CUT • EXTRUDER •

ICE
group sc

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Manual instruction

ICE GROUP s.c.
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NIP 642-16-18-551 REGON 273073007

CONFORMITY DECLARATION

The Company „ICE group" S.C., declares that:

Extrusion doser

CUT EXTRUDER
(serial no 610)

to which the following declaration refers, is in conformity with all standards required by law regarding the safety of operation and hygiene.

Grzegorz Biały

Rybnik, 17 December 2003

.....
(Directors's signature and seal)

Congratulations due to your good choice. Thank you for your trust.

Content:

A. DESCRIPTION

I. OPERATION SAFETY INSTRUCTION.

1. Please read the following safety instructions before the doser is placed the in its normal location and commissioned. Not applying to the safety instructions can lead to the loss of the warranty rights as well as it can lead to accidents.
2. The device can be operated only by the authorised and qualified personnel. The manufacturer provides the training for the personnel before giving the machine for operation.
3. The doser prepared for operation should be levelled and protected from accidental movements.
4. Good lighting should be provided for the work place.
5. The personnel operating on the machine should be clothed in a working uniform. The garment must not have any parts which could be trapped in the machine's movable parts. The personnel should also have their heads covered.
6. The machine can not be operated by a person under influence of alcohol or seditives.
7. Smoking in the vicinity of the machine is strictly forbidden.
8. The machine must not be working unattended.
9. The machine can not be regulated during its operation, except for the change of the dosing time and the hot wire temperature which are done with the use of the respective switches on the control panel. Adjusting the doser during its operation may not only cause a damage to the machine but also may cause an accident.
10. In case of machine malfunction shut down the machine immediately with the emergency switch (push button). Eliminating the faults during operation of the machine may lead to an accident.
11. The machine must not be cleaned during operation.
12. Disconnect the machine from the mains before cleaning.
13. Do not expose the electrical elements of the machine to moisture or humidity.
14. The servicing of the machine can be performed only by a qualified, authorised personnel.
15. During the warranty period the repairs can be performed only by the manufacturer's service personnel.
16. Before conducting any maintenance job switch off the main switch of the machine.
17. Before conducting any maintenance of the electrical system disconnect the machine from the mains. Before conducting any maintenance of the pneumatic system disconnect the machine from the compressed air source.
18. Worn or damaged elements must be replaced only with the original, brand new replacement parts.

The device is designed to be powered by 1-phase electrical system. It is protected by the fuses from short circuit. The device is equipped with the electric shock protection. The control circuits are powered with 24 V safe voltage. The electrical box in IP 65 protection rate execution. The door is equipped with a mechanical lock which makes it impossible to open the door with the main switch on.

II. COMPLETE DELIVERY.

1. The extrusion doser with the equipment selected by the customer.
   - Carrying frame – 1 pce.,
   - Working table – 1pce.,
   - Electrical box - 1pce.,
   - Cutting mechanism – 1pce.,
   - Extruder - 4 pcs.,
   - Joint DN40 – 3 pcs.,
   - Joint DN25 – 3 pcs.,
   - Handle cup – 4 pcs.,
   - Hose conection – 3 pcs.,
   - Pipe cap – 3 pcs.,
   - Dummy extruder – 4 pcs.
2. Tool box with content:
   - screw driver – 1 set,
   - electrical box key – 1 pcs.,
   - teflon hammer – 1 pcs.
3. Spare parts:
   - cutting wire – 6 pcs.,
   - joint brackets - seals DN40 - 20 pcs
   - pneumatic joint TYP 26 - 1 pcs
   - bulbs ZBVB1 - 24 V – 2 pcs.,
4. Operation Manual – 1 pce.

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III. TECHNICAL DATA.

Maximum capacity	1.000 pce/ h
Power installed	0,5 kW
Power supply	230 V, 50 Hz
Compressed air pressure	6 bar
Compressed air consumption	100 l/ min.
Dimensions (length x width x height)	1200 x 1300 x 1650 mm
Weight	150kg

IV. DESIGNATION.

CUT EXTRUDER is a device designed for semi automatic ice cream dosing by extrusion to bulk packaging in a capacity of 100 ml to 5000 ml. With the use of the doser we can obtain ice cream of one, two, or three tastes. The doser is designed to work with continuous freezers. The doser should be operated by two persons. One on each side of the machine.

V. CONSTRUCTION FEATURES.

CUT EXTRUDER consists of: carrying frame with the table, extruder, cutting mechanism, pneumatic system for dosing and cutting of ice cream control and electrical system. The frame of the device is made of stainless steel and some aluminium components. All components having contact with food are made of AISI 304 stainless steel.
Carrying frame is placed on the feet with adjustable height, owing to which the doser can be easily levelled for proper operation. The working table size 1200 x 800 mm is installed on the frame. The table holds the guiding rods where carriage with containers slides. The carriage allows to place the containers safely under the extruder.
The extruder can be equipped with one, two, or three ports for connecting the ice cream, depending on the number of flavours of the extruded ice cream. The shape of the extruder depends on the shape of the container. The ice cream installation is connected to the valve with DN 32 or DN 40 joint.
The cutting mechanism consists of two cutting wires attached to the arms. The arms are slid with servomotors along the inner part of the frame.The frame of the cutting mechanism is lift up and down with four servomotors.
The pneumatic elements, that is: servomotors, electro-valves, compressed air drier, joints pneumatic hoses are of FESTO make.
The electrical elements are in the installed in the electrical box with IP 65 protection rate, made of stainless steel.
The doser is equipped with adjustment of ice cream dosing time. The adjustment is done by means of time relay installed on the main panel of the electrical box.

VI. INSTALLATION AND CONECTIONS.

1. Location.
The doser should be located in a production hall in a place which shall enable easy connection to the mains as well as to the ice cream supply. It should also allow for the easy access of the operator to the machine. After installing the machine should be well levelled with the adjustable feet. The device must be stable in a workplace.

2. Pneumatic connections.
The compressed air should be connected to the doser with the use of quick release coupling. For this purpose flexible hose with diameter (9 mm) should be connected to the quick release joint provided and secured with a band. For the proper operation of the doser dried air is required. The air should be deprived of oil particles with the constant pressure of 6 bar. The device is equipped with FESTO pneumatic components, which do not require oil content in the air. Please check the air tightness of the system. Check the bands for proper attachment. Check the manometer readings and adjust the pressure with the pressure knob. The pressure should be 5 ÷ 6 bar.

ATTENTION !
If the pressure drops below 4,5 bar some elements of the pneumatic system do not work properly and the doser will be inoperational.

3. Electrical connections.
Check if the mains voltage matches the nominal voltage of the machine. The doser should be equipped with zeroing electric shock protection. Connect the cable to the mains with the standarised socket.

4. Connection to the technological line.
Connect the ice cream supply to the dosing head ports (standard dairy ports DN40). Make sure that the bands are tight and that the ports are firmly attached.

VII. DESCRIPTION OF OPERATION.

1. Commissioning.

During commissioning the training for the customers personnel is carried out.

After connecting power supply and pneumatic and ice cream connections the machine can be activated. The activation should be done in the following order:

- place the blocking plate underneath the dosing head,
- open the air vents in the upper part of the doser,
- switch on the main switch and in case of „manhattan" doser open start the drive by opening the compressed air valve,
- start the freezer supplying ice cream to the doser,
- when ice cream fills the dosing head and starts flowing through the air vents remove the blocking plate close the vents and start dosing (green button).

First doses of ice cream are not suitable for packing. They should be dropped to the container, until the dose becomes stable and the nozzle is cooled. Then place the proper container to the carriage and move the carriage underneath the extruder.

2. The dose size adjustment.

The dose adjustment is done by the change of the settings of the time relay on the control panel.
The change of the dosing time that is the time between successives suttings is done by changing the red indicator. The lift up and down time is set by the manufacturer to the default settings and should not be altered by the customer.

3. Halting the machine.

The machine can be halted at any time by pressing STOP button (red button).

VIII. CLEANING.

ATTENTION !
Disconnect machine from the mains before cleaning.

The cleaning should be done before starting the production and also after every completed production shift.
The remains of the juice as well as other stains should be removed with cool running water and a sponge, soft cloth and typical detergents or disinfectants. When cleaning pay special attention to use non corrosive detergents (detergents based on oxidised water, phosphoric acid, sulphuric acid, or chloride of low concentration). Do not clean the device with steam. It is advised to dismantle the head and the hoses for cleaning. The above mentioned elements are easy to dismantle what ensures thorough disinfecting of the components which have direct contact with food products.

ATTENTION !
If the device is not cleaned after each use the product bacteriological contamination may take place.

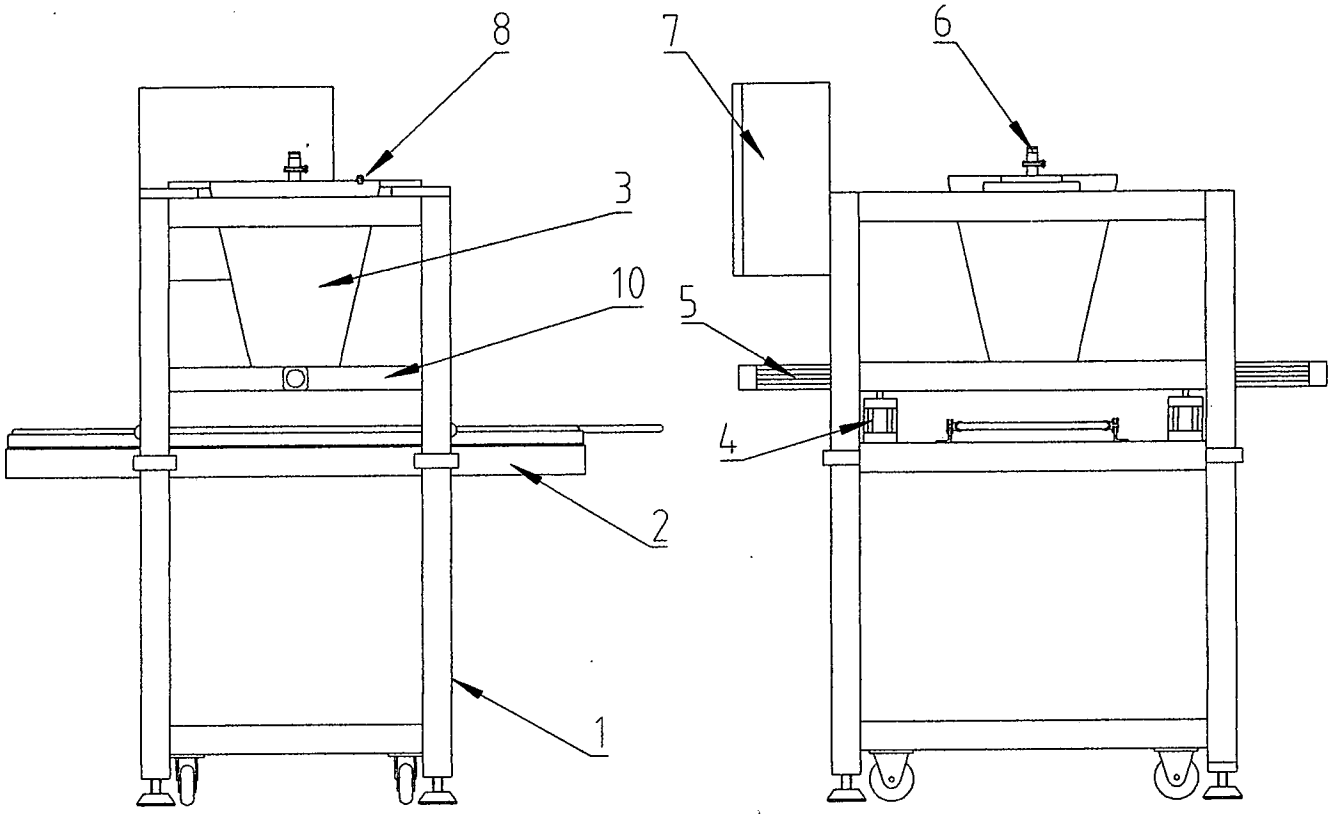
IX. SERVICING AND PERIODIC INSPECTIONS.

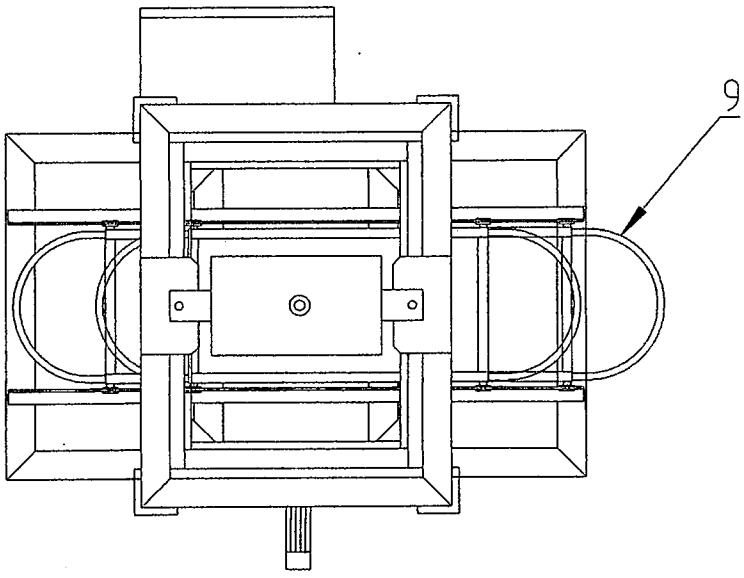
ATTENTION !
Before any maintenance job the machine must be switched off with the main switch. Before conducting any job with the electrical system disconnect the machine from the mains. Before conducting any job with the pneumatic system disconnect the machine from the compressed air supply.

After setting up the doser and after 100 hours of operation check the bolt connections. The following inspections should be conducted once a month as well as at the end of the season.
Due to the easy construction of the machine the periodic servicing should be limited to checking the condition of the dosing head guidance bushes and the cutting mechanism. Worn bushes should be replaced with the new ones. In order to extend their living period wax them with Vaseline. Pay attention to the amount of water in air filter container. In case of the water presence remove the water by pressing the valve at the bottom of the container.
Once a year conduct the technical inspection of the doser.

B. DRAWINGS

Drawing No. 1 : GENERAL VIEW OF THE DOSER.





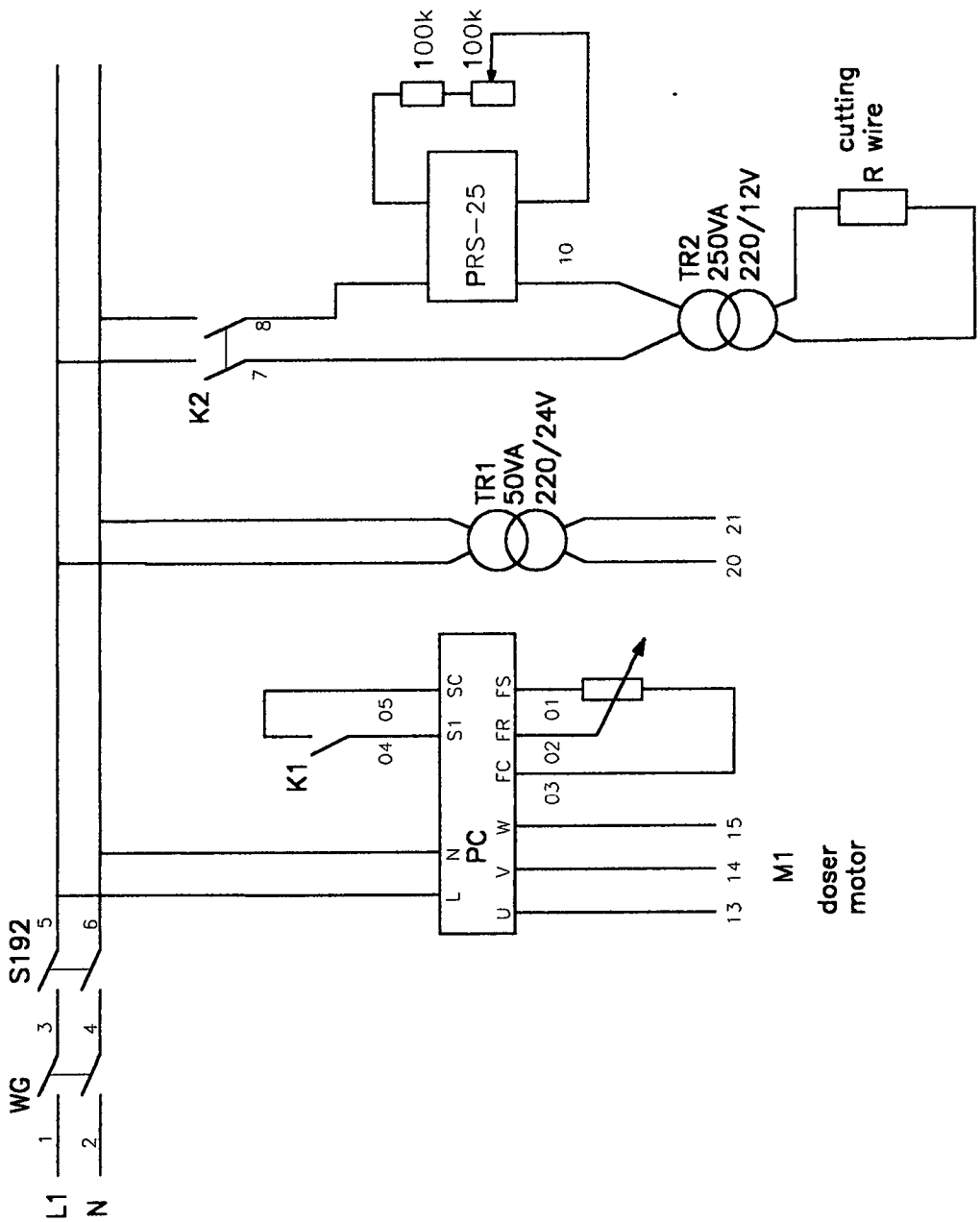
1. Carrying frame
2. Working table
3. Extruder
4. Cutting lowering servomotor
5. Cutting mechanism servomotor
6. Inlet product
7. Electrical box
8. Out air
9. Truck
10. Cutting mechanism

Konstruował				Masa [kg]	Nr zlecenia
Sprawdził					610
Emitował	Agnieszka Godziek	03.09.2001			

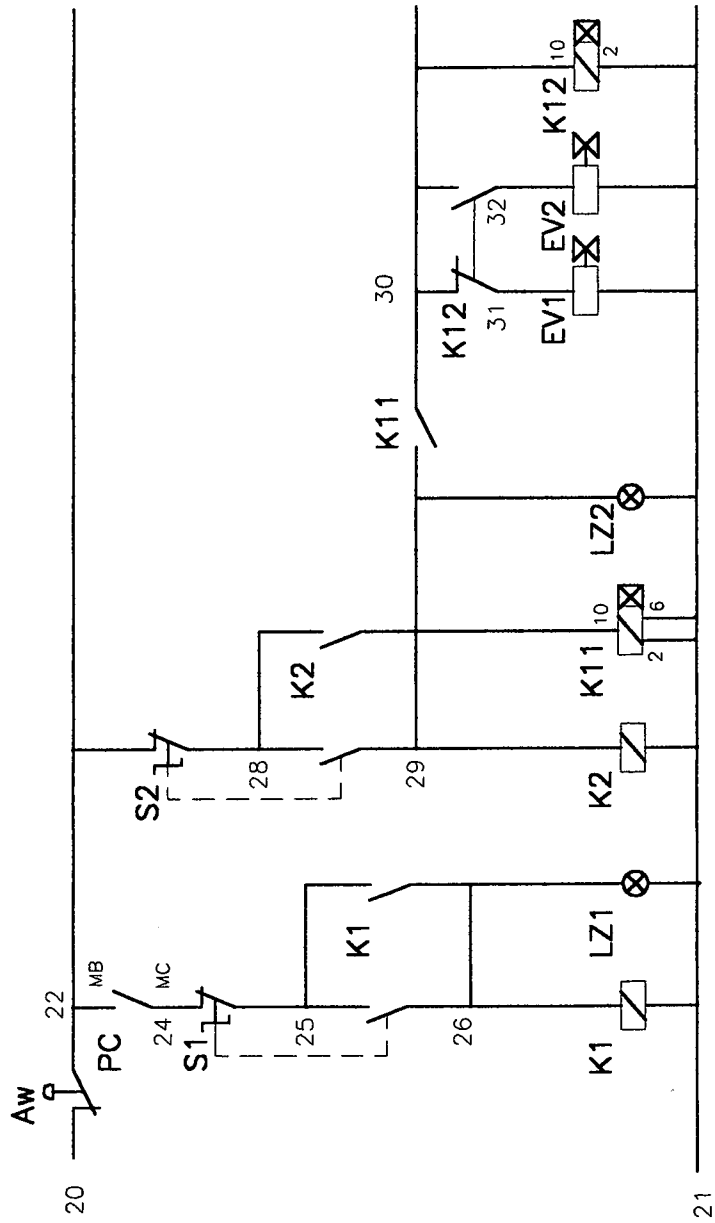
Nazwa maszyny	Nazwa zespołu	Nazwa detalu
Cut extruder	Cut extruder	Cut extruder

	Podziałka	Il. szt.	Materiał	Nr rysunku
				SE-00

Drawing No. 3 : ELECTRICAL DIAGRAM.



NAZWA PLIKU	SKALA 1:50	MATERIAL	IL. SZT.
FORMAT ISO_A4		Cut extruder	
RYSOWAL 15 11 2003 Krzysztof Kalafarski		Obwod zasilania	
SPRAWDZIL		Schemat elektryczny	
ZATW.			
WYPROD.		NR RYS.	
WER.		SE-E-610-1	
NR KONTRAKTU 610			

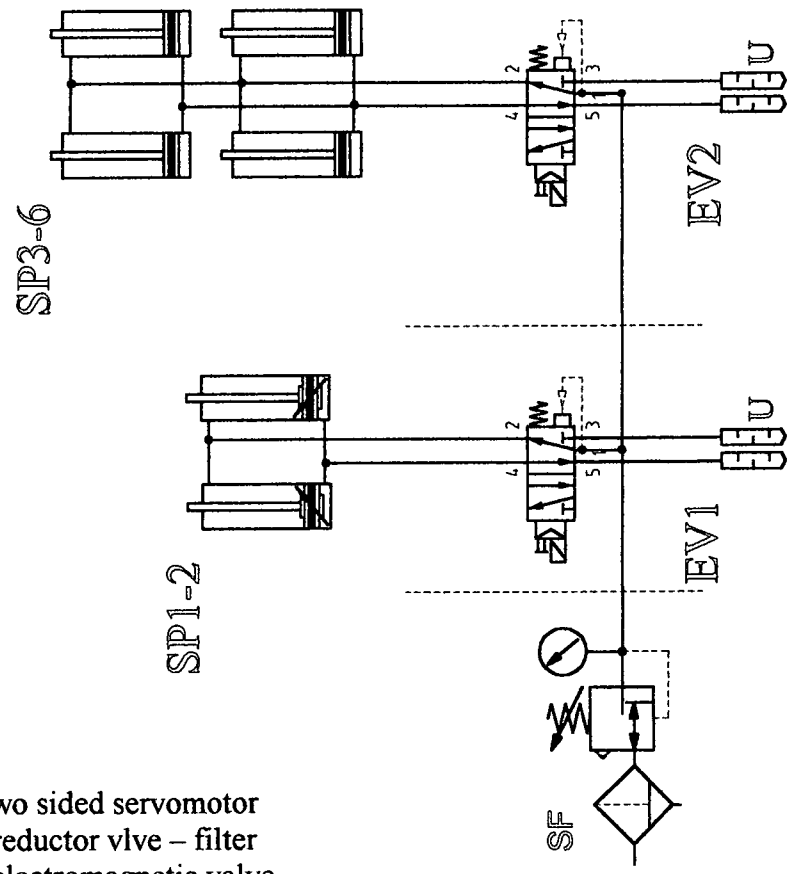


NAZWA PLIKU	SKALA 1:50	MATERIAL	IL. SZT.
FORMAT ISO_A4		Cut extruder	
RYSOWAL 15 11 2003 Krzysztof Kalafarski			
SPRAWDZIL		Obwod sterowania	
ZATW.		Schemat elektryczny	
WYPROD.			
WER.		NR RYS.	
NR KONTRAKTU 610		SE-E-610-2	

Electrical diagram symbol legend.

Aw – emergency switch
EV1 – electrovalve of the cutting servomotor
EV2 – electrovalve of the cutting frame servomotor
K1 – contactor
LZ1 – Manhattan signalling light, white
LZ2 – Cutting signalling light, white
R – cutting wires
K11,K12 – time relay contactors
S–192 – electromagnetic protection
TR 1,2 – voltage adaptors
WG – main switch
PRS-25 – voltage control
PC – friquency converter
M1 – manhattan motor

Drawing No. 4 : PNEUMATIC SYSTEM DIAGRAM.



SP1, 2– two sided servomotor
SF – reductor vlve – filter
EV – electromagnetic valve
U – silencer

NAZWA PLIKU	SKALA 1:1	MATERIAL	IL. SZT.
FORMAT A4		CUT EXTRUDER	
RYSOWAŁ 17 11 2003 Krzysztof Kalafarski		Instalacja pneumatyczna	
SPRAWDZIŁ		Schemat pneumatyczny	
ZATW.			
WYPROD.			
WER.		NR RYS.	
NR KONTRAKTU 610		SD-P-610	

C. WARRANTY

POLAND, 44 - 203 Rybnik, Żorska 14
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e-mail: icegroup@icegroup.pl

..... company name (Customer)

....., date .....
Place

I. MACHINE COLLECTION CONFIRMATION

CUT EXTRUDER nr 610

Hereby device has been commissioned and related to the customers disposal on the day ..... The training dealing with construction of the device, operation safety, adjustment methods, cleaning and maintenance

The training has been participated in by the following persons of the customer's personnel. These persons are qualified to operate the above devices.

Lp.	Name	Designation	Signature of the trained peson
1.			
2.			

.....
Signature of the customer

.....
Signature of the service person

ATTENTION!
Non accepting the device causes that every fault of the machine emerged in operation does not undergo warranty rights.

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II. WARRANTY CARD.

Warranty period
12 months

MACHINE NAME CUT EXTRUDER

SERIAL NUMBER 610

DELIVERY DATE .....

COMMISSIONING DATE.....

*) delete inadequate

ul. Żorska 14, 44-203 Rybnik, Polska
ICE group sc

.....
(signature and seal of the seller)

.....
(signature of the commissioning service person)

Serwis: ICE group sc. 44-203 Rybnik, ul. Żorska 14
tel./ fax 0-32/ 423-79-44, 422-98-35,

POLAND, 44 - 203 Rybnik, Żorska 14
Tel. + 48 32 42 29 835
Tel. + 48 32 42 29 836
Tel. / Fax + 48 32 42 37 944
e-mail: icegroup@icegroup.pl

III. SERVICE ORDER CARD

1. Service order should be confirmed by fax. Please specify when the machine will be ready for repair.
2. Preparing the machine for the technitian arrival should include its cleaning anddrying. Please also ensure appropriate amount of ice cream, containers and lids for tests. Until teh work is completed at least one person of the customer should be available (name) ....., authorized to confirm the work carried out by the manufacturers service person.
3. The service person's waiting time for maachine readiness is included in the cost of the service regardless if the machne is within the warranty period or not. If there is a need for the technician to stay overnight this cost will also be included in the cost of the service.
4. Device type ..... Serial nr . ..... Year of production .....

Faulty element, part	Detailed description of damaged elements	Suggestions for the requirements of parts needed

.....
Service ordering person name (legible)

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Faulty element, part	Detailed description of damaged elements	Suggestions for the requirements of parts needed

.....
Service ordering person name (legible)

D. ATTACHMENTS

OMRON

Model H3CR-F TWIN TIMER

INSTRUCTION MANUAL

Bedienungsanleitung

Manuel d'instructions

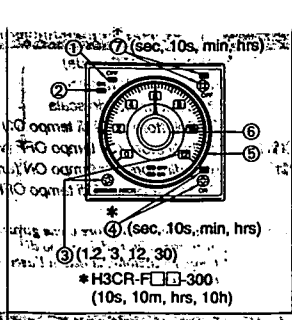
Thank you for purchasing this OMRON product. This manual primarily describes precautions required in installing and wiring the timer. Before operating the product, read this manual thoroughly to acquire sufficient knowledge of the product. Keep this manual for future reference.

Bitte lesen Sie diese Betriebsanleitung sorgfältig durch, bevor Sie mit dem Gerät arbeiten.

Avant d'utiliser ce produit, veuillez, s'il vous plait, lire attentivement ce manuel pour vous familiariser avec le produit.

Karasuma Nanajo, Shimogyo-ku,
Kyoto 600, Japan
OMRON Corporation

0696907-5A



UK/USA Nomenclature

① OFF Indicator (green)
② ON Indicator (orange)
③ Rated time selector
④ ON time unit selector
⑤ Setting dial for OFF (green pointer)
⑥ Setting dial for ON (orange pointer)
⑦ OFF time unit selector

Note: If pointer is turned counterclockwise until overranged, instantaneous output will be issued.

D Bezeichnungen der Teile

① *AUS-Anzeige (grün)*
② *EIN-Anzeige (orange)*
③ *Nennzeit-Wähler*
④ *Einschaltzeit -Wähler*
⑤ *Einstellskala für AUS (grüne Anzeige)*
⑥ *Einstellskala für EIN (orange Anzeige)*
⑦ *Ausschaltzeit -Wähler*

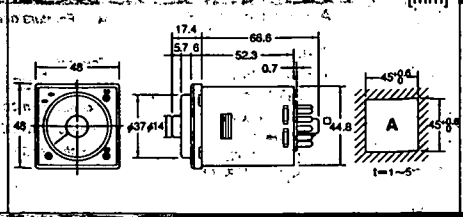
Anmerkung: Wenn die Anzeige im Uhrzeigersinn über den Zeitbereich hinausdreht, wird der Sofortkontakt gesetzt.

F Nomenclature

① Voyant repos (vert)
② Voyant travail (orange)
③ Sélecteur de temps
④ Sélecteur d'unité du temps travail
⑤ Anneau de réglage du temps repos (pointeur vert)
⑥ Anneau de réglage du temps travail (pointeur orange)
⑦ Sélecteur d'unité du temps repos

Remarque: Si le pointeur est tourné dans le sens inverse des aiguilles d'une montre jusqu'à sortir de l'échelle graduée, une sortie instantanée sera créée.

[mm]



UK/USA Dimensions

A — Panel cutout dimensions

Applicable socket
Model P2CF-08, P2CF-11
Front connection socket

Model P3G-08, P3GA-11
Back connection socket
(* : H3CR-F8(N)
** : H3CR-F(N))

D Abmessungen

A — *Frontplattenausschnitt*

Verwendbare Sockel
P2CF-08, P2CF-11
Frontseitige Klemmen

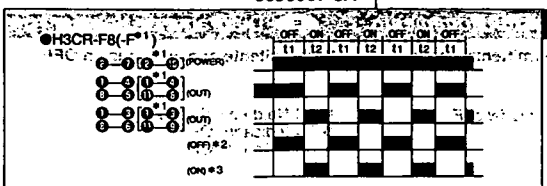
P3G-08, P3GA-11
rückseitige Klemmen

F Dimensions

A — Découpe du panneau

Socle
Modèle P2CF-08, P2CF-11
Socle à connexion avant

Modèle P3G-08, P3GA-11
Socle à connexion arrière



UK/USA Timing charts

●Flicker OFF start

* 1 : Pin No. of -F type
* 2 : OFF indicator
* 3 : ON indicator

D Zeitablauf

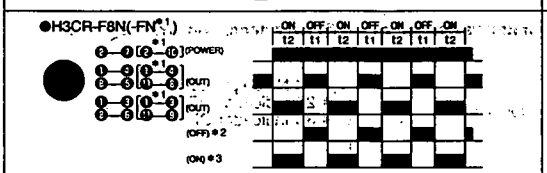
●*Blinker bei AUS startend*

* 1 : *Pin No der F - Type*
* 2 : *AUS - Anzeige*
* 3 : *EIN - Anzeige*

F Tableaux de minutage

●Clignotant démarrage par le temps repos

* 1 : Numéro de borne sur type-F
* 2 : Indicateur repos
* 3 : Indicateur travail



●Flicker ON start

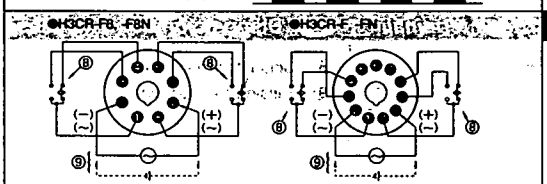
* 1 : Pin No. of -FN type
* 2 : OFF indicator
* 3 : ON indicator

●*Blinker bei EIN startend*

* 1 : *Pin No der FN - Type*
* 2 : *AUS - Anzeige*
* 3 : *EIN - Anzeige*

●Clignotant démarrage par le temps travail

* 1 : Numéro de borne sur type-FN
* 2 : Indicateur repos
* 3 : Indicateur travail



UK/USA Connections

⑧ Delayed contacts
⑨ Operating power

D Anschlußanordnung

⑧ *verzögerte Kontakte*
⑨ *Arbeitsspannung*

F Brochage

⑧ Contacts temporisés
⑨ Tension d'alimentation

UK/USA Notice

Please comply strictly with the following instructions which are intended to ensure safe operation of the controller.

(1) **For correct use, do not subject the timer to the following conditions.**
- Dramatic temperature fluctuations
- High humidity or where condensation may occur
- Severe vibration and shock
- Corrosive gas or dusty environments
- Where there is danger of splashing of water, oil or any chemicals
- Where explosive or flammable gases may be present

(2) **Load power supply**
Make sure that the load power supply is within the rating.

(3) **Handling**
Never disassemble, modify or repair the product.

(4) Make sure the proper product is specified for the application.

(5) Connect terminals with correct polarity.

(6) Separate the timer, input devices and input signal wiring as far as possible from noise sources and conductors carrying high voltage.
We recommend using a surge suppressor if surge voltage occurs.

(7) Be sure to use the Timer at ambient temperature of -10 to 55 °C and ambient humidity (relative humidity) of 35 to 85 %.

(8) **Cleaning**
Do not use paint thinner or the equivalent. Use standard grade alcohol to clean the product.

(9) Do not change the time unit and time range while the Timer is in operation, otherwise the Timer may malfunction. Be sure to turn off the power before changing the setting.

(10) **Power supply connection**
Use a DC power supply having a ripple factor of 20% or less and supplying a mean voltage that is within the rated operating voltage marked on the timer.
Make sure that the supply voltage is applied to the timer all at once, using contacts such as of a switch or relay. Otherwise, the timer may not be able to perform power reset or its set time may be up when it should not.

(11) Please do not exceed the voltage rating marked on the timer. If voltage other than the rated voltage is applied, the internal components may be damaged.

D *Hinweis*

Bitte folgen Sie genau den folgenden Hinweisen. Die gewährleisten eine sichere Funktion des Zeitrelais.

(1). Setzen Sie das Zeitrelais nicht unter den folgenden Bedingungen ein :
- *Erhebliche Temperaturschwankungen*
- *Hohe Luftfeuchtigkeit oder wenn Kondensation entstehen könnte*
- *Vermeiden Sie starke Vibration oder Schock*
- *Korrosieves Gas oder staubige Umgebung*
- *Bei plätscherndem Wasser, Öl oder irgendwelche Chemikalien*
- *Wenn in der Umgebung explosive oder entflammbare Gase sind*

(2) Spannungsversorgung
Stellen Sie sicher, daß die Spannungsversorgung innerhalb des angegebenen Bereiches liegt.

(3) Handhabung
Demontieren, modifizieren und reparieren Sie bitte niemals das Gerät.

(4) Stellen Sie sicher, daß das Produkt den Anforderungen Ihrer Anwendung entspricht.

(5) Schließen Sie die Drähte mit der richtigen Polarität an.

(6) Montieren Sie das Zeitrelais und die Eingangsverdrahtungen soweit wie möglich von elektriechen Störungen oder Starkstromschaltgeräten entfernt.

(7) Verwenden Sie das Zeitrelais nur innerhalb des Temperaturbereiches von -10 bis +55 °C und bei einer relativen Luftfeuchtigkeit zwischen 35 und 85%.

(8) Reinigung
Verwenden Sie keine Verdünnung für Lacke o.ä., sondern nur Reinigungsalkohole.

(9) Verändern Sie während des Betriebes niemals den Zeitbereich oder die Zeiteinheit. Das Gerät würde fehlerhaft arbeiten. Stellen Sie sicher, dass bei Einstellungsänderungen die Versorgungsspannung abgeschaltet ist.

(10) Anschluß der Netzspannung
Verwenden Sie eine Gleichspannungsversorgung mit einer Restwelligkeit von 20% oder weniger und eine mittlere Spannung, die innerhalb des angegebenen Bereiches für die Betriebsspannung des Zeitrelais liegt.
Stellen Sie sicher, daß die Spannung über die ganze Zeit am Zeitrelais ansteht. Verwenden Sie Kontakte, wie z.B. ein Relais. Andernfalls kann das Zeitrelais nicht ordentlich arbeiten. Es könnte z.B. die Netzrückstellung oder der Endzeitpunkt geschaltet werden, obwohl die Zeit noch nicht abgelaufen ist.

(11) Überschreiten Sie bitte niemals die auf dem Zeitrelais angegebene Nennspannung.
Wenn eine andere Spannung als die angegebene Nennspannung angelegt wird, werden die internen Komponenten beschädigt.

F Note

Veuillez suivre précisément les instructions suivantes afin d'utiliser correctement la minuterie.

(1) **Pour une bonne utilisation de la minuterie, veuillez éviter les conditions suivantes:**
- Les fortes variations de température
- Les zones à forte humidité où de la condensation pourrait se former
- Les chocs est les vibrations trop importantes.
- Les environnement poussiéreux ou contenant des gaz corrosifs
- Les endroits où il y a des risques d'éclaboussures d'eau, d'huile ou autres produits chimiques.
- Les ambiances explosives ou avec des gaz fortement inflammables.

(2) **Alimentation**
Vérifier que la tension d'alimentation correspond à celle du produit.

(3) **Manipulations**
Ne jamais désassembler, modifier ou réparer ce produit.

(4) Assurez vous que le produit correspond à votre application.

(5) Connectez les bornes avec la bonne polarité

(6) Placez la minuterie et ses éléments de commande, à distance de toute source de perturbation et d'alimentation haute tension.

(7) Utilisez la minuterie avec une température ambiante entre -10° et 55° et une humidité relative entre 35 et 85%.

(8) **Nettoyage**
N'utilisez pas des solvants de peinture ou équivalents. Utilisez des produits à base d'alcool.

(9) Ne modifiez pas l'unité de temps ni la plage de temps pendant le fonctionnement de la minuterie car elle pourrait subir des dysfonctionnements.
Veillez à bien couper le courant avant de modifier les sélections.

(10) **Connexion de l'alimentation**
Utilisez une alimentation Vc.c. avec un facteur d'ondulation inférieur à 20% délivrant la tension nominale marquée sur le produit.
Assurez vous d'alimenter la minuterie d'un coup en utilisant des contacts tels que des relais ou des interrupteurs.
Sinon, la fonction remise à zéro ou le temps réglé pourrait être altérés.

(11) Veuillez ne pas dépasser la tension nominale indiquée sur la minuterie. Si une tension supérieure à celle indiquée est appliquée, le circuit interne du composant risque d'être endommagé.

UK/USA Precautions in Using the Product

When the product is used under the circumstances or environment below, ensure adherence to limitations of the ratings and characteristics. Also, take countermeasures for safety precautions such as fail-safe installations.
①Use under circumstances or environment which are not described in the instruction manual.
②Use for nuclear power control, railway, aircraft, vehicle, incinerator, medical equipment, entertainment equipment, safety device etc...
③Use for applications where death or serious property damage is possible and extensive safety precautions are required.

D *Vorsichtsmaßnahmen zum Gebrauch des Gerätes*

Halten Sie bitte alle angegebenen Grenzwerte ein, wenn das Gerät unter den folgendenn Umständen oder Umweltbedingungen eingesetzt wird. Beachten Sie die Sicherheitsstandards und üblichen Installationsvorschriften.
①Bei Anwendungen, die nicht im Katalog stehen.
②Bei Verwendung in Kernkraftwerken, Eisenbahnen, Flugzeugen, Fahrzeugen, Verbrennungsöfen, Unterhaltungselektronik, Sicherheitsgeräten u.v.a.m.
③Bei Verwendung in Applikationen, wobei Tod oder Besitz-/Vermögensverluste möglich sind und umfassende Sicherheitsvorschriften gelten.

F Précautions d'emploi de la machine

Lorsque la machine est employée dans les circonstances ou les domaines ci-dessous, conformez-vous aux limitations de ses prestations et de ses fonctions. Prenez également des mesures préventives de sécurité en installant des dispositifs à sûreté intégrée.
① Emploi dans les circonstances ou les domaines qui ne sont pas décrits dans le manuel d'instruction.
② Emploi dans le nucléaire, les trains, les avions, les véhicules, les incinérateurs, les équipements médicaux, les équipements d'attractions, les dispositifs de sécurité, etc
③ Emploi pour des applications pouvant entraîner la mort ou de graves dommages aux biens et pour lesquelles d'importantes mesures de sécurité sont requises.

UK/USA Contact address

OMRON ELECTRONICS.INC.
Phone: 1-800-55-OMRON
OMRON CANADA INC.
Phone: 1-416-286-6465
Phone: 1-514-636-6676 (French Language)

UNITED KINGDOM
OMRON ELECTRONICS LTD.
Phone: 44-181-450-4646

D *Kontakt Adresse*

EUROPEAN H.Q.
OMRON EUROPE B.V.
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GERMANY
OMRON ELECTRONICS G.m.b.H.
Phone: 49-2103-203-3

F Adresse du contact

EUROPEAN H.Q.
OMRON EUROPE B.V.
Phone: 31-23-5681300
FRANCE
OMRON ELECTRONICS S.a.r.l
Phone: 33-1-49747000

OMRON

形 H3CR-F ツイン タイマ

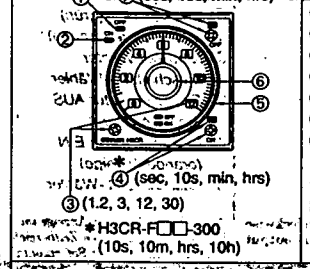
① 取扱説明書
Manuale d'istruzioni
Manual de instrucciones

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、十分にご理解してください。
お読みになった後もいつも手元においてご使用ください。

Prima di utilizzare il temporizzatore, leggete questo manuale per acquisire una sufficiente conoscenza del prodotto.

Antes de operar el producto, por favor, lea este manual atentamente para adquirir los conocimientos suficientes sobre él.

オムロン株式会社 OMRON Corporation



① 各部の名称

① OFF表示（緑）
② ON表示（橙）
③ 目盛数字切替
④ ON時間単位切替
⑤ OFF用セットダイアル（緑指針）
⑥ ON用セットダイアル（橙指針）
⑦ OFF時間単位切替

注：セットダイアルを0方向に回しきると瞬時に出力が切り換わります。

I Descrizione pannello frontale

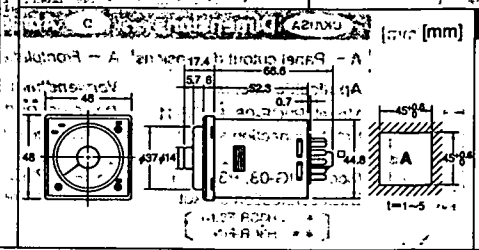
① *Spia di OFF(verde)*
② *Spia di ON (arancio)*
③ *Selettore fondo scala*
④ *Selettore unità di tempo ON*
⑤ *Indicatore per tempo OFF (verde)*
⑥ *Indicatore per tempo ON (arancio)*
⑦ *Selettore unità di tempo OFF*

Nota: Se l'indicatore viene girato in senso antiorario fuori del campo di temporizzazione, si attiva l'uscita istantanea.

E Nomenclatura

① Indicador OFF (verde)
② Indicador ON (naranja)
③ Selector de tiempo nominal
④ Selector de unidad de tiempo ON
⑤ Dial de selección para OFF (puntero verde)
⑥ Dial de selección para ON (puntero naranja)
⑦ Selector de unidad de tiempo OFF

Nota: Se producirá una salida instantánea si el puntero se gira en sentido antihorario hasta salir fuera de rango.



J 外形寸法

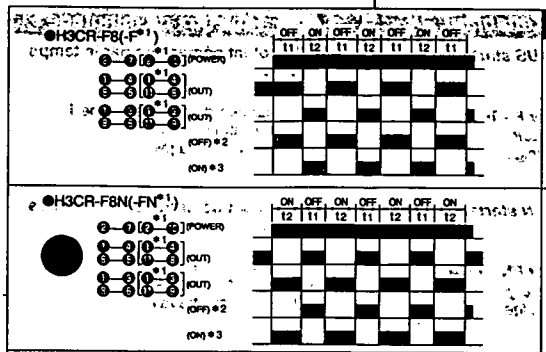
A－パネルカット寸法
（t－パネル厚）
適用接続ソケット
形P2CF-08, P2CF-11
－表面接続ソケット
形P3G-08, P3GA-11
－裏面接続ソケット
［＊：H3CR-F8(N)
＊＊：H3CR-F(N)］

I Dimensioni

A－*Foratura del pannello*
Zoccoli
Modello P2CF-08, P2CF-11
Zoccolo per montaggio retroquadro
Modello P3G-08, P3GA-11
Zoccolo per montaggio frontaquadro

E Dimensiones

A－Dimensiones del corte en el panel
Zócalo aplicable
Modelo P2CF-08, P2CF-11
Zócalo de conexión frontal
Modelo P3G-08, P3GA-11
Zócalo de conexión posterior



J 動作チャート

●フリッカ動作
（OFF スタート）

＊1：-Fタイプのピン番号を示す
＊2：(OFF)表示
＊3：(ON)表示

I Grafico di funzionamento

●Ritardo ad intermittenza con inizio OFF

＊1：*Piedino No modello -F*
＊2：*Spia OFF*
＊3：*Spia ON*

E Diagrama de tiempo

●Intermitente con arranque en OFF

＊1：No.de pin de tipo -F
＊2：Indicador OFF
＊3：Indicador ON

●フリッカ動作
（ON スタート）

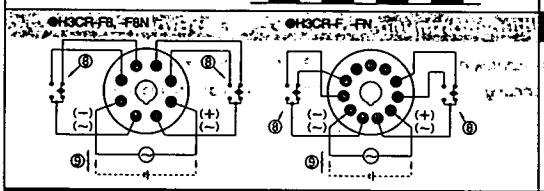
＊1：-FNタイプのピン番号を示す
＊2：(OFF)表示
＊3：(ON)表示

●Ritardo ad intermittenza con inizio ON

＊1：*Piedino No modello -FN*
＊2：*Spia OFF*
＊3：*Spia ON*

●Intermitente con arranque en ON

＊1：No.de pin de tipo -FN
＊2：Indicador OFF
＊3：Indicador ON



J 接続図

⑧ 限時接点
⑨ 操作電源

I Disposizione terminali

⑧ *Contatti ritardati*
⑨ *Alimentazione*

E Disposición de terminales

⑧ Contactos retardados
⑨ Tensión de operación

J お願い

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。

(1) 下記の環境では使用しないでください。
・温度変化の激しい場所
・湿度が高く、結露が生じる恐れのある場所
・振動、衝撃の激しい場所
・腐食性ガス、塵あいのある場所
・水、油、薬品などがかかる恐れのある場所
・揮発性ガス、引火性ガスのある場所
(2) 負荷電流について
負荷電流は、必ず定格以下でご使用ください。
(3) 取り扱いについて
分解、改造、修理をしないでください。
(4) ご希望どおりの製品であるかお確かめの上、ご使用ください。
(5) 端子の極性等、誤配線のないよう注意してください。
(6) ノイズ発生源、ノイズがのった高圧線から入力信号の配線、および製品本体を離してください。
サージ電圧が発生する場合は、サージアブソーバのご使用をお勧めします。
(7) 使用周囲温度：−10～55℃ 使用周囲湿度：相対湿度35～85%でご使用ください。

J 正しい使い方

(1) 配線について
配線は高圧、大電流線との接近を避けてください。
(2) 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ご使用ください。
(3) タイマ動作中に時間単位、目盛数字を切り換えることは、誤動作の原因となりますので、切り換える場合は、必ず電源を切って行なってください。
(4) 操作電源の接続について
・DC 仕様についての電源はリップル率20%以下で、平均電圧が許容電圧変動範囲内でご使用ください。
・電源電圧はスイッチ、リレー等の接点を介して一気に印加する様にしてください。一気に電圧を印加しない場合、電源リセットされなかったり、タイムアップすることがあります。
(5) 定格電圧以外の電圧を印加しますと内部素子が破壊する恐れがあります。

J ご使用に際してのお願い

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イ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るようお願いいたします。
①取扱説明書に記載のない条件や環境での使用
②原子力制御・鉄道・航空・車両・燃焼装置・医療機器・娯楽機械・安全機器などへの使用
③人命や財産に大きな影響が予測され、特に安全性が要求される用途への使用

I Nota

Si seguano attentamente le istruzioni che seguono in quanto sono studiate per utilizzare il prodotto in condizioni di sicurezza.

(1) Per un corretto utilizzo, non si sottoponga il temporizzatore alle seguenti condizioni ambientali/di funzionamento:
• Repentine variazioni di temperatura;
• Alte percentuali di umidità relativa con possibilità di condensa;
• Urti o vibrazioni di forte intensità;
• Ambienti ricchi di polveri o gas corrosivi;
• Ambienti in cui siano possibili schizzi di acqua o altri composti chimici;
• In presenza di gas o liquidi corrosivi.
(2) Alimentazione del carico
Ci si assicuri che l'alimentazione del carico sia nel campo della.
(3) Norme d'uso
Non si tenti di aprire, modificare o riparare il prodotto.
(4) Ci si assicuri di utilizzare il prodotto corretto per l'applicazione desiderata.
(5) Si colleghino i cavi di alimentazione ai terminali 2 e 10 facendo attenzione alla polarità.
(6) Si installi il timer, i dispositivi di ingresso e i cavi di collegamento il più possibile lontano da sorgenti di disturbi o da cavi per l'alta tensione.
(7) Si utilizzi il temporizzatore in ambienti di funzionamento che rispettino le seguenti caratteristiche: temperatura: -10... +55°C; umidità relativa: 35... 85%.
(8) Pulizia
Per pulire il temporizzatore non si utilizzino solventi per vernici o equivalenti. Si utilizzi unicamente alcool o prodotti per pulizia.
(9) Non si cambi l'unità di tempo e il valore del fondo-scala mentre il temporizzatore sta effettuando il conteggio in quanto potrebbero verificarsi conteggi errati.
Assicuratevi che il temporizzatore sia spento prima di effettuare le modifiche.
(10) Collegamento dell'alimentazione
Si utilizzi un alimentatore che fornisca una tensione in corrente continua compatibile con quella indicata sul temporizzatore e ondulazione residua inferiore al 20%.
Si alimenti il temporizzatore mediante un relè in modo che la tensione raggiunga direttamente il valore nominale altrimenti il temporizzatore non potrà essere riassettato e potrebbe dare errori di temporizzazione.
(11) Non si colleghi al temporizzatore una tensione superiore a quella indicata sul temporizzatore. In presenza di tensioni diverse, i circuiti interni del temporizzatore potrebbero venire danneggiati.

I Precauzioni nell'uso del prodotto

Nel caso il prodotto venisse utilizzato nelle circostanze o negli ambienti operativi più avanti descritti, assicurarsi che vengano rispettate le limitazioni dei valori nominali e delle funzioni che possono essere svolte. Si prendano inoltre, delle contromisure per garantire l'incolumità come per i sistemi di sicurezza.
① Utilizzo del prodotto in condizioni o ambienti non descritti nel manuale d'istruzione.
② Utilizzo del prodotto nel controllo di centrali nucleari, ferrovie, aerei, veicoli, inceneritori, apparecchi elettromedicali, apparecchiature per l'intrattenimento, dispositivi di sicurezza, ecc.
③ Utilizzo del prodotto in applicazioni nelle quali si corre il rischio di morte o di gravi danni alla proprietà e dove sia necessario installare dispositivi di sicurezza.

E Nota

Por favor, cumplir estrictamente las siguientes condiciones, que intentan garantizar la fiabilidad de funcionamiento del temporizador.
(1) Para una correcta utilización, no someter al temporizador a las siguientes condiciones.
• Cambios bruscos de temperatura
• Alta humedad o donde se pueda producir condensación
• Fuertes vibraciones o golpes
• Existencia de gases corrosivos o suciedad
• Donde exista riesgo de salpicaduras de agua, aceite o agentes químicos
• Donde pueda haber gases explosivos o inflamables
(2) Fuente de alimentación de la carga
Verificar que la fuente de alimentación de la carga esté dentro de los valores nominales.
(3) Manipulado
No desmontar, modificar ni reparar nunca el temporizador.
(4) Verificar que el producto especificado es el adecuado para la aplicación.
(5) Cablear los terminales respetando la polaridad.
(6) Ubicar el temporizador, dispositivos de entrada y cableado de señal de entrada lo más lejos posible de fuentes de ruido y de conductores de alta tensión.
(7) Verificar la utilización del temporizador a temperatura ambiente de −10 a 55° y humedad ambiente del 35 al 85% de HR.
(8) Limpieza
No utilizar disolventes de pintura o equivalentes. Utilizar alcohol industrial estándar para limpiar el producto.
(9) Para evitar posibles malfuncionamientos, no cambiar la unidad de tiempo y el rango de tiempo mientras el temporizador está operando. Antes de efectuar los cambios, desconectar la alimentación del temporizador.
(10) Conexión de fuente de alimentación
Utilizar una fuente de alimentación de c.c. que tenga un rizado de 20% máximo y aplicar una tensión media comprendida dentro de la tensión de operación nominal indicada en el temporizador.
Para evitar funcionamientos defectuosos del temporizador, conectar la fuente de alimentación a través de un relé o interruptor de tal forma que la tensión alcance un valor fijo instantáneamente.
(11) No exceder el valor de tensión nominal indicada en el temporizador. Si se aplica una tensión distinta de la nominal, pueden dañarse los componentes internos.

E Precauciones para la utilización del producto

Cuando se utilice el producto en las siguientes circunstancias o condiciones, verificar que se cumplen las limitaciones de valores nominales y de funciones. Tomar también las medidas apropiadas para seguridad tales como instalaciones de seguridad contra fallos.
① Utilización en circunstancias o condiciones no descritas en este manual de instrucciones.
② Utilización para control de energía nuclear, ferrocarriles, aviones, vehículos, incineradores, equipos de medicina, equipos de mantenimiento, dispositivos de seguridad, etc...
③ Utilización en aplicaciones donde exista riesgo de muerte o de daños graves materiales y sean necesarias medidas de seguridad adicionales.

J お問い合わせ先

オムロン株式会社 営業統轄事業部
〒141-0032 東京都品川区大崎1-11-1
ゲートシティ大崎ウエストタワー14F

制御機器についてのお問い合わせは下記をご利用ください。
三島／TEL 0559-82-5000 三島／FAX 0559-82-5051
東京／TEL 03-3493-7091 大阪／TEL 06-6253-0471
営業時間：9:30～12:00／13:00～17:00
営業日：土・日・祝祭日および年末年始・春期と夏期の休業日を除く

中国
歐姆龍（中国）有限公司
Phone: 86-10-6515-5778～5782

香港
歐姆龍亞洲有限公司
Phone: 852-2375-3827

台湾
台灣歐姆龍股 有限公司 總公司
Phone: 886-2-2715-3331

大韓民国
韓国OMRON株式会社
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AUSTRALIA
OMRON ELECTRONICS PTY.LTD.
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SINGAPORE
OMRON ASIA-PACIFIC PTE.LTD.
Phone: 65-835-3011

I Indirizzi di riferimento

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OMRON EUROPE B.V.
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E Dirección de contacto

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SPAIN
OMRON ELECTRONICS S.A.
Phone: 34-1-377-7900

E5CN

OMRON

Temperature controller

UK/USA Instruction Manual

Thank you for purchasing the OMRON E5CN temperature controller. Read this manual carefully before using the controller and always keep it close at hand while the controller is in use.

OMRON CORPORATION

For detailed operating instructions, please refer to the E5CN User's Manual.

Significance of WARNINGs and CAUTIONs

⚠ CAUTION — Indicates information that, if not heeded, could result in relatively serious or minor injury, damage to the product, or faulty operation.

N1 0682722-0E

⚠ CAUTION

Do not touch terminals when voltage is applied. Electric shock hazard	⚠
Do not allow metal fragments or lead wire scraps to fall inside this product. This may cause electric shock, fire or malfunction.	⊘
Do not use this product where subject to flammable or explosive gas. Doing so may cause explosion.	⊘
Never disassemble, repair or modify the product. This may cause electric shock, fire or malfunction.	⊘
The life expectancy of the output relay varies considerably according to its the output relay within its rated load and electrical life expectancy, if the output relay is used beyond its life expectancy, its contacts may become fused or burned.	⚠
Tighten the terminal screws using a torque of 0.74 to 0.90 N·m. Loose screws may cause damage or malfunction.	
Correctly set the settings on the temperature controller matched to the control target.If the settings are not compatible with the control target, the product may operate in an unexpected manner, resulting in damage to the product or an accident.	❗
To maintain safety in the event of malfunction of the temperature controller, we recommend taking safety measures, for example, installing an excessive temperature rise prevention alarm on a separate line. If malfunction prevents control, this may result in a major accident.	

PRECAUTIONS IN USING THE PRODUCT

When the product is used under the circumstances or environment below, ensure adherence to limitations of the ratings and functions. Also, take countermeasures 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.

NOTICE

(1) Do not use this product in the following places:
- Places directly subject to heat radiated from heating equipment.
- Places subject to splashing liquid or oil atmosphere.
- Places subject to direct sunlight.
- Places subject to dust or corrosive gas (in particular, sulfide gas and ammonia gas).
- Places subject to intense temperature change.
- Places subject to icing and condensation.
- Places subject to vibration and large shocks.

(2) Use/store within the rated temperature and humidity ranges. Provide forced-cooling if required.
(3) To allow heat to escape, do not block the area around the product. Do not block the ventilation holes on the product.
(4) Be sure to wire properly with correct polarity of terminals.
(5) Use specified size (M3.5, width 7.2 mm or less) crimped terminals for wiring.
(6) Do not wire the terminals which are not used.
(7) Allow as much space as possible between the controller and devices that generate a powerful high-frequency or surge. Separate the high-voltage or large-current power lines from other lines, and avoid parallel or common wiring with the power lines when you are wiring to the terminals.
(8) Use this product within the rated load and power supply.
(9) Make sure that the rated voltage is attained within two seconds of turning the power ON.
(10) Make sure the controller has 30 minutes or more for warm up.
(11) When executing self-tuning, turn the load and the unit ON simultaneously, or turn the load ON before you turn the controller ON.
(12) A switch or circuit breaker should be provided close to this unit. The switch or circuit breaker should be within easy reach of the operator, and must be marked as a disconnecting means for this unit.
(13) If you remove the controller from its case, or put the controller into its case, never touch nor apply shock to the terminals and the electronic parts inside. Make sure the electronic components and the case are not contacted when inserting the internal mechanism.
(14) Cleaning: Do not use paint thinner or the equivalent. Use standard grade alcohol to clean the product.

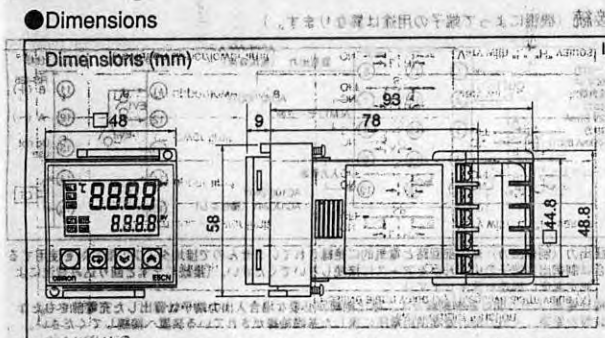
●Specifications

Power supply voltage	100-240V AC type 24V AC/DC type
Operating frequency	50-60Hz
Operating voltage range	85 to 110% of the rated voltage
Power consumption	7VA (AC100-240V) 4VA (AC24V) 3W (DC24V)
Sensor input	Thermocouple, platinum resistance thermometer, analog input, Infrared Thermosensor ES1A
Control output	Relay/Voltage/Current Output
Mechanical life of relay	10 million operations
Electrical life of relay	100,000 operations
Control method	ON/OFF or advanced PID
Ambient temperature	−10 to 55°C (Avoid freezing or condensation)
Ambient humidity	RH 25 to 85%
Storage temperature	−25 to 65°C (Avoid freezing or condensation)
Altitude	Max. 2,000m
Recommended fuse	T2A, 250V AC, time-lag, low-breaking capacity
Weight	Approx. 150g (main unit only)
Installation environment	Setup category II, pollution degree 2 (as per IEC61010-1)

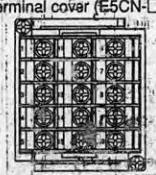
Wiring

●Dimensions

Dimensions (mm)



In the pack:
- Main unit
- Watertight packing
- Adapter
- Instruction manual
- Terminal cover (E5CN-□-500 only)



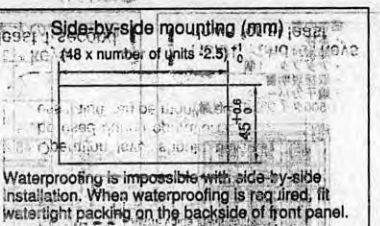
Solderless terminal size: M3.5
Terminal cover:E53-COV10

* The main unit can be removed for maintenance without disconnecting the terminal wiring.

●Installation

Individual mounting (mm)

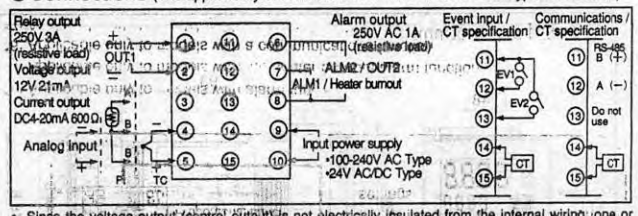
Side-by-side mounting (mm)



Waterproofing is impossible with side-by-side installation. When waterproofing is required, fit watertight packing on the backside of front panel.

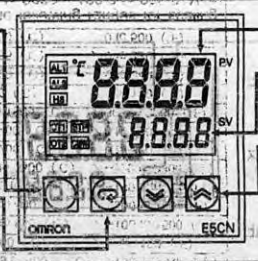
Insert the main unit through the mounting hole in the panel (1-5 mm thickness). Push the adapter from the rear up to the panel removing any gap between the controller, panel and adapter. Finally, secure the controller with screws.
When more than one machine is installed, make sure that the ambient temperature does not exceed the specified limit.

●Connections (The applicability of the electric terminals varies with the type of machine.)



- Since the voltage output (control output) is not electrically insulated from the internal wiring, one or other of the control output terminals must be left unearthed when using an earthed thermocouple thermometer. (Connection makes measurements unreliable due to sneak currents.)
- The input and output terminals of this device have basic insulation. In cases where reinforced insulation is required, connect the input and output terminals to devices or power sources without exposed live parts or to devices suitably insulated for the maximum voltage of the input and output terminals.

●Names of parts on front panel



- Level key
  Use this key to change levels.
- Press the M key and the ◁ key together for at least 3 seconds to switch to protect level.
- Display key
  Press this key to change the contents of the display
- No.1 display
  Process value or set data symbol
- No.2 display
  Set point, set data read-out value or changed input value
- Up and Down keys
  Use the keys to change the values displayed on the No.2 display.
  Each press of ▲ key increments or advances the values displayed on the No.2 display.
  Each press of ▼ key decrements or returns the values displayed on the No.2 display.

Operation indicators
- AL1: Alarm 1
  Lights up while alarm 1 is operating function.
- AL2: Alarm 2
  Lights up while alarm 2 is operating function.
- HB: Heater burnout
  Lights up to indicate that heater burnout has occurred
- OT1
  Lights up when Process control 1 is on; goes out when Process control 1 is off.
  E5CN-6□ type doesn't have this indicator.
- OT2
  Lights up when Process control 2 is on; goes out when Process control 2 is off
- STP
  Lights up when operation has stopped.
  Lights up during control operation to indicate that event input or Run/Stop has been set to stop. Remains out at all other times.
- CMW: "write" control by communications
  Lights up when "write" is enabled; goes off when "write" is disabled.

- °C / °F temperature display
  Used to indicate that the value in the display relates to temperature.
  Determined in accordance with the chosen "Temperature unit" setting
  °F = °F
  °C = °C
  This flashes while ST(Self-Tuning) is activated.

Operation menu

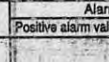
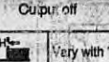
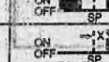
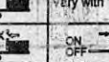
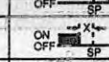
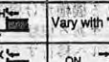
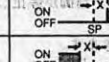
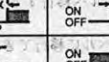
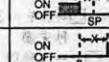
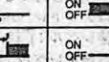
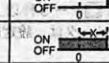
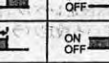
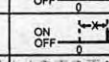
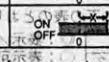
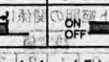
●Input type

Input type	Input	Setting	Setting range
Thermocouple input type	K	0	−200 to 850 (°C) / −300 to 1500 (°F)
		1	−199.9 to 500.0 (°C) / −199.9 to 900.0 (°F)
		2	0.0 to 100.0 (°C) / 0.0 to 210.0 (°F)
	J	3	−199.9 to 500.0 (°C) / −199.9 to 900.0 (°F)
		4	0.0 to 100.0 (°C) / 0.0 to 210.0 (°F)
	K	17	−199.9 to 400.0 (°C) / −199.9 to 700.0 (°F)
	Eh	5	0 to 600 (°C) / 0 to 1100 (°F)
	L	6	−100 to 850 (°C) / −100 to 1500 (°F)
	U	7	−200 to 400 (°C) / −300 to 700 (°F)
	T	18	−199.9 to 400.0 (°C) / −199.9 to 700.0 (°F)
	N	8	−200 to 1300 (°C) / −300 to 2300 (°F)
	R	9	0 to 1700 (°C) / 0 to 3000 (°F)
	S	10	0 to 1700 (°C) / 0 to 3000 (°F)
	B	11	100 to 1800 (°C) / 300 to 3200 (°F)
Infrared Thermosensor E2C	10–70°C	12	0 to 90 (°C) / 0 to 160 (°F)
	60–120°C	13	0 to 120 (°C) / 0 to 240 (°F)
	115–165°C	14	0 to 165 (°C) / 0 to 320 (°F)
	160–260°C	15	0 to 260 (°C) / 0 to 500 (°F)
Analog input	0 to 50mV	16	Use the following ranges for scaling: −1999 to 9999, −199.9 to 999.9, Vary Depending on "L", "H" value

Input type	Input	Setting	Setting range
Platinum resistance thermometer input type	Pt100	0	−200 to 850 (°C) / −300 to 1500 (°F)
		1	−199.9 to 500.0 (°C) / −199.9 to 900.0 (°F)
		2	0.0 to 100.0 (°C) / 0.0 to 210.0 (°F)
	JPt100	3	−199.9 to 500.0 (°C) / −199.9 to 900.0 (°F)
		4	0.0 to 100.0 (°C) / 0.0 to 210.0 (°F)

Default = "0"

●Alarms

Setting	Alarm type	Alarm output function: Positive alarm value (X)	Alarm output function: Negative alarm value (X)
0	No alarm function	Output off	
*1 1	Deviation upper/lower limit		Vary with "L", "H" values
2	Deviation upper limit		
3	Deviation lower limit		
*1 4	Deviation upper/lower range		Vary with "L", "H" values
*1 5	Deviation upper/lower limit standby sequence ON		Vary with "L", "H" values
6	Deviation upper limit standby sequence ON		
7	Deviation lower limit standby sequence ON		
8	Absolute value upper limit		
9	Absolute value lower limit		
10	Absolute value upper limit standby sequence ON		
11	Absolute value lower limit standby sequence ON		

*1: Upper and lower limits can be set for parameters 1, 4 and 5 to provide for different types of alarm. These are indicated by the letter "L" and "H".
- Default = "2"

●Error display (trouble shooting)

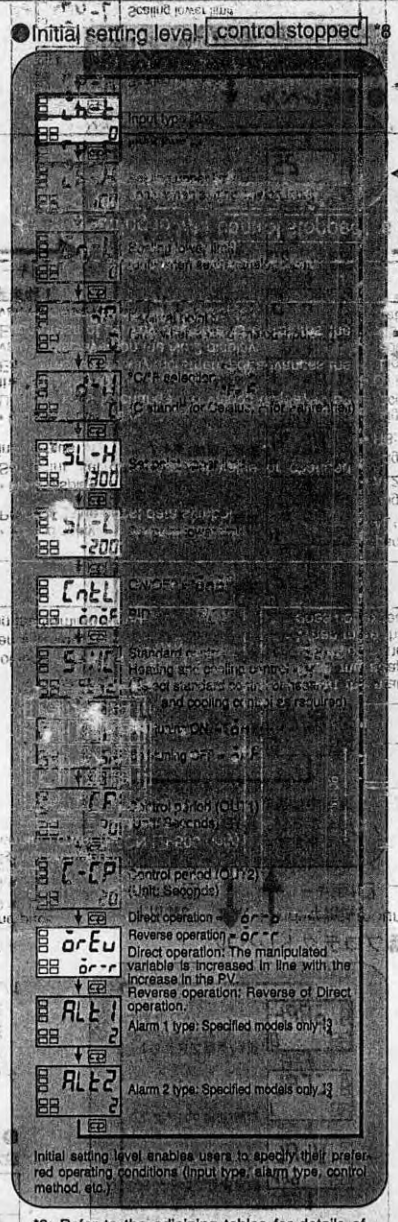
When an error has occurred, the No.1 display alternately indicates error codes together with the current display item.

No.1 display	Meaning	Action	Output status: Control output	Output status: Alarm output
S.Err (S. Err)	Input error *2	Check the wiring of inputs, disconnections, shorts and input type.	OFF	Operates as above the upper limit.
	A/D converter error *2	After the correction of input error, turn the power OFF then back ON again. If the display remains the same, the controller must be changed. If the display is restored to normal, then a probable cause can be external noise affecting the control system. Check for external noise.	OFF	OFF
E111 (E111)	Memory error	First, turn the power OFF then back ON again. If the display remains the same, the controller must be changed. If the display is restored to normal, then a probable cause can be external noise affecting the control system. Check for external noise.	OFF	OFF
H.Err (H. Err)	Internal circuit error *2		OFF	OFF

If the input value exceeds the display limit (−1999(−199.9) to 9999(999.9)), though it is within the control range, [cccc] will be displayed under −1999(−199.9) and [3333] above 9999(999.9). Under these conditions, control output and alarm output will operate normally.
Refer to "E5CN User's Manual" for details of control range.

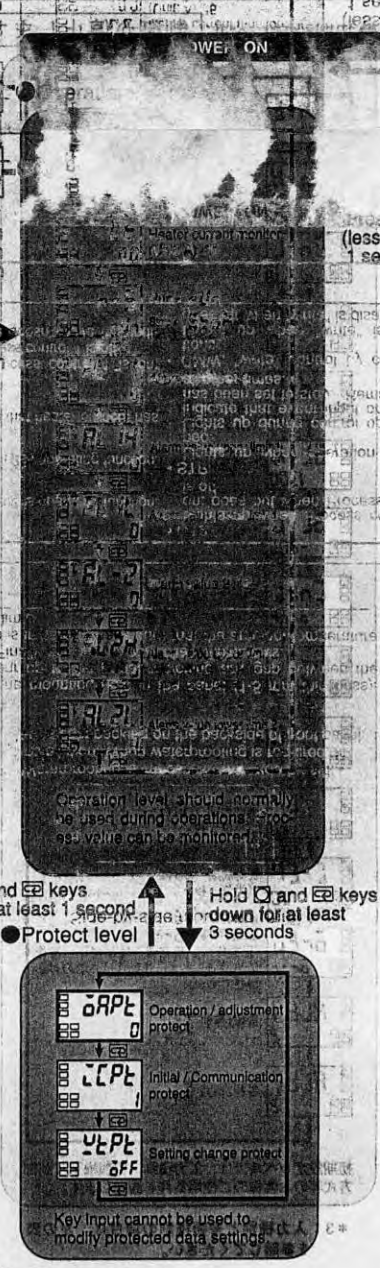
*2: Error shown only for"Process value / Set point". Not shown for other status.

●Initial setting level [control stopped] *8

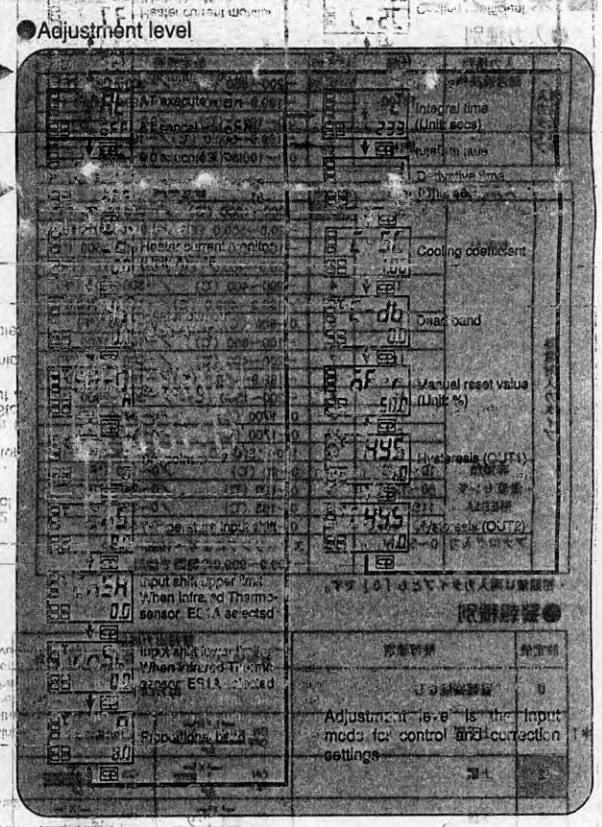


Initial setting level enables users to specify their preferred operating conditions (input type, alarm type, control method, etc.).

*3: Refer to the adjoining tables for details of input types and alarm types.



●Adjustment level



Adjustment is the input mode for control and correction settings.

*4: Applicable only to models with alarm functions
*5: Applicable only to models with the heater burnout alarm function
*6: Applicable only to models with a communications function
*7: Applicable only to models with an event function
*8: Controller dose not operate during initial setting level. (Process will be stopped)

Use the following key operations for transition between levels:
Operation level → Protect level: M + ◁ keys for at least three seconds
Operation level → Adjustment level: M key for less than one second
Operation level ← Initial level: M key for at least three seconds
The values of grayed out parameters are shown only when set.

●Operation / Adjustment protect

The following table shows the relationship between settings and protect limits related to Operation level and Adjustment level.

Mode	Setting 0	1	2	3
Process value	○	○	○	○
Set point	◎	◎	◎	○
Others	◎	◎	×	×
Adjustment level	◎	×	×	×

◎ : Can be displayed or changed
○ : Can be displayed
× : Can not be displayed and move to other levels not possible

- No protect when set to "0"
- Default = "0"

●Initial / Communication protect

Limits transition to the Initial setting level, Communication setting level and Advanced function setting level

Setting	Initial setting level	Communication setting level
0	Transition possible (Transition to Advanced function level possible)	transition possible
1	Transition possible (Transition to Advanced function level not possible)	transition possible
2	Transition not possible	transition not possible

- Default = "1"

●Setting change protect

Limits changes of setting by key operations.
OFF: Key operations can be used to change settings
ON : Key operations cannot be used to change settings
(Protect level settings can all be changed)

Other functions

In addition to the aforementioned, there are alarm hysteresis, automatic return of display mode and others in the advanced setting level.
Refer to "E5CN User's Manual" for details.
For communications details, please refer to "E5AN/EN/CN/GN communications User's Manual".

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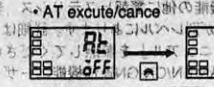
239920 SINGAPORE
Phone 65-835-3011 FAX 65-835-2711

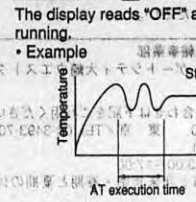
●AT (auto-tuning)

- AT for temperature adjustment
  When AT is running, "on: AT excute".
  To cancel AT, select "oFF: AT cancel".
- AT excute/cance



The display reads "OFF" after AT is finished running.

- Example



Run time for auto-tuning varies with the thermal capacity of the control system.