For Personal Use
PRODUCTION DISPLAY

MD-4

INSTRUCTION MANUAL
V1.20

Thank you very much for purchasing the HERCOM MD-4 production display system.

In order for you to make use of your production display system ,please read this instruction manual thoroughly. The production display system has various types of the models. This instruction manual is for use in common with all the models. Read those sections of the manual related to the model you purchased. Each page or text has The name of each model that is given in the right-hand corner of related pages. [ALL]is marked on pages for use in common with all the models. Asterisk "**"are also marked if that section is for use in common.

Content

1.General Description

1-1 Scope

This manual is applied to the HERCOM MD-4 production display system (called "the machine" from now on).

1-2.Outline

The machine is a production control display system that displays the quantity of production in ever-progressing production processes at your factory helping you to grasp the present status of production at a glance and providing you with a great effect on the rationalization of production such as production process analysis, worker's self-administration, etc.

1-3.Operation

The machine incorporates a microcomputer allowing you to set or change the six basic data: tact, target, actual, advancement, clock and working hours. The machine counts signals from limit switches for the number of production results, computes the production progress on the basis of data such as man-hours and working hours and indicates the respective data. The machine also beeps its buzzer for each of the set man-hours.
There are " Clear Time Function" to clear automatically plan/actual result/progress status at the set time,
" Average Capacity Display Function" to measure the actual time for actual result input and display the average capacity, " Pitch Indicating Function" to indicate the process state of set Capacity, and
"Temporary Stop Function" to stop the plan/calculate the progress temporarily even during operation hours.

1-4.Features

Low price.
Compact and light weight.
1 inch high-luminance 7segment LED display for easy look.
Microcomputer and timer are incorporated.
As various indications are equipped, you may easily change the display type by Keyboard.
10-LED lights for set up Capacity and you can recognize passed time at a glance. The sound also tells you the passed time.
So easy to operate with temporary stop function.
Provided with a battery backup function for data saving in case of power interruption.

2.Specifications

2-1.Machine specifications

Indicator section	1 inch red 7-segment LED Numeral:4 digits× 2 Symbol+3 digits× 1
Pitch-indicator section	5 green LED× 5 orange LED× 5 red LED×
Keyboard	16keys(for commands and numerals)
Input section	Count-up input× 1 Count-down output× 1 Stop input× 1
Output section	Buzzer output× +5V output× 1
External dimensions	230W× 168H× 41Dmm
Weight	Approximately 1500g
Power source	AC100V,approximately 7W
Working temperature	0~50
Data backup	Approximately 2 weeks

2-2.Operation specification

Item	Specification	Type
Labor time	Max,23hour59minutes/day	All
Working hour	0~20 times/day	
Working hour pattern	6 pattern	
tact	0.1~9999.9 seconds	
target	0~9999	1**
plan	0~9999	5** 152
actual	0~9999	*2* 152
advancement	-999~999	**3
Accomplishment rate	0~999%	**4
Average tact frequency	0~99	All
Clear time	3 times	

2-3.External dimensions
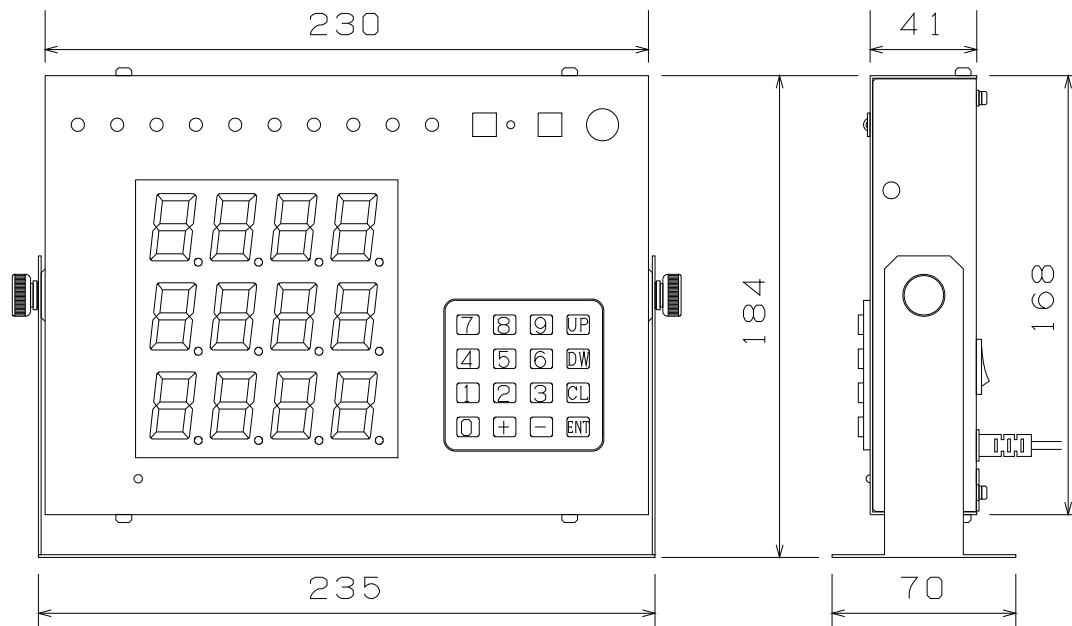
2-4.Installation dimensions

3
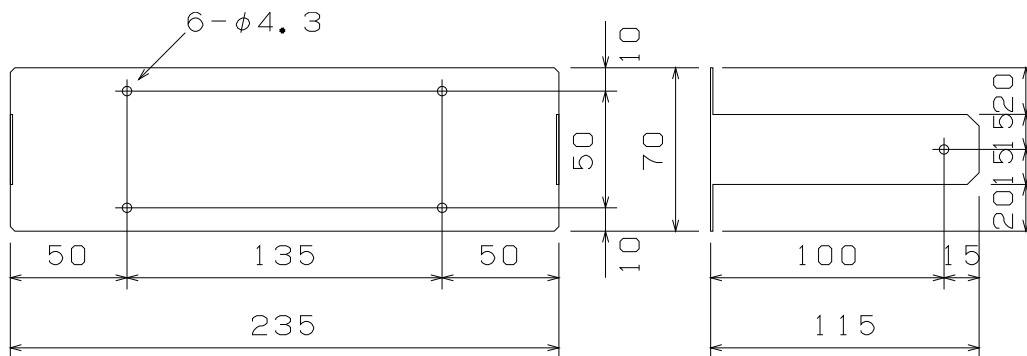
3.Name and Function of parts

3-1.Name of function of parts
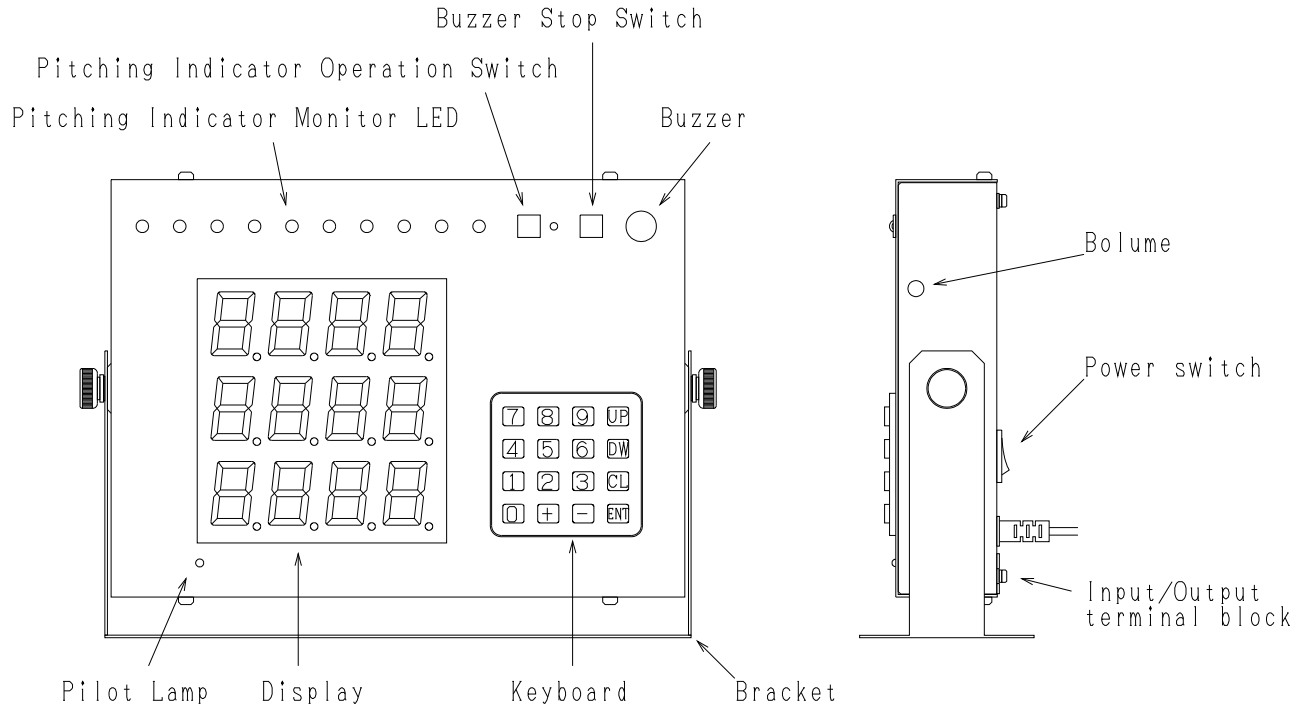
Power switch................turn on power source
Pilot lamp...................lights up to indicate that power is being supplied
Keyboard....................inputs command or data
Display.......................displays data
Input/output   ....inputs result counts(back side of frame)
     terminal block
Bracket......................mounts the machine unit
Pitching Indicator........Indicates the passing time in Pitching Indicator
          Monitor LED
Pitching Indicator........Switch for ON/OFF of Pitching Indicator functions
          Operation Switch
Pitching Indicator........Shows the Pitching Indicator status (lights when
                              running)
Status Lamp Buzzer......Buzzer for Pitching Indicator functions
Volume.......................Volume adjusting of Buzzer (smaller: turn clockwise)
Buzzer Stop Switch.......Switch to stop Buzzer sound
                    (Buzzer sounds in the following Pitching Indicators)

3-2.Input/output terminal block

The input/output terminal block are located the back
Explanation on each terminal function

Back side

```
     GND  UP  DWN  STP  OUT  BUZ  +5V  NC   A    B
```
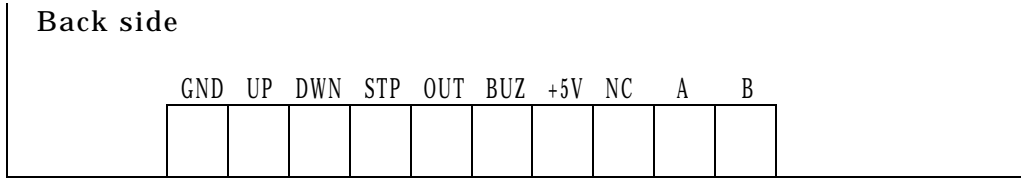
Terminal block	Input/ output	Function
GND		Common
UP	Input	Counts the actual up(actual +1
DWN	Input	Counts the actual down(actual -1)
STP	Input	
OUT		Not used
BUZ	Output	Buzzer output(open collector output)
+5V	Output	DC5V Output
NC		Not used
A		Not used
B		Not used

*Please input no-voltage contact point
*Buzzer output is open collector output.

Connecting the Equipment
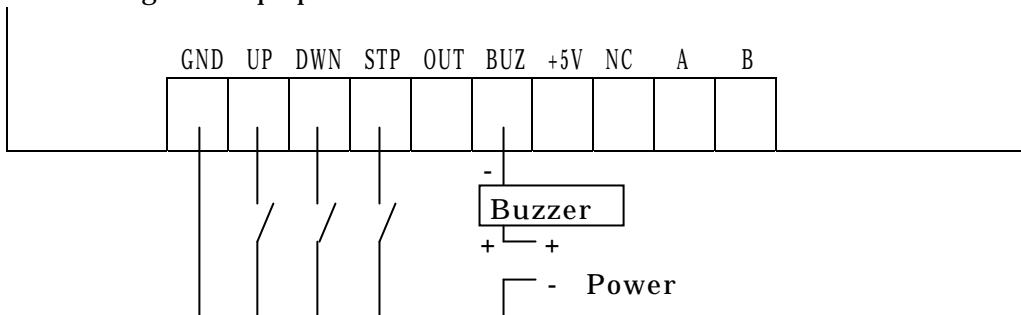
```
     GND  UP  DWN  STP  OUT  BUZ  +5V  NC   A    B
```

Buzzer

Power

For the no-voltage contact point to be connected to the count(UP,DOWN,STP),a stable 5V voltage and 10mA current which can be turned on and off should be used. There should be a minimum of chattering.
Open Corrector Output Terminal (BUZ):Resistant to pressure up to D/C 35V- 50 mA.
(Some buzzers may have polarity or insufficient current capacity. Be careful. In some cases, you need to connect Buzzer after having received with relay.
+5V Output Terminal: Max. Output D/C 5V- 100 mA

Input/output circuit

No-voltage contact point input(Remark   DC5V   10mA

```
        +5V

                        Input Contact Point

                            No-voltage Contact Point


                        GND
Inside      Terminal Function
```
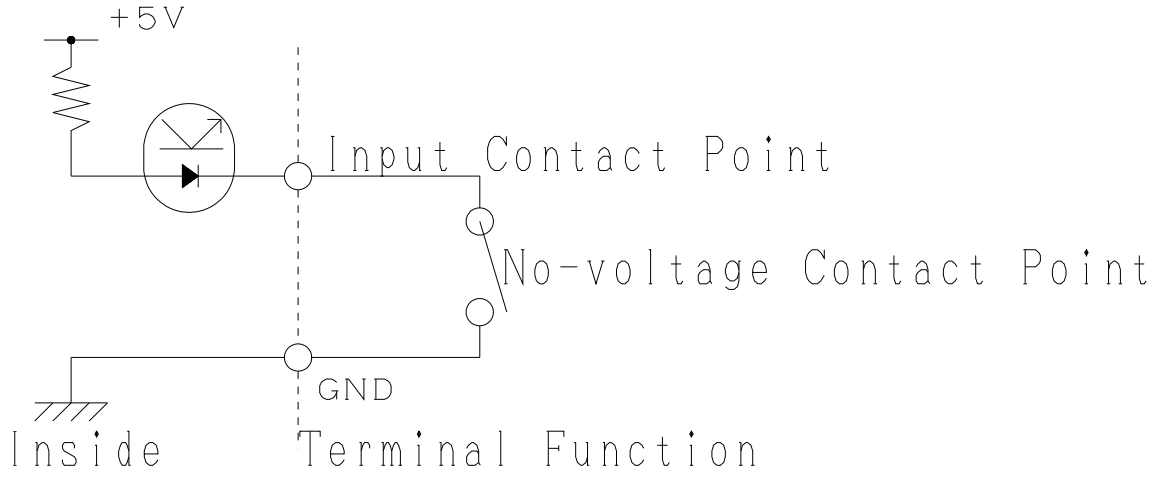
Open corrector output   Max   DC35V   50mA

```
                Output Contact Point


                                Resistance

                        GND
Inside      Terminal Function
```

6
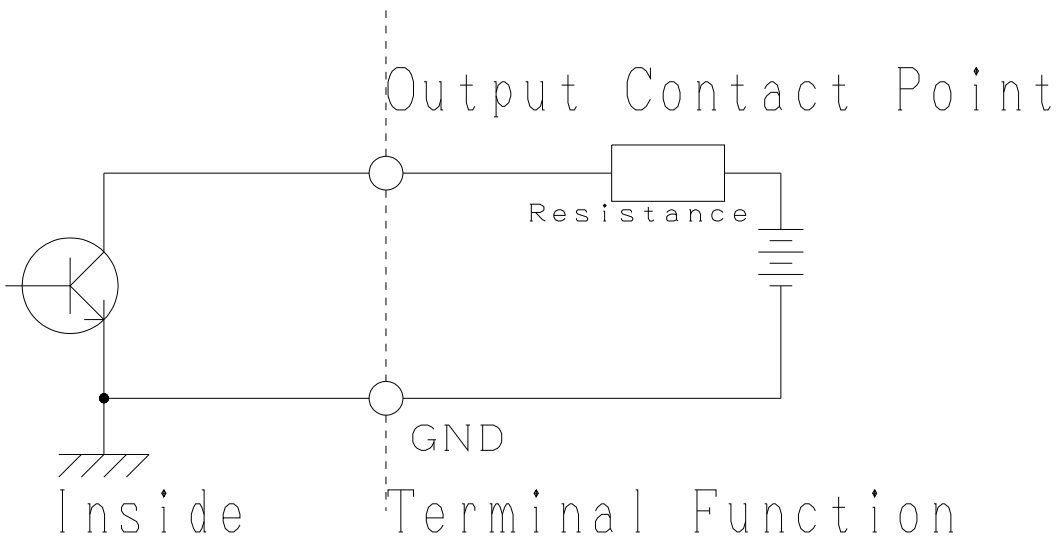
3-3 Displays

1. Initial screen

When the power is turned on, whenever the power is turned on before working time starts, a screen like that shown below is displayed.
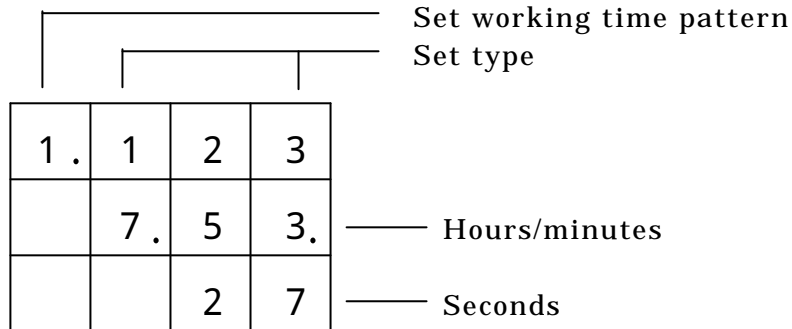
If the power is turned on within the working time, the screen advances to the following reference screen in a few seconds. If the power is turned on before the working time starts, the screen advances to the reference screen whenever the working time starts or the actual results are input.

2. Reference screen

During normal operation, the screen looks like that shown below.
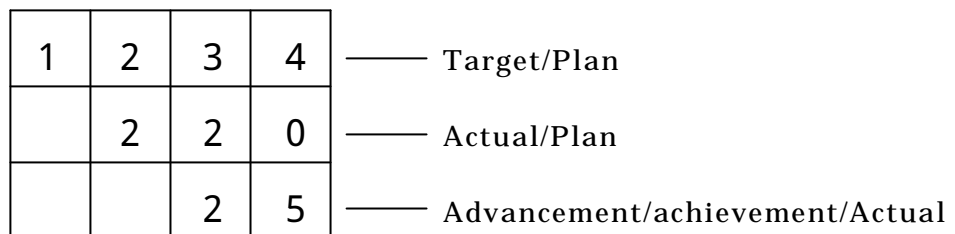
3. Switching the screen

Pressing the "+"key switches between the initial screen and the reference screen. This can be used to view the time during operation. Pressing the "+"key again results to the original screen.

4.Setting up the Equipment

　1. Installation of Equipment
　　　When the metal fittings are attached to the Body, take off　two ornament
　　　screws in both sides, and remove the fittings. Fix the fittings to the place where
　　　they should be put with screws/ wood screws.
　　　Put the body to the fittings with ornament screws and tighten it a little.

　２ .Connection of IN/OUT Terminal Strip
　　　Connect the non-voltage connecting point with the Actual Result Count (UP
　　　Terminal) in IN/OUT Terminal Strip , to count the actual results of
　　　Relay/Micro-Switch/Limit Switch.　 Also, if necessary, connect it with each
　　　IN/OUT Terminals respectively.
　　　(Regarding IN/OUT Terminal Strip functions and how to connect lines, see "3-2:
　　　 IN/OUT Terminal Strip" in Page 5)

　 3. Deciding such as angle as you see the Display Screen (Display and Pitching
　　　 Monitor LED) and operate easily, fix the Body by tightening ornament screws
　　　 in both sides.

Since the main unit has a built-in microcomputer, fluctuations or surges in the
power supply can cause data to be lost. Make sure the power supply used will be
free of fluctuations and surges.

For the no-voltage contact point to be connected to the count(UP,DOWN,STP),a
stable 5V voltage and 10mA current which can be turned on and off should be
used. There should be a minimum of chattering.

5.Setting the type

Several different types of equipment can be specified with this system. When the system is first introduced, the type must be set, and the user must specify whether or not the system itself is to be used.

5-1.Description of the various types

Type	Contents
123	Target/Actual/Advancement
523	Plan/Actual/Advancement
124	Target/Actual/Achievement
524	Target/Actual/Achievement
152	Target/Plan/Actual

[1]Target............Target number of units to be produced that day
                    (number of units planned for one day as fixed display)
[5]Plan...   ....Number of planned production units at the current point in
                    time, calculated based on the working hours(changes as the
                    time changes)
[2]Actual.............No. of units produced at current point in time(incremented
                    in response to external contact point input)
[3]Advancement...Degree of advancement showing actual units produced in
                    relation to number of units planned at current point in time,
                    indicated by means of a ± numeric display
[4]Achievement...Actual units produced in relation to number of units planned
                    at current point in time, indicated by means of a percentage
                    display

If you use something except Type 1/2/3 (plan, actual result, progress) , attach a seal on the surface cover before using.

5-2.Setting the equipment type

(1)Turn on the power switch with the "DW" key on the keyboard held down. The display looks like that shown below.

·	·	

The asterisks indicate the type currently set

(2)Input a 3-digit number for the type to be set.
  For example, input"5","2",and "3"to set type 523

·	·	

(3)Press the "ENT" key to enter the setting
  If you make a mistake when inputting the number, press the "CL" key and
  input the number again.

  Error Messages
 If a number is input for which a type does not exist, and the "ENT" key is
 pressed, the following display flashes, and the system advances to the
 processing step without changing the type.

Once the type has been set when the system is first introduced, it does not have to be set again unless the type is being changed. When the power is turned on, the specified type is displayed in the last 3 digit of the top line.

10

6.Setting the data

With this system, the correct data must be entered to the controller using the following commands, or correct operation cannot guaranteed.

Key	Command	Function	Type
0	Tact	Used to set or change the tact in unit of seconds	ALL
1	Target	Used to set or change target production quantities	1**
	Plan	Used to set or change planned production quantities	5**
2	Actual	Used to set or change actual production quantities	* 2 *
	Plan	Used to set or change planned production quantities	152
3	Advance	Used to change the rate of advance	**3
	Achievement	Used to change the rate of achievement	**4
	Actual	Used to set or change actual production quantities	152
4	Time	Used to set the internal clock (24-hour system)	ALL
5	Working time	Used to set or change the working time (24-hour system)	ALL
6	Pattern	Used to set or change the working time pattern	ALL
7	Average Capacity	Used to set or change Average Capacity	ALL
8	Clear time	Used to set or change the clear time(24-hour system)	ALL

Once these data items have been set, they are preserved even if the switch is turned off, and do not need to be set again unless they are being changed

Caution

Incorrect setting of data will result in malfunctions and abnormal operation. Please make sure you read the sections on setting data carefully

6-1.Setting the time

The internal clock must be set.
(1)Press the "4"key.

 —— Command No.

—— The asterisk indicate data currently set.

(2)The current time is displayed using the 24-hour clock. Input the hours and the minutes.

For example, to input 8:05 in the morning, input "8", "0", and then "5".

(3)Press the "ENT" key to set the time.

If you make a mistake in entering the time, press the "CL" key and repeat the procedure from Step 1.Data can also be corrected by entering 4 consecutive digits of correct data.

Error Messages

If the input data is not logical, the following screen is displayed, and the system returns to its original status without setting the data.

Caution

This system has an internal crystal clock. The precision of the clock is maintained under normal conditions of usage, but the oscillating frequency of the crystal varies in response to the temperature, so that may be a small amount of offset in the time displayed by the clock depending on changes in the ambient and temperature.

6-2.Setting the working time pattern

With time system, six different working time pattern can be registered. The user must specify which pattern is to be used when work is started or when the working time is set.

(1)Press the "6" key.

—— Command No

—— The asterisk indicates the currently set
     data.

(2)To set pattern No.3, press the "3" key.

(3)Press the " ENT" key to enter setting.

If you make a mistake in entering the number, press the "CL" key and enter the correct number.

The specified pattern number is displayed in the first column of the top line of the initial screen display.

13

6-3.Setting the working time.

This function sets the working time. The specified working time is used in calculating the working hours to determine the number of units planned for production at the current point in time, and the results of this calculation are used to determine the actual production results and the rate of advancement.

```
 Start   8:00      10:00……10:10      12:00……13:00      15:00……
          Work    Break    Work     Break    Work     Break
      15:15     17:30……17:45     19:50……20:00     22:00……
          Work      Break    Work     Break    Work     Break
      23:00     1:00……  1:15      3:30   End
          Work      Break    Work
```

(1)Press the "5" key.

—— No. of times

—— The asterisks indicate time data already

   set.

 The Capacity are corresponding to the "number of times" in "Operation Hour Work Sheet" in the final page , which show the current Input position.   (00- 40)

(2)Press "8","0",and "0".

—— Input data

If you make a mistake in entering the number , press the "CL" key and enter the correct data(in this case, input "0","8","0","0")

(3)Press the "ENT" key
　Then, the machine is ready to receive the next time.

·	·	
	·	

——The asterisks indicate time data already
　set.

(4)Press "1","0","0",and "0".

·	·	
	·	

——Input data

(5)Press the "ENT" key.

·	·	
	·	

——The asterisks indicate time data already
　set.

(6)Press "1","0","1","0",and "ENT".

·	·	
	·	

——The asterisks indicate time data already
　set

(7)In keeping with the preceding format, input up to "3","3","0",and"ENT".

(8)As the last step, "0"and"ENT" to set the working time.

Pressing the "ENT" key without inputting anything will set the current working time without changing it.(Other changes made in the data will be set.)

Pressing the "+" key before entering the various times will move to the next time setting Pressing the "-" key moves backwards to the previous time setting.

Caution

Set 24 hours, 00 minutes to set midnight
Set 00 hours, 01 minutes to set 0:01 a.m.

Since the system uses 24-hour clock system, the ending time for work may not exceed the starting time.

After the final work ending time has been set, always set "0". If the number of times set is an odd number, "0" cannot be set, because an odd number of setting times means that no work ending time has been set.

20 working times being set results in 40 setting altogether.

Application example

In this example, we will change the starting work time of 13:00 from the previous example to 12:45.

(1)Press the "5" key.

(2)Press the "+" key five times.

(3)Since we have gone past our target time, we will press the "-" key once.

(4)Press "1","2","4",and"0."

(5)The last digit is an error, so we will press the "CL" key.

(6)Press "1","2","4",and"5".

(7)Press the "ENT" key.

(8)The "ENT" key is pressed here to finalize the setting.

As explained previously, "0" must always be set after setting the final work ending time. If "0" has not been set, calculation cannot be carried out properly, because the that time that work ends is not known. Any data set after the "0" is entered will be ignored.

Error Message

1) If the data which has been entered is not logical, the following screen is displayed, the system then returns to the input screen.

2) When [0] Input is in the position of Operation End Time , the screen below is displayed, and it will return to Input Screen again.

3) If "0" has not been set after the final work ending time has been set, the following screen is displayed, and the system then returns to the reference screen. Select command "5" once again and register "0" after the final work ending time has been set.

4) If the working time setting have not been input in correct sequence in terms of time, the following screen is displayed, and the system then returns to the reference screen. Select command "5" once again and correct the working time setting.

If the described Steps 2) and 4) are left uncorrected, operation cannot proceed correctly, so that each time the power is turned on, an error screen will be displayed.

6-4.Setting the working hours

Working hours(the time required to produce one unit)are set in units of seconds.

(1)Press the "0" key.

```
+-------+-------+-------+-------+
|   .       .                   |  —— Command
+-------+-------+-------+-------+
|                           .   |
+-------+-------+-------+-------+
|                               |  —— 1 digit to the right of the decimal point
+-------+-------+-------+-------+
```

The asterisks indicate currently set data.

(2)Input the working hours in seconds, in up to 5 digits(4 digits+1 digit to the right of the decimal point).

For example, to input 45.5 seconds, enter "4","5",and"5".

```
+-------+-------+-------+-------+
|   .       .                   |
+-------+-------+-------+-------+
|                           .   |
+-------+-------+-------+-------+
|                               |
+-------+-------+-------+-------+
```

(3)If the figure has been input correctly, press the "ENT" key to set the working hours. If an error has been made, press the "CL" key and input the correct data.

The setting for the working hours can be changed at any point (even during an operation). If the working hours item is set to "0", the degree of advancement will not be calculated.

In case of Capacity is "0",   the functions of Plan number calculation/Pitching Indicator stop.

6-5.Setting the target

This function sets the target number of production units for one day.

(1)Press the "1" key.

```
┌─────┬─────┬─────┬─────┐
│     │     │     │     │
│  •  │  •  │     │     │──── Command No.
│     │     │     │     │
├─────┼─────┼─────┼─────┤
│     │     │     │     │
│     │     │     │     │
├─────┼─────┼─────┼─────┤
│     │     │     │     │
│     │     │     │     │
└─────┴─────┴─────┴─────┘
```

　　　　　The asterisks indicate current set data
(2)Input the target quantity.

For example, to input 1230,press"1","2","3",and "0".

```
┌─────┬─────┬─────┬─────┐
│     │     │     │     │
│  •  │  •  │     │     │
│     │     │     │     │
├─────┼─────┼─────┼─────┤
│     │     │     │     │
│     │     │     │     │
├─────┼─────┼─────┼─────┤
│     │     │     │     │
│     │     │     │     │
└─────┴─────┴─────┴─────┘
```

(3)Press the "ENT" key to enter the setting. If an error has been made, press the "CL" key and input the number once again.

6-6.Setting the plan

Normally, the plan quantity does not have to be specified. If a error of some kind develops in the plan quantity, this function is used to set the correct quantity at that point.
Press the "1" key in case of type 5**, press the "2" key in case of type 152

   (1)Press the "1" key.(In case of type 5**)

——Command No.

         The asterisks indicate current set data

   (2)Input a plan quantity of up to 5 digits.

   For example, to input 1800, "1","8","0",and "0".

——Input data

   (3)If the figure has been input correctly, press the "ENT" key to set the working hours. If an error has been made, press the "CL" key and input the correct data.

If the plan quantity is changed, the degree of advancement and achievement are corrected automatically, based on the actual results of production.

6-7.Setting the actual results

Normally, the actual results of production do not have to be specified. If an error of some kind develops in the production results, this function is used to set correct quantity of production results at that point.
Press the "2" key in case of type *2*, press the "3" key in case of type 152

(1)Press the "2" key.(In case of type*2*)

```
┌───┬───┬───┬───┐
│ . │ . │   │   │  ── Command
├───┼───┼───┼───┤
│   │   │   │   │
├───┼───┼───┼───┤
│   │   │   │   │
└───┴───┴───┴───┘
```

The asterisks indicate current set data

(2)Input the quantity of actual results.

For example, to input 1253, enter "1","2","5",and "3".

```
┌───┬───┬───┬───┐
│ . │ . │   │   │
├───┼───┼───┼───┤
│   │   │   │   │  ── Input data
├───┼───┼───┼───┤
│   │   │   │   │
└───┴───┴───┴───┘
```

(3)If the figure has been input correctly, press the "ENT" key to set the actual results. If an error has been made, press the "CL" key and input the correct data.

If the plan quantity is changed, the degree of advancement and achievement are corrected automatically, based on the actual results of production.

The UP and DOWN function keys can be used to effect slight changes in the quantity of actual results.

6-8.Setting the degree of advancement

Normally, the setting for the degree of advancement does not have to be specified. If an error of some kind develops in the advancement, this function is used to set the correct degree of advancement at that point.

(1)Press the "3" key.

•	•		

——Command

The asterisks indicate current set data

(2)Input the degree of advancement, with a + or – symbol.

For example, to input +13 enter "+","1",and"3".

•	•		

——Input data(+ is blank)

(3)If the figure has been input correctly, press the "ENT" key to set the degree of advancement. If an error has been made, press the "CL" key and input the correct data.

Error Message

A degree of advancement with a + sign cannot be input if it exceeds the quantity of actual results. This is because there is no chance of advancement in the + direction higher than the quantity of actual results.
If a degree of advancement with a +sign that exceeds the quantity

6-9.Setting the rate of achievement

Normally, the setting for the rate of achievement does not have to be specified. If an error of some kind develops in the achievement, this function is used to set the correct degree of achievement at that point.

(1)Press the "3" key.

```
┌────┬────┬────┬────┐
│ ·  │ ·  │    │    │ ── Command
├────┼────┼────┼────┤
│    │    │    │    │
├────┼────┼────┼────┤
│    │    │    │    │
└────┴────┴────┴────┘
```

The asterisks indicate current set data

(2)Input the correct rate of achievement.

For example, if the rate of achievement is 93 %, enter "9",and"3".

```
┌────┬────┬────┬────┐
│ ·  │ ·  │    │    │
├────┼────┼────┼────┤
│    │    │    │    │ ── Input data
├────┼────┼────┼────┤
│    │    │    │    │
└────┴────┴────┴────┘
```

(3)If the figure has been input correctly, press the "ENT" key to set the rate of achievement. If an error has been made, press the "CL" key and input the correct data.

Calculating the Rate of Achievement

Rate of achievement(%)=Actual/Plan x 100
The rate of achievement is rounded off to the nearest whole number.

If the rate of achievement exceeds 9999 %, or if it cannot be calculated (for example ,if the plan is "0"), the rate of achievement is displayed as "7777".

If the rate of achievement is changed, the current plan quantity is also changed automatically, based on the actual results. If the rate of achievement input is not logical, however(for example, the rate of achievement is 0 although actual results exist, or the rate of achievement is such that the plan quantity exceeds 9999), subsequent data cannot be guaranteed.
The rate of achievement should never be changed unless the change is absolutely necessary.

6-10. Setting of Average Capacity

Set the average Capacity.   The Equipment has a function to calculate the actual average Capacity . You can set the times when calculating the average values.

(1) Press "7" Key. The screen becomes as follows.

```
 ___ ___ ___ ___
|   |   |   |   |
| . | . |   |   |  ──── Command
|___|___|___|___|
|   |   |   |   |
|   |   |   |   |
|___|___|___|___|
|   |   |   |   |
|   |   |   |   |
|___|___|___|___|
```

The asterisks indicate current set data

(2) Input the times. Range :   .
    For example, if 10 times, enter "1",and"0".

```
 ___ ___ ___ ___
|   |   |   |   |
| . | . |   |   |
|___|___|___|___|
|   |   |   |   |
|   |   |   |   |  ──── Input data
|___|___|___|___|
|   |   |   |   |
|   |   |   |   |
|___|___|___|___|
```

(3) Press "ENT" Key, and it is set.
    If an error has been made, press the "CL" key and input the correct data.

If you set the average Capacity to be "0", the function of average Capacity display becomes invalid.

In this command, you only execute setting.   As to the display of average Capacity, see " 9. Average Capacity Display Function" on Page 32.

6-11.Setting of Clear Time

Set "Clear Time."
"Clear Time" function executes automatically the clearing action ([CL]x2) when it becomes the set time.
You may set up to three set times.

(1) Press "8" Key.   The screen changes to as follows.

```
┌───┬───┬───┬───┐
│ • │ • │   │   │ ──── Command No.
├───┼───┼───┼───┤
│   │ • │   │   │
├───┼───┼───┼───┤
│   │   │   │   │
└───┴───┴───┴───┘
```

The asterisks indicate current set data

(2) Input the clear time, in order of hour and minute, in the form of 24- hour indication.
    For example, input "8" "0" "5" in case of 8:05 AM.

```
┌───┬───┬───┬───┐
│ • │ • │   │   │
├───┼───┼───┼───┤
│   │ • │   │   │ ──── Input data
├───┼───┼───┼───┤
│   │   │   │   │
└───┴───┴───┴───┘
```

(3) If you press "ENT" Key, the first clear time is set, and the screen changes to the one for second input.
    If an error has been made, press the "CL" key and input the correct data.

```
┌───┬───┬───┬───┐
│ • │ • │   │   │ ──── Second input
├───┼───┼───┼───┤
│   │ • │   │   │
├───┼───┼───┼───┤
│   │   │   │   │
└───┴───┴───┴───┘
```

The asterisks indicate current set data

In such a repetition, you may set up to three times.
If you press [ENT] Key without input, the command will end. With "+" "-" Keys, you may move the input numbers.

Error Message

When the input data is not logical, the following screen appears, and the status
returns to Re-Input condition automatically.

Set the Clear Time which you do not use to be 00:00.
If any time is input, the clear action is executed at the time.

For 00: 00 AM,   set as 24:00.   For 0: 01 AM, set as 0:01.

6-12.Testing the setting

When the time, working hours, target quantities and other elements have been set, press the "+" key to return to the reference screen if you are currently on the initial screen. Make sure that the quantity of actual results is incremented when the count is input.

Next, if the current time is within the working time, press the "CL" key and once the advancement display has stabilized(the advancement shows the number of target production units as a minus figure, from the start of the working time to the current time), check to see that the degree of advancement and the plan quantity change in accordance with the set working hours.

If the above tests are carried out satisfactorily, the setting process is concluded. If a malfunction of some sort occurs, correct the pertinent setting(s).

7.Description of function keys

(1)"ENT" key

The "ENT" key is used to enter data in computer.
The input data is not entered in the computer until the "ENT" key is pressed.
Also, with system, there are times when the data will not be entered in the
computer even if the "ENT" is pressed, if the data is not logically possible.

(2)"CL" key

The "CL" key is normally used to restart the equipment. Once the "CL" key is
pressed, the computer clears the actual results and the degree of advancement,
and then calculates the new degree of advancement and plan quantity up to the
current point, based on the working hours.

If the "CL" key is pressed twice in succession, the computer clears the actual
results and the degree of advancement, and then starts over from the current
point.

(3)"DW" key

Pressing this key decrements the actual results by 1.
It should be used to effect very slight corrections in the actual results.
If this key is held down when the power is turned on, the type of equipment can
be changed

(4)"UP" key

Pressing this key increments the actual results by 1.
It should be used to effect very slight correction in the actual results.

(5)"+" Key
    If you press   Key, the standard screen changes to the initial screen.

(6)"-" Key
    If you press [Key, you can refer to the average capacity.

8.Temporary Stop Function

This is the function to stop the plan/progress calculation temporarily, during operation hours.

During stopping, the light goes on and off in Initial Screen or Standard Screen, and you will see the status at a glance. There are two ways to stop them as follows;

(1) STOP Terminal.

When the signals are being input in STOP Terminal in the backside of the Body, the plan/progress calculation is stopped.

If you free the signal input, the calculation is started again at once.

```
GND  UP  DWN  STP  OUT  BUZ  +5V  NC   A    B
```
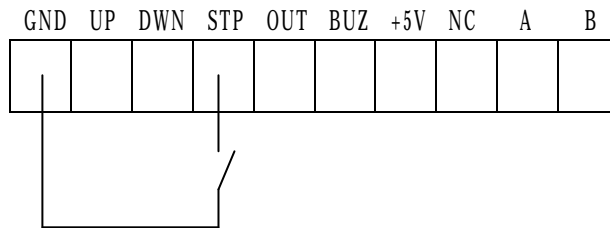
As to the explanation on Terminal Strip, see " 3-2 IN/OUT Terminal Strip" in Page 5.

(2)"9" KEY.

Either in Initial Screen or in Standard Screen, if you press "9" Key, the plan/progress calculation is stopped. If you press "9" Key again, the calculation is started again.

Above two ways are independent from each other.   You can free the halt by Signal Input only with Signal. Halt by [9] Key can be freed only with [9] Key.

9.Average Capacity Display Function

It is the Function to calculate the average capacity which has been set in [7] (see Page 26) .

It measures the actual time between actual result inputs , and it calculates the average capacity when the times have reached the set one.　Then, every time you input the actual result, the average capacity is renewed.　In Down/Set of Actual result, it is not updated. The number of average capacity is calculated up to 9999.9.

Regarding how to set the average capacity number,　see "Setting of Average Capacity Number" in Page 26.

The explanation on how to refer to Average Capacity is as follows;

(1)"-" KEY. The screen becomes the average capacity reference screen.　(normal)

```
┌───┬───┬───┬───┐
│ . │ . │   │   │ ──── Command No.
├───┼───┼───┼───┤
│   │   │   │ . │ ──── Current average capacity (integer    part)
├───┼───┼───┼───┤
│   │   │   │   │ ──── Current average capacity (decimal
└───┴───┴───┴───┘            fraction part)
```

(in case less than the set times)

```
┌───┬───┬───┬───┐
│ . │ . │   │   │
├───┼───┼───┼───┤
│   │   │   │ . │
├───┼───┼───┼───┤
│   │   │   │   │
└───┴───┴───┴───┘
```

(in case of values not to be displayed)

```
┌───┬───┬───┬───┐
│ . │ . │   │   │
├───┼───┼───┼───┤
│   │   │   │ . │
├───┼───┼───┼───┤
│   │   │   │   │
└───┴───┴───┴───┘
```

If there is any Actual Input has been input in this screen , the average capacity is renewed.

(2) If you press "CL" Key, the average capacity is cleared and the measurement starts from the beginning.
With "UP""DW" Key, you can execute Up/ Down of actual results.
If you press "ENT" Key, the standard screen appears again.

If you set the average capacity to be "o", the Function stops.
Therefore,   Command becomes invalid.

During Temporary Halt, the capacity measurement is stopped too.

To observe the operation time,   the capacity measurement is stopped , except the
time for rest and operation.

If you reset the average capacity , it is cleared.

In the following case,   only the capacity measurement is cleared, while the average
capacity is not changed.
  Power Source: Capacity Change   Key Press down
   Actual Result Down   Change Actual Result
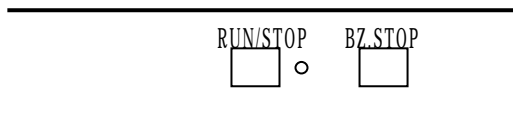
10.Pitching Indicator Function

It is the Function to notify an operator of the passed time status of set capacity , by LED and Sound.
There are 10 pcs of LED in the upper part of the Body, and they turn on at the interval of 1/10 of set capacity.   From 6th one on, the buzzer output is executed too.
When Actual Result UP is entered,   it is started again.

   Regarding Switch
Explanation on Switch for Pitch Indicator is as follows;

   RUN/STOP Switch   Pitching Indicator Operation Switch
        With it you switch Run/Stop of Pitching Indicator Function.
        Every time you push the switch, it changes from/to Run/Stop.
        During running, the LED beside the switch is ON.

               SWITCH   Buzzer Stop Switch
        If you push Switch, the Buzzer output stops and only LED is ON.
        This Switch is valid only in one time, and in the next Pitching Indicator, the buzzer output is executed.

 Explanation on Actions
For example, in case that the capacity is 10 seconds;
        Light OFF   Light ON   In the beginning, all are OFF.

   When   second has passed   only lighting ON

   When   seconds have passed: only lighting ON

        ⋮

When 6 seconds have passed   lighting ON   buzzer output

        ⋮

When 10 seconds have passed   lighting ON   buzzer output

35

Start Timing

When it is the operation start time
When there is any change in Actual Result numbers (up/down/change)
When RUN/STOP Switch is pushed (Halt ? Run)
When the capacity is changed

Buzzer Output

Buzzer Output runs the Buzzer generation in Body and BUZ Terminal output.
When the Buzzer is stopping, both of them   also stop.
Regarding BUZ Terminal, see "3-2 IN/OUT Terminal Strip" in Page 5.

The relations between Lighting LED and Buzzer output.

	Buzzer output
	None
	Sounds once
	Sounds twice
	Continue sounding consecutively to the next start

Adjust Buzzer Sound Volume

By the "Volume" in the right side of the Body, you can adjust the Buzzer sound in the Body. (" 3-1:Name of Each Part", Page 4).
Turning clockwise, the sound becomes smaller.

Volume
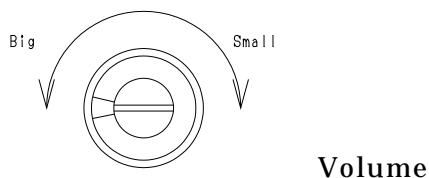
The Function will not work unless the capacity and operation hours have been set.

As it works according to the operation hours, it does not work except such hours.
Also, it does not go on during the rest time, and starts at the stopped point when the rest time has finished.
During Temporary Halt , it does not go on.

At the Power Source ON, it begins at starting status always.

The State of RUN/STOP is backed up.

11.Command

Key	Command	Function	Type
DW + Power	Type	Setting the type	ALL
0	Tact	Used to set or change the tact in unit of seconds	ALL
1	Target	Used to set or change target production quantities	1**
	Plan	Used to set or change planned production quantities	5**
2	Actual	Used to set or change actual production quantities	* 2 *
	Plan	Used to set or change planned production quantities	152
3	Advance	Used to change the rate of advance	**3
	Achievement	Used to change the rate of achievement	**4
	Actual	Used to set or change actual production quantities	152
4	Time	Used to set the internal clock (24-hour system)	ALL
5	Working time	Used to set or change the working time (24-hour system)	ALL
6	Pattern	Used to set or change the working time pattern	ALL
7	Average Capacity	Used to set or change Average Capacity	ALL
8	Clear time	Used to set or change the clear time(24-hour system)	ALL
9	Temporary Stop	Temporary Stop Operation by Key	ALL
+	Screen Switch	Change from Initial Screen to Standard Screen or vice versa	ALL
-	Refer to Average Capacity	Refer to Average Capacity	ALL
UP	Actual Result	Actual Result Number	ALL
DW	Actual Result	Actual Result Number	ALL
CL× 1	Clear	Clear Plan/Actual result/Progress, and calculate again.	ALL
CL× 2	Clear	Clear Plan/Actual result/Progress, and starts at the current point.	ALL

12.Error messages

Error Message is indicated by the numerals lighting ON/OFF in the positions below.
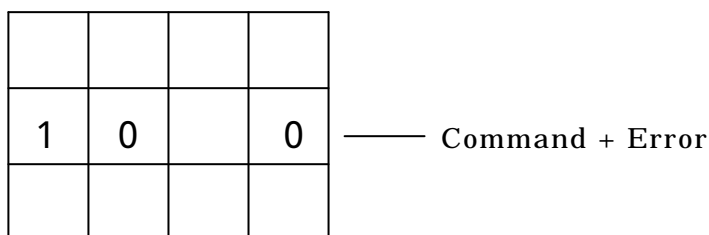
 —— Command + Error

Message

Command	Error	Contents
10	0	The input equipment type does not exist.
4	4	The input data does not conform to the time format.
5	5	The input data not conform to the time format.
	6	Input position for 0000 is wrong.
	8	"0" has not been registered after the working time.
	9	The order of the working times has been reversed.
3	1	A "+" advancement cannot be set if it exceeds actual results
8	8	Input data does not have the form of Time.

Special Error Message

Command	Error	Contents
99	0	Back up data error.
	1	Back up data error.

Special Error Message generates in Power Source ON.   It does not occur normally. If it occurs often, the repair may be required.

13.Precautions regarding usage

[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.

[6]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.

[7] 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.

[8] 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.

14.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.

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.

Working Time Work Sheet   Pattern No.

When setting the working time, fill in this work sheet and input the data.

No. of time	Time	Remarks	No. of time	Time	Remarks
00		Start	26		Start
01		End	27		End
02		Start	28		Start
03		End	29		End
04		Start	30		Start
05		End	31		End
06		Start	32		Start
07		End	33		End
08		Start	34		Start
09		End	35		End
10		Start	36		Start
11		End	37		End
12		Start	38		Start
13		End	39		End
14		Start	40	Nothing other than 00:00 may be input.	
15		End			
16		Start	Always input 00:00 after setting the end of the final working time. 0:00 a.m. should be input as 24:00		
17		End			
18		Start			
19		End			
20		Start			
21		End			
22		Start			
23		End			
24		Start			
25		End			