

E5AK

Digital Controller
Digitaler Regler
Contrôleur numérique
デジタル調節計
Regolatore digitale
Controlador digital

OMRON

- INSTRUCTION MANUAL
- GEBRAUCHSANLEITUNG
- FEUILLE D'INSTRUCTIONS
- 取扱説明書
- ISTRUZIONI PER L'USO
- HOJA DE INSTRUCCIONES

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1 Thank you for purchasing this OMRON product.
This manual primarily describes precautions required installing and operating the digital controller.
Before operating the product, read this manual thoroughly to acquire sufficient knowledge of the product. Keep this manual for future reference.

Vielen Dank für den Kauf dieses OMRON Produktes.
Diese Bedienungsanleitung beschreibt primär die Vorsichtsmaßnahmen, die zur Installation und Inbetriebnahme des digitalen Reglers erforderlich sind.
Vor dem Gebrauch des Gerätes lesen Sie bitte diese Bedienungsanleitung gründlich durch, damit Sie ein ausreichendes Wissen über das Gerät erwerben.
Heben Sie diese Anleitung zur späteren Verwendung gut auf.

Nous vous remercions d'avoir fait l'acquisition de ce produit OMRON.
Ce manuel décrit les précautions à prendre lors de l'installation et l'utilisation de ce contrôleur numérique.
Avant d'utiliser ce produit, veuillez lire attentivement ce manuel, afin d'acquérir une connaissance suffisante sur le produit. Gardez précieusement ce manuel.

オムロン製品をお買い上げいただきありがとうございます。
この製品を安全に正しく使用していただくために、お使いになる前にこの取扱説明書をお読みになり、十分にご理解ください。
お読みになった後は、いつも手元に置いてご使用ください。

La ringraziamo per aver acquistato un prodotto OMRON. Questo manuale illustra essenzialmente le precauzioni da adottare nell'installazione e collegamento del regolatore digitale.
Prima di utilizzare il prodotto, leggete questo manuale per acquisire una sufficiente conoscenza del prodotto stesso. Conservate questo manuale per eventuali future necessità.

Gracias por adquirir este producto OMRON. Este manual describe en primer lugar las precauciones necesarias en la instalación y operación del controlador digital.
Antes de poner en servicio el producto, lea este manual para adquirir los conocimientos suficientes sobre él. Conserve este manual para referencias futuras.

To ensure safe and correct use of this product, also read "E5AK Digital Controller User's Manual".
The above manual can be obtained from any OMRON sales office or dealer.

Um sicherzustellen, daß das Produkt richtig eingesetzt wird, beachten Sie auch die "E5AK Regler Gebrauchsanleitung".
Die obigen Handbücher sind bei OMRON-Verkaufsvertretungen sowie bei Fachhändlern erhältlich.

Afin que garantir une utilisation sûre et correcte de ce produit, veuillez également lire les manuels suivants:
• Contrôleur numérique E5AK Manuel de l'utilisateur.
Les manuels mentionnés ci-dessus sont disponibles chez les revendeurs et représentants OMRON.

この商品を安全に正しく使用していただくために、
「形 E5AK デジタル調節計 ユーザーズマニュアル」を併せてご覧ください。
なお上記マニュアルは、当社営業所または販売店にご請求ください。

Per assicurare un uso sicuro e corretto di questo prodotto leggere anche i seguenti manuali:
• E5AK Regolatore digitale manuale dell'utilizzatore
I manuali succitati possono essere ottenuti presso qualsiasi ufficio di vendita o rivenditore OMRON.

Para utilizar con seguridad y correctamente este producto, lea también los manuales siguientes:
• Controlador digital E5AK Manual. Le usuario
Los manuales mencionados podrán obtenerse en cualquier oficina o distribuidor OMRON.

PRECAUTIONS IN USING THE PRODUCT
VORSICHTSMAßNAHMEN ZUM GEBRAUCH DES GERÄTES
PRÉCAUTIONS D'EMPLOI
ご使用に際してのお願い
PRECAUZIONI NELL'USO DEL PRODOTTO
PRECAUCIONES EN LA UTILIZACIÓN DEL PRODUCTO

When the product is used under the circumstances or environments below, ensure adherence to limitations of the ratings and functions. Also, take the following measures for safety precautions such as fail-safe installations.

- Use under circumstances or environment which are not described in the instruction manual.
- Use for nuclear power control, railway aircraft, vehicle, incinerator, medical equipment, entertainment equipment, safety device etc...
- Use for applications where death or serious property damage is possible and extensive safety precautions are required.

Halten Sie bitte alle angegebenen Grenzwerte ein, wenn das Gerät unter den folgenden Umständen oder Umweltbedingungen eingesetzt wird. Beachten Sie die Sicherheitsstandards und übliche Installationsvorschriften.
● Bei Anwendungen, die nicht im Katalog stehen.
● Bei Verwendung in Kernkraftwerken, Eisenbahnen, Flugzeugen, Abfallverbrennungsöfen, Aufbereitungselektronik, Sicherheitsgeräte etc. a.m.
● Bei Verwendung in Applikationen, wobei Tod oder Besitz-/ Vermögensverluste möglich sind und umfassende Sicherheitsvorschriften gelten.

Lorsque le produit est utilisé dans les circonstances ou environnements suivants, vérifiez que son utilisation reste dans les limites de ces fonctions. Considérez aussi les précautions de sécurité lors de panne de l'installation.

- Utilisation dans des circonstances et environnements non décrit dans le manuel d'instruction.
- Utilisation en milieu nucléaire, ferroviaire, aérospatial, véhicule, incinérateur, équipement médical, équipement de divertissement, appareil de sécurité, etc...
- Utilisation dans le cas d'applications où la mort ou des dommages graves sont encourus et des mesures supplémentaires de sécurité doivent être prises.

次に示す条件や環境で使用する場合は、定格、機能に対して余裕を持った使い方やフェールセーフなどの安全対策へのご配慮をいただくとともに、当社営業担当者までご相談ください。

- 取扱説明書に記載のない条件や環境での使用
- 原子力制御・鉄道・航空・車両・船・設置・医療機器・娯楽機器・安全機器などへの使用
- 人命や財産に大きな被害が予測され、特に安全性が要求される用途への使用

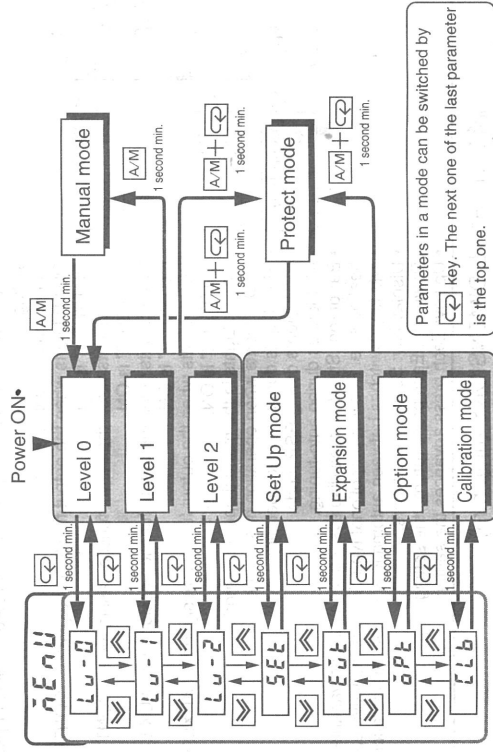
Nel caso in cui dotte venisse utilizzato nelle circostanze o negli ambienti operativi più avanti descritti, ci si assicuri che l'uso rispetti le limitazioni ai valori nominali e alle funzioni del prodotto. Si prendano inoltre delle contromisure per garantire l'incolumità come per i dispositivi di sicurezza.

- Utilizzo del prodotto in condizioni o ambienti non descritti nei manuali e nei cataloghi.
- Utilizzo del prodotto nel controllo di centrali, oleaari, ferrovie, aerei, veicoli, inceneritori, apparecchi elettronici, medici, apparecchi per l'irradiazione, dispositivi di sicurezza ecc...
- Utilizzo del prodotto in applicazioni nelle quali è possibile la morte o gravi danni o ove sia necessario installare dispositivi di sicurezza.

Quando se utilice el producto bajo las siguientes circunstancias o condiciones, verificar que se cumplen las limitaciones de valores nominales y de funciones. También las medidas apropiadas para seguridad, tales como instalaciones de seguridad.

NOTICE ANMERKUNG NOTE	お願い／正しい使い方 NOTA NOTA
Items shown below are necessary for safe usage. Please note them carefully. - Do not use the product in places where explosive or flammable gases may be present. - Never disassemble , repair or modify the product. - Tighten the terminal screws properly. - Use the specified size solderless terminals for wiring. - Use the product within the rated supply voltage. - Use the product within the rated load. - If you remove the controller from its case, never touch nor apply shock to the electronic parts inside. - Do not cover the controller. - Do not use the controller in the following places: - Places subjects to icing, condensation, dust or corrosive gas (especially sulfide gas or ammonia gas). - Places subjects to vibration and large shocks. - Places subjects to splashing liquid or oil atmosphere. - Places subjects to intense temperature changes. - Places subjects to heat radiation from a furnace. - Be sure to wire properly with correct polarity of terminals. - Avoid wiring near high voltage sources and power lines carrying large currents. - Cleaning: Do not use paint thinner or the equivalent, Use standard grade alcohol to clean the product.	以下に示す項目は、安全を確保するために必ず守ってください。 - 引火性、爆発性ガスの環境では使用しないでください。 - この製品を分解したり、修理、改造しないでください。 - 端子台のねじは確実に締めてください。 - 配線用圧着端子は、指定サイズのものを使用してください。 - 電源電圧は、仕様範囲内で使用してください。 - 負荷は定格以下で使用してください。 - ドローアウトしたときは、絶対に電子部品に手を触れたり衝撃を与えたりしないでください。 - 形E5AKの周囲をふさがないようにください。 - 次の環境での使用を避けてください。 - 氷結、結露、塵あい、腐食性ガス(とくに硫化ガス、アンモニアガスなど)のあるところ - 振動、衝撃の影響が大きいところ - 冠水、被油のあるところ - 温度変化が激しいところ - 炉の放熱を受けるところ - 端子の極性を確認して、正しく配線してください。 - 高圧、強電流線と接近しないように配線してください。 - 清掃について：シンナー類は使用しないでください。市販のアルコールを使用してください。
Um eine sichere Anwendung zu gewährleisten, ist es notwendig die unten aufgeführten Punkte sorgfältig zu beachten. - Benutzen Sie das Gerät nicht an Orten , an denen explosive oder brennbare Gase sein können. - Demontieren, reparieren oder verändern Sie das Produkt unter keinen Umständen. - Drehen Sie die Schrauben sorgfältig fest. - Verwenden Sie die angegebene Größe der lötfreien Schraubklemmen zur Verdrahtung. - Verwenden Sie das Gerät nur innerhalb des angegebenen Spannungsbereichs. - Verwenden Sie das Gerät nur innerhalb der angegebenen Last. - Wenn der Regler aus seinem Gehäuse genommen ist , niemals die elektronischen Bauteile im inneren berühren oder sie elektrischen Schlägen aussetzen. - Nicht den Regler verdecken. - Den Regler nicht an den folgenden Orten betrie ben: - Orte, die Vereisung, Kondenswasser, Staub oder ätzenden Gasen ausgesetzt sind (insbesondere Schwefel Ammoniumgase). - Orte, die Vibrationen und starken Erschütterungen ausgesetzt sind. - Orte, die flüssigkeitsspritzern oder Öl ausgesetzt sind. - Orte, die mit starken Temperaturschwankungen. - Orte, die Heizstrahlung, z.B. von Öfen, ausgesetzt sind. - Beachten Sie beim Anschluß die richtige Polarität der Klemmen. - Vermeiden Sie eine Verdrahtung in der Nähe von Hochspannung oder von Versorgungsleitungen mit starken Strömen. - Reinigung: Benutzen Sie niemals Verdünnung von Farben oder ähnliches. Um das Gerät zu säubern benutzen, Sie bitte handelsüblichen Reinigungsalkohol.	Le raccomandazioni sotto riportate sono necessarie per un utilizzo in sicurezza del prodotto. Annotatele con attenzione. - Non si utilizzi prodotto in ambienti in cui è possibile vi sia la presenza di gas esplosivi o infiammabili. - Non si tenti di aprire o modificare il prodotto. - Le viti dei terminali devono essere serrate correttamente. - Per collegare i cavi al prodotto si utilizino dei terminali a crimpare di dimensioni adeguate. - Si alimenti il prodotto con una tensione non superiore alla tensione nominale. - Non si colleghi al prodotto un carico il cui assorbimento ecceda il carico nominale. - Se si estrae il regolatore dalla sua custodia, non toccare mai nè applicare tensione alle parti elettroniche all'interno. - Non coprire il regolatore. - Non usare il regolatore nei seguenti luoghi: - Luoghi soggetti alla formazione di ghiaccio, condensa, polvere o gas corrosivi (particolarmente gas di solfuro o gas di ammoniaca). - Luoghi soggetti a vibrazioni o forti scosse. - Luoghi soggetti a schizzi di liquido o atmosfere oleose. - Luoghi soggetti a forti cambiamenti di temperatura. - Luoghi soggetti a radiazioni di calore da una fornace. - Ci si assicuri di effettuare i collegamenti in modo corretto rispettando la polarità dei terminali. - Si eviti di far passare i cavi vicino a sorgenti di alte tensioni o linee ad alta potenza. - Pulizia: Si eviti di pulire il prodotto con diluenti per vernici o prodotti similari. Si pulisca il prodotto utilizzando alcool comune o.
Les éléments ci-apres sont importants pour la sécurité. Prêtez-y attention. - Ne pas utiliser ce produit en présence de gaz inflammables ou d'explosifs. - Ne pas démonter, réparer ou modifier le produit. - Serrer correctement les vis. - Utiliser les broches de taille spécifiée pour le câblage. - Utiliser le produit sous l'alimentation spécifiée. - Utiliser le produit sous la charge indiquée. - Sie vous enlevez le contrôleur de son étui, ne jamais toucher les pièces électroniques à l'intérieur et ne pas les soumettre à des chocs. - Ne pas recouvrir le contrôleur. - Ne pas utiliser le contrôleur dans les endroits suivants: - Endroits exposés au gel, à la condensation, à la poussière ou à des gaz corrosifs (en particulier du gaz sulfure ou ammoniac). - Endroits soumis à des vibrations ou des chocs importants. - Endroits risquant d'être éclaboussés d'eau ou atmosphère imprégnée de corps gras. - Endroits exposés à des variations de température importantes. - Endroits exposés à la chaleur d'un poêle. - Vérifier le bon fonctionnement et respecter les polarités. - Eviter un câblage à proximité des câbles véhiculant des courants forts	Para una utilización segura es necesario observar cuidadosamente los siguientes puntos. - No utilizar el producto en lugares donde puedan existir gases explosivos o inflamables - No desmontar, reparar ni modificar nunca el producto. - Apretar convenientemente los tornillos de terminales. - Utilizar los terminales especificados para el cableado. - Utilizar el producto dentro de la tensión de alimentación nominal. - Utilizar el producto dentro de la carga nominal. - Cuando extraiga el controlador de su caja, no toque nunca ni ejerza presión sobre los componentes electrónicos de su interior. - No cubra el controlador. - No utilice el controlador en: - Lugares sometidos a congelación, condensación de humedad, polvo, o gas corrosivo (especialmente gas sulfúrico o gas amoniac). - Lugares sometidos a vibraciones o golpes. - Lugares sometidos a salpicaduras de líquidos o aceite. - Lugares sometidos a cambios bruscos de temperatura. - Lugares sometidos a la radiación térmica de un horno. - Verificar la polaridad cuando se efectúe el cableado. - Evitar el cableado junto a fuentes de alta tensión y líneas de potencia con corrientes

PARAMETERS



Input Type

Setting	Input Ranges
0	JPT100 -199.9 to 650.0 (°C)/ -199.9 to 999.9 (°F)
1	PH100 -199.9 to 650.0 (°C)/ -199.9 to 999.9 (°F)
2	K1 -200 to 1300 (°C) / -300 to 2300 (°F)
3	K2 0.0 to 500.0 (°C) / 0.0 to 900.0 (°F)
4	J1 -100 to 850 (°C) / -100 to 1500 (°F)
5	J2 0.0 to 400.0 (°C) / 0.0 to 750.0 (°F)
6	T -199.9 to 400.0 (°C)/ -199.9 to 700.0 (°F)
7	E 0 to 600 (°C) / 0 to 1100 (°F)
8	L1 -100 to 850 (°C) / -100 to 1500 (°F)
9	L2 0.0 to 400.0 (°C) / 0.0 to 750.0 (°F)
10	U -199.9 to 400.0 (°C)/ -199.9 to 700.0 (°F)
11	N -200 to 1300 (°C) / -300 to 2300 (°F)
12	R 0 to 1700 (°C) / 0 to 3000 (°F)
13	S 0 to 1700 (°C) / 0 to 3000 (°F)
14	B 100 to 1800 (°C) / 300 to 3200 (°F)
15	W 0 to 2300 (°C) / 0 to 4100 (°F)
16	PL1 0 to 1300 (°C) / 0 to 2300 (°F)
17	4 to 20mA
18	0 to 20mA
19	1 to 5V
20	0 to 5V
21	0 to 10V

Alarm Type

Alarm Type	Alarm Output Operation
1 Deviation upper/lower limit	X ≥ 0 ON OFF ON at all times
2 Deviation upper limit	X: X ON OFF ON at all times
3 Deviation lower limit	X: X ON OFF ON at all times
4 Deviation upper/lower range	X: X ON OFF OFF at all times
5 Deviation upper/lower limit (standby sequence ON)	X: X ON OFF OFF at all times
6 Deviation upper limit (standby sequence ON)	X: X ON OFF ON at all times
7 Deviation lower limit (standby sequence ON)	X: X ON OFF ON at all times
8 Absolute value upper limit	X: X ON OFF ON at all times
9 Absolute value lower limit	X: X ON OFF ON at all times
10 Absolute value upper limit (standby sequence ON)	X: X ON OFF ON at all times
11 Absolute value lower limit (standby sequence ON)	X: X ON OFF ON at all times

ERROR DISPLAY

SErr Input error

E!!! Memory error

E333 A/D converter error

RErr Calibration data error

Input is in error.

Internal memory is in error.

Internal circuits are in error.

The calibration data is in error. This message is displayed for two seconds

Check the input wiring (incorrect, disconnected, or short-circuited), input type.

Repair.

Repair.

Repair.

Others

- Only the E53-R output unit can be used for E5AK-PRR controllers.

- No user serviceable parts.

- However, Output/Option units can be replaced.

- Return to OMRON for all repairs.

Level C.

Level 1

Level 2

Level 3

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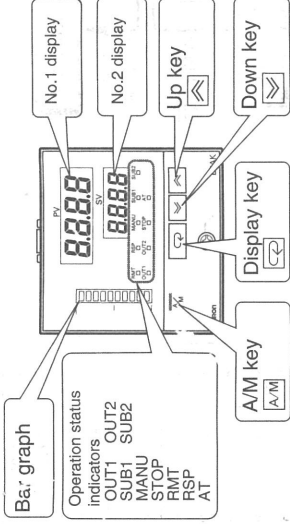
Level 900

UNPACKING

Make sure that the package contains the following items. If all the items are not in the package or an item is damaged, contact your dealer immediately.

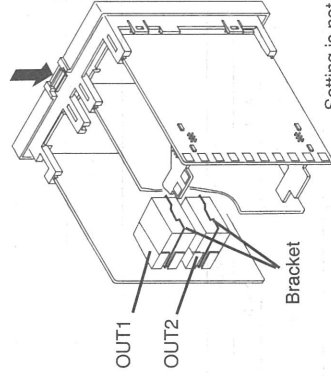
- E5AK ----- 1
- Mounting bracket ----- 2
- Terminal cover ----- 1
- Screw Cover ----- 1
- This Instruction Manual ----- 1

NAMES OF PARTS ON FRONT PANEL

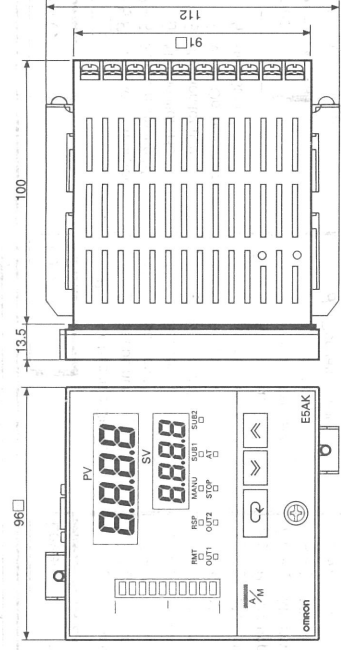


- No.1 display: Displays process values or parameter symbol.
- No.2 display: Displays set point, manipulated variable or parameter settings.
- Operation status indicators
 - OUT1: Lights when the output function assigned to "CONTROL OUTPUT 1" is ON.
 - OUT2: Lights when the output function assigned to "CONTROL OUTPUT 2" is ON.
 - SUB1: Lights when the output function assigned to "AUXILIARY OUTPUT 1" is ON.
 - SUB2: Lights when the output function assigned to "AUXILIARY OUTPUT 2" is ON.
 - MANU: Lights in the manual operation mode.
 - STOP: Lights when operation has stopped.
 - RMT: Lights during remote operation.
 - RSP: Lights during RSP mode.
 - AT: Flashes during auto-tuning.
- Bar graph: Standard type displays the manipulated variable on the heating side. Position proportional type displays the valve opening.
- A/M key: Switches between automatic and manual operation.
- Display key: Selects parameters.
- Down key: Each press returns the setting.
- Up key: Each press advances the setting.

SETTING THE OUTPUT UNIT



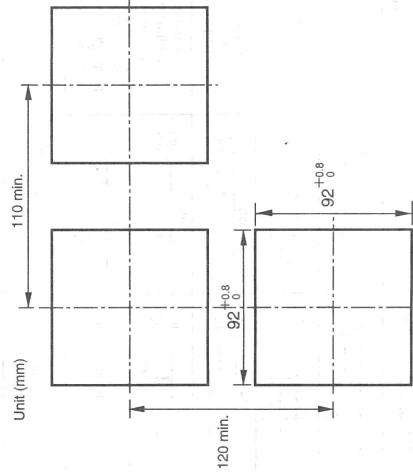
EXTERNAL DIMENSIONS (unit: mm)



Setting is not required on the E5AK-PRR □□.

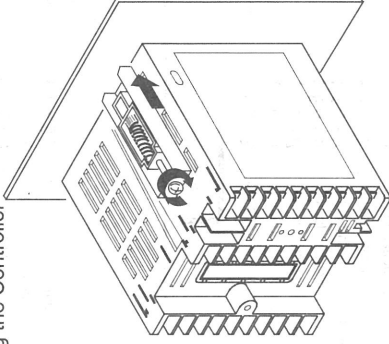
INSTALLATION

- Mounting Panels



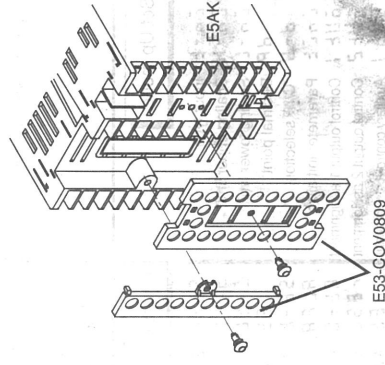
Recommended panel thickness is 1 to 8 mm.

- Mounting the Controller



- (1) Fit the mounting bracket (supplied) into the grooves on the top and bottom sides of the rear case.
- (2) Alternately tighten the top and bottom screws on the mounting bracket applying equal pressure a little at a time until the ratchet rotates freely.

- Terminal cover
E5AK-□□-500 only



WIRING TERMINALS

AC100-240V

50/60Hz

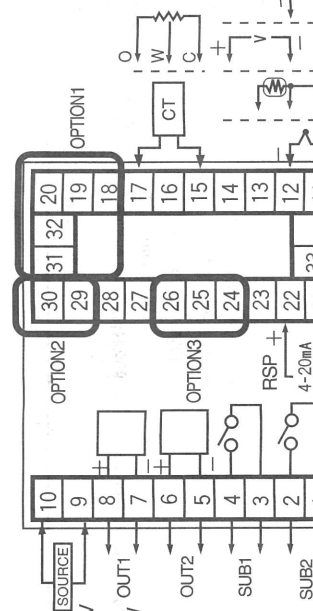
16VA

or

AC/DC24V

50/60Hz

12VA, 8W



MAIN SPECIFICATIONS

Supply voltage and power consumption	AC100-240V (-15% to +10%), 50/60 Hz, 16 VA
Input	DC24V (-15% to +10%) 50/60Hz, 12VA Thermocouple, platinum resistance thermometer, current input, voltage input
Control output	According to output unit
Auxiliary output	1a AC 250 V, 3A (resistive load)
Control method	ON/OFF or PID control
Ambient temperature	-10 to 55°C
Ambient humidity	35 to 85%
Storage temperature	-25 to 65°C
Weight	Approx. 450 g
Enclosure ratings	Front panel: NEMA4 for indoor use (IP66 equivalent)
Setup environment	Installation category II; Pollution degree 2.
Altitude	(Conforming to IEC 1010-1)
Recommended fuse	2000m max. T2A AC250V Time-lag Low-breaking capacity