

# CRANE-II

## Operating Manual



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## 1. INTRODUCTION

This Service and Operation Manual are the specifications for our **CRANE-II**

The **CRANE-II** is the product of years of design, development, and in-field testing.

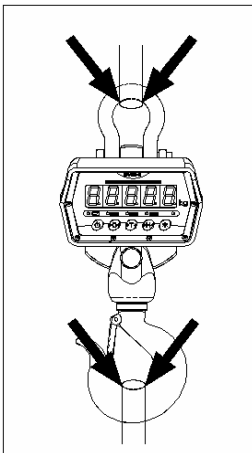
This **CRANE-II** has been designed with reliability, under rigid quality control and with outstanding performance.

This MANUAL included with basic technical information about composition of hardware and programmatic functions.

### ■ Installation

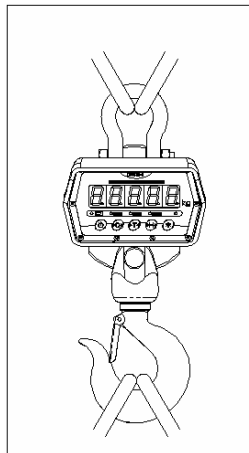
Please check if the safety hook is connected well before you install our **CRANE-II**, so that the SHACKLE is not separated.

#### DO NOT



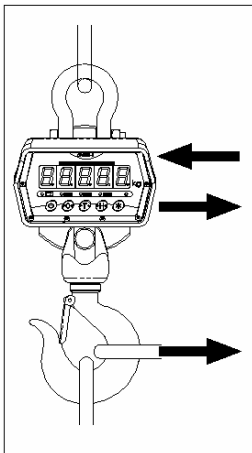
DO NOT INTERFACE HARDWARE (SHACKLES, HOOKS ETC.) THAT ARE OVERSIZED AND RESTRICT SINGLE POINT LOADING AND SELF-ALIGNMENT WHICH CAN RESULT IN OFF-AXIS LOADING

#### DO NOT



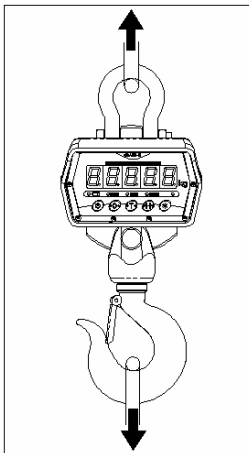
DO NOT USE MULTIPLE ATTACHMENTS

#### DO NOT



DO NOT PUSH OR PULL ON LOADED SCALE. DO NOT PULL Laterally ON HOOK WITH SCALE LOADED.

#### DO



USE HARDWARE THAT CREATES SINGLE POINT ATTACHMENTS AND ALLOWS THE SCALE FREEDOM OF ALIGNMENT.

## ■ Precautions

Please be informed that we're not responsible for any incident or mishap caused by partial modification of this product. To avoid such situation, customers need to contact our customer service team or system installation staff in advance, and any modification should be conducted under our surveillance.

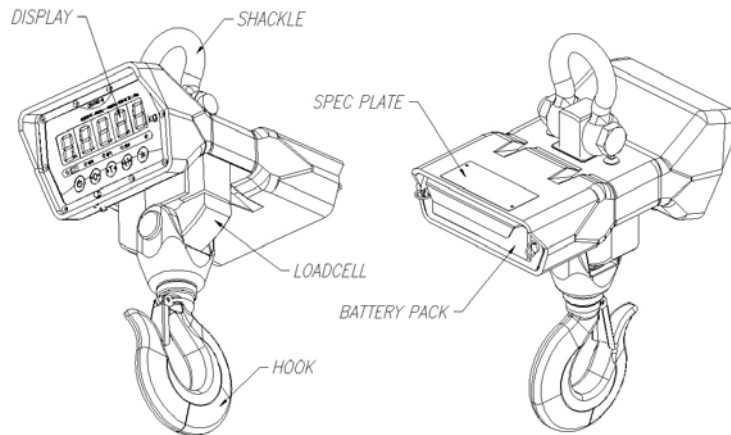
- ◆ Use only approved enhancements and batteries. Do not connect incompatible products.  
Use only batteries, chargers, adaptor, and enhancements approved by TMT for use with this particular model. The use of any other types may invalidate any approval or warranty, and may be dangerous. For availability of approved enhancements, please check with your dealer.
- ◆ Don't install the **CRANE-II** in direct sunlight.
- ◆ Avoid sudden temperature changes, vibration, wind, water, or excessive dirt.
- ◆ Avoid from the shock of excessive weight.
- ◆ **CRANE-II** is not water-resistant.
- ◆ Use away from heavy R.F noise.
- ◆ Keep it dry place.
- ◆ Do not stand under the scale while weighing the load, and you should be careful to provide against a safety accident.

## 2. MAIN FEATURES

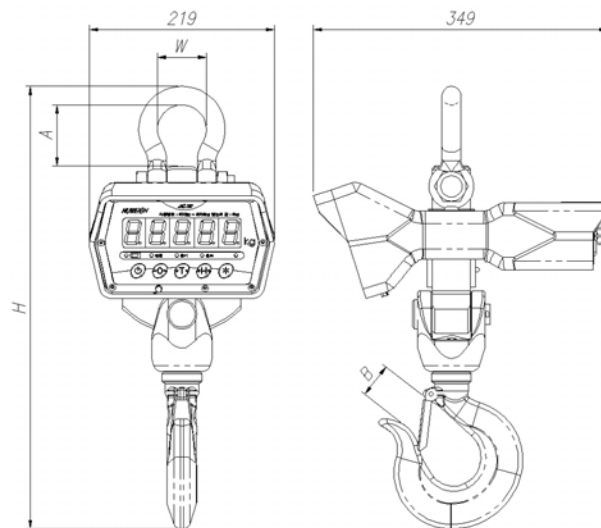
- ◆ **Five large, 1.2 inch LED digits for clear weight readings from a distance.**
- ◆ **Automatic or manual hold for loading operations.**
- ◆ **Easily customized for special applications.**
- ◆ **Very light and sturdy aluminum alloyed case**
- ◆ **Very easy-to-read => downward display**
- ◆ **Standard infrared remote controller**
- ◆ **One-touch battery pack (90 degree)**
- ◆ **Rechargeable battery pack**
- ◆ **Rotating hook**
- ◆ **Weight-adding function => only possible in our optional remote control**
- ◆ **RS-232 Serial output (option 1)**
- ◆ **Wireless communication & wireless printer (option 2)**

### 3. TECHNICAL SPECIFICATIONS

#### ◆ Overall View



#### ◆ Size



Model No.	Capacity	Division	Size				Weight
			H	A	W	B	
CRANE II -1T	1000 kg	0.5 kg	407	62	51	25	13kg
CRANE II -3T	3000 kg	1 kg	525	73	58	42	19kg
CRANE II -5T	5000 kg	2 kg	525	73	58	42	20kg
CRANE II -10T	10000 kg	5 kg	679	101	83	55	30kg
CRANE II -15T	15000 kg	5 kg	840	127	97	63	50kg
CRANE II -20T	20000 kg	10 kg	1021	151	127	85	70kg
CRANE II -30T	30000 kg	10 kg	1098	171	154	100	120kg
CRANE II -50T	50000 kg	20 kg	1536	231	200	145	325kg

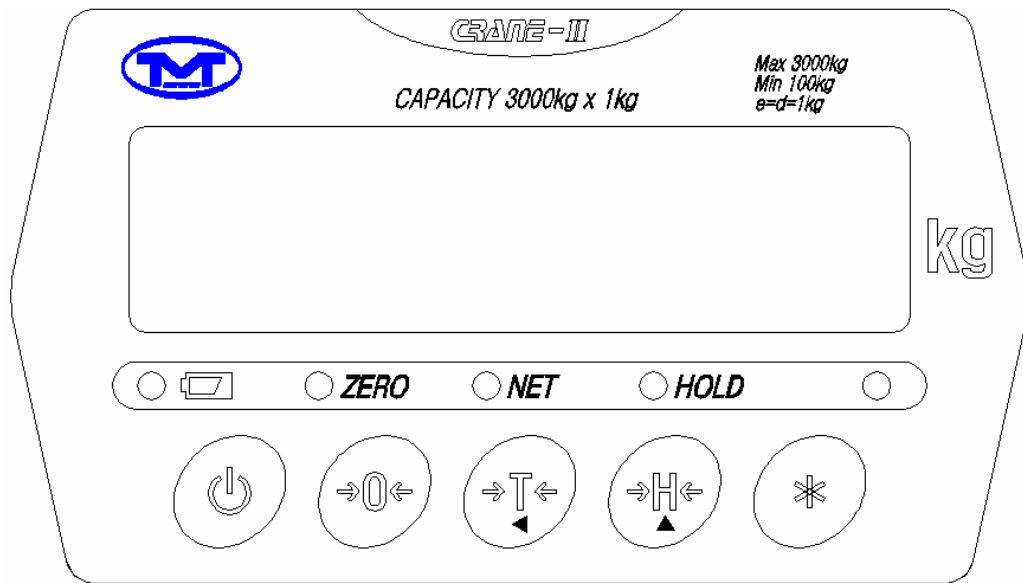
## ◆ Specifications

<b>Display</b>	5 digit LED (30mm high)	
<b>Function</b>	<b>Power</b>	Turns scale on and off
	<b>Zero</b>	Zero applied load up to 50% of capacity
	<b>Tare</b>	Tare applied load up to 100% of capacity
	<b>Hold</b>	Weigh unstable things such as liquid, livestock, etc. (automatic hold, manual hold)
	<b>User</b>	Programmable multifunction button for use as PRINT, DATA SEND, WIRELESS PRINT, ETC.
<b>Display lamp</b>	Low battery, Zero, Tare, Hold	
<b>AD conversion speed</b>	10 times/sec	
<b>Resolution</b>	Internal AD resolution : 1,048,576 counts (20 bits)	
<b>Power</b>	Rechargeable sealed lead acid battery pack (6V)	
<b>Charging adaptor</b>	DC 9V, 1A	
<b>Battery life</b>	LED type : 150 hours max. / LCD type : 350 hours max. After low battery lamp is on, the power will be turned off automatically after one hour or five hours. (depends on operating conditions)	
<b>Temperature</b>	-20℃ ~ 60℃	
<b>Humidity</b>	10 to 95% non-condensing	
<b>Enclosure</b>	Cast aluminum case	
<b>Hook and shackles</b>	Crosby Product or equivalent	
<b>Load cell</b>	Standard 1000 Ω Bridge	
<b>Accuracy</b>	± 0.1% of reading	
<b>Auto zero function</b>	Standard, can be programmed internally	
<b>Nominal overload</b>	200% of capacity	
<b>Maximum overload</b>	500% of capacity	
<b>Infrared remote controller</b>	Standard	
<b>Option</b>	Option 1. RS-232 serial output Option 2. Wireless communication (ZIGBEE) Option 3. LCD display (40mm high)	


## ◆ Assembly

- 1) Crane scale : 1 EA
- 2) Battery pack : 2 EA
- 3) Charger & adaptor : 1 EA
- 4) Infrared remote controller : 1 EA






## 4. DISPLAY AND KEYS



### ◆ Display

- Weight Display : Displays weight or messages
- Zero Lamp: Indicates that scale is stable and at zero
- Tare Lamp : Indicates that scale is currently using a tare
- Hold Lamp: indicates that the HOLD feature has been activated
- LOW BATTERY (  ) Lamp : Indicates that battery is low and must be changed soon

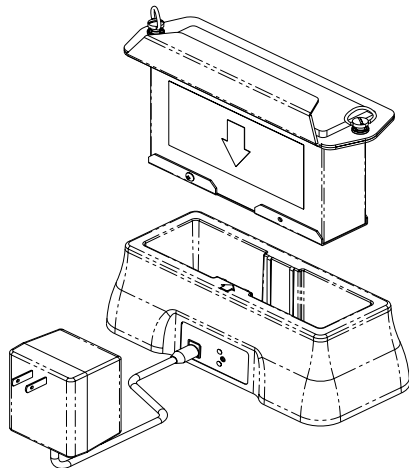
### ◆ Keys

Key		Function
	<b>ON</b>	Turn on and off the scale
	<b>ZERO</b>	Reset scale to zero
	<b>TARE</b>	Enter a tare weight
	<b>HOLD</b>	Weigh unstable things such as liquid, livestock, etc.
	<b>SET</b>	Retuning a new mode

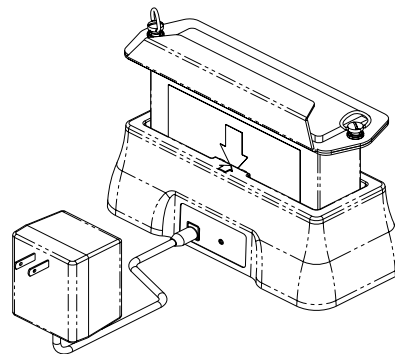
## 5. USE OF BATTERY CHARGING

### (1) How to charge a battery

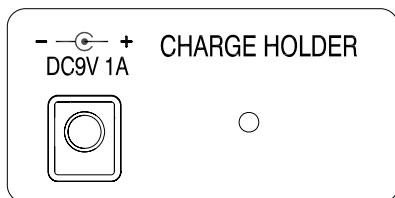
- Connect adapter into charger (Check if the voltage is 9V 1A).
- Place battery pack into charger toward arrow direction.
- If you place it in reverse, it will not charged and please make sure if the RED lamp is off.
- If a Battery pack is connected with a charger properly, RED lamp is on.
- If it's charged completely, a green lamp is on.



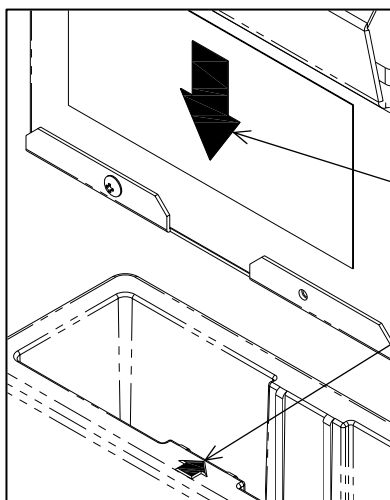
1. Connect adapter into charger.



2. Place batter pack into charger correctly according to the arrow direction.



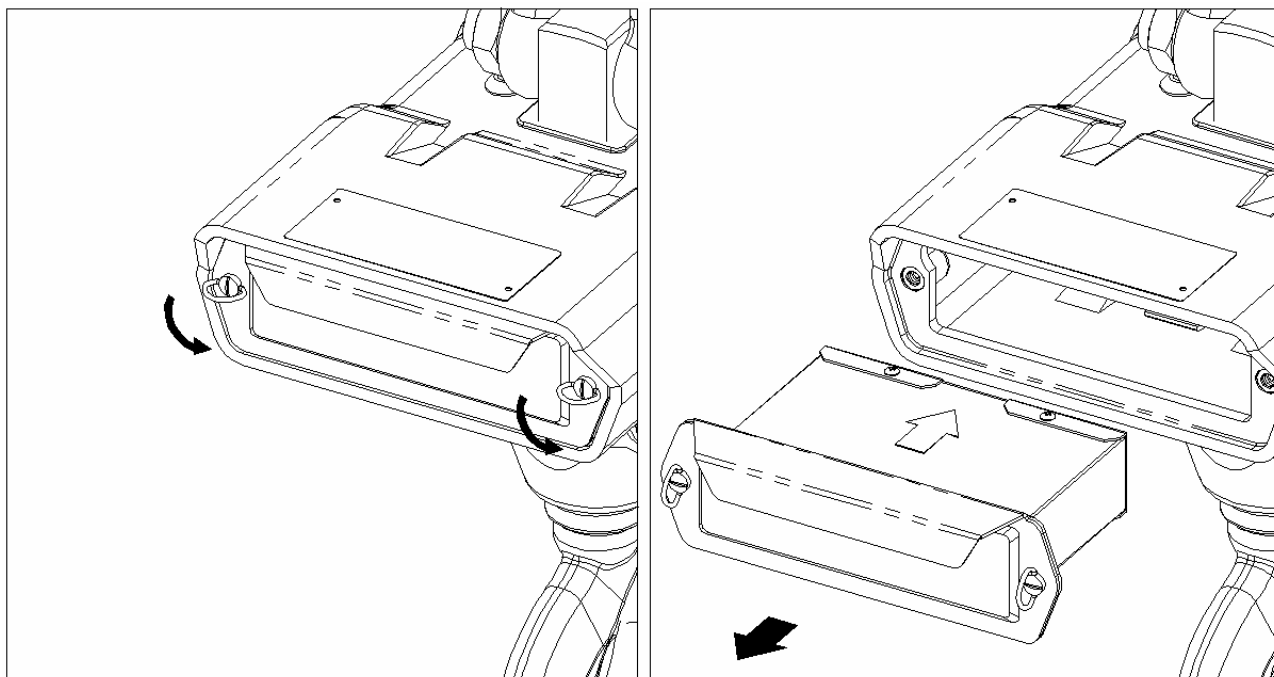
Battery charging : **Red** lamp  
Finished battery charging : **Green** lamp



Watch out its direction



## (2) Battery Pack Inserting & Charging



1. Turn clamps that exit on both sides of charger to the right in a quarter
2. Pull out a battery pack
3. Inserting is in reverse

## (3) Charger (Lead Storage Battery)


Capacity	6000mAH
Power	6V
Size	151 * 94 * 35.5 (mm)

## (4) LOW BATTERY LAMP


- In order to prevent the electric discharge, after **LOW BATTERY LAMP** is on, the power will be turned off automatically after one hour or five hours.  
(It's subjected to be changed according to using conditions.)

## 6. GENERAL FUNCTIONS AND DESCRIPTIONS


### (1) Operating Method

- Press the  (ON KEY) located in front of the scale. The scale will perform self-test on the WEIGHT DISPLAY and will be ready for weighing when ZERO LAMP is on.


### (2) Zero Function

- Use to correct drifted zero value when the scale is unloaded (User selected within +/- 2% of the maximum capacity), and motion is not detected. This function works when  (ZERO KEY) is pressed, and the ZERO LAMP is on.

### (3) Setting Tare Weight Function


■ After hanging a weight to be torn on the HOOK, press the  (TARE KEY). Then, the scale will memorize the weight of the tare and will display zero value "0"kg.

The TARE LAMP will be on.

■ To escape this function, remove everything from the hook, and press the  (TARE KEY). Then, the TARE LAMP will be off and this function is terminated.

\* Note : The sum weight of the tare and any item on a hook cannot exceed maximum capacity.

### (4) Power Saving Function

■ When ZERO LAMP is on for over 20 sec or setting time into setting mode F05, then power saving function works automatically and display becomes like this ;  in the power saving mode.

### (5) Zero Calibration Function


■ When ZERO LAMP is on and if the weight change is under a half of graduation, the scale is calibrated automatically into ZERO.


(ZERO Calibration Limit : Within +/- 2% of the maximum capacity)


### (6) Hold Function

#### ① Automatic Hold Function


(This function works whenever the scale weighs moving things.)


■ Press  (HOLD KEY) when the hook is empty (Initial Zero State).

■ The WEIGHT DISPLAY will indicate  . HOLD LAMP is on.

■ After hooking a thing, if the weight turns stable then, a display shows  and average weight will appear.

■ The weight of a hooked thing is displayed.


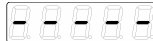
■ To escape the automatic hold mode, when zero point is on, press  (HOLD KEY).

Then, the message of  is displayed and HOLD LAMP is off and normal weighing mode is reverted.


#### ② Manual Hold Function

(Only this function operates when you press a HOLD KEY)

■ Press  (HOLD KEY) hooking a thing

This message of  is displayed and sequentially the message of  is shown with appearing the average weight.

■ The weight of a hooked thing is displayed.




■ To escape the manual hold mode, remove everything from a hook, or press the  (HOLD KEY). Then, HOLD LAMP will be off and the scale changes from a hold mode to a normal mode.

## 7. SETTING MODE

### (1) How to use

- Press the  (TARE KEY) and  (POWER-ON KEY) at the same time. Then, it turns into a setting mode.

### (2) Keyboard

- ZERO KEY  : Use to set up an initial zero value (0).
- SET KEY  : Use to save an inputting value and to move on next menu.
- HOLD KEY  : Use to add a value of “1” from existing value.

### (3) Setting menu (F1 – F18)

- F01 : Adjustment the speed of weight change (1 ~ 9)

Setting Menu	Description
F01-1	Very fast
...	
F01-5	Normal
...	
F01-9	Very slow

- F02 : Weight Storage Function

Setting Menu	Description
F02-0	Not used
F02-1	Use

- F03 : Adjustment the hold speed (1 ~ 9)

Setting Menu	Description
F03-1	Very fast
...	
F03-5	Normal
...	
F03-9	Very slow

- F04 : Stable condition set of weight (1~9)

Setting Menu	Description
F04-1	Sensitive
...	
F04-5	Normal
...	
F04-9	Insensitive

■ F05 : Time of Power Saving Mode

Setting Menu	Description
F05-0	Not used
F05-1	20sec
F05-2	1min

■ F06 : Automatic Zero Condition (00~99)

Setting Menu	Description
F06-00	No compensation
...	
F06-23	Compensation for gradual change below 1 division for 3 sec.
...	
F06-99	Compensation for gradual change below 4.5 division for 9 sec.

■ F07 : Auto Hold Start

Setting Menu	Description
F07-0	Manual
F07-1	Automatic

■ F08 : Initialization Hold Weight (1~9)

Setting Menu	Description
F08-0	Zero (0)
...	
F08-3	Below 3 division
...	
F08-9	Below 9 division

■ F09 : Function \* key **-option 1,2**

Setting Menu	Description
F09-0	Use to clear previously added weights.
F09-1	Print command key
F09-2	Weighing data send to computer
F09-3	Wireless print command key (include print format)
F09-4	Wireless print command key (only weight data)

■ F10 : Device number (Identification number of each scale) **-option 1,2**

Setting Menu	Description
F10-0	Device No.0
...	
F10-5	Device No.5
...	
F10-9	Device No.9

■ F11 : Item number (Identification number of each Item) **-option 1,2**

Setting Menu	Description
<b>F11-0</b>	Item No.0
...	
<b>F11-5</b>	Item No.5
...	
<b>F11-9</b>	Item No.9

■ F12 : Data set sent to computer **-option 1,2**

Setting Menu	Description
<b>F12-0</b>	No data output
<b>F12-1</b>	Command mode
<b>F12-2</b>	Transmission in an state of stable & unstable.
<b>F12-3</b>	Transmission only in stable state

■ F13 : Wireless real time communication **-option 1,2**

Setting Menu	Description
<b>F13-0</b>	Not used
<b>F13-1</b>	Auxiliary display
<b>F13-2</b>	TF200 (Wireless dongle)

■ F14 : Print line feed **-option 1,2**

Setting Menu	Description
<b>F14-0</b>	1 line feed
...	
<b>F14-5</b>	6 line feed
...	
<b>F14-9</b>	10 line feed

■ F15 : Print form **-option 1,2**

Setting Menu	Description
<b>F15-0</b>	Form 0 (serial No., Item No., weight)
<b>F15-1</b>	Form 1 (weigh No., Item No., weight)
<b>F15-2</b>	Form 2 (weight)

[FORM 0]

001, ID_9, 25 kg
------------------

[FORM 1]

SN_012, ID_9, 25 kg
---------------------

[FORM 2]

25 kg
62 kg

■ F16 : Initialization of number measured daily (weigh No.) **-option 1,2**

Setting Menu	Description
F16-0	Maintain current number
F16-1	Initialization (starting from No.1)

■ F17 : Auto print **-option 1,2**

Setting Menu	Description
F17-0	Not used
F17-1	Auto print (include print format)
F17-2	Auto print (only weight data)
F17-3	Wireless Auto print (include print format)
F17-4	Wireless Auto print (only weight data)

■ F18 : Hold data auto print **-option 1,2**





Setting Menu	Description
F18-0	Not used
F18-1	used

## 8. Testing Mode

(1) How to use















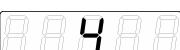
- Press the  (ZERO KEY) and  (POWER-ON KEY) at the same time. Then, it turns into a testing mode.

(2) Keyboard



- SET KEY  : Use to move on next menu.
- , ,  (ZERO KEY), (TARE KEY), (HOLD KEY) : Use to test the scale.

(3) Testing Menu (TEST 1 - TEST 5)

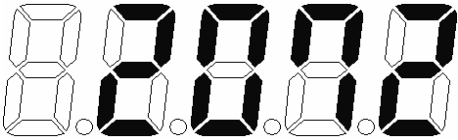


■ TEST 1 : Keyboard Test

	KEY	REMOTE CONTROL	Display	Description
ZERO				Press a keyboard that you want to test, and then the display message will be shown. If press a  (SET KEY), move on TEST 2.
TARE				
HOLD				
SUM				
SET				

■ **TEST 2 : Display Test**

Display	Description
	TEST 2 runs automatically and a display is on. If press a  (SET KEY), move on TEST3.

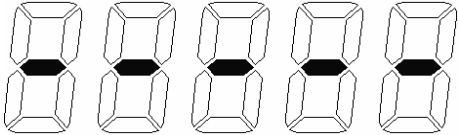
■ **TEST 3 : A/D Conversion Test (Load cell Test)**

Display	Description
	The value is the conversion constant for A/D. The  may be different according to scale models. If a  (SET KEY), move on TEST4

Please check if the displayed number is easily changed with giving force to a hook.  
 If the displaying number is not changed or remains '0', then it needs the service after sales.

■ **TEST 4 : Not used**

■ **TEST 5 : RS-232C test -option 1,2**

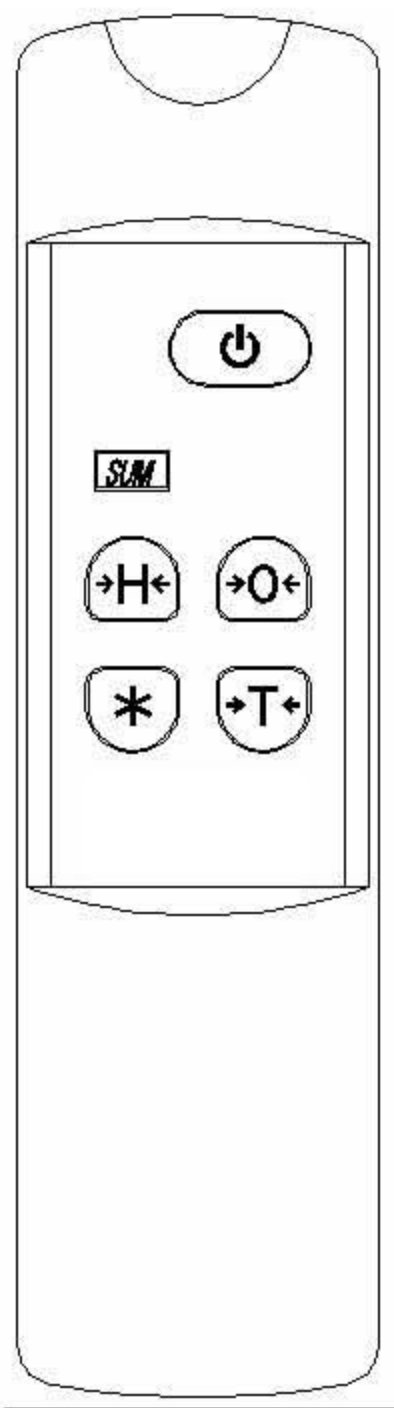
Display	Description
	Ex) 49-13 : Transmit 49 (ZERO KEY) Receiver 13 (PC ENTER KEY) (ZERO KEY 49, TARE KEY 50, HOLD KEY 51)







■ **TEST 6 : Wireless communication test -option 1,2**

Press  (ZERO KEY) at the scale. The numeric character increases on the auxiliary display.

## 9. REMOTE CONTROL

### (1) How to use



-  : OFF KEY : Use to power off the scale  
(Power-ON is available only on scale.)
-  : ZERO KEY : Same as Keyboard
-  : TARE KEY : Same as Keyboard
-  : HOLD KEY : Same as Keyboard
-  : SET KEY (CLEAR) : Use to clear previously added weights.
-  : SUM KEY : Use to add weights.

If press a SUM KEY, the sum of weights is displayed. After that, about 2 sec later, a weighing mode is reverted.

Battery for a Remote Control : AAA size, 1.5V, 2 pcs

### (2) Specification

List	Description
Available Distance	6 m ~ 10 m
Available Angle	60
Power	3V (1.5V AAA 2pcs)

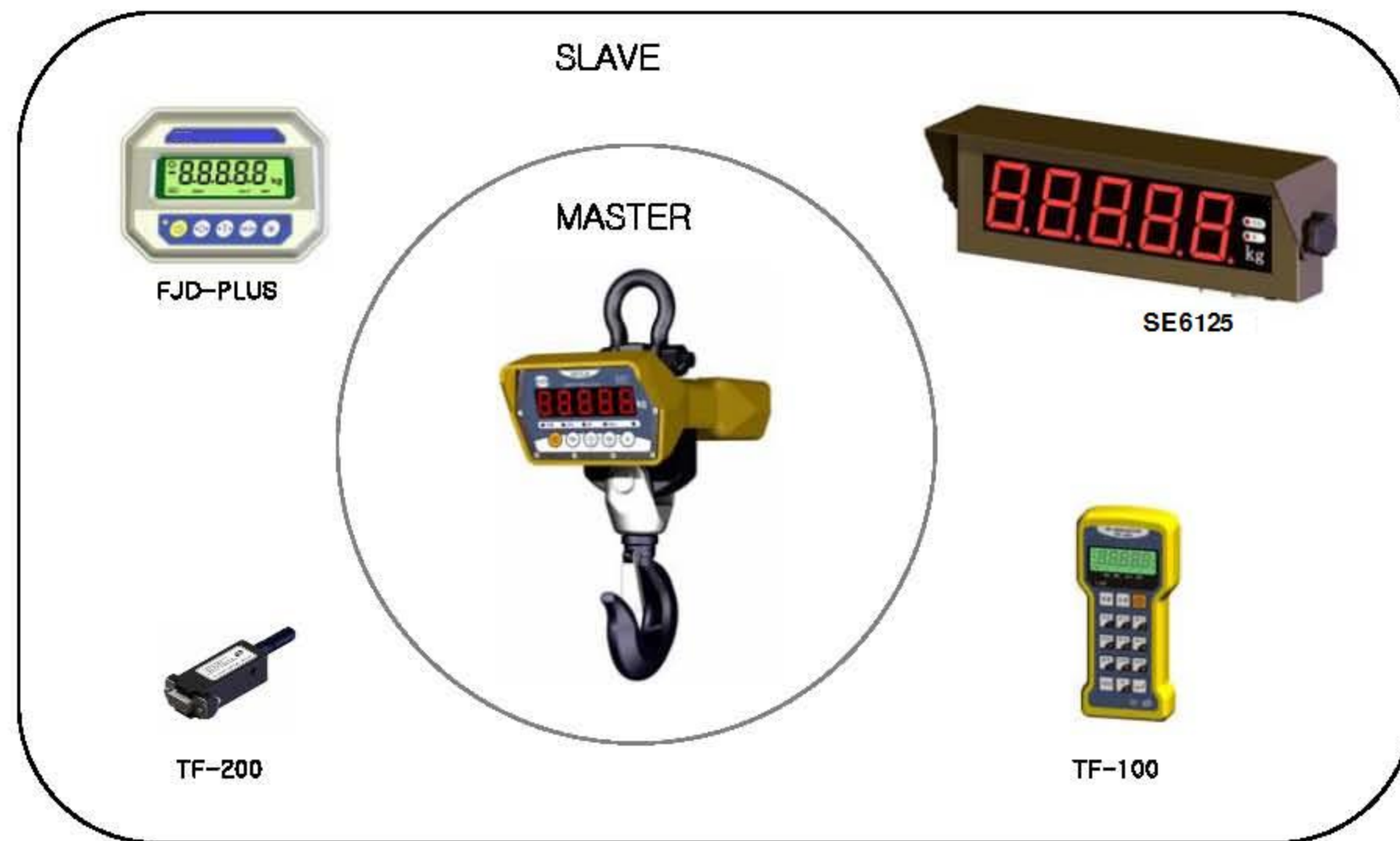


## (2) OPTION 2 : Wireless communication (ZIGBEE)

### ◆ **Wireless specification**

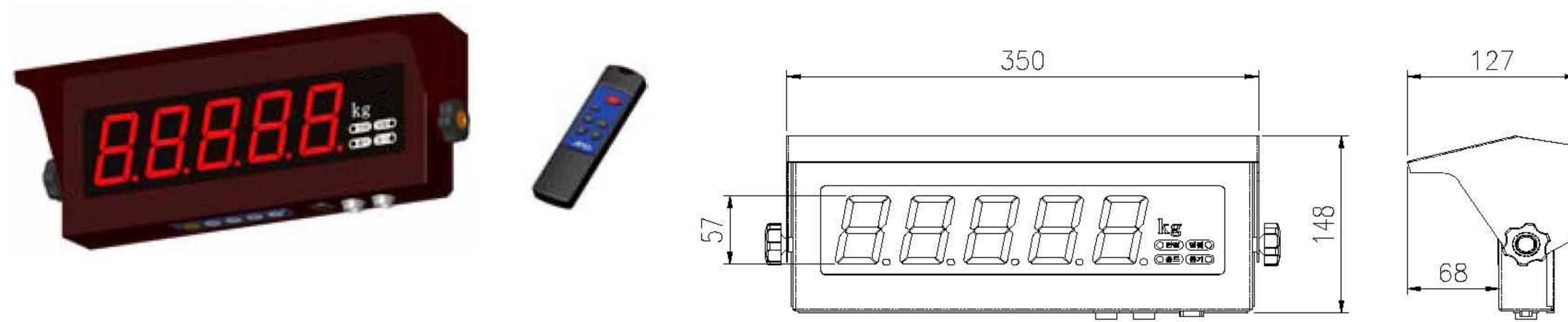
RF frequency range	2400 ~ 2483.5 MHz
Output power	Max. 4dBm
Channel width	2 MHz
Frequency offset	<±30ppm
Transmit data rate	250Kbps,500Kbps
Receiver sensitivity	-99dBm (PER <1%)
Maximum input level	0dBm
RF In/out impedance	50 ohm (TXRF, RXRF)
Spurious(2nd harmonics)	< -30dBm
Radio link effective range	Approx. 100M (Open space)

### ◆ **Wireless diagram**

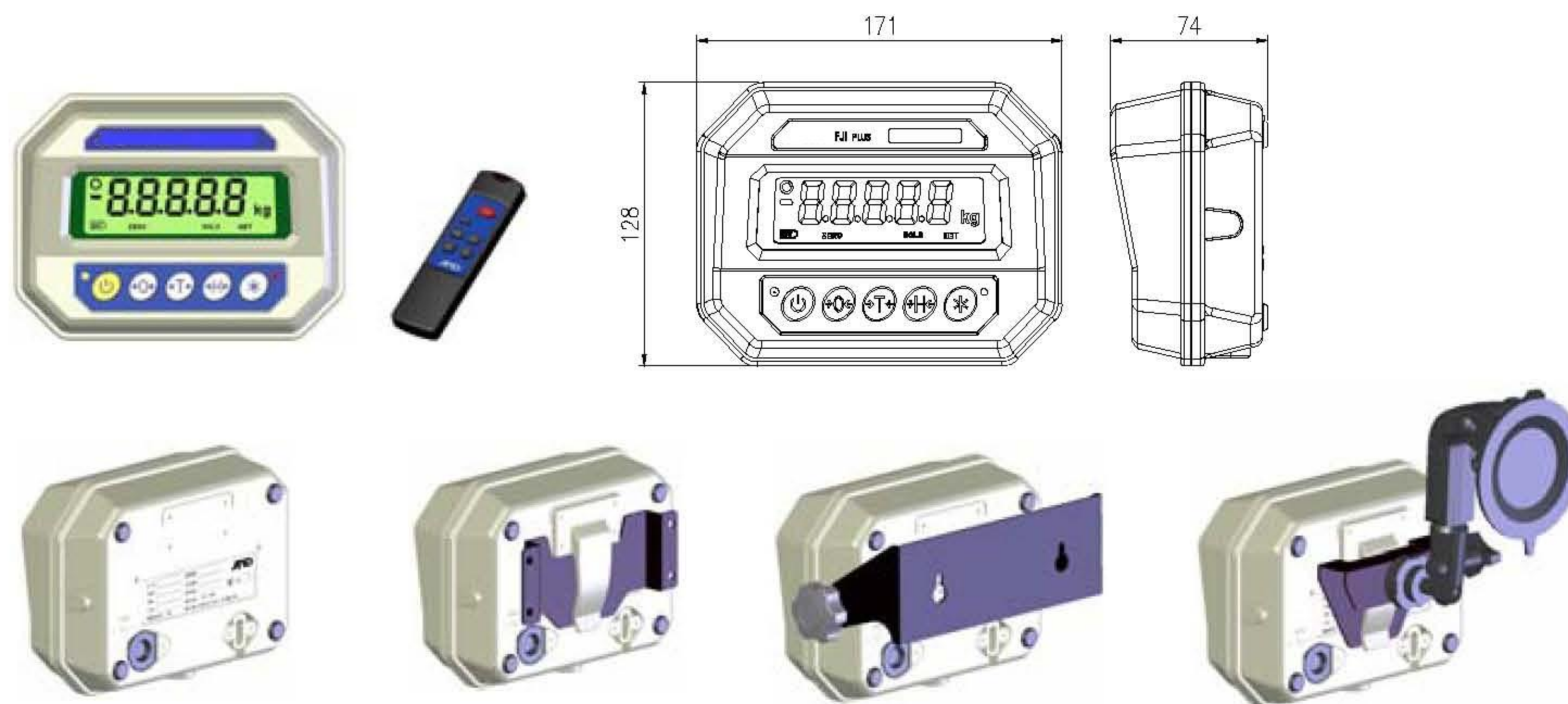




① Wireless auxiliary display ( SE6125 )

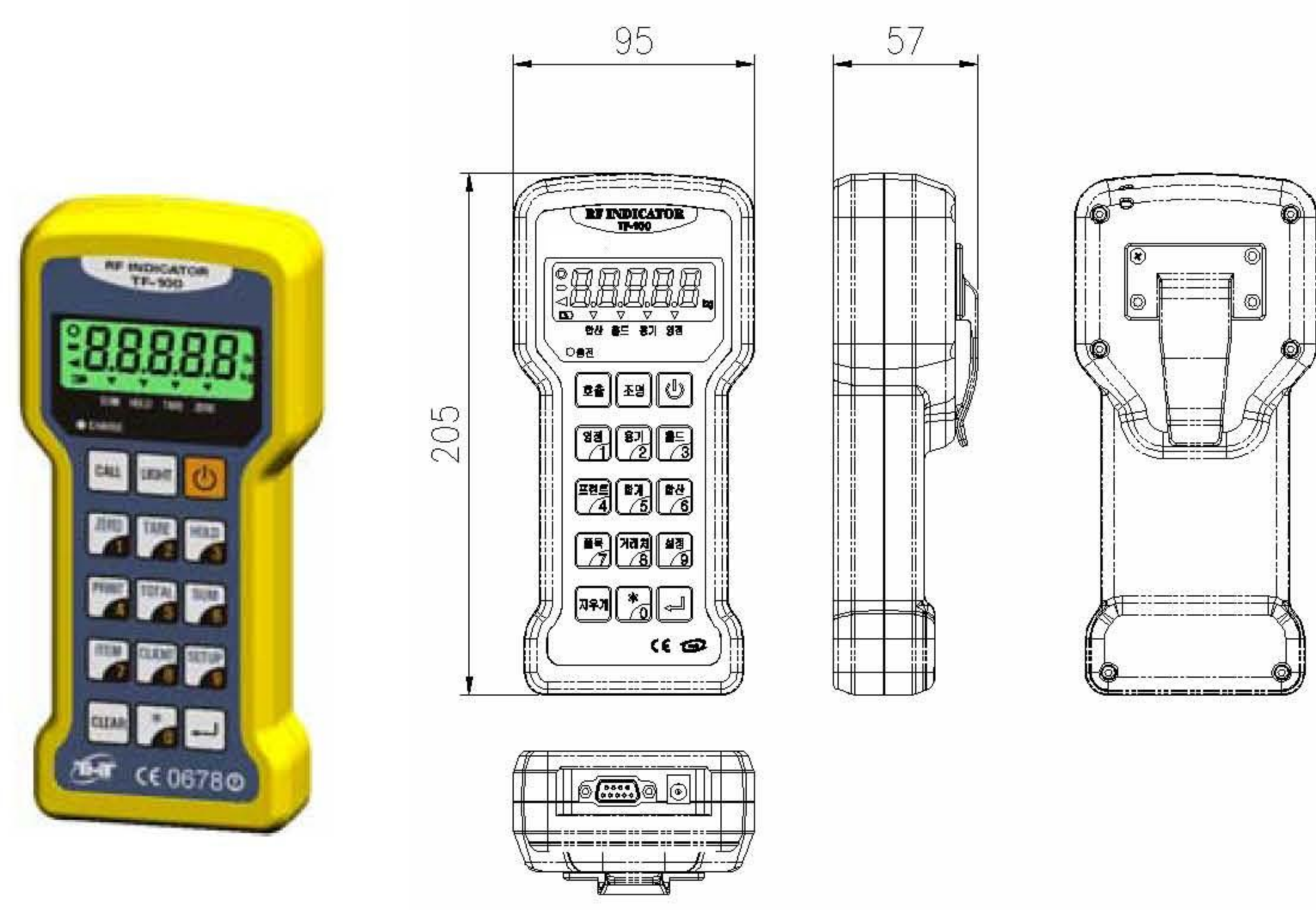


② Wireless auxiliary display (FJD-PLUS)

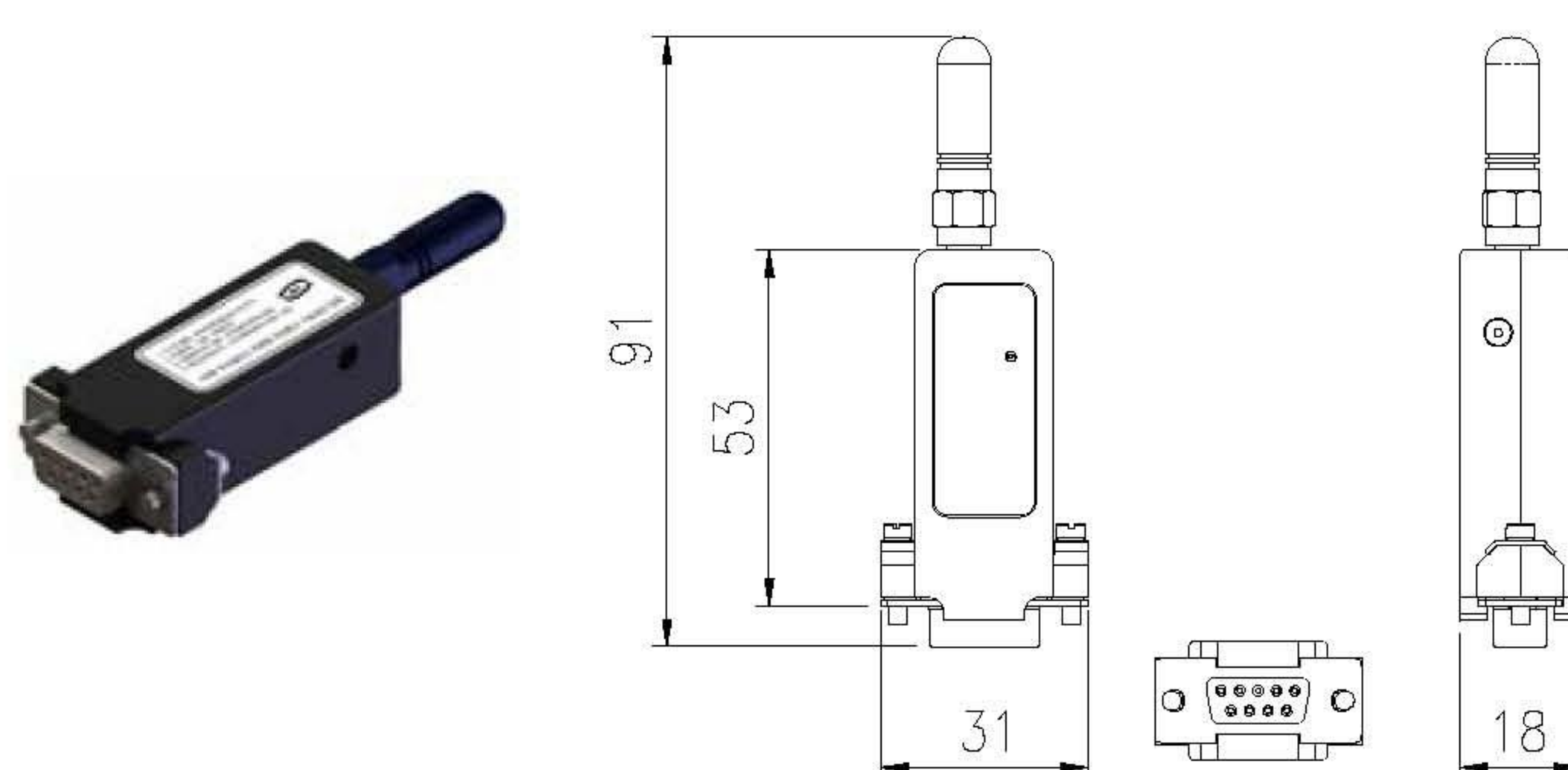


[standard] [wall hanging] [wall rotation] [glass adhesion]

③ Wireless controller (TF-100)



④ Wireless dongle (TF-200)





## 11. ERROR MESSAGE & TROUBLE SHOOTING

A digital display with four segments showing the error code 'E1001'. The 'E' is in the first segment, '1' in the second, '0' in the third, and '0' in the fourth.

### ■ Error 1

Message : Data in an internal storage allocation are erased owing to any electronic impact.

Trouble shooting : Please contact us to resolve this technical problem.

A digital display with four segments showing the error code 'E1002'. The 'E' is in the first segment, '1' in the second, '0' in the third, and '2' in the fourth.

### ■ Error 2

Message : Something wrong in a Load cell connection or in an A/D conversion.

Trouble shooting : Please contact us to resolve this technical problem.

A digital display with four segments showing the error code 'E1003'. The 'E' is in the first segment, '1' in the second, '0' in the third, and '3' in the fourth.

### ■ Error 3

Message : The initial zero range is exceeded within +/- 10% of maximum weight value.

Trouble shooting : Please check if a hook is empty.

A digital display with four segments showing the error code 'E00E'. The 'E' is in the first segment, '0' in the second, '0' in the third, and 'E' in the fourth.

### ■ Error

Message : When a thing is over-weighed within the maximum weight value, the error message is displayed.

Trouble shooting : Do not weigh the thing whose the limit of a maximum weight value is exceeded. If a load cell is broken, then the load cell has to be replaced.

# MEMO

# MEMO