



Wireless Production Control Indicator
Controller

21D-429C

Instruction Manual V1.80

Please use this Instruction manual correctly on reading well.
Please keep it carefully to be able to read immediately, when required.

[21D] Notational Conventions for Series Model

Set (Controller+Display)

	1 Machine types		2 Items		3 Communica tion		4 Display type		5 LED color
21	***	-	***	-	***	-	***	-	***
	D		2		429		123		G
	D5		3		265		523		R
	DW		4				124		
	D5W						524		
	DE						152		
	DEW						15		
							12		
							52		
							23		
							24		
							1523		
							1524		

For the Controller only, the contents of 3 Communication are as follows:

429C

265C

For the Display only, the contents of 3 Communication are as follows:

429D

265D

485D

- Machine types: D→Large-sized 4-digit Single side, D5→Large-sized 5-digit Single side, DW→Large-sized 4-digit Double side, D5W→Large-sized 5-digit Double side, DE→Middle-sized 5-digit Single side, DEW→Middle-sized 5-digit Double side

2. Item : 2 - 4 items

3. Communication:429→Specific small-current radio wave

265→Microradio wave

485→Wire-type

*For the 485 type, only the Display is available.

4. Display type :1→Target 2→Actual 3→Advancement 4→Accomplishment rate 5→Plan

5. LED color : G→Green, R→Red

*For the Middle-sized type, only red color is available.



To use this product in safety and comfort,

(Be sure to read)



Thank you very much for purchasing our product.

This operation manual contains the precautions necessary for preventing an accident caused by the use in an improper ways.

Read it carefully while thoroughly understanding the meanings of pictorial symbols.

 Warning	Using in an improper way while ignoring this pictorial symbol might cause a serious human injury.
 Caution	Using in an improper way while ignoring this pictorial symbol might cause a human injury or physical damage.

- The type of precautions that should be observed, are classified using the following pictorial symbols.

	This pictorial symbol indicates a "Reminder" to attract an attention.
	This pictorial symbol indicates a "Prohibition" to prohibit a certain action.

Caution

- For the usage to be commonly applied in all the models:

- Avoid using in a place with a plenty of humidity or dust. Otherwise, absorbing a dust or water contents may cause machine trouble, fire or electrical shock.





- For handling this machine:

- This is the electronic device or wireless radios composed of the precision parts. Do not overhaul/remodel. It may cause accident or machine trouble.













Warning

■ For handling this machine:

● Do not use this product for the application needing the high reliability related to human lives.	
● Do not use this product in a place where it is uncertain about whether or not radio waves reach.	



■ For handling the power source:

Be sure to observe the following precautions to prevent the AC adapter and Power cord from being heated, damaged or ignited.

● Do not approximate the AC adapter and Power cord to a fire, or do not put them into a fire. The AC adapter and Power cord can be broken or ignited, resulting in an accident.	
● You can use the AC adapter and main body only with the specified power voltage to protect them from the damage and fire accident.	
● Do not use the AC adapter and main body in a wettable atmosphere. It may cause accidents or troubles such as heating, igniting or electrical shock.	
● Do not touch the AC adapter, main body, Power cord and Plug outlet with wet hands. It may cause an electrical shock.	
● Do not damage the Power cord. A short-circuit or heating may cause a fire or electrical shock.	
● Do not use the Power plug with dust being adhered. A short-circuit or heating may cause a fire or electrical shock.	
● Do not give a strong impact onto the AC adapter. It may cause an accident or machine failure.	
● If you find out deformed AC adapter, do not use it. It may cause an accident or machine failure.	
● do not use this product in a place where flammable gas can be generated. It may cause a fire accident.	
● Never overhaul the AC adapter. It may cause an accident or machine failure.	

■ When trouble happens during use:

Since it may cause a fire or electrical accident, disconnect a power plug, and immediately ask outlet store or our company to repair.

● When smoke or abnormal odors are generated, stop using, immediately disconnect a power plug, and ask outlet store or our company to repair.	
● Once the Power cord is damaged, do not use it. Using it as is may cause a fire or electrical accident.	

**※This operation manual is translated a product for Japan into English/
This product is based on Japanese Wireless law.**

Before use:

This machine is awarded the certificate of conformance as the wireless equipment for “specific small-current wireless station telemeter and tele-control”.

About the wireless equipment for telemeter and tele-control:

Wireless equipment for telemeter:

Wireless equipment for transmitting the signal intended for automatically displaying or recording the measured results of measuring instrument at remote place using a radio wave.

Wireless equipment for tele-control:

Wireless equipment for transmitting the signal intended for starting, changing or terminating the functions of device at remote place using a radio wave

1. Do not use it for the application which may possibly cause loss of human life or damage of other equipment or units.
Also, do not use it near the units which may be malfunctioned by the radio wave emitted from this machine.
2. Overhauling or remodeling the machine certified as the technical standard conformance is prohibited by the law.
3. Do not peel the technical standard conformance certification label attached on the case.
Operating the machine with it being peeled off is an illegal act.
4. This machine is only for use in Japan.
Different Radio Law does not allow the application outside Japan.
It is also impossible to use it while the machine is being connected to the electrical communication line.
5. The communication capacity may vary with the surrounding conditions. Make sure if communication is possible before installation.

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General Description

1. General Description

1-1. Scope

This operation manual describes about the Controller [21D-429C] (hereinafter called “the machine”) of Wireless Production Control Indicator [21D-429] Series.

For the Wireless Production Control Indicator [21D-429] Display, see another operation manual.

1-2. Outline

The Production Control Indicator unit [21D-429] series consists of the Controller section and Indicator section. This machine is the Controller for Wireless Production Control Indicator unit [21D-429], which displays the contents of ever-processing process and the quantity of production at your factory. Once combined with the Indicator unit, it helps you grasp the present status of production at a glance and also provides you with a great effect on the rationalization of production such as production process analysis, worker’s self-administration and etc.

1-3. Type selection

The combination of “Target”, “Actual”, “Advancement”, Accomplishment rate” and “Plan” allows you to select several kinds of types. Normally, the type is already set before shipment. However, it can be changed after purchasing. You may select the item suitable for your application after understanding the contents of each item. In this manual, the type is replaced with the numeric value and alphabet.

Items	Contents	Numeric notation	Alphabetical notation
Target	The target quantity of production today	1	T
Actual	The quantity of production up to the present	2	A
Advancement	The degree of advancement in either “+” or “-“ sign to the planned quantity of production at the present	3	a
Accomplishment rate	The Accomplishment rate (%) of actual to the planned quantity of production at the present	4	t
Plan	The planned quantity of production at the present	5	P

General Description

Types	Numeric notation	Alphabetical notation
Target/Actual/Advancement	123	TAa
Plan/Actual/Advancement	523	PAa
Target/Actual/Accomplishment rate	124	TAt
Plan/Actual/Accomplishment rate	524	PAAt
Target/Plan/Actual	152	TPA
Target/Plan/Actual/Advancement	1523	TPAa
Target/Plan/Actual/Accomplishment rate	1524	TPAt

● How to calculate each item

“Plan” = Elapsed time within working hours ÷ Tact

“Accomplishment rate”(%) = (Actual ÷ Plan) x 100

“Advancement” = Actual - Plan

* Decimal places of the Accomplishment rate are all cut off.

* If the Accomplishment rate is over 9999% or it cannot be calculated, “9999” appears for the calculation results.

Specifications

2. Specifications

Items	Descriptions	Remarks
Model	21D-429C	
Frequency	Optional one wave of 40 waves ranging 429.2500-429.7375MHz(12.5KHz in step)	
Transmit output	10mW	
Antenna	1/4 λ Whip antenna	Cannot be removed from main body
Input power voltage	DC12V(DC11.0-28.0V) ①DC Jack for AC adapter x1 ②Terminal block(screw-type) x1	Current amount of 300mA or more can be steadily supplied
Current consumption	About 65mA in DC12V	When I/O terminal is not connected
Working environment	Temperature:0-50°C Humidity:85% or less, no dew drop	
Size	222W x155H x 40Dmm (Projection excluded)	
Weight	About 650g	
Buzzer	Used for checking the key input and error	
Keyboard	Membrane switch with 20 keys [F1]-[F4] [0]-[9] [▲](UP), [▼](DOWN) [+], [-] [CLR], [ENT]	
Display	LCD 16-digitx2-line LED backlight built-in	
Switch	Power switch x 1(Locker switch)	
Input	Non-voltage contact input x 5-point	5V 15mA can be stably turned ON/OFF
Output	Open collector output x 4-point Max output voltage DC50V Max output current 1.5A	*1
Data backup	About 2 weeks	

*1:Use the diode for preventing the back electromotive force when turning on/off the coil inductive load.

Specifications

Also, use an extreme care when controlling the lamp load and etc having a high inrush current. Even if only slightly exceeding the maximum output current, it may damage the drive circuit.

Specifications

Operating specifications

Items	With working hour	Without working hour
Labor hour	Max 23 hours 59 minutes	Max 1 month
Working hour	For 20 working hours Number of sets: 40	Impossible to set
Working hour pattern	6 patterns	Impossible to set
Tact	0.1-9999.9 second or 0.01-999.99 second	
Target	4-digit type:0-9999 5-digit type:0-99999	
Plan	4-digit type:0-9999 5-digit type:0-99999	
Actual	4-digit type:0-9999 5-digit type:0-99999	
Advancement	4-digit type:0-±999 5-digit type:0-±9999	
Accomplishment rate	4-digit type:0-999(%) 5-digit type:0-9999(%)	
Tact reservation	For twenty types at max <Reserved contents> Set-up time 0-998-min *1 Tact 1-9999.9 second or 0.01-999.99 second Production target quantity 4-digit-type:0-9999 5-digit-type:0-99999	
Clear time	For 3-time max	
Pre-scale value	1-99999(Multiple number) 1-99999(Batch number)	
Advancement judging set value	0-9999(+side) 0-9999(-side)	

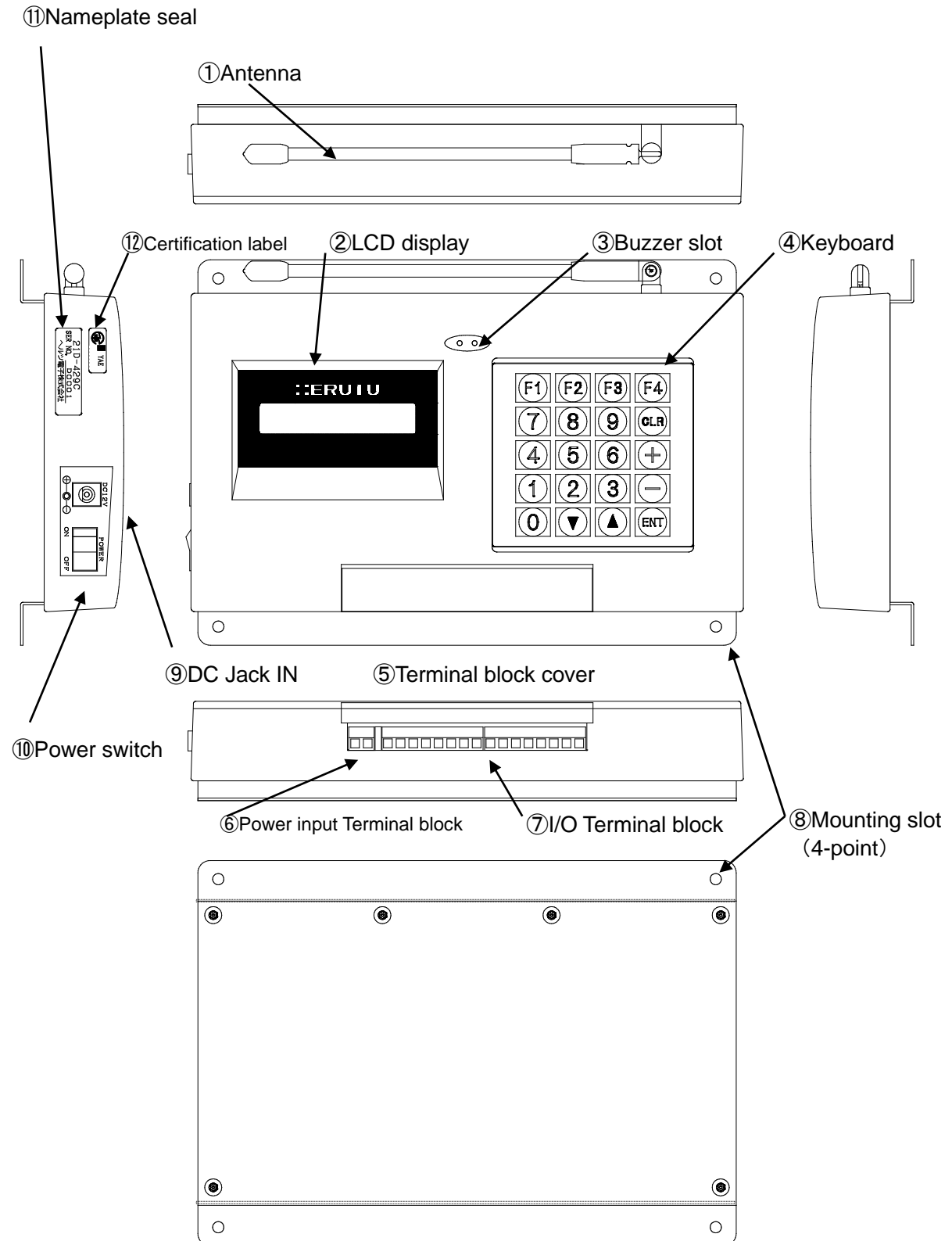
*1:It can be set only when Working hour setting “Yes” is set.

*Internal clock may possible cause approximately 1-min/month in error depending on the working environment(0 to 50°C).

Names and Functions of each section

3. Names and Functions of each section

3-1. Names and Functions of each section



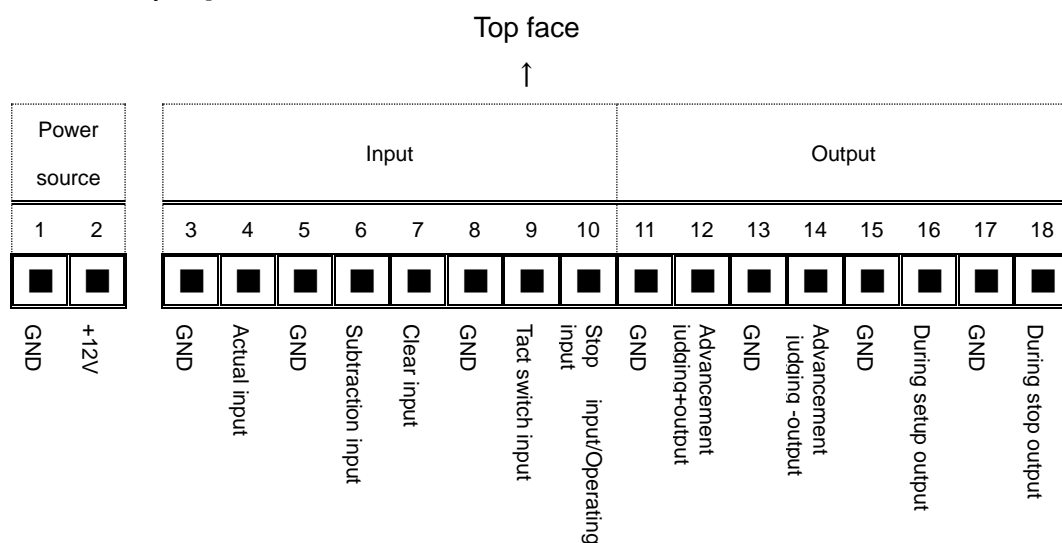
Names and Functions of each section

①Antenna	1/4 λ whip antenna (Set it perpendicular to the installation face during use.)
②LCD Display	16-digit x 2-line display LCD
③Buzzer slot	Slot for buzzer sound
④Keyboard	Membrane switch with 20 keys
⑥ Power input terminal block	Terminal block for inputting power source of 12VDC (DC11.0-28.0V)
⑦I/O Terminal block	Screw-type I/O terminal block
⑧Mounting slot	Mounting slot for installing the machine: $\Phi 4.5\text{mm}$ x 4-point (For the mounting slot positions, see the Dimensional drawing.)
⑨DC Jack IN	DC Jack entry for dedicated AC adapter (DC12V)
⑩Power switch	Power source switch
⑪Nameplate seal	Model and production number are described.
⑫Certification seal	Certification seal certifying the compatibility of specific small current wireless technology. Never peel off the seal. Using with being peeled off is an illegal act.

Names and Functions of each section

3-2. Terminal block

[Terminal block layout]



Power input	DC12V (DC11.0-28.0V)	Input the power voltage.	
Non-voltage contact input	Actual input	Increases the production actual	
	Subtraction input	Decreases the production actual	
	Clear input	Clears the Actual/Plan.	
	Tact switch input	Switches tact reserve No. into next reserve No. *1 (effective only when Tact reserve function is used)	
	Stop input Operating input	<div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;"> "With Working hour" is set </div> <div style="border: 1px solid black; padding: 2px;"> "Without Working hour" is set </div>	<div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;"> "Stop input" turns on during inputting so that the planned quantity calculation stops. </div> <div style="border: 1px solid black; padding: 2px;"> "Operating input" turns on during inputting so that the planned quantity calculation runs. </div>
Open collector output	Advancement judging output "+"	It turns on while Advancement exceeds "+advancement judging value".	
	Advancement judging output "-"	It turns on while Advancement does not exceed "-advancement judging value".	
	"During setup" output	"During setup" turns on. *2 "During setup" turns off for other than Working hour.	
	"During stop" output	"With Working hour" is set	"During stop" turns on while Stop input terminal is ON.
		"Without Working hour" is set	Not used

Names and Functions of each section

*1:When switching from the final reserve No, the reserve No. 1 comes back.

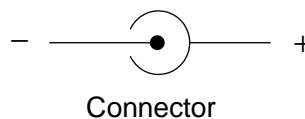
*2:This is only effective when “Yes” for use of working hour is set while “Yes” for use of Tact reserve function is set.

3-3. AC Adapter

Model:ADB12100

Input voltage:AC90-264V

Output voltage:DC12V 1A



Installation methods

4. Installation methods

4-1. Installation of Controller

- ① Install the machine in a place near each I/O signal as far as possible using the mounting slots while the machine can be easily controlled and its antenna on the Display can be easily overlooked.

Install the machine so that Antenna is not in parallel to the metal objects.

- ② Connect the signal cables necessary for I/O terminals.

Connect the actual input signal and necessary I/O signal cables to the Terminal block.

- ③ Feed the specified voltage without fluctuation and instantaneous stoppage into the power source.

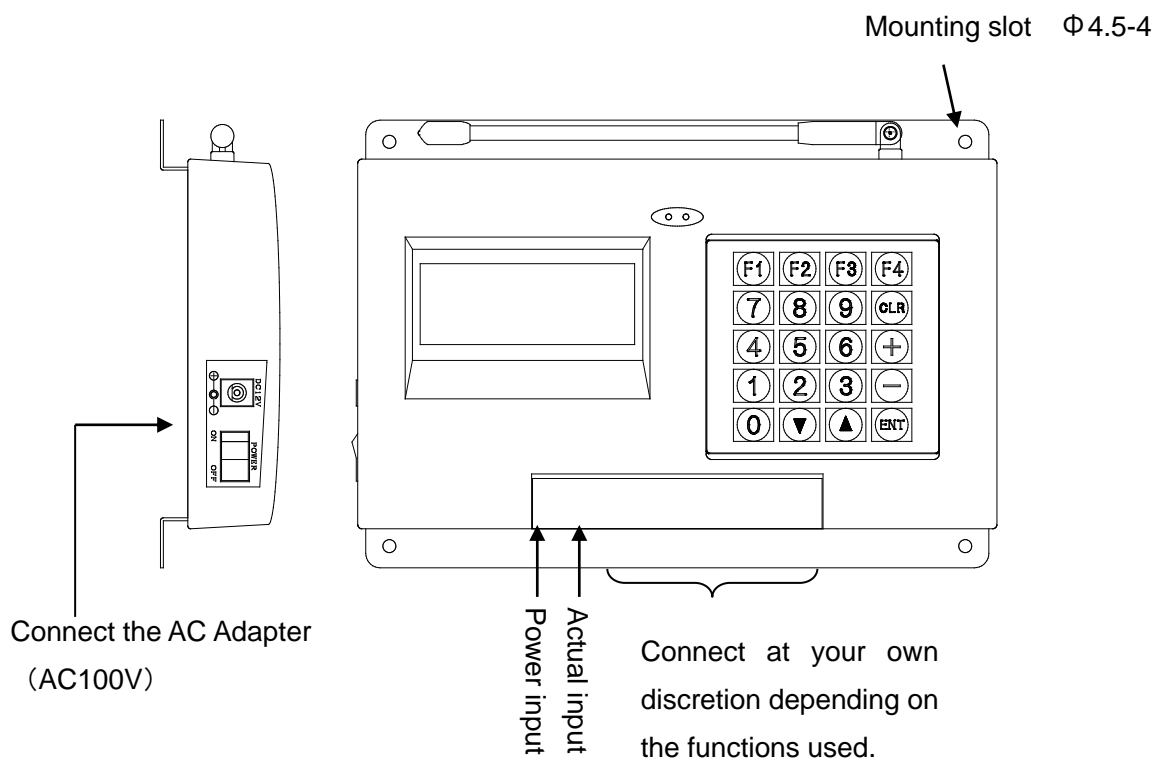
If AC Adapter is used, insert the AC adapter connecting section into the DC jack of the machine.

If DC power source is used, connect the power source, which can stably supply 300mA or more up to the specified voltage, into the Terminal block.

Besides, the wire rod for power source should be securely mounted on the Terminal block.

* To assure the safety, turn off power source before mounting the wire rod.

Operating power voltage:DC12V(DC11.0-28.0V), 300mA or more

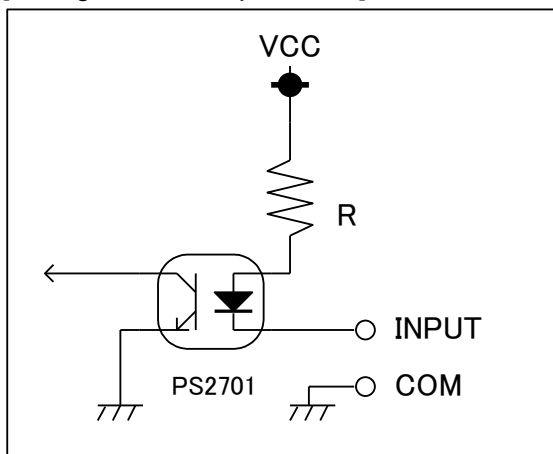


*The power voltage should be connected to either DC IN for AC adapter or terminal block power input.

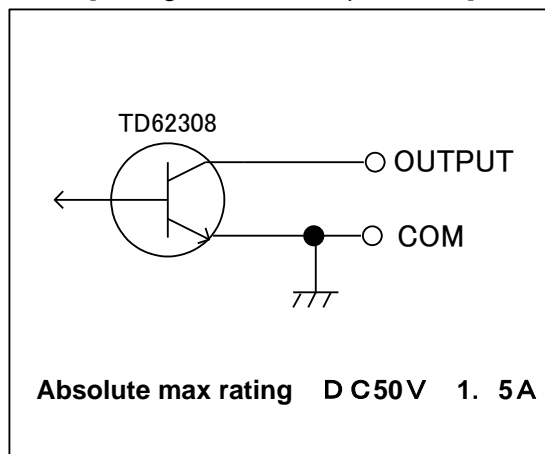
Installation methods

4-2. I/O circuit

[Configuration of Input circuit]



[Configuration of Output circuit]



● Connecting to the input terminal

For the Non-voltage contact input to be connected to the Actual input, use the circuit with less chattering which can steadily turn on/off the voltage/current of 5V/15mA.

Keep a time interval of 50mSec or more between input signals. Also for the time interval between the time when input signal is turned off until the time when next signal is turned on, keep 50mSec or more.

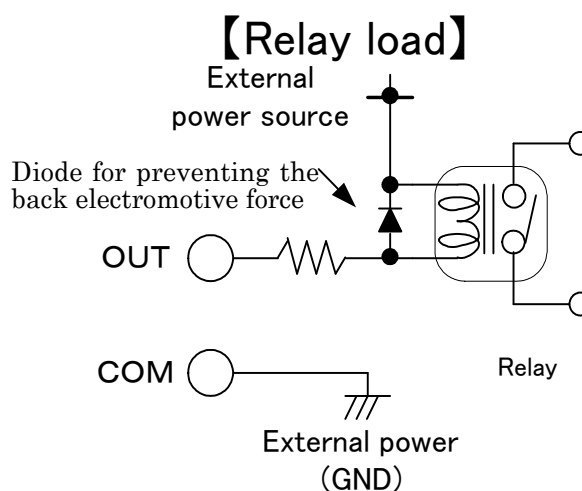
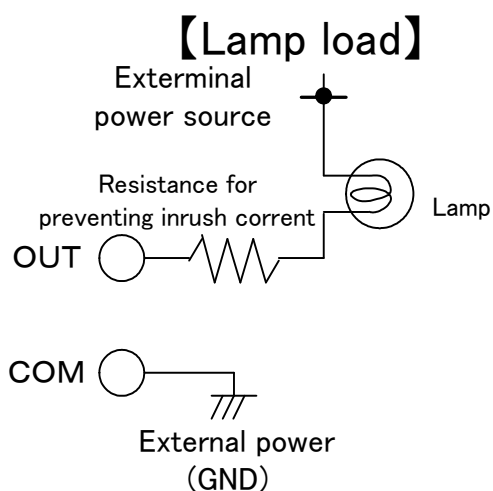
For the input signal, be sure to connect the non-voltage contact signal.

● Examples of connection (Output side)

Contact output (LED lights up with ON)

Use it within the driving current per terminal. If the specified power voltage or driving current are exceeded, connect the drive circuit like relay during use.

Or, if inductive load such as lamp or relay is connected, take necessary actions for inrush current.



Installation methods

[Terminal block rating]

Cable size to be connected :0.14-1.5mm² (AWG26-AWG16)

Electric cable naked length :6mm

Terminal screw nominal dia :M3

Absolute max rating :DC50V 1.5A

Function settings

5. Function settings

Function setting of this machine is already done depending on the customers' needs before shipment; however, if you need to change about the following contents, proceed as follows. If those descriptions are unwanted, see the Basic operation.

5-1. Function settings

① Turn on the power switch with [F1] being pressed.

Keep pressing [F1] key for about 2 seconds until after [Command selection screen] appears and buzzer sounds.

Name : 2 1 D - 4 2 9 C - E	[Opening screen]
Ver : * . * * - * * * * * *	

↓ After about 2 seconds, Command selection screen appears.

* * C o m m a n d * *	[Command selection screen]
(0 - 1 2) []	

② You may set the following contents in command selection screen.

Enter numeric value for the item to be changed, and press [ENT]key.

Command	Contents	Setting range
[0]	Sets the equipment No.	1-99
[1]	Sets the wireless channel.	1-40
[2]	Sets the type.	0-6
[3]	Sets the digit-number.	4/5
[4]	Sets the tact precision.	0.1/0.01
[5]	Sets with or without tact reserve function.	No/Yes
[6]	Sets with or without working hours	No/Yes
[7]	Sets the password	0000-9999
[8]	Sets the pre-scale	0/1/2
[9]	With or without Advancement judging function	No/Yes
[10]	Sets the transmit mode	Continuous/Intermittent
[11]	Sets the display latch	No/Yes
[12]	Stop to calculate at PLAN=TARGET	No/Yes

Function settings

5-2. Setting the equipment No. Command[0]

① Select [0] key, and press [ENT] key . The equipment no selection screen appears.

If there is no need to change the setting contents, press [ENT] key to return to the Command selection screen.

<pre> Equipment [] (1 - 9 9) [] </pre>	[Equipment No. setting screen]
--	--------------------------------

② Enter optional numeric value within 1-99.

<e.g.>To set the equipment No.2, input [2].

<pre> Equipment [0 1] (1 - 9 9) [2] </pre>	[Equipment No. setting screen] Equipment No. setting range:1-99
---	--

③ Here, press [ENT] to set the equipment no, and Command selection screen comes back.

If you have inadvertently set a wrong equipment no, press [CLR] key to return into the status of ① or overwrite the correct equipment No to modify.

5-3. Setting the wireless channel Command[1]

① Press [1] key, and Wireless channel setting screen appears.

If there is no need to change the setting contents, press [ENT] key to return to the Command selection screen.

<pre> Channel [] (1 - 4 0) [] </pre>	[Channel setting screen]
--	--------------------------

② Input optional numeric value within 1-40.

<e.g.>To set the wireless channel 3, input [3].

<pre> Channel [3] (1 - 4 0) [] </pre>	[Channel setting screen] Wireless channel setting range:1-40
--	---

③ Here, press [ENT] key to set the wireless channel, and Command setting screen comes back.

If you have inadvertently set a wrong equipment no, press [CLR] key to return into the status of ① or overwrite the correct equipment no to modify.

Function settings

Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
01	429.2500	21	429.5000
02	429.2625	22	429.5125
03	429.2750	23	429.5250
04	429.2875	24	429.5375
05	429.3000	25	429.5500
06	429.3125	26	429.5625
07	429.3250	27	429.5750
08	429.3375	28	429.5875
09	429.3500	29	429.6000
10	429.3625	30	429.6125
11	429.3750	31	429.6250
12	429.3875	32	429.6375
13	429.4000	33	429.6500
14	429.4125	34	429.6625
15	429.4250	35	429.6750
16	429.4375	36	429.6875
17	429.4500	37	429.7000
18	429.4625	38	429.7125
19	429.4750	39	429.7250
20	429.4875	40	429.7375

Function settings

5-4. Setting the operation type Command [2]

Set the operation type.

Selective value	Types	Numeric notation	Alphabetical notation
[0]	Target/Actual/Advancement	123	YJS
[1]	Plan/Actual/Advancement	523	KJS
[2]	Target/Actual/Accomplishment rate	124	YJT
[3]	Plan/Actual/Accomplishment rate	524	KJT
[4]	Target/Plan/Actual	152	YKJ
[5]	Target/Plan/Actual/Advancement	1523	YKJS
[6]	Target/Plan/Actual/Accomplishment rate	1524	YKJT

① Select [2] key and press [ENT] key, and type setting screen appears.

If there is no need to change the setting contents, press [ENT] key to get back to the Command selection screen.

T y p e [] = 1 2 3 (0 - 6) [] =	[Type setting screen]
--	-----------------------

② Input optional numeric value within 0-6.

<e.g.> To set the type 5(1523), input [5].

T y p e [] = 1 2 3 (0 - 6) [] = 1 5 2 3	[Type setting screen] Type setting range:0-6
--	---

③ If [+] key is pressed, type notation changes into alphabetical notation.

If [+] key is pressed once more, type notation changes into numeric notation.

④ Here, press [ENT] to set the type, and Command selection screen comes back.

If you have inadvertently press a wrong type No, press [CLR] key to get back to the status of ① or overwrite the correct No to modify.

Function settings

5-5. Setting the digit-number Command [3]

Set the digit-number. Set it to fit on the digit-number of Indicator unit.

① Select [3] key and press [ENT] key, and Digit-number setting screen appears.

If there is no need to change the setting contents, press [ENT] key to get back to the Command selection screen.

D i g i t	> 5	[Digit-number setting screen] Selective digit-no:4-digit or 5-digit
n u m b e r	4	

② Press [▲][▼]keys to select digit No.(5-digit/4-digit).

③ Here, press [ENT] to set the type, and Command selection screen comes back.

5-6. Setting the tact precision Command [4]

① Press [4] key, and Digit-number setting screen appears.

If there is no need to change the setting contents, press [ENT] key to get back to the Command selection screen.

T a c t	> 0 . 1	[Tact precision setting screen] Selective tact precision:0.1sec or 0.01sec
p r e c i s i o n	0 . 0 1	

② Press[▲][▼]key to select tact precision (0.1sec/0.01sec).

③ Here, press [ENT] to set the tact precision, and Command selection screen comes back.

*Once the tact precision is changed, the tact unit, which is set at present, will be changed.

Therefore, if changed, be sure to reset the tact and tact reserve data.

If tact precision is changed from 1/10 into 1/100, the tact will become 1/10.

If changed from 1/100 into 1/10, the tact will become 10-fold value.

Function settings

5-7. Setting with or without Tact reserve function Command [5]

Set with or without of Tact reserve function.

Setting	Contents
Yes	Tact reserve function is enabled. Maximum 20 working hour tact can be reserved. Set the “(Tact-Production quantity-Setup time) x Max 20 working hours” in normal screen using the [F1] key. When working hour is not used, “(Tact-Production quantity) x Max 20 working hours” can be set.
No	Tact reserve function is disabled. The[F1]key cannot be used in normal screen.

① Select [5] key and then press [ENT] key, and Tact reserve function setting screen appears.

If there is no need to change the setting contents, press [ENT] key, and Command selection screen comes back.

T a c t	> N o
r e s e r v e	Y e s

[Tact reserve function with/without setting screen]

② Press[▲][▼]key to select Tact reserve function(Yes/No).

③ If “No” is selected and [ENT] key is pressed, Command selection screen comes back.
If “Yes” is selected and [ENT] key is pressed, the Display method selection screen appears.

C u m u l a t i v e	> N o
d i s p l a y	Y e s

[Cumulative display setting screen]

④ Press[▲][▼]key to select Cumulative display(Yes/No).

⑤ Here, press [ENT] key to set Tact reserve function(With/Without)and Display method(Cumulative/Individual), and Command selection screen comes back.

Function settings

Commands	Cumulative display ("Yes" is selected)	Individual display ("No" is selected)
Target	Displays total target production quantity today.	Displays target production quantity of reserve No. being executed at present time.
Plan	Displays total planned production quantity at present time.	Displays total planned production quantity of reserve No. being executed at present time.
Actual	Displays total production actual up to present time.	Displays total production actual of reserve No. being executed at present time.
Advancement	Displays advancement degree \pm against total planned production quantity at present time.	Displays advancement degree \pm against total planned production quantity of reserve No. being executed at present time.
Accomplishment rate	Display the accomplishment rate of production actual against total planned production quantity at present time.	Display the accomplishment rate of production actual against total planned production quantity of reserve No. being executed at present time.

Function settings

5-8. Setting with or without working hours Command [6]

Set with or without working hours.

Setting	Contents
Yes	Planned calculation is carried out based on the registered contents of working hour. Register the working hour with the [5] key in normal screen.
No	The working hour cannot be registered. When signal from outside signal (Stop/Operating terminal) is ON, planned calculation is carried out. Recalculation function after returning to the beginning of working hour is not available.

①Select [6] key and then press [ENT] key, and the “Working hour with/without setting screen” appears.

If there is no need to change the setting contents, press [ENT] key to get back to the Command selection screen.

<div style="display: flex; justify-content: space-between;"> W o r k i n g > Y e s </div> <div style="display: flex; justify-content: space-between;"> h o u r s N o </div>	[Working hours with/without setting screen]
--	---

②Press [▲][▼] key to select working hours(Yes/No).

③Here, press [ENT] to set Working hours (With/Without), and Command selection screen comes back.

*When “No” for use of working hour is set, both “During setup” output and “During stop” output functions are disabled.

Function settings

5-9. Setting the password function Command [7]

Setting	Contents
0000	Password function disabled
Other than 0000	Password function enabled To control all the keys in normal screen, password should be inputted.

① Select [7] key and then press [ENT] key, and the Password function setting screen appears.

If there is no need to change the setting contents, press [ENT] key to return to Command selection screen.

P a s s w o r d []	[Password function setting screen]
I n p u t []	

② Input optional numeric value within 0000-9999.

P a s s w o r d [0 0 0 0]	[Password function setting screen] Password setting range:0000-9999
I n p u t [1 1 1 1]	

*If password function is not used, set to[0][0][0]and[0]in this order.

③ Here, press [ENT] key to set the password, and Command selection screen comes back.

If you have inadvertently pressed a wrong password number, press [CLR] key to return to the status of ① or overwrite the correct password number to modify.

Function settings

5-10. Setting the pre-scale Command [8]

Set the pre-scale function.

Selective No.	Contents
0	Pre-scale function is disabled.
1	The Pre-scale function is set to "Multiple number". Set the pre-scale value with [8] key in normal screen.
2	The Pre-scale function is set to "Batch number". Set the pre-scale value with [8] key in normal screen.

*It cannot be used together with the tact reserve function.

- ① Select [8] key and then press [ENT] key, and Pre-scale function setting screen appears.
If there is no need to change the setting contents, press [ENT] key to return to the Command selection screen.

<pre> P r e - s c a l e [0] = N (0 - 2) [] = </pre>	[Pre-scale setting screen]
--	----------------------------

- ② Input optional numeric value within 0-2.

<pre> P r e - s c a l e [0] = N (0 - 2) [1] = M </pre>	[Pre-scale setting screen] Pre-scale selection: 0→none 1→Multiple(Multiple number) : M 2→Batch(Batch number) : B
--	---

- ③ Here, press [ENT] key to set the pre-scale, and Command selection screen comes back.
If you have inadvertently pressed wrong pre-scale no, press [CLR] key to return to the status of ① or overwrite the correct pre-scale no to modify.

Function settings

5-11. Setting with/without Advancement judging Command [9]

Setting with/without Advancement judging

Setting	Contents
Yes	Advancement judging function is enabled. Set the Advancement judging value of + side and - side with the [9] key in normal screen.
No	Advancement judging function is disabled.

① Select [9] key, and press [ENT] key, and “Advancement judging With/Without setting screen” appears.

If there is no need to change the setting contents, press [ENT] key to get back to the Command selection screen.

<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;">A D V T</td> <td style="width: 5%; border: none;">></td> <td style="width: 45%; border: none;">N o</td> </tr> <tr> <td style="border: none;">j u d g i n g</td> <td style="border: none;"></td> <td style="border: none;">Y e s</td> </tr> </table>	A D V T	>	N o	j u d g i n g		Y e s	<p>[Advancement judging With/Without setting screen]</p> <p>ADVT: Advancement</p>
A D V T	>	N o					
j u d g i n g		Y e s					

② Press [▲][▼] key to select advancement judging(No/Yes).

③ Here, press [ENT] key to set the advancement judging(Yes/No), and Command selection screen comes back.

The advancement judging function is only effective when “ * S (* * 3)” and “YKJS(1523)” are set in the 《5-4. Type》 setting.

Function settings

5-12. Setting the Transmit mode Command [10]

Set the transmit mode.

Setting	Contents
Continuous	Transmits the data continuously.
Intermittent	Transmits the data intermittently. Set the No of telegram to be transmitted, and send data intermittently.

- ① Select [1][0] key and then press [ENT] key, and Transmit method setting screen appears.
If there is no need to change the setting contents, press [ENT] key to get back to the Command selection screen.

T r a n s m i t > C m o d e I	[Transmit mode setting screen] C: Continuous I: Intermittent
--	--

- ② Press [▲][▼]key to select Transmit mode(Continuous/Intermittent).

- ③ If “Continuous” is selected and [ENT] is pressed, Command selection screen comes back.
If “Intermittent” is selected and [ENT] is pressed, Telegram No. setting screen appears.

N u m b e r o f [] t e l e g r a m []	[Telegram No. setting screen]
--	-------------------------------

- ④ Input optional numeric value within 1-5.

N u m b e r o f [1] t e l e g r a m [2]	[Telegram No. setting screen] Telegram No. setting range:1-5
--	---

- ⑤ Here, press [ENT] to set the No of Telegram.
If you have inadvertently pressed a wrong data, input the correct data so that it can be modified.

- ⑥ Here, press [ENT] key to set the Transmit mode, and Command selection screen comes back.

Function settings

*In intermittent transmit mode, data is randomly transmitted at interval of 0 to 7 seconds (8 types in total at interval of 1 second) regardless of any number of telegram. However, when impossible to transmit due to the radio wave receiving from others at transmitting timing, upon stoppage of other radio wave, transmission starts.

Basic operation

6. Basic operation

To operate the machine, you need to carry out various settings before use.

Execute those settings according to the explanation to precisely operate this machine.

Since the keys and commands vary with the types, implement the settings with this understanding.

Key	Command	Functions	Target type
[0]	Tact	Sets or changes the tact	ALL
[1]	Target	Sets or changes the target production quantity	1 * *(Y * *)
	Plan	Sets or changes the planned production quantity	5 * *(K * *)
[2]	Actual	Sets or changes the production actual	* 2 * (* J *)
	Plan	Sets or changes the planned production quantity	152(YKJ)
[3]	Advancement	Sets or changes the advancement	* * 3(* * S)
	Accomplishment rate	Sets or changes the accomplishment rate	* * 4(* * T)
	Actual	Sets or changes the production actual	152(YKJ)
[4]	Clock	Sets or changes the internal clock	ALL
[5]	Working hour	Sets or changes the working hour	ALL
[6]	Working hour pattern	Sets or changes the working hour pattern	ALL
[7]	Clear time	Sets or changes the clear time	ALL
[8]	Pre-scale	Sets or changes the pre-scale value	ALL
[9]	Advancement judging	Sets or changes the advancement judging	* * 3(* * S)
[▲]	Actual UP	Increases the Actual by one point	ALL
[▼]	Actual DOWN	Decreases the Actual by one point	ALL
[CLR]	Clear	Clears the Actual	ALL
[+]	Screen switch	Switches between normal screen and setting screen	ALL
[-]	Output selection	Switches Yes/No for output from terminal	ALL
[F1]	Tact reservation	Sets or changes the tact reserved contents	ALL

Basic operation

*[5] [6] keys are only effective when “Yes” for working hour setting is set in Function settings.

*[9] key is only effective when “Yes” for “With/Without Advancement judging function” is set in the Function settings.

*[F1] key is only effective when “Yes” for “With/Without Tact reserve function” is set in Function settings.

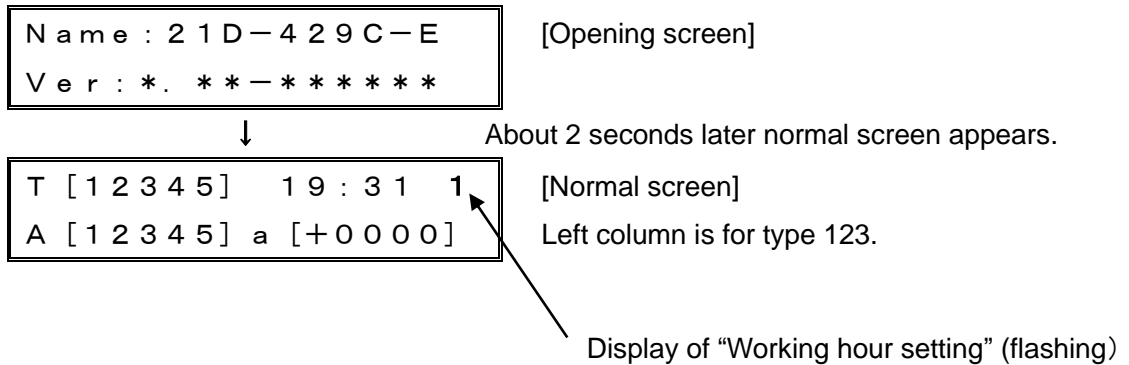
*[8] key is only effective when either of “Multiple” or “Batch” for the pre-scale is set in the Function settings.

- Pressing [CLR] key once allows the Actual to be cleared, and returning to the beginning of working hour, and then the planned quantity to be recalculated according to the tact. Pressing this key twice allows the Actual to be cleared, and the planned quantity to be recalculated according to the tact from the present time.

Basic operation

[Normal screen]

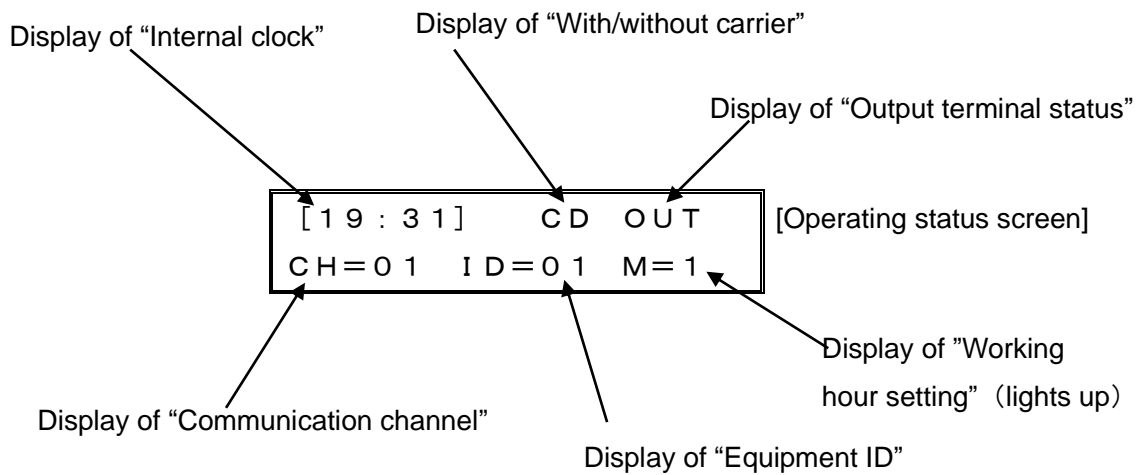
After power ON, the following screen appears, and then normal screen appears.



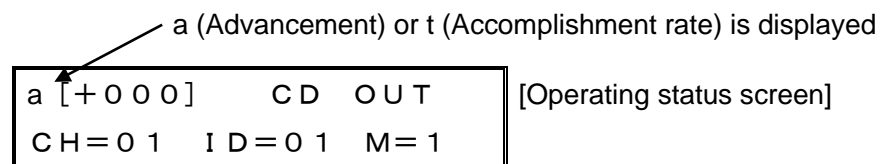
[Operating status screen]

Press [+] key in [normal screen] to display the [Operating status screen].

If [+] key is pressed once more, [Normal screen] comes back.



■ When type "1523(TPAa)" / "1524(TPA t)" is set



Display of "Working hour setting" (lights up)

Basic operation

“Internal clock” · · · · · Indicates the time of internal clock.

“With/without of carrier” · · · · · Indicates whether the machine receives an electric wave from
outsides

When “CD” is displayed, it is impossible to communicate, and so the
communication channel should be changed or the channel existing
nearby should be eliminated.

“Output terminal status” · · Indicates whether output to the terminal is effective or ineffective.

When “OUT” is displayed, output from terminal is effective, so that
terminal can be turned on when it should be outputted.

When “OUT” is not indicated, output from terminal is ineffective, so
that terminal cannot be turned ON even if it should be outputted.

“Communication channel” · · Indicates the channel being communicated.

“Equipment ID” · · · · · Indicates the preset ID.

● ON/OFF of output

For the output, pressing [-] key allows switching between effective and ineffective of output from terminal.

To confirm the present status, press [+] key to display the [Operating status screen].

When “OUT” is displayed, output from terminal is effective, so that terminal can be turned ON when it should be outputted.

When “OUT” is not displayed, output from terminal is ineffective, so that terminal cannot be turned ON even if it should be outputted.

[1 9 : 3 1]	C D	O U T
C H = 0 1	I D = 0 1	M = 1

[Operating status screen]

Display of “Output terminal status”

Basic operation

- [Normal screen]/[Operating status screen] display the contents of working setting depending on each set contents.

Descriptions of working setting to be displayed(normal screen)

Setting contents		Display methods(flashes)
“With working hour” is set	Without Tact reserve function	Working pattern is displayed
	With Tact reserve function (Individual display)	
	With Tact reserve function (Cumulative display)	
“Without working hour” is set	Without Tact reserve function	A or a
	With Tact reserve function (Individual display)	B or b
	With Tact reserve function (Cumulative display)	C or c

Descriptions of working setting to be displayed(Operating status screen)

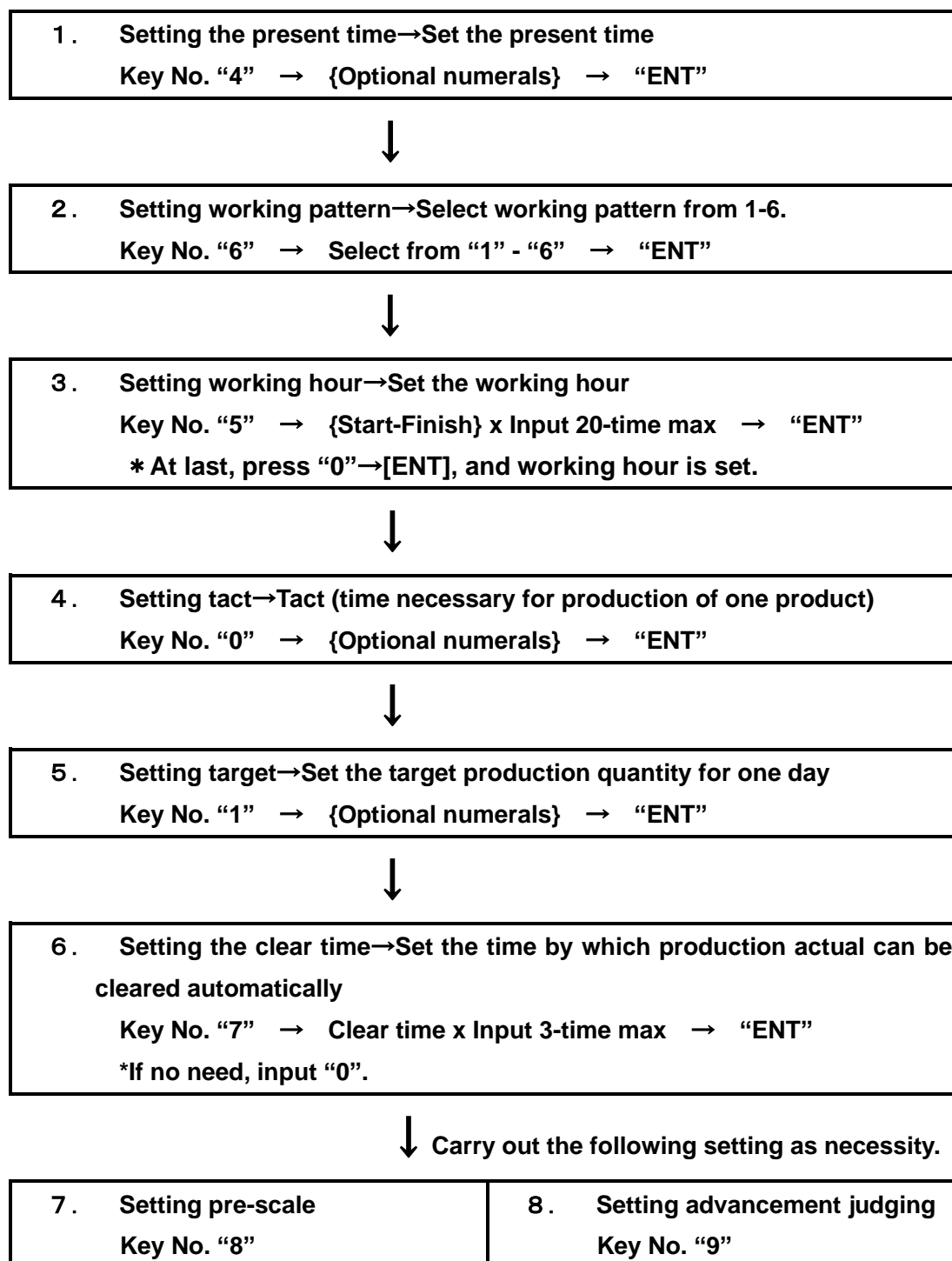
Setting contents		Display methods(lights)
“With working hour” is set	Without Tact reserve function	1
	With Tact reserve function (Individual display)	2
	With Tact reserve function (Cumulative display)	3
“Without working hour” is set	Without Tact reserve function	A or a
	With Tact reserve function (Individual display)	B or b
	With Tact reserve function (Cumulative display)	C or c

*The alphabetical capital letter of “A”, “B” and “C” in Display methods indicate that “Now is under planned quantity calculation(Operating input terminal is ON)”.

The alphabetical lowercase letter of “a”, “b” and “c” in Display methods indicate that “Now is under planned quantity calculation stopping (Operating input terminal is OFF)”.

Basic operation

Flow of Basic operation(“Without Tact reserve function” and “With working hour”)



*For pre-scale and advancement judging function, the key No. is only effective when “Yes” is set in the “Function settings”.

*For the type 523(KJS) and 524(KJT), “5. Setting the Target” cannot be executed.

Basic operation

6-1. Setting the Internal clock Key [4]

Setting the internal clock

- ① Press [4] key, and the internal clock setting screen appears.

{ 4 } C l o c k [* * : * *] I n p u t [: _]	[*]present data
--	-----------------

Input the present time in the order of hour and minute.

<e.g.>If you have 8:05 A.M.

- ② Input [8][0]and[5] in this order.

{ 4 } C l o c k [* * : * *] I n p u t [8 : 0 5]	[*]present data
--	-----------------

- ③ Here, press [ENT] to set that time.

*If you have inadvertently set a wrong data, you may press [CLR] key to get back to the Step ① or you may input 4 correct digits continuously to correct the wrong data.

The machine has a crystal clock. The accuracy of this clock well withstands the normal use. However, the oscillation frequency of the crystal may vary with the temperature, causing a slight shift due to changes in the working environment or temperature if any.

Basic operation

6-2. Setting the Working hour pattern Key [6]

The machine has six working hour patterns and you have to set the machine to operate at which working hour pattern.

- ① Press [6] key, and the working hour pattern setting screen appears.

<div style="display: flex; justify-content: space-between;"> { 6 } W. H. P [*] </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> I n p u t [_] </div>	[*]present data
--	-------------------

<e.g.>If you want to set working hour pattern No.3,

- ② Input [3].

<div style="display: flex; justify-content: space-between;"> { 6 } W. H. P [*] </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> I n p u t [3] </div>
--

- ③ Here, press [ENT] to set that working hour pattern.

*If you have inadvertently set a wrong data, you may press [CLR] key to get back to Step

- ①.

The working hour pattern that was set always appears in the right-hand corner of the normal screen.

<div style="display: flex; justify-content: space-between;"> T [1 2 3 4 5] 1 9 : 3 1 3 </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> A [1 2 3 4 5] a [+ 0 0 0 0] </div>	[Normal screen]
--	-----------------

Working hour pattern No.

Working hour pattern setting is only effective when “Yes” for use of working hour pattern is set in Function settings. If “No” is set, it cannot be set.

Basic operation

6-3. Setting the Working hour Key [5]

Set the working hour of your interest. The machine computes the planned quantity of productions at the present by the set working hour to compute the advancement to production actual.

Since the machine has six kinds of working hour patterns, clarify which working hour pattern # is set with the Command [6] and set the working hour pattern of your interest.

<e.g.> If you have working hours as follows:

<div style="border: 1px solid black; padding: 5px;"> <div style="display: flex; justify-content: space-between;"> [Start] 8:30-----10:00 · · 10:10--12:00 · · 13:00-----15:00 · · 15:15-----17:30 · · </div> <div style="text-align: center; margin-top: 5px;"> Working Rest Working Rest Working Rest Working Rest </div> <div style="margin-top: 20px;"> 17:45-----19:50 · · 20:00-----22:00 · · 23:00-----1:00 · · 1:15-----3:30 [End] </div> <div style="text-align: center; margin-top: 5px;"> Working Rest Working Rest Working Rest Working </div> </div>
--

① Press [5] key, and Working hour setting screen appears.

<div style="border: 1px solid black; padding: 5px;"> <div style="display: flex; justify-content: space-between;"> [00] STAT [* * : * *] </div> <div style="text-align: center; margin-top: 5px;"> Input [: _] </div> </div>	[*] present data
--	------------------

The {00} before “START” indicates an input number.

② Input [8][3] and [0] in this order.

<div style="border: 1px solid black; padding: 5px;"> <div style="display: flex; justify-content: space-between;"> [00] STAT [* * : * *] </div> <div style="text-align: center; margin-top: 5px;"> Input [8 : 3 0] </div> </div>
--

③ Here, press [ENT] key, “FINISH” screen appears.

*If you have inadvertently set a wrong data, you may press [CLR] key to get back to the Step ① or may input the correct 4-digit data to modify.

④ Input [1][0][0] and [0] in this order for working finish time.

<div style="border: 1px solid black; padding: 5px;"> <div style="display: flex; justify-content: space-between;"> [00] FINS [* * : * *] </div> <div style="text-align: center; margin-top: 5px;"> Input [1 0 : 0 0] </div> </div>

⑤ Here, press [ENT] key to get back to the “START” screen.

Repeatedly input “START” and “FINISH” of working hours according to forementioned procedures.

Basic operation

⑥ At last, press [0][0][0][0] and [ENT] keys on the “START” screen of even input numbers to set the working hours of your interest.

Basic operation

*If you need to change only optional "START" or "FINISH", scroll the screen with [+]/[-] key to change it.

[00] STAT [** : **]
Input [: _]

[+]↓ ↑[-]

[01] FINISH [** : **]
Input [: _]

[+]↓ ↑[-]

[02] STAT [** : **]
Input [: _]

*Pressing [ENT] key without any input lets you set that working hours without any change.
(The data before this have been changed.)

For 0: 00, set 24:00.

For 0: 01, set 00:01.

Since the machine has the unit of 24 hours, you cannot set any start of working hours exceeding the end of working hours.

<e.g.>You cannot set any start time of 8:00 A.M. and any end time of 10:00 A.M. on the next day.

After setting the end of working hours, be sure to set [0].

Unless [0] is set, the machine does not recognize the end time of working hours and so does not have the normal computation. If [0] is set en route, further data after that setting is all ignored. If the set time is odd number (FINISH screen), the end time of working hours has not been set. Accordingly [0] cannot be set in this case.

A single working hour set is for 20 working hours, which is equivalent to 40 set times.

The working hour setting is only effective when working hour setting "Yes" is set in Function settings. If "No" is set, it cannot be set.

Basic operation

6-4. Setting the Tact Key [0]

Setting tact in seconds (the time required for production per product)

① Press [0] key, and the tact setting screen appears.

<pre>{ 0 } T a c t [* * * * . *] I n p u t [. _]</pre>	<p>[*] present data</p> <p>The screen is for tact precision (0.1)sec</p>
---	--

② Input the Tact (man-hours) of your interest in seconds within less than 5-digit.

The setting ranges vary with the tact precision (0.1sec/0.01sec) which was set in operation setting.

0.1sec setting → 0.1-9999.9sec

0.01sec setting → 0.01-999.99sec

<e.g.> For 45.5sec, input [4][5] and [5] in this order.

<pre>{ 0 } T a c t [* * * * . *] I n p u t [4 5 . 5]</pre>

③ Here, press [ENT] to set the tact.

*If you have inadvertently set a wrong data, you may press [CLR] key to get back to the Step ①.

Tact can be changed at anytime.

If tact is "0", the machine does not compute any progress.
--

Basic operation

6-5. Setting the Target Key [1]

Objective type=1 * * , 1 * * *

Setting a target quantity of productions a day

- ① Press [1] key, and Target setting screen appears.

```

{ 1 } T A G T   [ * * * * * ]
      I n p u t   [      _ ]
  
```

[*]present data

The screen is for 5-digit type setting

TAGT:Target

- ② Input the number of target of your interest.

The setting ranges vary with the digit number (4-digit/5-digit) which was set in operation setting.

4-digit setting→0-9999

5-digit setting→0-99999

<e.g.>For 12345, input [1][2][3][4] and [5] in this order.

```

{ 1 } T A G T   [ * * * * * ]
      I n p u t   [ 1 2 3 4 5 ]
  
```

- ③ Here, press [ENT] key to set the tact.

*If you have inadvertently pressed a wrong data, press [CLR] key to get back to the Step

- ①.

Basic operation

6-6. Setting the Plans Key [1] or [2]

Objective type =5 * *, 152, 15 * *

Normally, there is no need to set plans. If an error occurs in the planned quantity of productions due to some reasons, you may set the correct planned quantity of productions.

① Press [1] key, and Plan setting screen appears.

(For the type 152, 15 * *, press [2].)

[1] P l a n	[* * * * *]
I n p u t	[_]

[*] present data

The screen is for 5-digit type setting

② Input the planned quantity of productions of your interest.

The setting ranges vary with the digit number (4-digit/5-digit) which was set in Function settings.

4-digit setting → 0-9999

5-digit setting → 0-99999

<e.g.> For 12345, input [1][2][3][4] and [5] in this order.

[1] P l a n	[* * * * *]
I n p u t	[1 2 3 4 <u>5</u>]

③ Here, press [ENT] key to set the Plan.

*If you have inadvertently set a wrong data, press [CLR] key to get back to the Step ①.

If the plan is changed, the Advancement and Accomplishment rate are automatically changed based on the production actual.

Basic operation

6-7. Setting the Actual Key[2] or [3]

Objective type = * 2 * , 152, 152 *

Normally, there is no need to set production actual. If an error occurs in the production actual due to some reasons, you may set the correct actual of productions again.

① Press [2] key to go into the Plan setting screen.

(For the type 152, 152 * , press [3] key.)

{ 2 } A C T L	[* * * * *]
I n p u t	[_]

[*]present data

The screen is for 5-digit type setting.

ACTL:Actual

② Input Actual.

The setting range varies with the digit number (4-digit/5-digit) which was set in the Function settings

4-digit setting→0-9999

5-digit setting→0-99999

<e.g.>For 12345, input [1][2][3][4] and [5] in this order.

{ 2 } A C T L	[* * * * *]
I n p u t	[1 2 3 4 <u>5</u>]

③ Here, press [ENT] to set the Actual.

*If you have inadvertently set a wrong data, press [CLR] key to get back to the Step ①.

If the production actual is changed, Advancement and Accomplishment rate are automatically changed based on the production actual.

A small change in the production actual can also be made by using the [▲]/[▼]key.

Basic operation

6-8. Setting the Advancement Key [3]

Objective type= * * 3

Normally, there is no need to set the Advancement. If an error in advancement occurs due to some reasons, you may set the correct advancement again.

- ① Press [3] key to go into the Advancement setting screen.

{ 3 } A D V T	[± * * * *]
I n p u t	[_]

[*] present data

The screen is for 5-digit type setting.

ADV T: Advancement

- ② Input the correct Advancement with ± being put.

The setting range varies with the digit-number (4-digit/5-digit) which was set in operation setting.

4-digit setting → 0-±999

5-digit setting → 0-±9999

<e.g.> For +13, input [+] [1] and [3] in this order.

{ 3 } A D V T	[± * * * *]
I n p u t	[+ 1 3]

- ③ Here, press [ENT] key to set the Advancement.

*If you have inadvertently set a wrong data, press [CLR] key to get back to the Step ①.

*The larger + numerals than actual cannot be inputted

Basic operation

6-9. Setting the Accomplishment rate Key [3]

Objective type= * * 4

Normally, there is no need to set the Accomplishment rate. If an error in Accomplishment rate occurs due to some reasons, you may set the correct Accomplishment rate.

① Press [3] key to go into the Advancement setting screen.

```
{ 3 } A C P T    [ * * * * % ]
      I n p u t   [    _ % ]
```

[*]present data

The screen is for 5-digit type setting.

ACPT:Accomplishment

② Input the correct Accomplishment rate.

The setting range varies with the digit number (4-digit/5-digit) which was set in operation setting.

<e.g.>For 93%, input [9] and [3] in this order.

```
{ 3 } A C P T    [ * * * * % ]
      I n p u t   [    9 3 % ]
```

③ Here, press [ENT] key to set the Accomplishment rate.

*If you have inadvertently set a wrong data, press [CLR] key to get back to the Step ①.

Basic operation

6-10. Setting the Clear time Key [7]

This is the clear time setting procedure. Once the preset time is reached, the clear function allows the planned quantity/production actual to set into "0" and makes restarting. For this machine, [CL] key should be pressed or the power source should be turned on/off once a day. However, if the clear time is set before the beginning of the working hour, continuous operation is enabled. The clear time can be set up to 3 times in total.

① Press [7] key.

<pre>{ 7 } C L R 1 [* * : * *] I n p u t [: _]</pre>	[*]present data
--	-----------------

② Set the time at which you want to clear for the first time.

<e.g.> To set it at 7:55, input [7] [5] and [5] in this order.

If you have inadvertently set a wrong data, press [CLR] key and input once again.

<pre>{ 7 } C L R 1 [* * : * *] I n p u t [7 : 5 5]</pre>	[*]present data
--	-----------------

③ Press [ENT] to set the clear time.

The screen displays the clear time 2.

In the same manner as for the first time, set the second and third clear time.

<pre>{ 7 } C L R 2 [* * : * *] I n p u t [: _]</pre>	[*]present data
--	-----------------

*You can get off/back the input screen using [+] [-] key.

④ To terminate the setting, press [ENT] while input column is being blank to get back to the normal screen.

*The clear time can be registered up to 3-time for a day (23-hour 59-min).

*For the clear time which is not used, input [00:00].

*For 0:00, input [24:00].

*When the Controller power source was turned off at the clear time registered, this function does not work.

Basic operation

6-11. Setting the Pre-scale Key [8]

Set the pre-scale here. The pre-scale function includes the multiple number setting and batch number setting. Once either [Multiple number] or [Batch number] is selected in the Function settings, this function is enabled. If neither of [Multiple number] nor [Batch number] is selected in the Function settings, this function is disabled, thus [8] key cannot be selected.

Multiple number setting · · · It allows the multiplied content, which is set for actual input/subtraction input, to go up/down.

Up/Down by means of [▲]/[▼] key allows increasing/decreasing one by one point regardless of any pre-scale set values.

Batch number setting · · · Once the Batch number set for actual input/subtraction input is reached, the numeric value goes up or down one by one point. The actual input and subtraction input, which do not exceed the Batch number, are memorized into this machine, however, if they are cleared, the memorized contents will be erased.

Up/Down by means of [▲]/[▼] key allows increasing/decreasing one by one point regardless of any pre-scale set values.

To carry out the Multiple number setting [Multiple number]:

① Press [8] key.

<div style="display: flex; justify-content: space-between;"> { 8 } M. N [* * * * *] </div> <div style="display: flex; justify-content: space-between;"> I n p u t [_] </div>	<div style="display: flex; justify-content: space-between;"> [*]present data </div> <div style="display: flex; justify-content: space-between;"> M.N: Multiple number </div>
--	--

② Input the Multiple number to be set.

<e.g.> To set "120", input [1] [2] and [0] in this order.

If you have inadvertently set a wrong data, press [CLR] key and input once again.

<div style="display: flex; justify-content: space-between;"> { 8 } M. N [* * * * *] </div> <div style="display: flex; justify-content: space-between;"> I n p u t [1 2 0] </div>	<div style="display: flex; justify-content: space-between;"> [*]present data </div>
--	--

③ Here, press [ENT] key to set the Multiple number.

*If you have inadvertently pressed a wrong numerals, press [CLR] key to get back to the Step ①.

*Also for the Batch number (Batch), take setting in the same manner as above.

※ M. N : M u l t i p l e n u m b e r
 B. N : B a t c h n u m b e r

Basic operation

Multiple number setting range:1-99999

Batch number setting range:1-99999 *"0" cannot be set.

*This function cannot be used together with Tact reserve function.

Basic operation

6-12. Setting the Advancement judging function Key [9]

Objective type= * * 3, 1523

The Advancement judging function allows the outputting from “Advancement judging +” terminal and “Advancement judging -” terminal when the absolute value of Advancement has exceeded the judging value of [+] side and [-] side, which was preset. You have to set both for plus side and minus side.

Once “With/without of advancement judging” is set to “No” in the Function settings, this function is disabled, thus [9] key cannot be selected.

① Press [9] key.

```
{ 9 } A. J. V
+ : + s i d e  - : - s i d e
```

※ A. J. V : advancement judging value

② To set the + side judging, input [+].

```
+ A. J. V      [ * * * * ]
  I n p u t    [   _   ]
```

[*] present data

③ Input + side judging value.

<e.g.> To set + 10, input [1] and [0] in this order.

If you have inadvertently pressed a wrong numerals, press [CLR] key and input once again.

```
+ A. J. V      [ * * * * ]
  I n p u t    [  1 0 ]
```

[*] present data

④ Here, press [ENT] to set the + side judging value.

*If you have inadvertently pressed a wrong numerals, press [CLR] key to get back to the Step ①.

*Also for the - side judging value, take setting in the same manner as above.

```
+side judging value setting range:0-9999
- side judging value setting range:0-9999
```

Applied operation

7. Applied operation

This article describes the operation methods other than those mentioned in “6. Basic operation”.

The contents stated here are mainly the different points from those in Basic operation, but the same points as those in Basic operation are not contained. Accordingly, make settings for those different points according to the Basic operation.

The operation described here consist of the working setting (1)-(3) and (A)-(C).

The working setting is largely classified into:

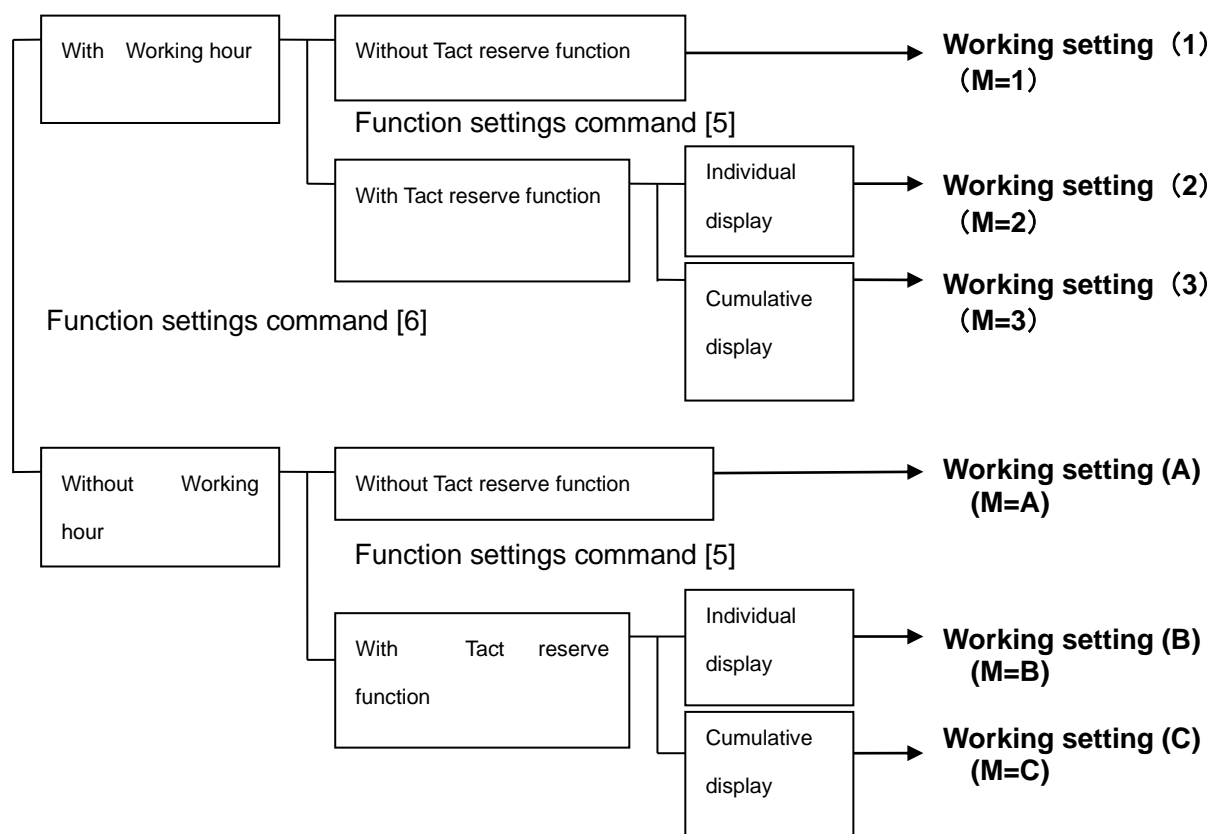
- ① “Yes” or “No” for registration of Working hour
(Function settings command [6])
- ② “Yes” or “No” for use of Tact reserve function
(Function settings command [5])

Besides, when ②Tact reserve function is used, the display method is divided into:

- ①”Yes” for use of Cumulative display
- ②”Yes” for use of Individual display

To change the working setting, use the commands [5] [6] in the Function settings(Page-10). Precisely set depending on your application.

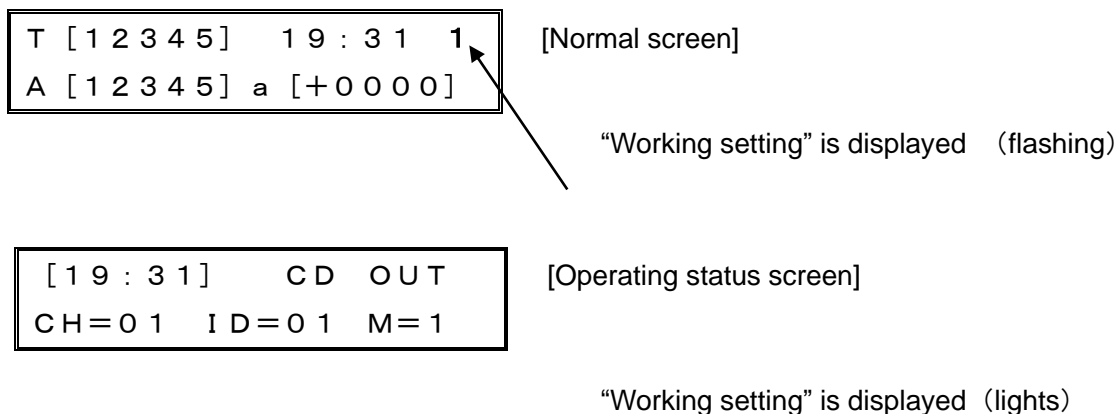
For the Working setting (1), see the Basic operation.



Applied operation

<Confirmation of working setting contents>

The [Normal screen] and [Operating status screen] let you confirm the working setting contents, which is set at present.



Descriptions of working setting to be displayed [Normal screen]

Setting contents		Display method (flashing)
“With working hour” is set	Without Tact reserve function	Display of working pattern
	With Tact reserve function (Individual display)	
	With Tact reserve function (Cumulative display)	
“Without working hour” is set	Without Tact reserve function	A or a
	With Tact reserve function (Individual display)	B or b
	With Tact reserve function (Cumulative display)	C or c

Descriptions of working setting to be displayed [Operating status screen]

Setting contents		Display method (lights)
“With working hour” is set	Without Tact reserve function	1
	With Tact reserve function (Individual display)	2
	With Tact reserve function (Cumulative display)	3
“Without working hour” is set	Without Tact reserve function	A or a
	With Tact reserve function (Individual display)	B or b
	With Tact reserve function (Cumulative display)	C or c

*The alphabetical capital letter of “A”, “B” and “C” in Display methods indicate that “Now is under planned quantity calculation (Operating input terminal is ON)”.

The alphabetical lowercase letter of “a”, “b” and “c” in Display methods indicate that “Now is under planned quantity calculation stopping (Operating input terminal is OFF)”.

Applied operation

7-1. Working setting 2, 3-Setting the Tact reservation (With working hour)

This article describes about the Working setting "2" and "3".

When the Working setting (M=?) is represented by "2" or "3" in the Operating status screen, the Function settings stated in the following table is set.

Working setting	With/Without of Tact reserve function [5]		With/Without of working hour [6]
	Tact reservation	Cumulative display	For use of Working hour
"2"	Yes	No	Yes
"3"	Yes	Yes	Yes

The operation carried out by the Working setting "2" "3" includes Tact reserve function in addition to the Basic operation. This article only describes the Tact reserve function.

To change the tact during work of one day, you can reserve the tact up to 20-type for each work order.

To reserve the tact, register "Tact", "Target production quantity" and "Setup time" beforehand.

The tact can be changed at the time when the production actual reaches the target production quantity. For the display methods, you have to set either Cumulative display or Individual display.

Registered items	Contents
Work quantity	20 types at max
Reserved contents	Tact 0.1-9999.9sec or 0.01-999.99sec Target production quantity: 4-digit-type:0-9999 5-digit-type:0-99999 Setup time 0-998min
Display method	Cumulative display or Individual display

<Displayed contents>

Command	Cumulative display (Working setting "3")	Individual display (Working setting "2")
Target	Displays total target production quantity today	Displays target production quantity of the present reserve No.
Plan	Displays total planned production quantity at present time	Displays planned production quantity of present reserve No.
Actual	Displays total production actual at present time	Displays production actual of present reserve No.
Advancement	Displays advancement degree in \pm against total planned production quantity at present time	Displays Advancement degree in \pm against planned production quantity at present time
Accomplishment rate	Displays Accomplishment rate of Actual against total planned production quantity at present time	Displays Accomplishment rate of Actual against planned production quantity at present time

Applied operation

Tact reserve function cannot be used together with pre-scale function.

<e.g.>When there are 4 types of works for one day and the target quantities for each work are as stated below, the contents both of Cumulative display and Individual display are as follows:
(The following example shows the case when immediately after tact is changed and also the production actual for each work is not being inputted)

Work	No.1	No.2	No.3	No.4	Total
Target quantity	350	100	860	400	1710

Individual display Cumulative display

Target	350	Target	1710
Actual	0	Actual	0
Advancement	0	Advancement	0

For the reserve No.1

Target	100	Target	1710
Actual	0	Actual	350
Advancement	0	Advancement	0

For the reserve No.2

Target	860	Target	1710
Actual	0	Actual	450
Advancement	0	Advancement	0

For the reserve No.3

Target	400	Target	1710
Actual	0	Actual	1310
Advancement	0	Advancement	0

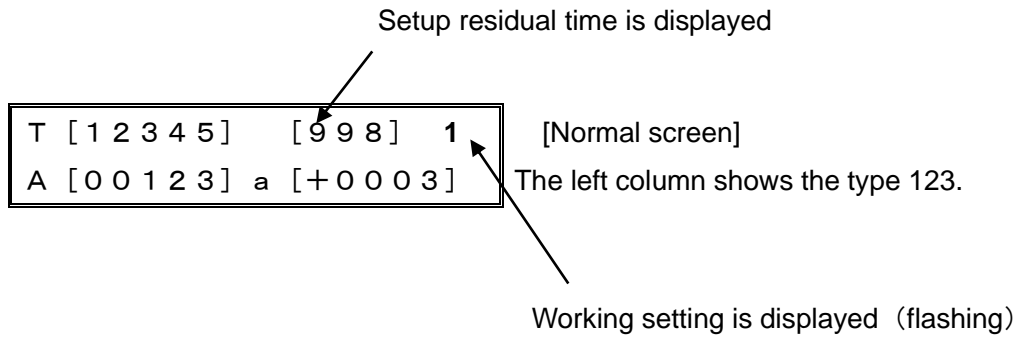
For the reserve No.4

Applied operation

["During setup" screen]

[Normal screen] displays the time at upper right corner of LCD, however, the setup residual time is displayed in the time column during setup.

Also "During setup" signal turns on from I/O terminal in the open collector system.



Applied operation

<Tact reserving procedures>

To reserve the tact, register “Tact”, “Target production quantity” and “Setup time” beforehand. Register the Reserve No. 1-20.

Setting range	Contents
Reserved work	20 works
Tact	0.1~9999.9-sec or 0.01-999.99-sec
Target production quantity	4-digit-type:0-9999 5-digit-type:0-99999
Setup time	0-998

① Press [F1] key.

{ F 1 } T . R s v 1 : R s v 2 : R s v N o .	[Tact reserve menu screen] ※ T.Rsv : Tact Reservation
--	--

② Input [1] key and carry out “Registration”.

Input the tact of the first work (Reserve No.1).

<e.g.>For 12.4 sec, input [1], [2] and [4] in this order.

F 1 1 - 0 1 [* * * * . *] T a c t [1 2 . 4]	[*] present data “01” indicates Reserve No 1.
--	--

Press [ENT] to register the tact.

If you have inadvertently pressed a wrong data, press [CLR] key and input [1],[2] and [4] in this order once again and then press [ENT] to register.

If [ENT] key is pressed without inputting anything, the Step ① comes back without being registered.

③ Input the target production quantity of the first work (Reserve No.1).

<e.g.>For 200, input [2],[0] and [0] in this order.

F 1 1 - 0 1 [* * * *] Q u a n t i t y [2 0 0]	[*] present data “01” shows the Reserve No.1.
--	--

Press [ENT] key to register the target production quantity.

If you have inadvertently pressed a wrong data, press [CLR] key and input [2],[0] and [0] in this order once again and then press [ENT] to register the target production quantity of the Reserve No.1.

Applied operation

If [ENT] key is pressed without inputting anything, the Step ① comes back without being registered.

④ Input the Setup time of the first work (Reserve No.1).

<e.g.>For 15min, input [1] and [5] in this order.

F 1 1 - 0 1	[* * *]	[*]present data
S e t u p (m i n)	[1 5]	"01" shows the Reserve No.1.

Press [ENT] key to register the setup time.

If you have inadvertently pressed a wrong data, press [CLR] key and input [1] and [5] in this order once again and then press [ENT] key to register the setup time. If setup time is not required, input [0] and press [ENT] to register the setup time of "0".

If [ENT] key is pressed without inputting anything, the Step ① comes back without being registered.

⑤ The Input screen for Reserve No.2 Tact appears.

F 1 1 - 0 2	[* * * . *]	[*]present data
T a c t	[1 2 . 4]	"02" shows the Reserve No.2.

⑥ Input "Tact", "Target production quantity" and "Setup time" for Reserve No.2 and onward according to the aforementioned procedures.

For less than 20 in registered work quantity, if one condition among "999 of setup time", "0 of tact" or "0 of production actual" for the next Reserve No. is satisfied in final register screen, it means that registration is completed, so that the subsequent registered contents are ignored.

F 1 1 - # #	[* * *]	[*]present data
S e t u p (m i n)	[9 9 9]	"##" shows the Reserve No.

⑦ Press [ENT] to register the Tact reservation, and [Tact reserve menu screen] comes back.

*To display the data of next tact reservation, press [+] key.

*To display the data of former tact reservation, press [-] key.

Applied operation

<Message in registering>

When the amount of reserved tact (man-hours), labor hours calculated based on the production reserved quantity and setup time in total exceeds the working hour for one day, the overrun time is displayed.

W o r k i n g h o u r () i n o v e r	It is displayed for about 4sec in registering.
---	--

When the amount of reserved tact (man-hours), labor hours calculated based on the production reserved quantity and setup time in total does not exceed the working hour for one day, the surplus time is displayed.

W o r k i n g h o u r () i n s u r p l u s	It is displayed for about 4sec in registering.
---	--

*Since the message only indicates the time difference between the working hour and the reserved time, it does not affect on the processing. The displayed time is for your reference in reserving/registering.

*When “No” for use of working hour is set in the Function settings, the above overrun and surplus time are not displayed.

<To change the tact reserve No.>

In normal processing, data is switched in the order registered in Tact reservation; however, if processing should be started with the tact reserved work other than the work being currently processed, this setting should be carried out.

The tact reserve No. switching method includes the following two ways:

1. Input the external signal to switch the current reserve No. into the next reserve No.

Each time when signal is turned on from the external input terminal “Tact switch” , the Tact reserve No. is switched into the next reserve No.

2. Control the key to specify the reserve no and switch it.

To switch the reserve No through the control of key:

① Press [F1] key.

{ F 1 } T . R s v 1 : R s v 2 : R s v N o .	[Tact reserve menu screen]
--	----------------------------

Applied operation

② Input [2] key and input "Reserve No."

<e.g.> To switch to Reserve No 3, input[3].

F 1 2 R s v N o . [* *]	[Reserve No. switch screen]
I n p u t (0 4) [3]	[*]present data

The "04" of [Input(04)] in the screen indicates the registered work quantity.

Even if numerals other than the registered work quantity is inputted, it cannot be accepted after pressing [ENT] key.

③ Press [ENT] key to switch into the inputted reserve no.

When the reserve No. is changed through either the control of key or use of external signal,

① For the Individual display setting: the reserve No is changed, and also Plan/Actual is cleared.

② For the Cumulative display setting: even if the reserve No is changed, Actual is not cleared.

<Clear processing>

[Clear] terminal	Within working hour	Plan/Actual is cleared and calculation is started from the present time according to the tact of current reserve No.
	Other than working hour	Work of Reserve No. 1 is set.

[CLR] key	Pressing once within working hour	Plan/Actual is cleared and recalculation is carried out up to the present time according to the tact of the current reserve No.
	Pressing twice within working hour	Plan/Actual is cleared and calculation is started from the present time according to the tact of the current reserve No.
	Other than working hour	Work of Reserve No. 1 is set.

Applied operation

<Tact switching timing>

The tact switching timing is the time when target production quantity is consistent with the production actual.

Processing is carried out within working hour setting for the range between the reserve No. registered as "1" and the reserve No. ahead of either [999] in setup time or [0] in tact or [0] in production actual.

If within working hour, processing continues after returning to the reserve No. 1.

Switching timing:

1. When No is manually changed using [2:Reserve No.] of [F1]
2. When inputting through Input terminal "Tact switch"
3. When Production Actual is reached

Applied operation

7-2. Working setting A - Operation when “No” for working hour setting is set(Without Tact reserve function)

This article describes about the Working setting “A” .

When Working setting (M=?) is displayed as “A” in the Operating status screen, the Function setting is carried out as stated in the following table.

Working setting	With/Without of Tact reserve function [5]		With/Without of working hour [6]
	Tact reservation	Cumulative display	For use of Working hour
“A”	No	No	No

The Working setting “A” allows the planned quantity to be calculated without setting the working hour while the signal being inputted from outside is regarded as “Within working hour”.

The working hour registration and the working pattern selection are disabled. Since working hour is not registered, there is no starting time and finishing time. Accordingly, recalculating function by means of [CLR] key is not available.

The input terminal for “Stop input” operation in the Working setting “1” - “3” is changed into the operation for “Operating input” in the Working setting “A” - “C”.

The “During Stop” output terminal is also disabled.

The key function is basically same as the basic operation; however, the key functions stated below are changed.

(For other portions, see the page 21 of Basic operation.)

Key	Command	Functions
[5]	Working hour	Disable
[6]	Working hour pattern	Disable
[CLR]	Clear	Clears the Actual, and allows the calculation of planned quantity according to the tact from the present time.

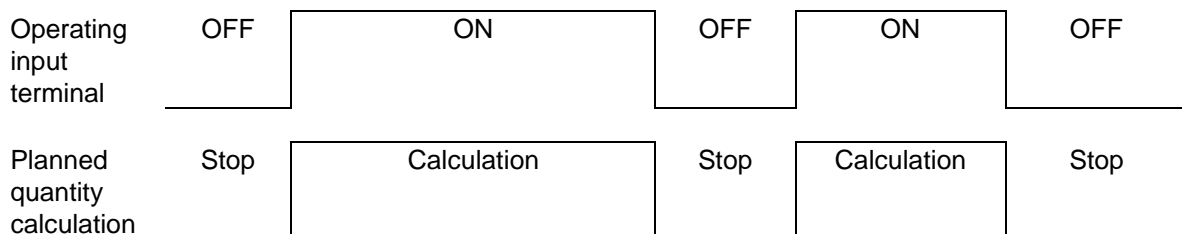
Applied operation

For this operation, the functions of I/O terminals are changed as follows:

Input								Output							
3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
GND	Actual input	GND	Subtraction input	Clear input	GND	Tact switch input	Operating input	GND	Advancement judging + output	GND	Advancement judging - output	GND	Not used	GND	Not used

Non-voltage contact input	Actual input	Increases the production actual
	Subtraction input	Decreases the production actual
	Clear input	Clears the Plan/Actual
	Tact switch input	Switches the Tact Reserve no into the next Reserve No. (Effective only when Tact reserve function is used)
	Operating input	Planned quantity calculation is run during being inputted.
Open collector output	Advancement judging output “+”	It turns on while Advancement is more than “+advancement judging value” .
	Advancement judging output “-”	It turns on while Advancement is less than “-advancement judging value” .
	“During setup” output	Not used
	“During stop” output	Not used

This operation setting allows the planned quantity to be calculated only while the I/O terminal “Operating input” is ON.



Applied operation

<Clear processing>

[Clear] terminal	Plan/Actual is cleared and calculation is started from the present time according to the preset tact.
[CLR] key	Plan/Actual is cleared and calculation is started from the present time according to the preset tact.

*As the working hour is not registered, the recalculating function while returning to the starting time is not available.

*The data in power off can be backed up. If power is boosted again, calculation starts with the backed up data.

*Operating input can be accumulated for up to 1-month.

Applied operation

7-3. Working setting B, C - Operation when “No” for working hour setting is set(With Tact reserve function)

This article describes about the Working setting “B” / “C” .

When the Working setting (M=?) is displayed as “B” or “C” in the Operating status screen, the Function setting is carried out as described in the following table.

Working setting	With/Without Tact reserve function [5]		With/Without working hour [6]
	Tact reservation	Cumulative display	For use of working hours
“B”	Yes	No	No
“C”	Yes	Yes	No

The Working setting “B” / “C” is the operation including of Tact reserve function in addition to the Working setting “A” , which allows the planned quantity to be calculated without setting the working hour while the signal being outputted from outside is regarded as “within working hour”.

To reserve the tact according to this operation, register “Tact” and “Target production quantity” beforehand.

(For the Working setting “B” / “C” , the setup time is not registered.)

<Tact reserving procedure>

Set in the same way as for “7-1”. However, the setup time is not registered.

<To switch the tact reserve No.>

Set in the same way as for “7-1”.

<Clear processing>

[Clear] terminal	Plan/Actual is cleared and calculation is started from the present time according to the tact of the current reserve No.
[CLR] key	Plan/Actual is cleared and calculation is started from the present time according to the tact of the current reserve No.

<Tact switching timing>

The tact is switched into the next tact at the timing when the target production quantity is consistent with the production actual.

Processing is carried out within working hour for the range between the reserve No.

registered as “1” and the reserve No. ahead of either [0] in tact or [0] in production actual.

If operating terminal input is ON, processing continues after retuning to reserve No. 1.

Maintenance

8. Handling precautions

[1] If you use the setting of using working hour, the machine maintains the displayed data after the working hours are over. Thus, you need to turn off power once or press the [CLR] key before the start of working hours.

(Unless the previous day's data is cleared, the machine will not start the Plan/Advancement calculation.)

[2] Assume a case where the clock time is changed after the start time of working hours. If the time is put back, the machine operates erroneously, recognizing that 24 hours or more have elapsed. In this case, press the [CLR] key after you have put back the time.

For example, if the clock time is changed to 8:27 at 8:30, then the machine takes it for 8:27 on the next day.

[3] It is imperative that the machine be switched on before the start time of working hours. If it is switched on after that, the machine fails to operate normally. For the machine takes it for recovery from a power failure because it is within working hours and recognizes 24 hours or more have elapsed.

In such a case, press the [CLR] key after you have switched on the machine.

[4] Most of the causes for abnormal operation of the machine are attributed to the Working hour setting, the Tact setting, and the above [1]/[2]/[3]. When the machine does not operate normally, try pressing the [CLR] key after re-checking if the Working hour, Tact, and Clock are normal.

If the machine still does not return to normal condition, please contact us because a machine trouble is suspected.

[5] When it becomes impossible for the period of the data backup and the clock to shorten or to backup, it is necessary to exchange the battery. It might be consumed. When you have to exchange, contact the AGENT or through which you purchased the product or our office.

[6] If the battery of data back up is not used for a while, the battery doesn't charge it enough and cannot be backed up. Please turn on Power for while. It is necessary for the full charge for 24hours. If you don't use the machine over 3-6 months, please charge for full charge for 24 hours every 3-6 months to maintain performance of battery.

[7] If you press the [ENT] key after this, the value you input will be set as the planned quantity. If you have inadvertently set a wrong data, press the [CLR] key and re-input the correct data.

9. Maintenance

In the unlikely event that you find trouble during use under normal conditions, inform the following matters to the outlet store through which you purchased or our sales office.

**Product name / Production No. / Service environment,
External devices connected. Operating procedures taken
until trouble happens, and Concrete trouble contents**

Warranty

10. Warranty

■ Provisions of warranty

The provisions of warranty are set forth by us for warranty of the product after shipment so that the product can be used with a sense of security after purchased. In case our product is out of order, we will provide repair or replacement under the provisions of warranty.

■ Warranty period

Besides, as long as there is not providing, the warranty period shall be 13 months after shipping the products. During the warranty period, we will provide free-of-charge repair subject to the provisions of warranty set forth in the warranty certificate.

If you have anything unclear about the repair or follow-up service during the warranty period, please contact the outlet store through which you purchased the product or our Sales Office.

■ Scope of warranty

If the product should get out of order under the normal conditions of use by the customer, we will repair the failed section(s) free of charge or exchange the new one free of charge subject to the provisions of warranty. Please contact the outlet store through which you purchased the product or our Sales Office.

Also, the warranty period shall be 13 months after shipping the product or shall be 6 months after shipping substituting goods. The warranty periods will be applied the period visited later. Note, however, that free-of-charge repair under this warranty is limited to the hardware components of the product. Even during the warranty period, the customer shall be responsible for repair cost if any of the following applies:

1. Troubles or damages occurring due to improper handling by the customer, such as a fall, a shock, etc. during transportation or movement of the product by the customer.
2. Troubles caused by overhaul or remodeling of the main body by the customer.
3. Troubles or damages caused by fire, earthquake, flood damage, or other natural disasters, as well as by abnormal voltage.
4. Troubles resulting from any trouble of devices connected to the product, which devices are other than those designated by us.
5. Troubles with the accessories (AC adapter, antenna, connection cables, or the like) except the main body.
6. Repairing, adjustment, modification by except our company
7. Replacement of consumables and limited-life items (including batteries).

Consumables and limited-life items include, but not limited to:

- (1) Switches (limit switches, pushbutton switches, or the like)
- (2) Battery cells or batteries (dry batteries, button batteries, or the like)
- (3) Other items subject to consumption or limitation of life caused by use.

Warranty

8. Troubles occurring due to handling against the use instructions or precautions specified in this operation manual.

■ Initial defects

The period within 30 days from the date of shipping the product is defined as the initial defect period for the product. The product will be replaced with a new one or repaired free of charge provided that it is returned to the outlet store through which you purchased the product or our Sales Office, checked, and recognized as having initial defects. For initial defects, we shall be responsible for the shipping cost.

But it is in Japan only. In case of purchasing the products out of Japan, it will be decided after conference about shipping cost for returning back, insurance cost, custom duty.

■ Disclaimer

We will assume no liability for any damages or monetary losses, direct or indirect, arising out of troubles, failures, or use of the product.

■ Repair service period

Only if we have the stock of parts for repairing, even if after finishing the warranty period, we will repair the product within 5 years after end of production for a fee.

However, we reserve the right to use substitute parts or devices for repairing purposes if there are unavoidable reasons such as unavailability of service parts.

■ Others

● Independent of the warranty period, the product to be repaired shall in principle be brought into our site because of the necessity of using measuring instruments or the like for adjustments etc., and the shipping cost etc. incurred in bringing the product into our site shall be borne by the customer.

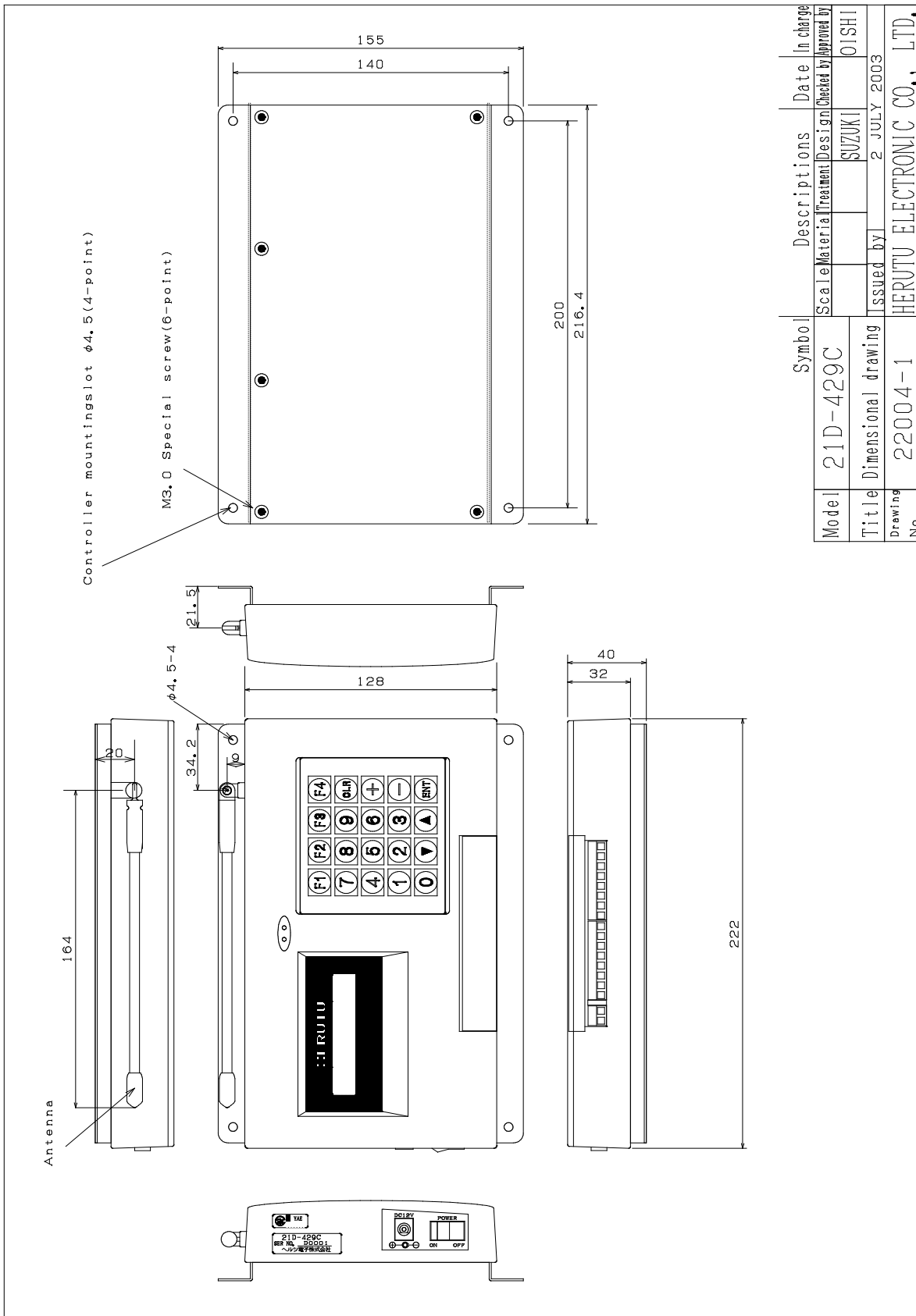
● In such cases where you request a trip to your place for repair or need substitute devices during the warranty period, please contact the outlet store through which you purchased the product or our Sales Office. We will correspond for a fee.

● We reserve the right to refuse replacement or repair if we are unable to reproduce the concerned failure at our engineering department after receipt of a request for repair. In addition, an additional charge may be made to the customer for the technical examination cost incurred in reproducing the failure.

● The information in this manual, our website, catalog we supply, is subject to change without prior notice. Please be forewarned.

Dimensional drawing

Dimensional drawing





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