

TCB(L) SERIES

VER (TCBL:109 , TCB:124)

CRANE SCALE

OPERATIONAL MANUAL



TMT

NOTE

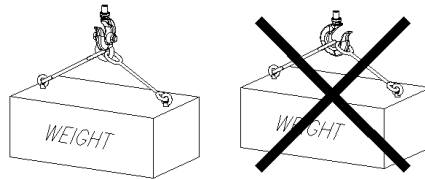
- (1) The unauthorized copying of some or all of this manual is prohibited.
- (2) The information contained herein is subject to change without notice.
- (3) If there are any questions such as wrong or missing parts of the contents listed in this manual, please contact us.
- (4) To improve the product performance, functions can be changed with no notice.
- (5) Please understand that TMT does not have responsibility for a demand related to loss, lost profit etc. caused by operating the product, regardless of the third clause.

INDEX

1. Precautions	4
2. Main Features	4
3. Specifications	5
4. Description of Panels and Symbols	7
5. Rechargeable Battery	8
6. General Functions for Weighing Mode	9
7. Setting Mode	10
8. Test Mode	15
9. IR Remote Controller	17
10. ZigBee Wireless (Option 1)	18
11. Bluetooth Wireless (Option 2)	18
12. Real Time Clock (Option 3)	19
13. Check Message	20

1. Precautions

- ◆ Do not put too much pressure to keys. Light touching is enough to operate products.
- ◆ Do not use inflammable substances for cleaning.
- ◆ Do not use the product in the rain. Keep it dry.
- ◆ Avoid sudden changes of temperature if possible
- ◆ Do not use the product in a place with a high-voltage current or severe electronic noise.
- ◆ Keep the product in a dry place.
- ◆ Do not use the product in a place with strong direct sunlight and dust.
- ◆ Do not use the product in a place with severe vibration.
- ◆ Check the supply voltage.
- ◆ Please check if the safety hook is connected well before you install our **TCB(L)**, so that the **SHACKLE** is not separated.

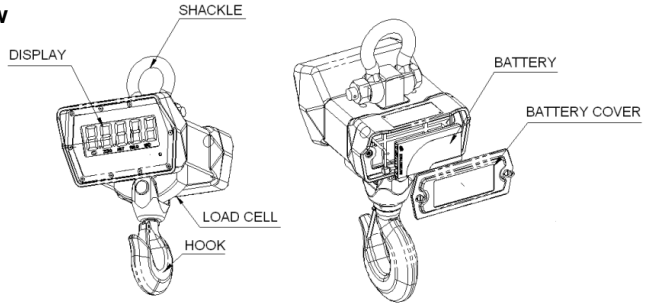


2. Main Features

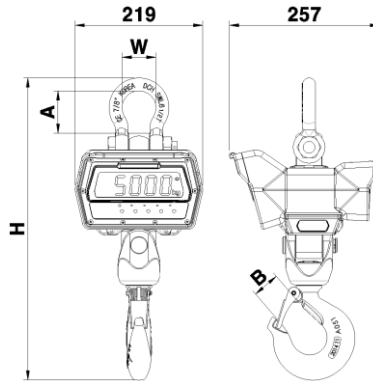
- ◆ Swivel hook
- ◆ Big size display
- ◆ Easy to exchange battery pack (Li-Po battery)
- ◆ IR remote controller(OPTION1)
- ◆ LAN communication is possible using the ZigBee
- ◆ ZigBee wireless application and real time clock (OPTION 2)
- ◆ Bluetooth application (OPTION 3)

3. Specifications

◆ Overall view



◆ Dimensions

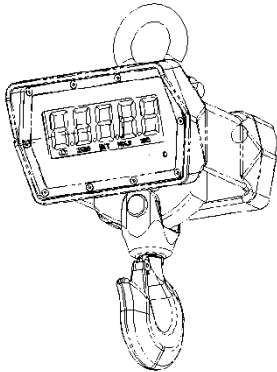


MODEL	Max (kg)	e=d= (kg)	Weight (kg)	DIMMENSION (UNIT: mm)			
				H	A	W	B
TCB-1T(L)	1,000	0.5	8.2	412	62	50	27
TCB-3T(L)	3,000	1	12.0	489	73	57	32
TCB-5T(L)	5,000	2	14.5	519	73	57	42
TCB-10T(L)	10,000	5	27.1	639	101	83	55
TCB-15T(L)	15,000	5	46	782	126	98	63
TCB-20T(L)	20,000	10	66	934	156	128	75

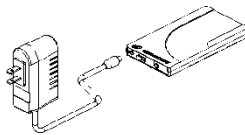
◆ Specifications

MODEL	TCB (FND TYPE)	TCB-L (LCD TYPE)
Display	5 digit FND 30.4mm	6 digit FSTN LCD 30mm
Operating time	Approx. 60hr	Approx. 200hr
Battery	7.4V \approx	3.7V \approx
Power adaptor	12V \approx 1A	5V \approx 1A
Display lamp	Low battery, Zero, Tare, Hold, Stable	
Function	ON/OFF, Zero, Tare, HOLD, *	
Temperature	-10 $^{\circ}$ C~40 $^{\circ}$ C	
Max. tare weight	Full Tare	
Safety overload	150% of capacity	
Zero point	Within 2% of Maximum Weight	
Initial zero band	Within 10% of Maximum Weight	
Parts	charge adaptor, manual	

◆ Parts



[Crane scale]



[Rechargeable adaptor]



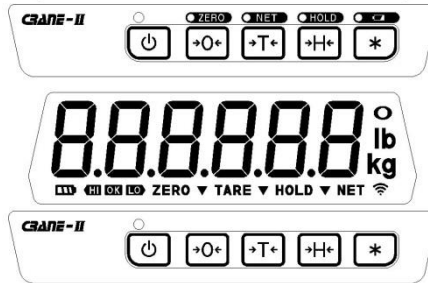
[Infrared remote controller](option)

4. Description of Panels and Symbols

FND Type



LCD Type



◆ Display

888888	Display the weight data & message
○	Indicates when the weight is stable
ZERO	Indicates when the weight is zero
TARE	Indicates when the tare is included
HOLD	Indicates when the hold function is set
	Indicates when a battery has to be recharged (B type)
	Indicates when the ZigBee communicates data (L type)

◆ Keypad

Key	Description
	ON/OFF Power ON/OFF of indicator
	ZERO The key to make weight value as zero
	TARE The key to perform tare weight
	HOLD The key to measure the unstable weight.
	ENTER The key to store/confirm setting value

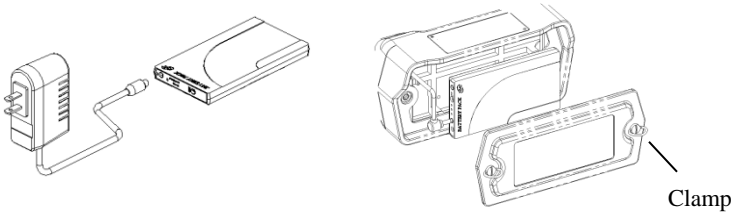
5. Rechargeable Battery

(1) Method of recharge battery

- Check the power supply voltage.
- If adaptor is still being charged, the RED lamp is on as below picture.
- If a charging is completed, the RED lamp is off.

The battery charging time takes about 6 hr.

(The battery charging time is subject to be changed according to battery condition.)



(2) Method of exchange battery pack

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

(3) Battery pack specifications

Nominal capacity	4500mAh
Nominal voltage	FND Type: 7.4V / LCD Type: 3.7V

(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 about 1~5 hours.

(It's subjected to be changed according to using conditions.)

6. General Functions

(1) Zero function

Use to correct drifted zero value when the scale is unloaded, and motion is not detected. This function works when **ZERO KEY** is pressed, and the **ZERO LAMP** is on.

(2) Setting tare weight function.

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 scale, and press the **TARE or ZERO KEY**.

Then, the **TARE LAMP** will be off and this function is terminated.

(3) Hold function

Automatic hold function

- Press **HOLD KEY** when the scale is empty (Initial zero state).
- The weight display will indicate **Hold on**. **HOLD LAMP** is on.
- After loading a thing, if the weight turns stable then, a display shows **-----** and average weight will appear.
- The weight of a loaded thing is displayed.
- To escape the automatic hold mode, when zero point is on, press **HOLD KEY**.



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

Manual hold function





- Press **HOLD KEY** loading a thing.
- This message of **hold** is displayed and sequentially the message of **-----** is shown with appearing the average weight.
- The weight of a loaded 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 enter this mode

Press the  KEY while pressing the  KEY.
Changed values are saved after run to the final menu.

(2) Keyboard

-  : Used to set up an initial zero value (0).
-  : Used to move the input value to the left or right by one place.
-  : Used to increase the setting constant one by one.
-  : Used to save the value and to move next menu.

(3) Menu

- 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 backup (0,1)

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

- F03 : Stable condition set of weight (1~9)

Setting Menu	Description
F03-1	Sensitive
F03-5	Normal
F03-9	Insensitive

■ F04 : Automatic Zero Condition (00~99)

Setting Menu	Description
F04-00	No compensation
F04-23	Compensation for gradual change below 1d for 3 sec.
F04-99	Compensation for gradual change below 4.5d for 9 sec.

■ F05 : Adjustment the hold speed (1~9)

Setting Menu	Description
F05-1	Very fast
F05-5	Normal
F05-9	Very slow

■ F06 : Auto Hold Start (0,1)

Setting Menu	Description
F06-0	Manual
F06-1	Automatic

■ F07 : Initialization Hold Weight (1~9)

Setting Menu	Description
F07-0	Zero (0)
F07-3	Below 3 division
F07-9	Below 9 division

■ F08 : Function * key (0~3)

Setting Menu	Description
F08-0	FND Type: Not used. LCD Type: Back light ON/OFF
F08-1	Print command key
F08-2	18bytes weighing data send key
F08-3	Use to clear previously added weights.

■ F09 : Item number (Identification number of each Item) (0~9)

Setting Menu	Description
F09-0	Item No.0
F09-5	Item No.5
F09-9	Item No.9

■ F10 : Weighing data send format (0~5)

Setting Menu	Description
F10-0	Not used
F10-1	Not used
F10-2	Send the print format by automatically at stable
F10-3	Send the weighing data ¹⁾ by automatically at stable
F10-4	Send the print format by automatically at HOLD
F10-5	Send the weighing data by automatically at HOLD

- i** Please select this mode if you used the wireless printer.
- i** In case of F10-2/4, the print form data(refer to F11) is send to printer and printer is printing with the print form. At this time, the printer mode of YJ380T must change to the NORMAL MODE.
- i** In case of F10-3/5, the 18bytes wireless data is send to printer and printer is printing with the itself format. At this time, the printer mode of YJ380T must change to the KEY MODE.

i 18bytes data

Type : EIA-RS-232C

Method : Full-duplex, asynchronous transmission Format

- ① Baud rate : 9600 bps
- ② Data bit: 8, Stop bit: 1, Parity bit: None
- ③ Code : ASCII

④ Format (18byte)

Start Code		Blank	Lamp Status		Weighing data		Unit		Stop code	
S U	T S	,	1 byte	,	+/-	7 byte	k	g	CR	LF

※ Start code : ST (Stable) / US (Unstable)

※ Lamp status byte

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
One decimal places	Two decimal places	Three decimal places	Stable		Zero	Tare	Hold

※ Weighing data (8bytes)

a. 13.5 kg : '+', '.', '.', '.', '.', '1', '3', '.', '.', '5'

b. -135 kg : '-', '.', '.', '.', '.', '1', '3', '.', '5'

※ CR: 0x0D / LF: 0x0A

■ F11 : Print form (0~2)

Setting Menu	Description
F11-0	Form 0 (Date and time, serial No., Item No., weight)
F11-1	Form 1 (Date and time, weigh No., Item No., weight)

i The serial number is not saved.

[FORM 0]

2013.10.13 12:00	
SN_001, ID_9,	25 kg

[FORM 1]

2013.10.13 12:00	
012, ID_9,	131 kg

■ F12 : Print line feed (0~9)

Setting Menu	Description
F12-0	1 line feed after printing
F12-5	6 line feed after printing
F12-9	10 line feed after printing

■ F13 : Initialization of number measured daily (weigh No.) (0,1)

Setting Menu	Description
F13-0	Maintain current number
F13-1	Initialization (starting from No.1)

i Maximum of weighing number is 999, and if it exceeds the number is initialized to 1.

■ F14 : Stream wireless mode (0~3)

Setting Menu	Description
F14-0	Not used
F14-1	ZigBee communicate with TD series, TF100 and TF400
F14-2	ZigBee communicate with TF200 dongle
F14-3	Bluetooth communicate with smartphone

i In case of F14-2, refer to the 18bytes data format.

i In case of F14-3, F10 function can't use.

■ F15 : Power synchronization (0~1)

Setting Menu	Description
F15-0	Not used.
F15-1	When the indicator turns off, the wirelessly connected display is automatically turned off.

■ F16 : Back light mode (LCD type) (0~2)

Setting Menu	Description
F16-0	Manual ON/OFF
F16-1	Automatic ON/OFF (Weighing: ON / Zero: OFF)
F16-2	Always ON

■ F17 : Back light brightness level control (LCD type) (1~9)

Setting Menu	Description
F17-1	10%
F17-5	50%
F17-9	100%

■ F18 : Signal response for wireless data communication (0, 1)

(Applicable only when set to F14-1)

Setting Menu	Description
F18-0	Improved response rate when communicating data with an external indicator
F18-1	Improved response rate when not receiving data with an external indicator

■ F25 : Good display settings (FND type)

(Applicable when F8- 1,2 setting)

Setting Menu	Description
F25-0	Connected with TF-200, print transmission confirmation Good displayed
F25-1	When the acknowledgment data is received from the PC connected to TF-200, Good is displayed.



※ In TF-100, if you press the Enter key, Good can be checked in TF-100 as well.

※ Data protocol for acknowledgment on PC

turn	1	2	3	4	5	6	7	8	9	10
data(HEX)	53h	53h	06h	30h	30h	30h	30h	30h	0Dh	0Ah




8. Test Mode

(1) How to enter this mode


Press the  KEY while pressing the  KEY.

(2) Menu



■ TEST 1 : Display test

Display	Description
	TEST 1 runs automatically and a display is on. If press  KEY, move into next menu.
	

■ TEST 2 : Keyboard test

Key	Display	Description
ZERO	1	If you press the key that you want to test, the key number is appeared on the display. If press  KEY, moves into next menu.
TARE	2	
HOLD	3	
ENTER	4	

■ TEST 3 : A/D conversion test (Load cell test)

Display	Description
	The value is the conversion constant for A/D. The value may be different according to scale models. If press  KEY, move into next menu.

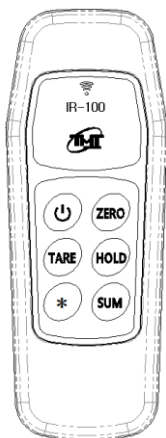
① Please check if the displayed number is easily changed with giving force

to a hook. If the displaying number is not changed or remains '0', then it needs the service after sales.

■ TEST 4 : Back light test (LCD Type)

Display	Description
	If you press the KEY once, back light turns on and once again, back light is turns OFF. If press KEY, move into weighing mode.

9. IR Remote Controller



- : Use to power off the scale (Power-ON is available only on scale.)
- : Same as Scale keyboard
- : Same as scale keyboard
- : Same as scale keyboard
- (CLEAR) : Same as scale keyboard
- : 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.

Weight of less than 5 digits is not summed.

Maximum of sum weights is 99999, and if it exceeds the weights is initialized to 0.

Type	Infrared
Available Distance	6 m ~ 10 m
Available Angle	60°
Power	3V (1.5V AA 2 EA)

10. ZigBee Wireless (Option 1)

The OP-01 is communicates with our wireless display and controller.
If you are using a wireless dongle, you can communicate with PC and printer.

RF frequency range	2400 ~ 2483.5 MHz
Output power	Max. 4dBm
Channel width	2 MHz
Frequency offset	< ± 30 ppm
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)


11. Bluetooth Wireless (Option 2)

The OP-02 is communicates with smart phone.

Bluetooth specification	Fully qualified with Bluetooth v2.0 +EDR specification EDR (Enhanced data rate) compliant with v2.0 of specification for both 2Mbps and 3Mbps.
RF frequency range	2401 ~ 2480 MHz
Output power	Max. 18dBm
Transmit data rate	Up to 921Kbps
Receiver sensitivity	-87dBm (PER <1%)
Maximum input level	-17dBm
Radio link effective range	Depend on smart phone Bluetooth


12. Real Time Clock (Option 1)

(1) How to enter this mode

Press the  KEY while pressing the **ZERO KEY**.

(2) Keyboard

 : Used to move the input value to the left or right by one place.

 : Used to increase the setting constant one by one.

 : Used to save the value and to move next menu.

(3) Menu

No	Display	Description
1	YEAR 20 13	Modify the year
2	DATE 10 13	Modify the date
3	TIME 18 00	Modify the time
4	End	The end

13. Check Message

08001

Data in an internal storage value are erased owing to any electronic impact.
Please contact us to resolve this technical problem.

08002

Something wrong in a Load cell connection or in an A/D conversion.
Please contact us to resolve this technical problem.

00001

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

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.