上位機器進行資料通訊時耗費許多時間

➤以115.2kbps的通訊速度達成資料通訊的高速化

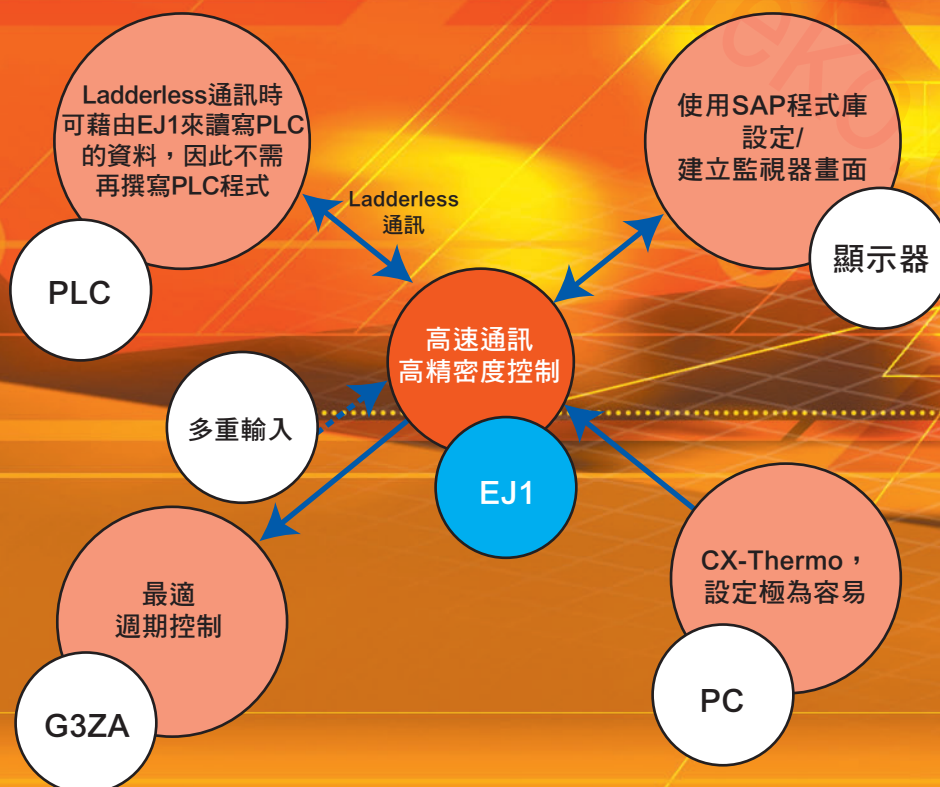
希望提昇輸出控制的等級

➤由於與多點動力控制模組G3ZA直接連接，因此能達到高精度・低干擾的控制

希望減少庫存品

➤由於在1個機種中即採用了白金阻抗體・熱電對・類比式的完整多重 (Full-Multi)輸入方式，因此能夠降低庫存壓力。

利用Ladderless通訊的Programless連接進行連繫， 大大提昇了與週邊裝置連接時的便利性！





※本圖所示為可與EJ1型進行連接的上位機器(PLC、人機介面(HMI))、PC、G3ZA型之表示圖。
由於機器在組合上有所限制，因此在連接時，請確認EJ1的系統組成圖。

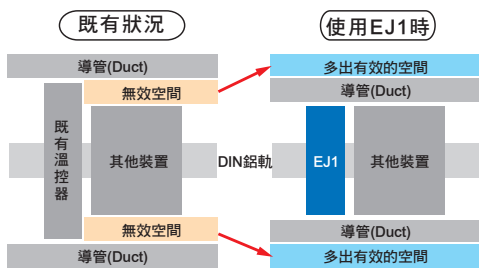
靈活配置的面板、更佳的裝置間連接性、簡易的擴充與維修--提昇設計・組裝・維修效率



面板空間

藉由模組的小型化與共通化，
有助於面板體積的精簡化

標準化規格可減少無效空間



面板內的設置表示圖

配盤的配置更具彈性規劃

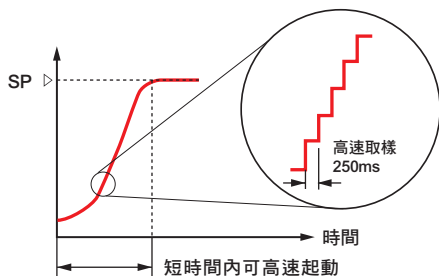
利用終端模組(end unit)將模組分散配置，將模組分散至多餘的空間後，即可有效率且精簡地使用面板空間。



具高速應答

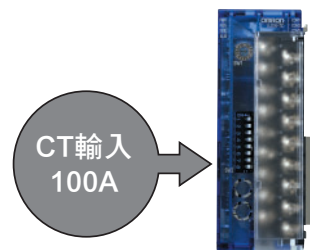
250ms高速取樣速度

取樣週期為250ms/1ch (為本公司先前的產品的2倍)，最適合升溫時需要高速回應速度的應用領域。



比流器(CT)輸入100A

加熱器斷線警報可支援至100A (為本公司先前產品的2倍)，同時非常適合用在大容量加熱器的控制。另外還可供SSR故障警報及加熱器過電流警報使用。



性能極致全新模組化溫度調節器



PANEL SPACE

具備易用性及高效能，
能有效支援各種應用領域

單一機種即可涵蓋所有輸入方式的全面性多重輸入功能

EJ1 1個機種可支援Pt、熱電對、類比輸入等所有的輸入，並且亦可支援W、PL II感測器，避免繁複的選擇方式及發生選擇錯誤的機會，讓庫存管理及現場維護更為簡便。

- 白金阻抗體輸入 →
- 熱電對輸入 →
- mA輸入 →
- V輸入 →



選擇容易因此
能降低庫存

與多點動力控制器G3ZA直接進行連接，能夠控制最佳週期

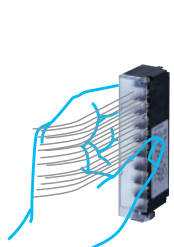
1台基本模組最多能與8台G3ZA直接連接，透過最佳週期時間的控制方式，實現高精度、低干擾的控制性，和電力調整器相較之下，更能將面板的體積進行小型化。



由組裝、配線到維修均極為簡便。可協助客戶提昇生產力。

容易組裝與維修的可拆卸式端子台

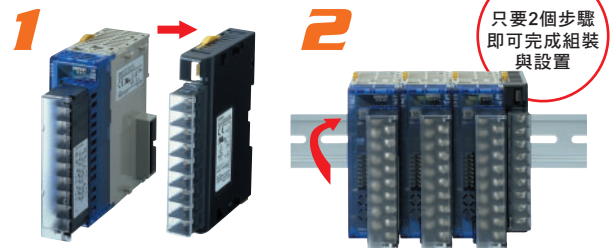
採用新機構-可拆卸式端子台，可提昇組裝時的作業性。另外，維修時不需拆除配線即可更換本體，能夠防止錯誤配線並提昇作業性。



保持既有配線
→ 易拆卸
→ 免除誤配線疑慮

支援水平連結接頭與DIN鋁軌

利用不需配線的接頭方式即可進行模組的連接。支援DIN鋁軌，因此安裝至面板時只要可拆式端子台即可完成，十分簡便。

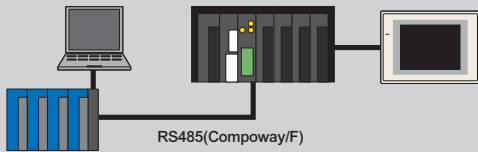


靈活支援各種應用領域，建構出最佳系統

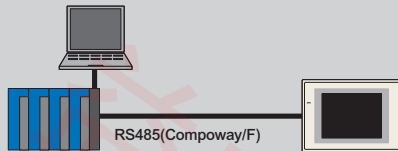
系統構成

由基本模組(TC2/TC4)所架構的系統

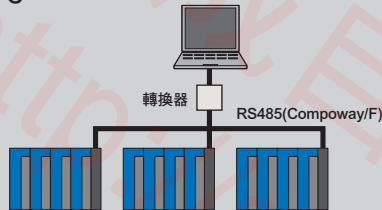
● 連接PLC/顯示器



● 連接顯示器

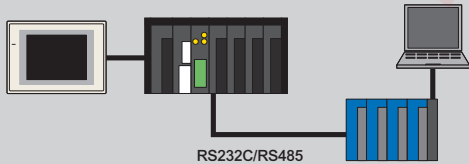


● 連接PC

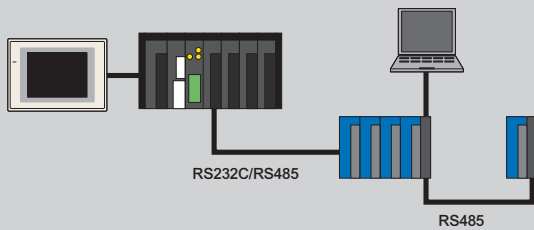


由高功能模組(HFU)所架構的系統

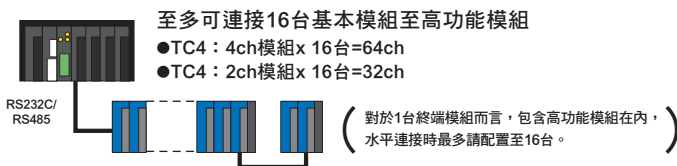
● 利用Ladderless通訊與PLC以無程式連接方式來架構系統



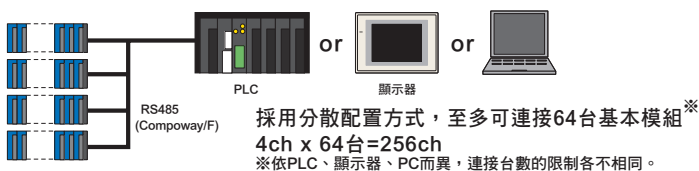
● 採用Ladderless通訊所架構的分散配置系統



採用Ladderless通訊，能夠進行64ch的系統化

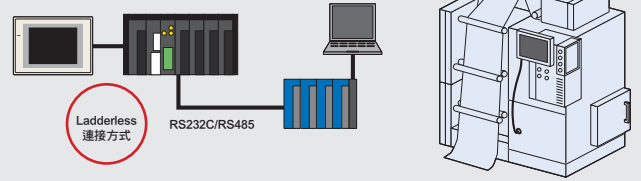


可建構至多256ch的系統



應用例

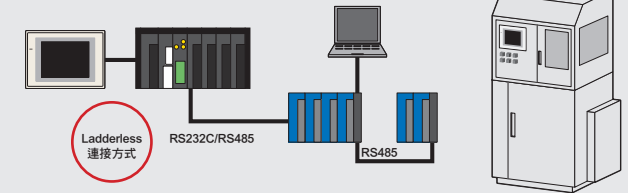
包裝機



與PLC採取Ladderless通訊方式，可減少軟體的開發工時

- 以最小的空間架構控制器
- 以高速取樣方式提昇成品品質
- 增設加熱器(Heater Block)時，只要追加基本模組後即可因應

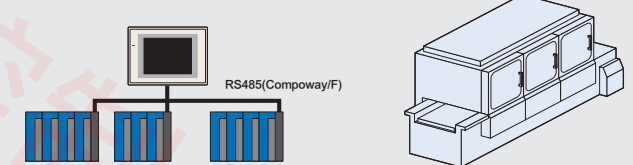
半導體製造裝置



利用高速通訊方式提昇裝置效能

- 最快可達115.2kbps的高速資料通訊
- 可接受超出溫度範圍的類比輸入
- 將面板設置空間精簡化

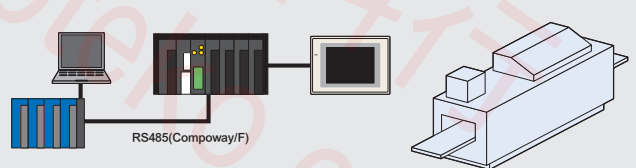
電子零件燒成爐



採用分散配置方式，可依區域別進行模組設計

- 採用高速取樣，可執行最佳溫度控制
- 即使大容量的加熱器，也能以100A的加熱器斷線警報提供支援
- 採取區域別分散配置的方式，有效減少補償導線等配線

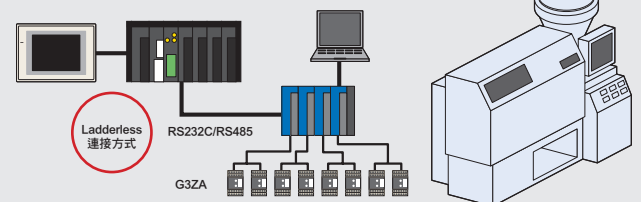
迴焊爐



可靈活支援溫度控制點數

- 採用高速取樣，可執行最佳溫度控制
- 可接受超出溫度範圍的類比輸入
- 由終端模組輸出2點綜合警報，因此不需追加模組，即可使用系統警報

成型機



和電力調整器相較，加熱器可達到體型較小、節省空間的目標，並且有利於節省配線

- 利用G3ZA抑制加熱器的電力
- 亦可對應每個模組的增設
- 透過Overshoot調整功能達到一致的品質

由於所記載的應用實例僅為參考用途，因此使用時請在確認機器、裝置的功能及安全性後再行使用，若在極度要求安全性的用途上使用時，請勿超過額定規格與性能，並擬定故障安全系統(Fail-safe)等安全對策，同時洽詢本公司的業務員，並根據規格書等資料進行確認。

種類 (有◎記號者為標準機種,無記號者(訂購生產機種)之交貨日期請向經銷商洽詢)

■ **本體**

● **標準控制型**

模組名稱	電源	控制點數	控制輸出 1~2	控制輸出 1~2	補助輸出	機能		通信功能	輸入類別	端子	型式
						加熱器斷線警報	Event輸入				
基本模組 (溫度控制) *1	由終端 模組 供應 DC24V	2點	電壓輸出2點 (SSR驅動用) *2	電晶體輸出 2台(PNP)	無	2點 *3	2點	G3ZA型 連接埠: RS-485 由終端模組連 接 埠A:RS-485 埠B:RS-485	可依CH分別選擇 熱電對、白金測 溫阻抗體、類比電 壓、類比輸入等項 目	M3端子	◎EJ1N-TC2A-QNHB型
		4點		電壓輸出 2點 (SSR驅動用) *2						無	無
高功能模組 *1	無	無	無	無	電晶體輸出 4台(PNP)	無	4點 *4	由終端模組連 接 埠A:RS-485 埠C:RS-485 或是切換為 RS-232C	無	M3端子	◎EJ1N-HFUA-NFLK型
										無	無
終端模組 *1	DC24V				電晶體輸出 2台(PNP)		無	埠A:RS-485 埠B:RS-485 以及 埠A (連接頭)		M3端子	◎EJ1C-EDUA-NFLK型

- *1. 連接基本模組、高功能模組時必須配備終端模組。另外,若未配備基本模組時,高功能模組將無法動作。
另外,基本模組單體無法與外部進行通訊。
- *2. 若使用加熱冷卻控制功能時,2點型可將控制輸出3、4分配為冷卻或加熱控制輸出。
另外,4點型在輸入2點時會變為加熱冷卻控制功能。
- *3. 若使用加熱器斷線警報時,必須備有另售的比流器(E54-CT1型或E54-CT3型)。
- *4. 連接至高功能模組之基本模組的動作指示,總共有3種類型可供選擇。

■ **附件(另售)**

● **比流器(CT)**

口徑	型式
φ 5.8	◎E54-CT1型
φ 12.0	◎E54-CT3型

● **支援軟體CX-Thermo (CX Thermo) Ver.3.0**

型式
EST2-2C-MV3型

● **G3ZA型連接纜線**

纜線長度	型式
5m	EJ1C-CBLA050型

● **USB-Serial連接線**

型式
E58-CIFQ1型

● **鋁軌安裝用選購品**

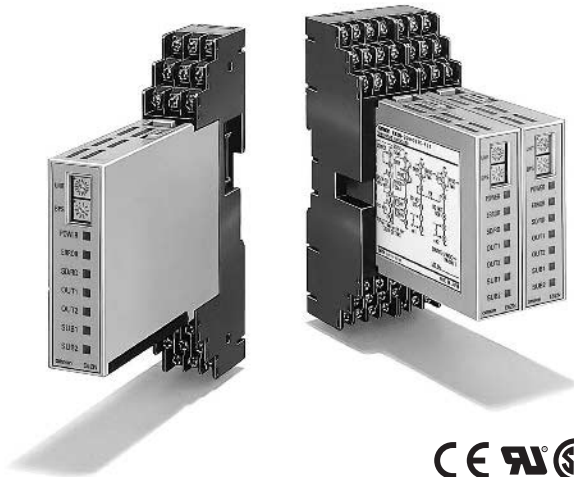
名稱	型式
支撐鋁軌	◎PFP-100N型
	◎PFP-50N型

Modular Temperature Controller

E5ZN

New DIN Track Mounting Temperature Controller

- Two channels of temperature control available despite width of only 22.5 mm.
- The Temperature Controller itself can be replaced without changing terminal wiring.
- Use in combination with a compact Setting Display Unit to reduce communications programming requirements.
- A wide variety of operation indicators (single-color LEDs) enable easy operation monitoring.
- Power supply and communications wiring not required between Units when mounted side-by-side.



Model Number Structure

Model Number Legend

E5ZN- 2 □ □ □ □ □ -FLK
 1 2 3 4 5 6 7

1. Control points

2: Two points

2. Control output

Q: Voltage (for driving SSR)

T: Transistor

C: Current

3. Auxiliary output

P: Transistor (sourcing)

N: Transistor (sinking)

4. Option

H: Heater burnout alarm

F: Transfer output

5. Communications

03: RS-485

6. Input type

TC: Thermocouple

P: Platinum resistance thermometer

7. CompoWay/F serial communications

-FLK: CompoWay/F serial communications

Ordering Information

List of Models

Name	Power supply	No. of control points	Control output	Auxiliary output	Functions	Communications functions	Input type (See note 5.)	Model
Temperature Controller (See note 1.)	24 VDC	2	Voltage output (for SSRs)	Transistor output: 2 pts (sinking)	Heater burnout alarm (See note 3.)	RS-485	Thermocouple	E5ZN-2QNH03TC-FLK
				Transistor output: 2 pts (sourcing)			Platinum resistance thermometer	E5ZN-2QNH03P-FLK
				Transistor output: 2 pts (sinking)			Thermocouple	E5ZN-2QPH03TC-FLK
				Transistor output: 2 pts (sourcing)			Platinum resistance thermometer	E5ZN-2QPH03P-FLK
			Transistor output	Transistor output: 2 pts (sinking)	Transfer output (linear voltage output) (See note 2.)		Thermocouple	E5ZN-2TNH03TC-FLK
				Transistor output: 2 pts (sourcing)			Platinum resistance thermometer	E5ZN-2TNH03P-FLK
			Analog output (current output) (See note 2.)	Event input: 1 point per Unit	Thermocouple		E5ZN-2TPH03TC-FLK	
					Platinum resistance thermometer		E5ZN-2TPH03P-FLK	
					Thermocouple		E5ZN-2CNF03TC-FLK	
					Platinum resistance thermometer		E5ZN-2CNF03P-FLK	
							Thermocouple	E5ZN-2CPF03TC-FLK
							Platinum resistance thermometer	E5ZN-2CPF03P-FLK

- Note:**
- Terminal Units are required for wiring. Purchase separately.
 - When connecting the load of the controlled system, heat control output or cool control output can be allocated to the control output or auxiliary output. When connecting a recording device or Digital Panel Meter, transfer output can be allocated to control output or auxiliary output 3 or 4 of analog output models.
 - When using the heater burnout alarm, purchase a Current Transformer (CT) separately.
 - When using heating and cooling control functionality, the auxiliary output will be either heating control output or cooling control output.
 - Analog input and infrared temperature sensors (ES1A-A) can also be used with thermocouple models.

Name	No. of terminals	Functions	Model
Terminal Unit (Includes bus system without backplane.)	24	Equipped with communications terminals for power supply, communications, and setting devices.	E5ZN-SCT24S-500
	18 (See note 1.)	Not equipped with communications terminals for power supply, communications, and setting devices.	E5ZN-SCT18S-500

- Note:**
- When using 2 or more E5ZNs mounted side-by-side, use the E5ZN-SCT18S-500 for the second and subsequent Units. When using E5ZNs separately, be sure to use the E5ZN-SCT24S-500.
 - Two End Plates are provided with E5ZN-SCT24S-500 Terminal Units. When mounting to a DIN track, be sure to mount End Plates on both sides.

Current Transformer (CT) (Order Separately)

Model	E54-CT1	E54-CT3
Diameter	5.8 dia.	12.0 dia.

Setting Display Unit (Order Separately)

Name	Power supply	Model
Setting Display Unit (See note.)	24 VDC	E5ZN-SDL

Note: Purchase sockets for wiring (shown on page 2) separately.

Terminal Cover

Model	E53-COV12	E53-COV13
Type	For SCT24S-500 models	For SCT18S-500 models

Note: The Terminal Cover comes with the Terminal Unit and does not have to be purchased separately.

Sockets (for Setting Display Unit - Order Separately)

Model	P2CF-11	P2CF-11-E	P3GA-11	Y92A-48G
Type	Front-connecting socket	Front-connecting socket (with finger protection)	Back-connecting socket	Terminal cover for finger protection

Note: Refer to the following manual for precautionary information and other information necessary to use the E5ZN: E5ZN Temperature Controller Operation Manual (Cat. No. H113).

Specifications

■ Ratings

Power supply voltage	24 VDC					
Allowable voltage range	85% to 110% of the rated power supply voltage					
Power consumption	Approx. 3 W					
Sensor input	Thermocouple: K, J, T, E, L, U, N, R, S, B Infrared temperature sensor (ES1A series): 10 to 70°C, 60 to 120°C, 115 to 165°C, 160 to 260°C (See note 1.) Voltage input: 0 to 50 mV					
	Platinum resistance thermometer: Pt100, JPt100					
Control output	Voltage output (for driving SSR)	Output voltage: 12 VDC ±15% (PNP); Maximum load current: 21 mA; Equipped with short-circuit protection circuit				
	Transistor output	Maximum operational voltage: 30 VDC; Maximum load current: 100 mA; Residual voltage: 1.5 V max.; Leakage current: 0.4 mA max.				
	Current output	Current output range: 4 to 20/0 to 20 mA DC; Load: 350 Ω max. (See note 2.)				
Auxiliary output	Transistor output	<table border="1"> <tr> <td>Sourcing</td> <td>Maximum operating voltage: 30 VDC; Maximum load current: 50 mA; Residual voltage: 1.5 V max.; Leakage current: 0.4 mA max.</td> </tr> <tr> <td>Sinking</td> <td></td> </tr> </table>	Sourcing	Maximum operating voltage: 30 VDC; Maximum load current: 50 mA; Residual voltage: 1.5 V max.; Leakage current: 0.4 mA max.	Sinking	
	Sourcing	Maximum operating voltage: 30 VDC; Maximum load current: 50 mA; Residual voltage: 1.5 V max.; Leakage current: 0.4 mA max.				
Sinking						
Linear voltage output	Voltage output range: 1 to 5/0 to 5 VDC; Load: 10 kΩ min.					
Event input	Contact output	ON: 1 kΩ max., OFF: 100 kΩ min. Discharge current: Approx. 7 mA				
	Non-contact output	ON: Residual voltage: 1.5 V max., OFF: Leakage current: 0.1 mA max. Discharge current: Approx. 7 mA				
Number of input and control points	Input points: 2, Control points: 2					
Setting method	Via communications or using the Setting Display Unit (E5ZN-SDL)					
Control method	2-PID or ON/OFF control					
Other functions	Heater burnout detection function, transfer output function Multi-SP and RUN/STOP switching using event input					
Ambient operating temperature	-10 to 55°C (with no icing or condensation) For 3 years of assured use: -10 to 50°C					
Ambient operating humidity	25% to 85%					
Storage temperature	-25 to 65°C (with no icing or condensation)					

- Note: 1. ES1A models with a temperature range of 160°C to 260°C have been discontinued.
2. OMRON G32A-EA Cycle Controller Unit (load impedance 352 Ω) can be used.

■ Input Range

Platinum Resistance Thermometer Models and Thermocouple Models

Input type	Platinum resistance thermometer models		Thermocouple models															Analog input						
	Platinum resistance thermometer		Thermocouple										Infrared temperature sensor (ES1A)		0 to 50 mV									
	Name	Pt100	JPt100	K	J	T	E	L	U	N	R	S	B	10 to 70°C		60 to 120°C	115 to 165°C		160 to 260°C					
Temperature range (°C)																								
Setting number	0	1	2	3	4	0	1	2	3	4	17	5	6	7	18	8	9	10	11	12	13	14	15	16

The applicable standards for the input types are as follows:

- K, J, T, E, N, R, S, B: JIS C1602-1995, IEC584-1
- L: Fe-CuNi, DIN 43710-1985
- U: Cu-CuNi, DIN 43710-1985
- JPt100: JIS C 1604-1989, JIS C 1606-1989
- Pt100: JIS C 1604-1997 IEC 751

Shaded parts indicate the settings at the time of purchase.

Note: ES1A models with a temperature range of 160°C to 260°C have been discontinued.

■ Characteristics

Indication accuracy	Thermocouple: (Indicated value $\pm 0.5\%$ or $\pm 1^\circ\text{C}$, whichever is greater) ± 1 digit max. (See note 1.) Platinum resistance thermometer: (Indicated value $\pm 0.5\%$ or $\pm 1^\circ\text{C}$, whichever is greater) ± 1 digit max. (See note 1.) Analog input: $\pm 0.5\%$ or ± 1 digit max. CT input: $\pm 5\%$ FS ± 1 digit max.
Transfer output	Accuracy: $\pm 0.5\%$ FS (See note 2.)
Hysteresis	0.1 to 999.9 EU (in units of 0.1 EU) (See note 3.)
Proportional band (P)	0.1 to 999.9 EU (in units of 0.1 EU) (See note 3.)
Integral time (I)	0 to 3,999 s (in units of 1 s)
Derivative time (D)	0 to 3,999 s (in units of 1 s)
Control period	1 to 99 s (in units of 1 s)
Manual reset value	0.0 to 100.0% (in units of 0.1%)
Alarm setting range	-1,999 to 9,999 (Position of decimal point depends on input type.)
Sampling period	500 ms
Insulation resistance	20 M Ω min. (at 500 VDC)
Dielectric strength	600 VAC for 1 minute at 50 or 60 Hz (between unlike terminals of charged parts)
Vibration resistance	10 to 55 Hz, 10 m/s ² for 2 hrs each in X, Y, and Z directions
Shock resistance	150 m/s ² max., 3 times each in $\pm X$, $\pm Y$, and $\pm Z$ directions
Enclosure rating	Temperature Controller: IP00 Terminal Unit: IP00
Memory protection	EEPROM (non-volatile memory) (Number of write operations: 100,000)
Weight	Temperature Controller: Approx. 90 g Terminal Unit (18): Approx. 80 g Terminal Unit (24): Approx. 100 g
Approved standards (See note 4.)	UL File No.: E200593 CSA File No.: 203889-1140084 CE EMS: ESD EN61326, EN61000-4-2 (4 kV/contact, 8 kV/air) REM field EN61326, EN61000-4-3 (10 V/m) Fast transient EN61326, EN61000-4-4 (2 kV/DC power, 1 kV/I/O) Surge immunity EN61326, EN61000-4-5 (line to ground: 2 kV/DC power 1 kV/I/O line to line: 1 kV/DC power) Conducted RF EN61326, EN61000-4-6 (10 V) EMI: Radiated EN61326 Class A

- Note:**
1. The indication accuracy for T and N thermocouples at -100°C , and for U and L thermocouples is $\pm 2^\circ\text{C} \pm 1$ digit max. There is no specification for the indication accuracy for the B thermocouple used at 400°C max. The indication accuracy for R and S thermocouples at 200°C max. is $\pm 3^\circ\text{C} \pm 1$ digit max.
 2. The transfer output accuracy for 0 to 4 mA when 0 to 20 mA DC is selected is $\pm 0.5\%$ FS +0.7 mA. The transfer output accuracy for 0 to 1 V when 0 to 5 VDC is selected is $\pm 0.5\%$ FS +0.175 V.
 3. "EU" stands for "Engineering Unit."
 4. In order to satisfy the EN61326 Class A standard for conducted emissions, install a noise filter (Densei-Lambda MXB-1206-33 or equivalent) in a DC power line as close to the E5ZN as possible.

■ Communications (Host Communications)

Transmission line connection method	RS-485 multipoint
Communications method	RS-485 (2-wire, half-duplex)
Synchronization method	Start-stop synchronization
Baud rate	4,800, 9,600, 19,200, or 38,400 bps
Transmission code	ASCII
Data bit length (See note.)	7 or 8 bits
Stop bit length (See note.)	1 or 2 bits
Error detection	Vertical parity (none, even, odd) BCC (block check character)
Flow control	None
Interface	RS-485
Retry function	None
Number of Units that can be connected in parallel	16 Units max. (32 channels)

Note: The baud rate, data bit length, stop bit length, and vertical parity can all be set independently as host communications settings.

■ Setting Display Unit (Order Separately) Ratings and Characteristics

Power supply voltage	24 VDC
Allowable voltage range	85% to 110% of the rated power supply voltage
Power consumption	Approx. 1 W
Display method	7-segment digital display and single-color display
Ambient operating temperature	-10 to 55°C (with no icing or condensation) For 3 years of assured use: -10 to 50°C
Ambient operating humidity	25% to 85%
Storage temperature	-25 to 65°C (with no icing or condensation)
Communications method	RS-485 (half-duplex)
Communications format	Fixed
Insulation resistance	20 M Ω min. (at 500 VDC)
Dielectric strength	1,500 VAC for 1 minute at 50 or 60 Hz (between unlike terminals of charged parts)
Vibration resistance	10 to 55 Hz, 20 m/s ² for 2 hrs each in X, Y, and Z directions
Shock resistance	300 m/s ² max., 3 times each in $\pm X$, $\pm Y$, and $\pm Z$ directions
Enclosure ratings	Front panel: IP50 Rear case: IP20 Terminal case: IP00
Memory protection	EEPROM (non-volatile memory) (Number of writes: 100,000)
Weight	Approx. 100 g Mounting bracket: Approx. 10 g

■ Current Transformer (CT) Ratings (Order Separately)

Dielectric strength	1,000 VAC (1 minute)
Vibration resistance	50 Hz, 98 m/s ²
Weight	E54-CT1: Approx. 11.5 g E54-CT3: Approx. 50 g
Accessories (E54-CT3 only)	Armature (2) Plug (2)

■ Heater Burnout Alarm Characteristics

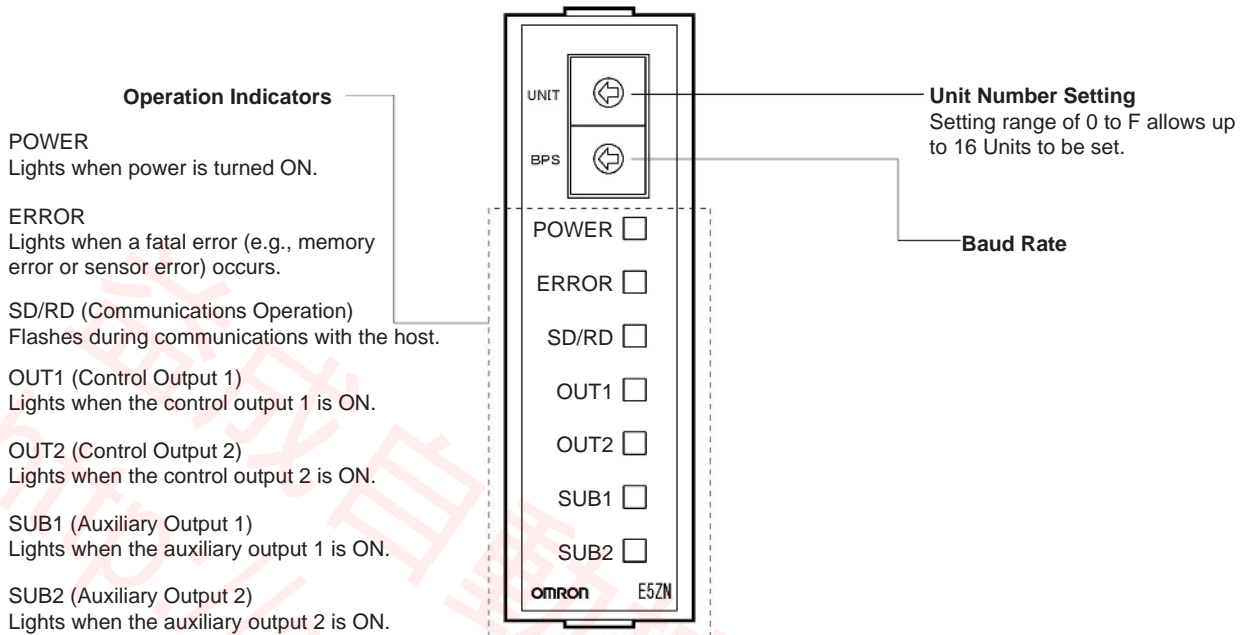
Maximum heater current	Single-phase, 50 A AC (See note 1.)
Input current readout accuracy	$\pm 5\%$ FS ± 1 digit max.
Heater burnout alarm setting range	0.0 to 50.0 A (in units of 0.1 A) (See note 2.)
Minimum detection ON time	190 ms (See note 3.)

Note: 1. Use the K2CU-F□□A-□GS (with GATE input terminal) for burnout detection of 3-phase heaters.

2. If the heater burnout alarm setting is set to 0.0 A, the alarm is always OFF, and if it is set to 50.0 A the alarm is always ON.
3. If the ON time for control output is less than 190 ms, heater burnout detection and heater current measurement will not be performed.

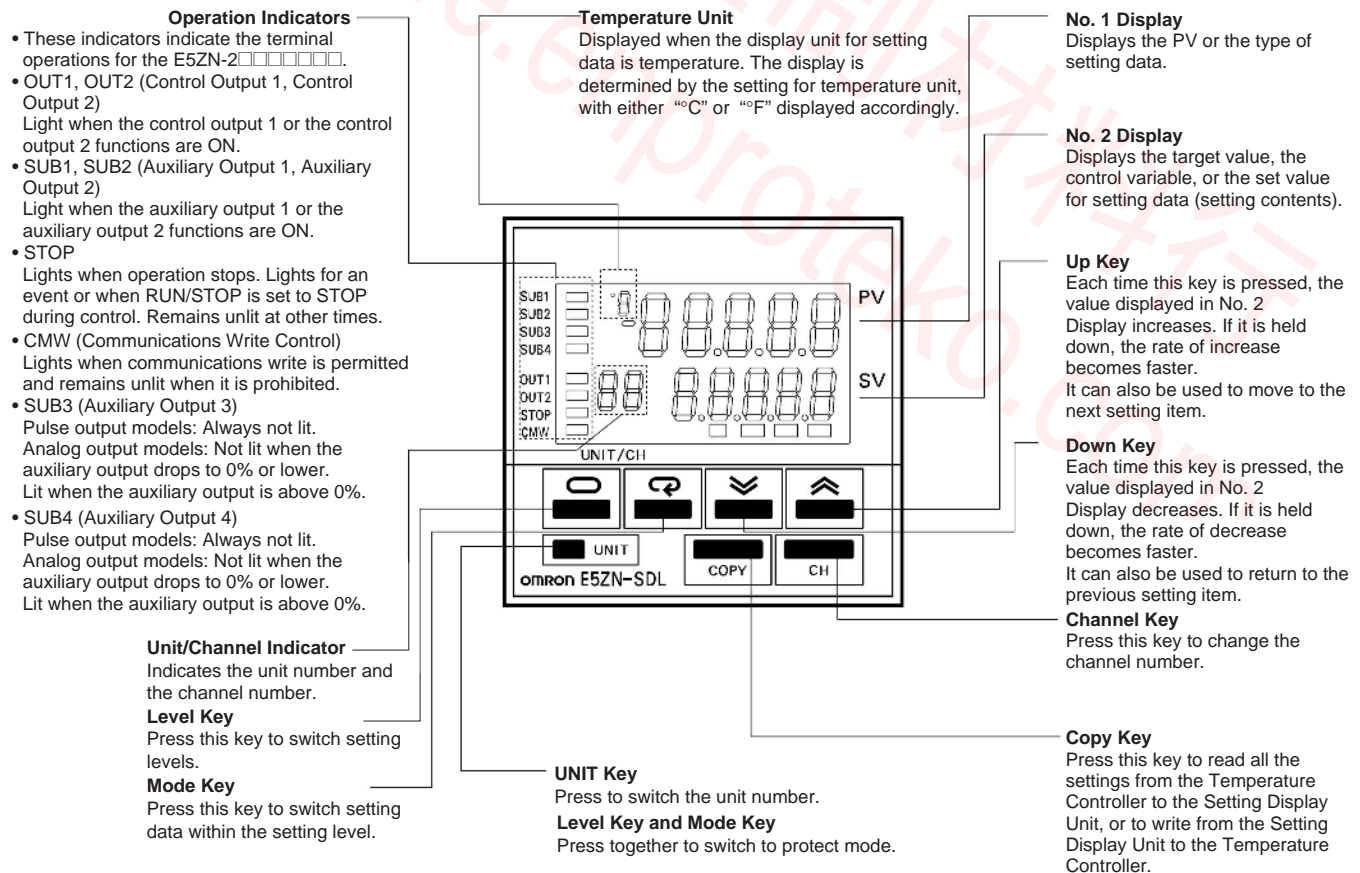
Nomenclature

E5ZN-2



E5ZN-SDL

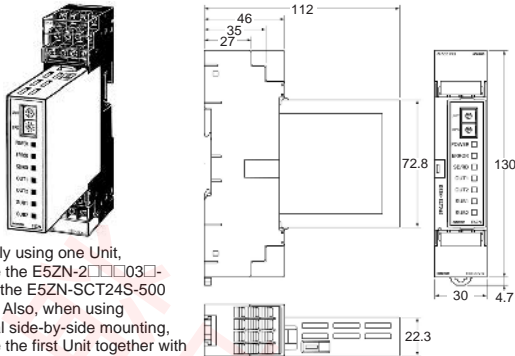
The following diagram shows the names and functions of the E5ZN-SDL parts for when it is connected to the E5ZN-2□□□□□□□□.



Dimensions

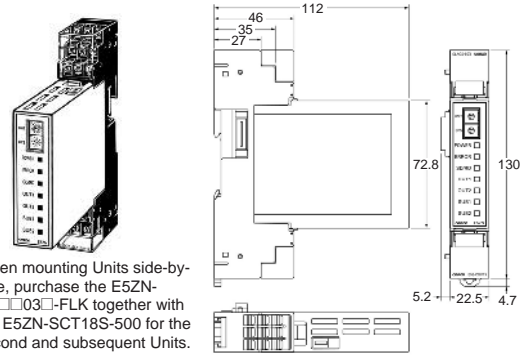
Note: All units are in millimeters unless otherwise indicated.

E5ZN-2□□□03□-FLK Connected to E5ZN-SCT24S-500



When only using one Unit, purchase the E5ZN-2□□□03□-FLK and the E5ZN-SCT24S-500 together. Also, when using horizontal side-by-side mounting, purchase the first Unit together with the E5ZN-SCT24S-500.

E5ZN-2□□□03□-FLK Connected to E5ZN-SCT18S-500

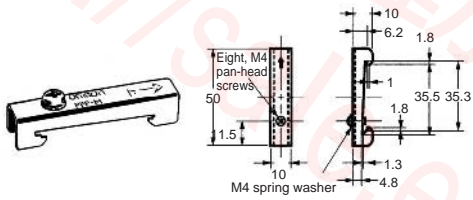


When mounting Units side-by-side, purchase the E5ZN-2□□□03□-FLK together with the E5ZN-SCT18S-500 for the second and subsequent Units.

Note: Refer to the following manual for precautionary information and other information necessary to use the E5ZN: E5ZN Modular Temperature Controller User's Manual (Cat. No. H113).

End Plate

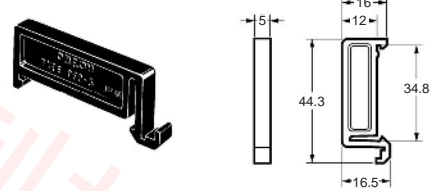
PFP-M



Note: End Plates are provided with the E5ZN-SCT24-500. Be sure to mount End Plates at both ends of Unit blocks.

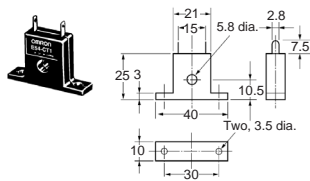
Spacer

PFP-S

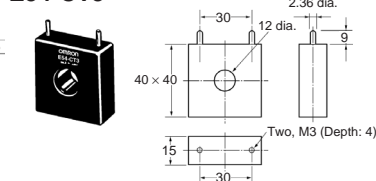


Current Transformer (Order Separately)

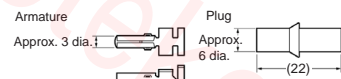
E54-CT1



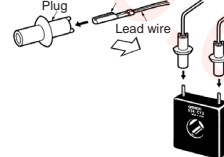
E54-CT3



E54-CT3 Accessories



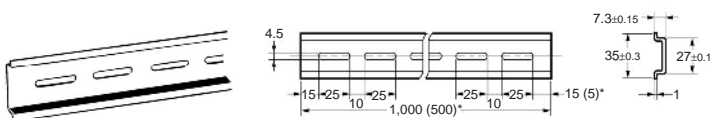
Connection Example



Mounting Track (for DIN Track Mounting - Order Separately)

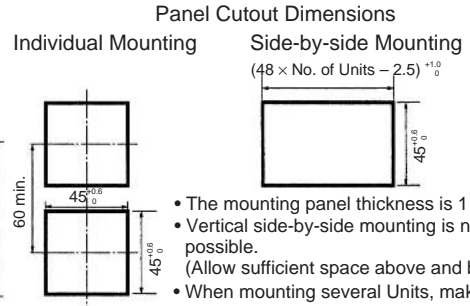
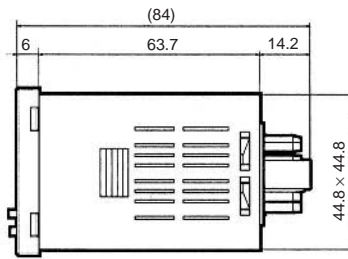
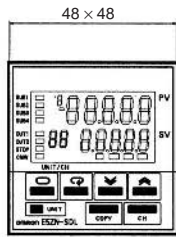
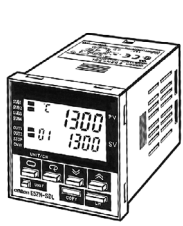
PFP-100N

PFP-50N



* Indicates dimensions for the PFP-50N.

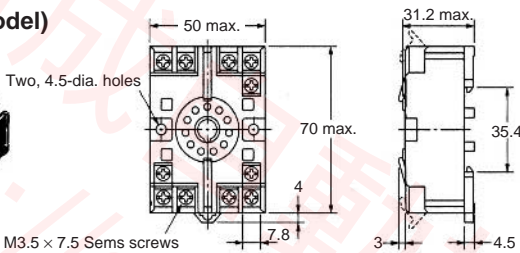
Setting Display Unit E5ZN-SDL



- The mounting panel thickness is 1 to 5 mm.
- Vertical side-by-side mounting is not possible. (Allow sufficient space above and below.)
- When mounting several Units, make sure that the ambient temperature specifications are not exceeded.

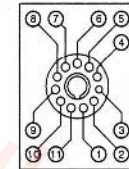
E5ZN-SDL Wiring Sockets Front-connecting Sockets

P2F-11 (Standard Model)

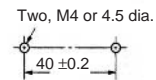


Terminal Arrangement/ Internal Connections

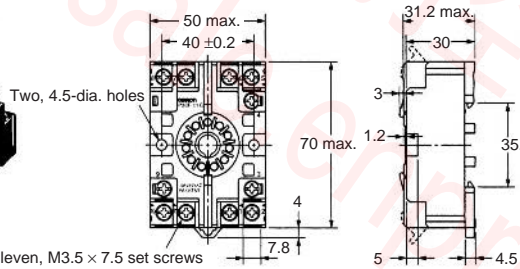
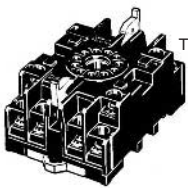
(TOP VIEW)



Mounting Hole Cutout Dimensions



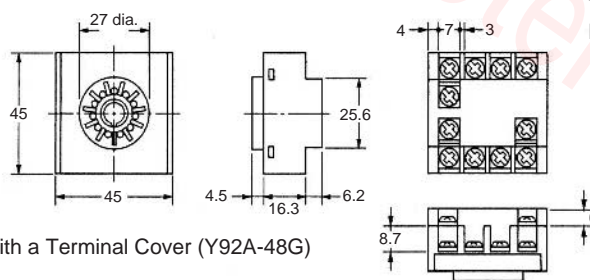
P2F-11-E (with Finger Protection)



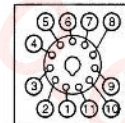
Note: DIN track mounting is also possible.

Back-connecting Sockets

P3GA-11 (Standard Model)



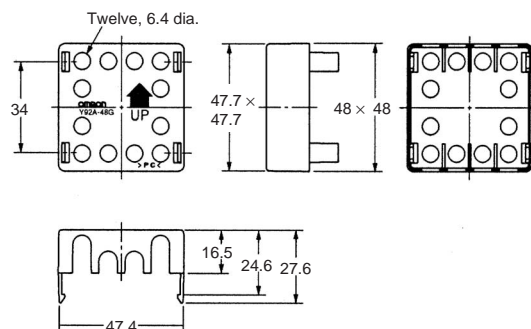
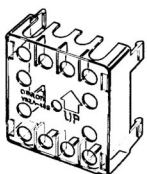
Terminal Arrangement/ Internal Connections (BOTTOM VIEW)



Note: Use in combination with a Terminal Cover (Y92A-48G) for finger protection.

Terminal Cover

Y92A-48G

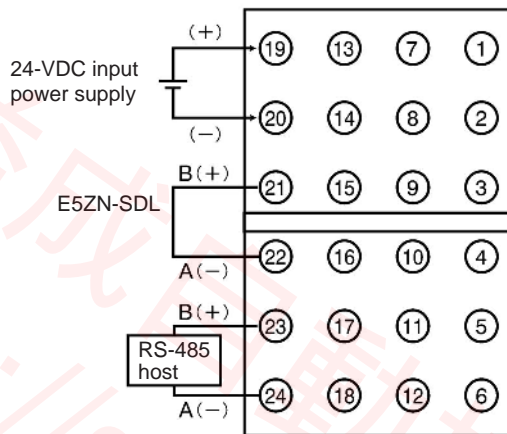


Installation

■ Connection Diagrams

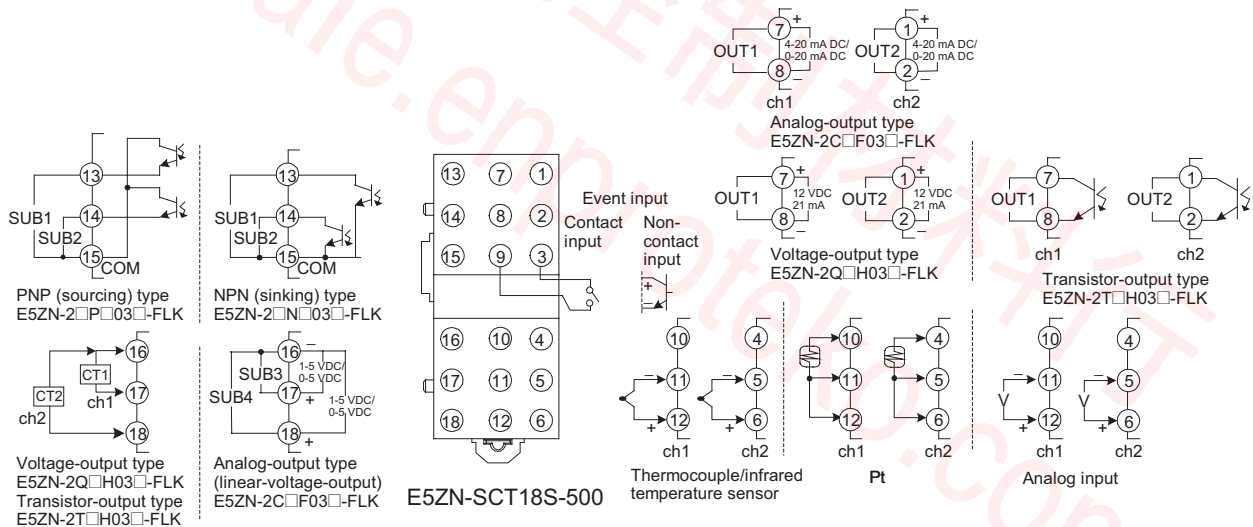
- Voltage output (control output) is not electrically isolated from internal circuitry. Therefore, when using grounded thermocouples, do not ground control output terminals. (Doing so may result in temperature measurement errors due to unwanted current paths.)
- There is basic insulation between the power supply inputs and outputs for this product. If reinforced insulation is required, connect the input and output terminals to equipment without any exposed charge-carrying parts, or to equipment with basic insulation sufficient for the maximum operating voltage of the power supply and the inputs and outputs.

Using with the E5ZN-SCT24S-500

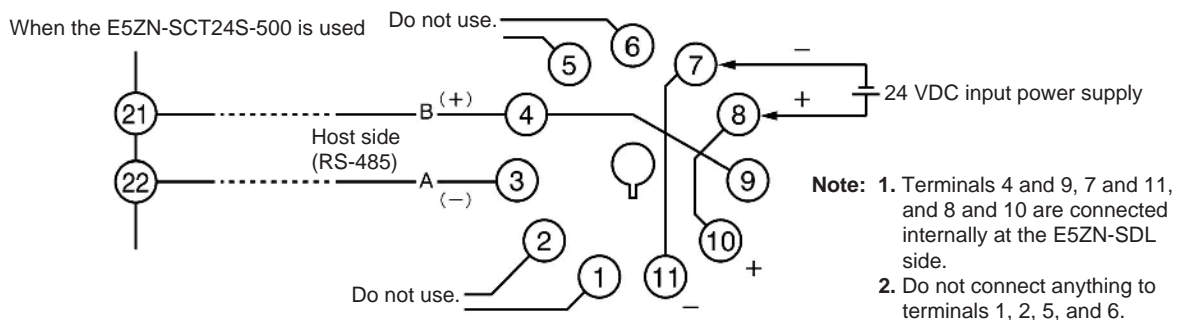


Wiring for terminals 1 to 18 is the same as for the E5ZN-SCT18S-500. See below.

Using with the E5ZN-SCT18S-500



E5ZN-SDL

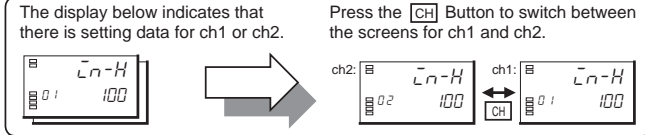


Note: Purchase either a P2CF-11 or a P3GA-11 Socket separately. (Refer to page 8.)

Operation

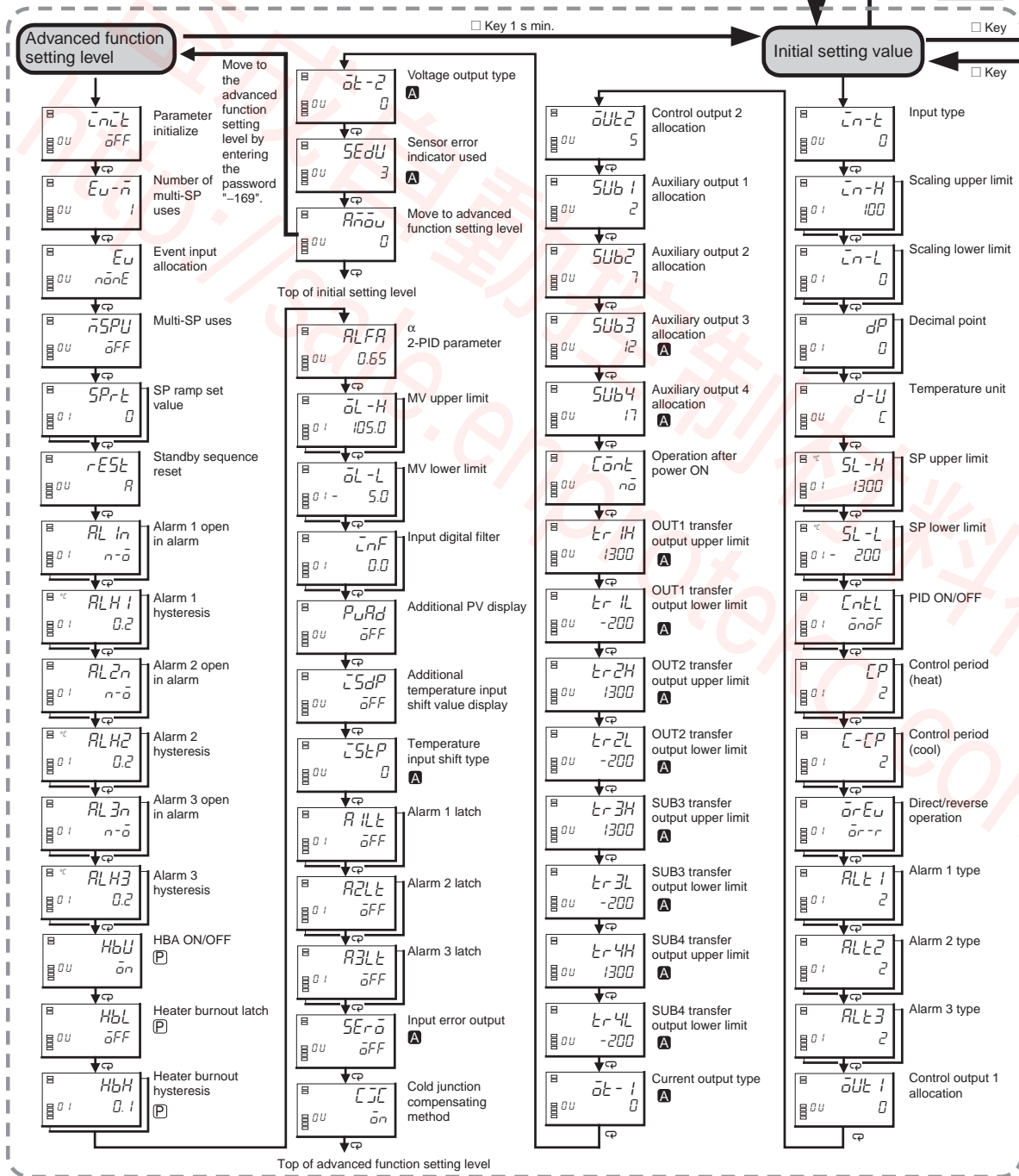
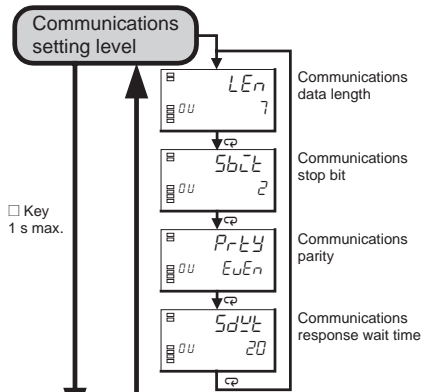
E5ZN-SDL Setting Data

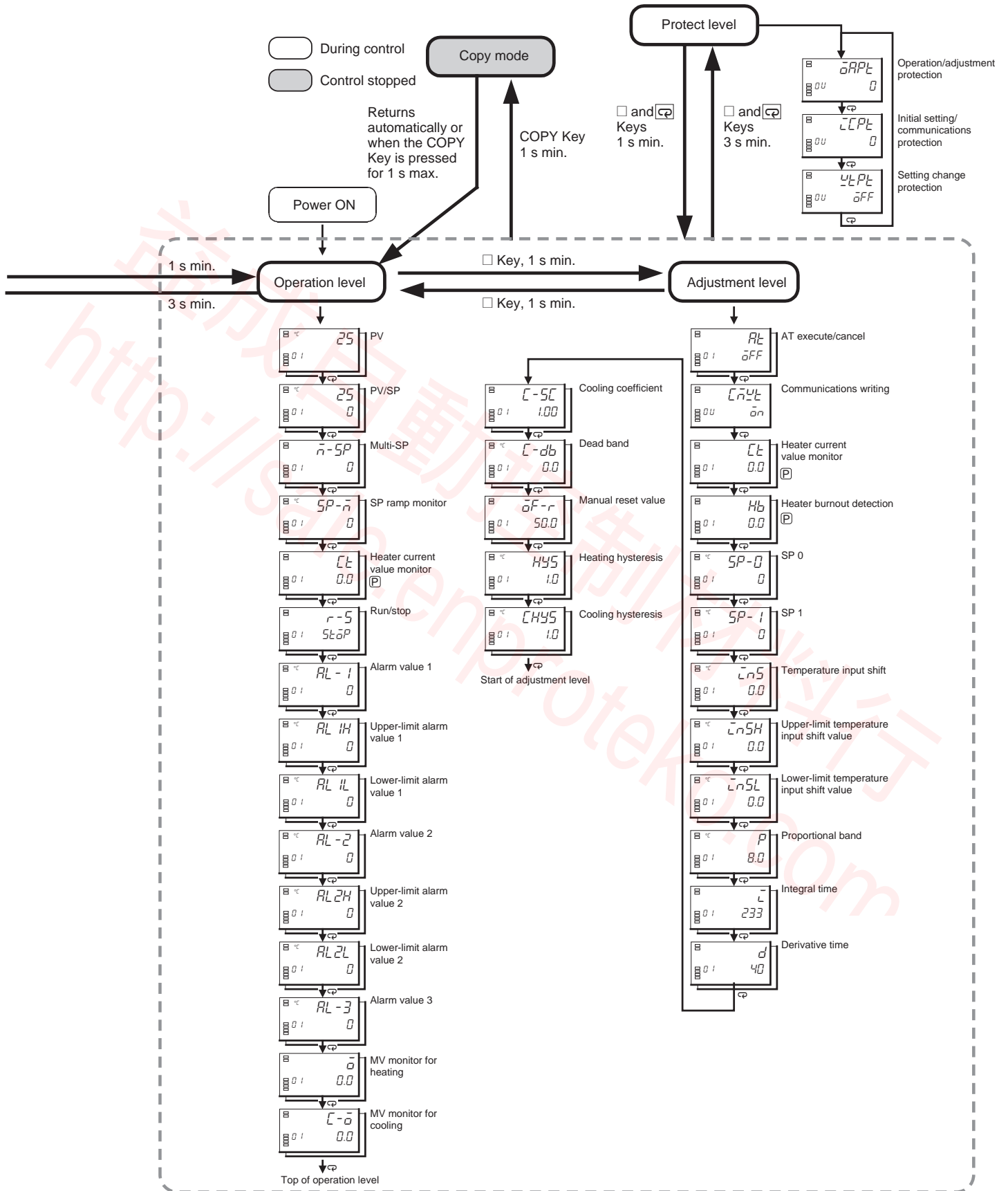
The setting data that can be set from the E5ZN-SDL Setting Display Unit is shown below. Depending on the protection settings and other factors, some settings may not be displayed. A password is required to move to the advanced function setting level.



P: This symbol indicates setting data that is displayed only for models with pulse output. ("Models with pulse output" is used here to indicate models with voltage output or transistor output.)

A: This symbol indicates setting data that is displayed only for models with analog output.





Examples of Functions

Using as a Temperature Input Signal Converter

Transfer Output Types

- The ten types of data shown below can be allocated for transfer output using the control output 1 allocation, control output 2 allocation, auxiliary output 3 allocation, and auxiliary output 4 allocation (initial setting level).
- Transfer output is supported by analog output models only.

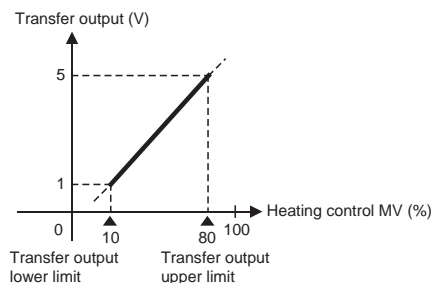
ch1	ch2
Transfer output for ch1 set point	Transfer output for ch2 set point
Transfer output for ch1 ramp set point	Transfer output for ch2 ramp set point
Transfer output for ch1 process value	Transfer output for ch2 process value
Transfer output for ch1 heating control MV	Transfer output for ch2 heating control MV
Transfer output for ch1 cooling control MV	Transfer output for ch2 cooling control MV

Note: Control outputs 1 and 2 use current output and auxiliary outputs 3 and 4 use linear voltage output.

Transfer Output Scaling

- The range set by the transfer output upper limit and transfer output lower limit (initial setting level) can be scaled to the output range for the transfer output (4 to 20 mA DC or 0 to 20 mA DC for control outputs 1 and 2, and to 1 to 5 VDC or 0 to 5 VDC for auxiliary outputs 3 and 4).
- The scale can be expanded by setting a small range between the transfer output upper and lower limits. Reverse scaling can be performed by setting the transfer output upper limit to a value smaller than the transfer output lower limit. The following figure shows a scaling example where the heating control MV transfer output is scaled to 1 to 5 VDC.

Example: Scaling to 1 to 5 VDC



Reading Temperatures for Multiple E5ZN Units

With conventional models, if the present temperature is read from multiple Temperature Controllers using host communications, there are time differences in the process temperatures read from each Temperature Controller, making it difficult to obtain concurrent data.

With the E5ZN, the PV hold function can be used to ensure that the data is concurrent to within 500 ms.

PV Hold

The PV hold function temporarily stores the present temperature for that moment as the PV hold value, when the "PV hold" operation command sent by host communications is received. (See fig. 1.)

Example 2: Displaying the ch2 Process Values on an External Meter Using Transfer Output

Temperature Controller: E5ZN-2C□F03P-FLK (current output, platinum resistance thermometer input)
 Meter: K3MA-J 24 VAC/VDC (Process Meter)

Temperature Controller Settings:

Sensor input type (initial setting level): 2 (platinum resistance thermometer, 0.0°C to 100.0°C)
 Control output allocation 2 (initial setting level): 17 (process value transfer output for ch2)
 OUT2 transfer output upper limit (initial setting level): 100.0 (°C)
 OUT2 transfer output lower limit (initial setting level): 0 (°C)
 Current output type (initial setting level): 0 (4 to 20 mA DC)

Meter Setting Example:

Inputs for 4 to 20 mA DC are scaled to 0.0 to 100.0°C.
 Input type (initial setting level: $\bar{c}n\bar{t}$): 4 to 20 mA DC (4-20)
 Scaling input value 1 (initial setting level: $\bar{c}n\bar{P}.1$): 4 mA (4.00)
 Scaling display value 1 (initial setting level: $d5P.1$): 0 (00000)
 Scaling input value 2 (initial setting level: $\bar{c}n\bar{P}.2$): 20 mA (20.00)
 Scaling display value 2 (initial setting level: $d5P.2$): 100 (0 10000)
 Decimal point (initial setting level: dP): One decimal place (0000.0)

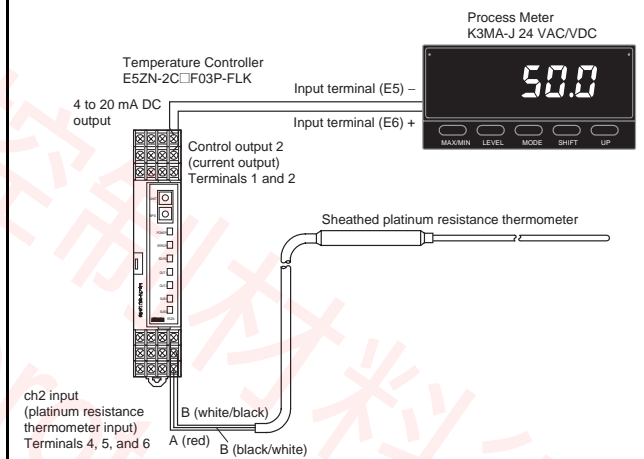
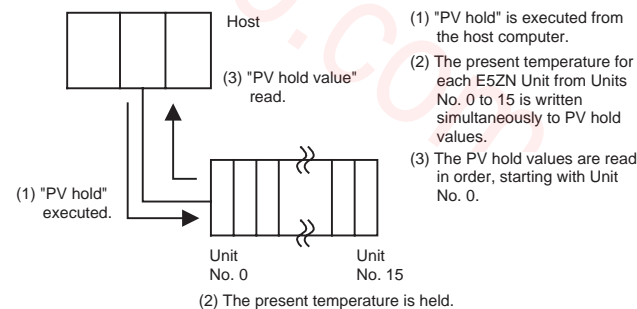


Fig. 1



- Note:**
- PV hold values are overwritten every time the "PV hold" operation command is executed. Once the PV hold values have been read for channels that require simultaneous reading of present temperatures, execute the next "PV hold" operation command.
 - The "PV hold" operation command cannot be executed and the "PV hold value" cannot be read from the E5ZN-SDL Setting Display Unit.
 - When the power is turned OFF, the PV hold values change to 0.

Precautions

■ General Precautions

The user must operate the product according to the performance specifications described in the operation manual.

Before using the product under conditions that are not described in the manual or applying the product to nuclear control systems, railroad systems, aviation systems, vehicles, combustion systems, medical equipment, amusement machines, safety equipment, and other systems, machines, and equipment that may have a serious influence on lives and property if used improperly, consult your OMRON representative.

Make sure that the ratings and performance characteristics of the product are sufficient for the systems, machines, and equipment, and be sure to provide the systems, machines, and equipment with double safety mechanisms.

■ Safety Precautions

Definition of Precautionary Information

⚠ WARNING

The above symbol indicates a situation that may result in injury or property damage.

Warnings

⚠ WARNING

Do not allow metal fragments or lead wire scraps to fall inside this product.
These may cause electric shock, fire, or malfunction.

⚠ WARNING

Do not use the product in locations subject to flammable or explosive gases. Doing so may result in explosion.

⚠ WARNING

Do not touch any of the terminals while the power is ON. Doing so may result in electric shock.

⚠ WARNING

Provide at least one power-interruption switch to ensure that the power is OFF before wiring. Not doing so may result in electric shock.

⚠ WARNING

To maintain safety in the event of a product malfunction, always take appropriate safety measures, such as installing an alarm on a separate line to prevent excessive temperature rises. If a malfunction prevents proper control, a major accident may result.

⚠ WARNING

Do not attempt to disassemble, repair, or modify the product. Any attempt to do so may result in malfunction, fire, or electric shock.

⚠ WARNING

Tighten screws to the specified torques given below.
Loose screws may result in burning or malfunction.
E5ZN-SCT□S-500: 0.40 to 0.56 N·m
E5ZN-SDL: 0.74 to 0.90 N·m

⚠ WARNING

Set all settings according to the control target of the product.
If the settings are not appropriate for the control target, the product may operate in an unexpected manner, resulting in damage to the product or accidents.

■ Application and Operating Environment Precautions

Observe the following points to ensure safe operation.

1. Use and store the product within the specified temperature and humidity ranges. Cool the product (e.g., using fans) where necessary.
2. Do not touch the electronic components or pattern of the PCB. Hold the product by the case.
3. To ensure proper heat dissipation, leave a space around the product. Do not block the product's ventilating holes.
4. Use at the rated power supply voltage with the rated load.
5. Be sure to connect terminals with the correct polarity.
6. Perform wiring using crimp terminals of the specified size. (E5ZN-SCT□S-500: M3.0, width 5.8 mm max.; E5ZN-SDL: M3.5, width 7.2 mm max.)
7. Be sure to use wires satisfying the following specifications for connection using bare wires.
Power supply terminals: AWG 22 to 14
Other terminals: AWG 28 to 16
(Length of exposed part: 6 to 8 mm)
8. Do not connect anything to unused terminals.
9. Ensure that the rated voltage is reached within 2 seconds of turning power ON.
10. Allow 30 seconds' warm-up time.
11. Install the product as far away as possible from devices that generate strong, high-frequency noise and devices that generate surges.
12. Keep wiring separate from high-voltage power lines or power lines carrying large currents. Do not wire in parallel with or together with power lines.
13. Install switches or circuit-breakers so that the user can turn the power OFF immediately, and indicate these accordingly.
14. Do not use the product in the following locations:
 - Locations subject to dust or corrosive gases (in particular, sulfide gas and ammonia gas)
 - Locations subject to freezing or condensation
 - Locations exposed to direct sunlight
 - Locations subject to vibrations or shocks
 - Locations subject to exposure to water or oil
 - Locations subject to heat radiated directly from heating equipment
 - Locations subject to intense temperature changes
15. When the Terminal Unit is separated from the Temperature Controller, under no circumstances touch the electrical components or apply shock to the Temperature Controller.
16. Do not use solvents to clean the product. Use commercial alcohol.
17. After wiring is completed remove the dust-protection label to allow proper heat dissipation.
18. When mounting the Temperature Controller to the Terminal Unit, make sure that the hook on the side of the Temperature Controller facing the Terminal Unit is inserted properly.
19. Install the DIN track vertically.

■ Correct Use

Service Life

Use within the following temperature and humidity ranges:

- Temperature: -10 to 55°C (with no icing or condensation)
- Humidity: 25% to 85%

If the product is installed inside a control panel, the temperature around the product (and not the temperature around the control panel) must be kept below 55°C.

With electronic devices like the E5ZN, the service life will depend not only on the number of switching operations performed by the relay but also on the service life of the internal electronic components. The service life of these components depends on the ambient temperature; it will be shorter if the ambient temperature is high, and longer if the ambient temperature is low. For this reason, the service life of the product can be lengthened by keeping the inside of the E5ZN at a low temperature.

If several Units are mounted side-by-side or are arranged vertically, the heat generated may cause the internal temperature of the Units to rise, reducing service life. To prevent this, take steps to ensure that the Units are cooled, such as installing fans.

Ensure, however, that the terminals are not also cooled, otherwise correct temperature measurement will not be possible.

Measurement Accuracy

When extending the lead wires for thermocouples, use a compensating conductor appropriate for the type of thermocouple used.

When extending the lead wires for platinum resistance thermometers, use lead wires with a low resistance, and make the resistance in the 3 lead wires equal.

Mount the E5ZN horizontally.

If significant errors occur, check that input compensation has been set correctly.

Waterproofing

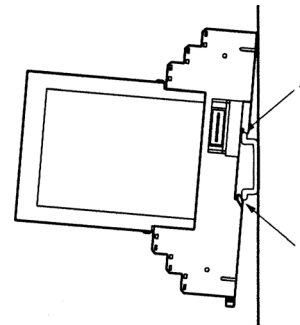
The enclosure ratings are given below. Parts for which the enclosure rating is not clearly indicated, and parts with IP□0 ratings (where □ is not 0) do not have waterproof specifications.

- Temperature Controller: IP00
- Terminal Unit: IP00

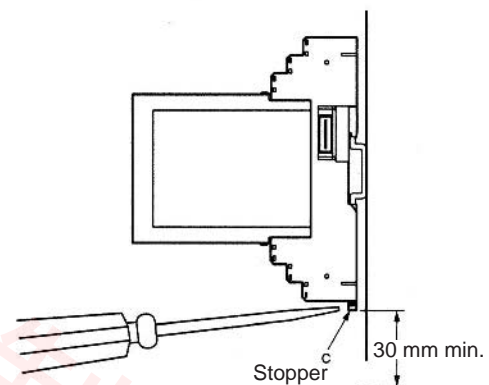
Note: Refer to the following manual for precautionary information and other information necessary to use the E5ZN: E5ZN Temperature Controller Operation Manual (Cat. No. H113).

Mounting and Dismounting

- To mount using a mounting track, first hook part A (see below) onto the track and then push down on part B.



- To dismount, insert a flat-bladed screwdriver into part C, pull the hook down, and then lift the bottom part of the E5ZN upwards.



- Mount the E5ZN at least 30 mm away from other devices to ensure easy mounting and dismounting.

Warranty and Limitations of Liability

■ WARRANTY

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, REGARDING NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR PARTICULAR PURPOSE OF THE PRODUCTS. ANY BUYER OR USER ACKNOWLEDGES THAT THE BUYER OR USER ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. OMRON DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED.

■ LIMITATIONS OF LIABILITY

OMRON SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS, OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.

In no event shall the responsibility of OMRON for any act exceed the individual price of the product on which liability is asserted.

IN NO EVENT SHALL OMRON BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS OMRON'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO CONTAMINATION, ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

Application Considerations

■ SUITABILITY FOR USE

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the products.

At the customer's request, OMRON will provide applicable third party certification documents identifying ratings and limitations of use that apply to the products. This information by itself is not sufficient for a complete determination of the suitability of the products in combination with the end product, machine, system, or other application or use.

The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses listed may be suitable for the products.

- Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this catalog.
- Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
- Systems, machines, and equipment that could present a risk to life or property.

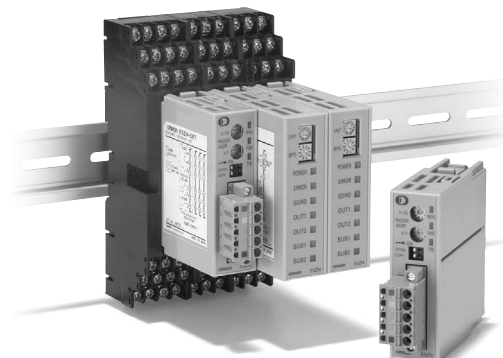
Please know and observe all prohibitions of use applicable to the products.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

DeviceNet Communications Unit E5ZN-DRT

Connect the E5ZN Modular Temperature Controller to DeviceNet

- The I/O link function allows setting and monitoring (e.g., of present values) for the E5ZN Modular Temperature Controller to be performed without communications programming.
- Up to 16 E5ZN Modular Temperature Controllers can be connected to one Unit.
- All the parameters for the E5ZN can be uploaded or downloaded in one operation using DeviceNet Configurator.



Ordering Information

List of Models

Name	External input power supply voltage	Applicable Temperature Controller	Model
DeviceNet Communications Unit	24 VDC	E5ZN	E5ZN-DRT

Note: A DeviceNet Communications Unit and Terminal Unit are required to connect to DeviceNet. (For details on the Terminal Unit, refer to page 4 or to the E5ZN Catalog (H116-E1-02).) Two End Plates are provided with E5ZN-SCT24S Terminal Units. When mounting to a DIN track, be sure to mount End Plates on both sides.

Specifications

Ratings

Power supply voltage	DeviceNet	24 VDC (for internal circuits)
	External input power supply	24 VDC (for RS-485 communications circuits and Temperature Controllers)
Allowable voltage range	DeviceNet	11 to 25 VDC
	External input power supply	20.4 to 26.4 VDC
Power consumption (See note.)	DeviceNet	Approx. 1.1 W (for a current of 45 mA at 24 VDC)
	External input power supply	Approx. 0.5 W (for a current of 20 mA at 24 VDC)
Connectable Temperature Controllers	E5ZN Series	
Maximum number of connectable Temperature Controllers	16	
Ambient operating temperature	-10 to 55°C (with no icing or condensation)	
Ambient operating humidity	25% to 85%	
Ambient storage temperature	-25 to 65°C (with no icing or condensation)	

Note: The power consumption for the Temperature Controllers is not included.

■ Characteristics

Insulation resistance	20 MΩ min. (at 100 VDC)	
Dielectric strength	500 VAC, 50/60 Hz for 1 min between the DIN track and all DeviceNet connector terminals and between the DIN track and all terminal socket terminals	
Vibration resistance	10 to 55 Hz, 10 m/s ² for 2 hrs each in ±X, ±Y, and ±Z directions	
Shock resistance	150 m/s ² , 3 times each in ±X, ±Y, and ±Z directions	
Weight	100 g max.	
Safety standards	cULus508 EMS: Electrostatic Discharge (ESD) EN61006-2, EN61000-4-2 (4 kV/contact, 8 kV/air) Radiated Electromagnetic Fields EN61006-2, EN61000-4-3 (10 V/m) Electrical Fast transients/BURST EN61006-2, EN61000-4-4 (2 kV/DC power-line, 1 kV/Signal-line) Surge Transients EN61006-2, EN61000-4-5 (line to ground : 1 kV/DC power-line : 2 kV/Signal-line line to line : 0.5 kV/DC power-line) EMI: Conducted Disturbances EN61006-2, EN61000-4-6 (10 V) Radiated Emissions (electric field) EN50081-2 Class A	

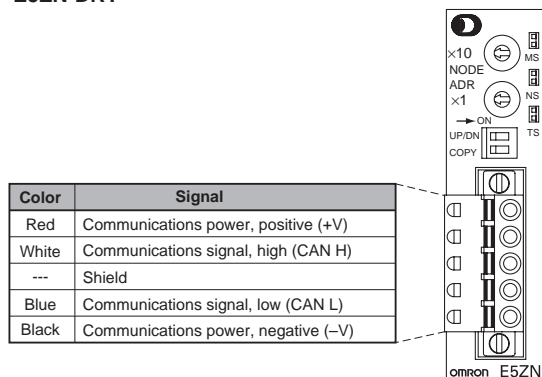
■ Communications (for Temperature Controller Expansion)

Transmission line connection method	RS-485 multipoint
Communications method	RS-485 (2-wire, half-duplex)
Synchronization method	Start-stop synchronization
Baud rate	38,400 bps
Transmission code	ASCII
Data bit length	7 bits
Stop bit length	2 bits
Error detection	Vertical parity (even) BCC (block check character)
Flow control	None
Number of Units that can be connected in parallel	16 Units max. (32 channels)

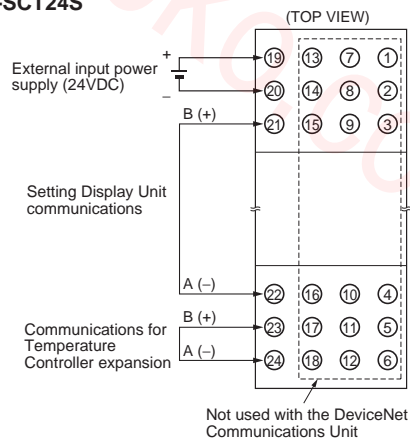
Connections

■ Terminal Arrangement

E5ZN-DRT

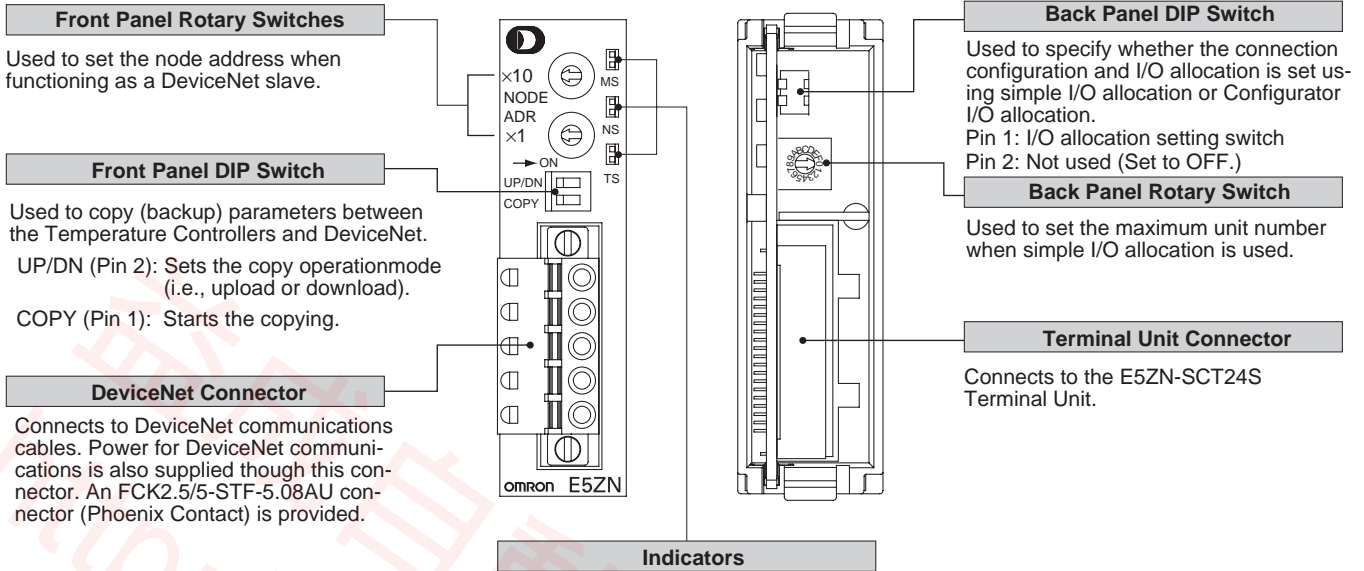


E5ZN-SCT24S



Nomenclature

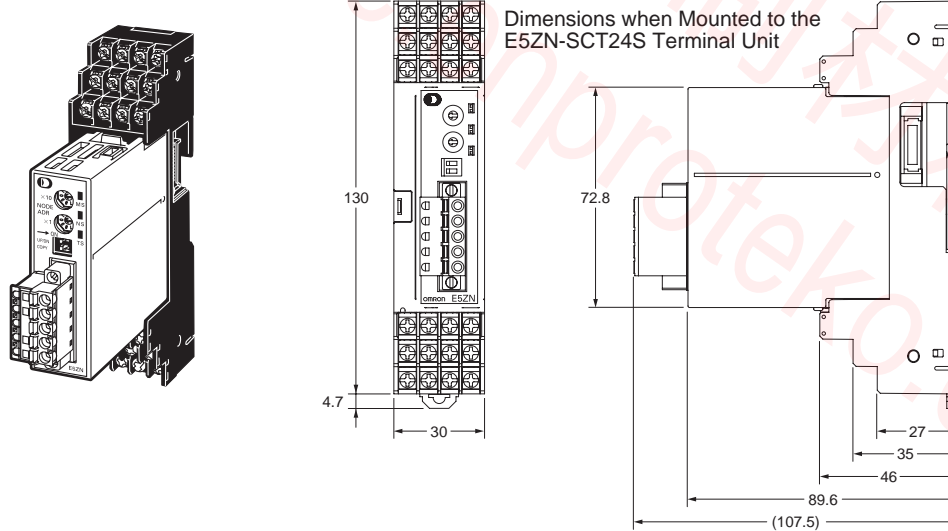
E5ZN-DRT



Dimensions

Note: All units are in millimeters unless otherwise indicated.

E5ZN-DRT



E5ZN Modular Temperature Controllers

■ List of Models

Name	Power supply	No. of control points	Control output	Auxiliary output	Functions		Communications functions	Input type (See note 5.)	Model
Temperature Controller (See note 1.)	24 VDC	2	Voltage output (for SSRs)	Transistor output: 2 pts (sinking)	Heater burnout alarm (See note 3.)	Heating or heat/cool control is selectable (See note 4.)	RS-485	Thermocouple	E5ZN-2QNH03TC-FLK
								Platinum resistance thermometer	E5ZN-2QNH03P-FLK
				Transistor output: 2 pts (sourcing)				Thermocouple	E5ZN-2QPH03TC-FLK
								Platinum resistance thermometer	E5ZN-2QPH03P-FLK
			Transistor output	Transistor output: 2 pts (sinking)	Event input: 1 point per Unit	Thermocouple		E5ZN-2TNH03TC-FLK	
						Platinum resistance thermometer		E5ZN-2TNH03P-FLK	
			Analog output (current output) (See note 2.)	Transistor output: 2 pts (sourcing)	Transfer output (linear voltage output) (See note 2.)	Thermocouple		E5ZN-2TPH03TC-FLK	
						Platinum resistance thermometer		E5ZN-2TPH03P-FLK	
			Transistor output: 2 pts (sinking)	Thermocouple		E5ZN-2CNF03TC-FLK			
						Platinum resistance thermometer		E5ZN-2CNF03P-FLK	
			Transistor output: 2 pts (sourcing)	Thermocouple		E5ZN-2CPF03TC-FLK			
						Platinum resistance thermometer		E5ZN-2CPF03P-FLK	

Note: 1. Terminal Units are required for wiring. Purchase separately.

- When connecting the load of the controlled system, heat control output or cool control output can be allocated to the control output or auxiliary output. When connecting a recording device or Digital Panel Meter, transfer output can be allocated to control output or auxiliary output 3 or 4 of analog output models.
- When using the heater burnout alarm, purchase a Current Transformer (CT) separately.
- When using heating and cooling control functionality, the auxiliary output will be either heating control output or cooling control output.
- Analog input and infrared temperature sensors (ES1A-A) can also be used with thermocouple models.

Name	No. of terminals	Functions	Model
Terminal Unit (Includes bus system without backplane.)	24	Equipped with communications terminals for power supply, communications, and setting devices.	E5ZN-SCT24S-500
	18 (See note 1.)	Not equipped with communications terminals for power supply, communications, and setting devices.	E5ZN-SCT18S-500

Note: 1. When using 2 or more E5ZNs mounted side-by-side, use the E5ZN-SCT18S-500 for the second and subsequent Units. When using E5ZNs separately, be sure to use the E5ZN-SCT24S-500.

- Two End Plates are provided with E5ZN-SCT24S-500 Terminal Units. When mounting to a DIN track, be sure to mount End Plates on both sides.

Setting Display Unit (Order Separately)

Name	Power supply	Model
Setting Display Unit (See note.)	24 VDC	E5ZN-SDL

Note: Purchase sockets for wiring separately.

Warranties, Limitations of Liability

■ WARRANTY

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■ LIMITATIONS OF LIABILITY

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IN NO EVENT SHALL OMRON BE RESPONSIBLE FOR WARRANTY, REPAIR OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS OMRON'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED AND MAINTAINED AND NOT SUBJECT TO CONTAMINATION, ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

Application Considerations

■ SUITABILITY FOR USE

OMRON shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the product in the customer's application or use of the product.

Take all necessary steps to determine the suitability of the product for the systems, machines and equipment with which it will be used.

Know and observe all prohibitions of use applicable to this product.

NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

Precautions

■ Definition of Precautionary Information

—⚠ WARNING —

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

—⚠ Caution —

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury, or property damage.

—⚠ WARNING —

Provide safety measures (such as emergency stop circuits, interlock circuits, and limit circuits) in external circuits in order to ensure safety in the system if an abnormality occurs due to malfunction of the PC or another external factor affecting the PC operation. Not doing so may result in serious accidents.

—⚠ Caution —

Tighten screws to the specified torques given below.
Loose screws may result in burning or malfunction.
Connector screws: 0.25 to 0.3 N · m; Terminal screws: 0.40 to 0.56 N · m

Confirm safety at the destination node before transferring a program to another node or changing contents of the I/O memory area. Doing either of these without confirming safety may result in injury.

Execute online edit only after confirming that no adverse effects will be caused by extending the cycle time. Otherwise, the input signals may not be readable.

Do not touch any of the terminals while the power is being supplied. Doing so may result in electric shock.

Do not attempt to take any Unit apart while the power is being supplied. Doing so may result in electric shock.

Do not allow metal fragments or lead wire scraps to fall inside this product. These may cause electric shock, fire, or malfunction.

Notice

Observe the following points to ensure safe operation.

- Set the communications distance to within the range specified in the E5ZN-DRT User's Manual (Cat. No. H119).
- Do not place communications cables close to or parallel to high-voltage lines or power lines.
- Use the communications cables specified in the E5ZN-DRT User's Manual (Cat. No. H119).
- Do not attempt to disassemble, repair, or modify the product.
- Do not drop the product or expose it to excessive shocks or vibrations. Doing so may result in malfunctions.
- Always use the power supply voltage within the specified range.
- Do not pull on the cables or bend the cables beyond their natural limit.
- Confirm that the power is OFF before wiring.
- Be sure to perform wiring for communications lines and power supplies correctly. Be sure to wire to terminals with the correct polarity. Incorrect wiring may result in malfunctions.
- Confirm that the power is OFF before mounting or removing connectors. Mounting or removing connectors with the power ON may result in malfunctions.
- Double-check all wiring and switch settings before turning ON the power supply.

Notice

- Do not use the product in the following locations
 - Locations exposed to direct sunlight
 - Locations subject to intense temperature changes
 - Locations subject to freezing or condensation
 - Locations subject to dust or corrosive gases (in particular, sulfide gas and ammonia gas)
 - Locations subject to exposure to water or oil
 - Locations subject to vibrations or shocks
- Take appropriate and sufficient countermeasures when installing systems in the following locations:
 - Locations subject to static electricity or other forms of noise.
 - Locations subject to strong electromagnetic fields.
 - Locations subject to possible exposure to radioactivity.
 - Locations close to power lines with high voltage or large current.
- Use the product within the specified temperature and humidity ranges.
- Take appropriate measures to ensure that the specified power with the rated voltage and frequency is supplied in places where the power supply is unstable.
- Do not use solvents to clean the product.
- Confirm that the power is OFF before replacing the product.